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CREDIT SPREADS AND ECONOMIC ACTIVITY IN EIGHT EUROPEAN ECONOMIES

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Abstract

In this thesis we examine the relationship between corporate bond spreads and economic activity in eight European countries using data on 500 corporate bonds between July 1994 and May 2011 for the United Kingdom and between October 2001 and May 2011 for Austria, Belgium, France, Germany, Italy, Netherlands and Spain. We construct a unique dataset of corporate bond spreads from bond-level data employing a similar methodology to Gilchrist and Zakrajšek (2012a) in the United States. Thus, we ensure that our credit spread measure is not distorted by illiquidity, embedded options, or mismatched maturities and coupon schedules between the two bond instruments being compared. We evaluate the importance of the country-level corporate bond spread index in predicting the future growth in real activity at the individual country level for various measures of economic activity (such as industrial production, unemployment available at monthly frequency; and employment and real GDP available at quarterly frequency). We find that the credit spread index is a consistent predictor of real activity even when we include measures of monetary policy tightness (such as the term spread and the real interest rate), other leading indicator variables (economic sentiment and consumer confidence) and factors extracted from a large macro dataset. Our results are consistent at different forecasting horizons and are robust to different measures of the credit spread index. We then decompose the credit spread by purging it of expected default, tax and liquidity premia in an attempt to determine what component accounts for its information content. We find that the excess bond premium, an indicator of financial market tightness, is the major driving source of the spread's predictive content. When we compare the predictive ability of the credit spread and the excess bond premium across individual countries within the Euro area and outside the Euro area, we find that mainly the core European countries have similar predictive ability, while the other countries in the Euro area and the UK are more heterogeneous.

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Chapter 1 Introduction

1.1 Motivation and Background

The global financial crisis that began in 2007, and the ensuing recession have spurred renewed interest in the relationship between financial market tightness and real economic activity. This has led to a remarkable growth in the theoretical and empirical investigation of the role of credit market frictions, or shocks emanating from the financial sector, in economic fluctuations. Leading works by Bernanke, Gertler and Gilchrist (1996, 1999) and Carlstrom and Fuerst (1997) proposed a framework to assess the quantitative implications of credit market imperfections for macroeconomic analysis. Their framework exhibits a financial accelerator mechanism whereby endogenous developments in the credit markets work to propagate and amplify shocks to the macroeconomy. The implication of this literature is that the net worth of borrowers amplifies initial shocks. When borrowers have limited wealth to contribute to the financing of projects, there is a greater divergence in interests between the borrower and the lender (the supplier of external funds) which gives rise to a moral hazard problem and therefore agency costs increase. Lenders must be compensated for this, and they demand a premium on the external finance provided, hence the external finance premium is inversely related to the net worth, or balance sheet condition. This balance sheet channel forms part of the so-called credit channel of monetary policy transmission along with the bank lending channel (whereby monetary policy affects the supply of bank loans).

The recent experience of the credit crisis suggests that shocks originating from the financial sector can be propagated and amplified over time through the financial accelerator mechanism. During the financial crisis we have seen a severe deterioration in financial intermediaries' balance sheets through increased write-offs due to exposure to the sub-prime mortgage market, thus shrinking their lending capacity and causing them to revise upwards the price of risk. Monetary authorities responded in an unprecedented way by reducing short-term interest rates, lending directly to private credit markets and engaging in quantitative easing (monetary expansion). However, a recent Bank of England Inflation Report (May 2012) shows that despite lower interest rates, the cost of borrowing has actually risen. Option-adjusted spreads of UK investment grade borrowers (over government bonds of equivalent maturity) were 200 basis points higher in May 2012 than in July 2007. In the context of a deteriorating global economic outlook and the greater uncertainties surrounding the European sovereign debt problems, the willingness or ability of financial market participants to bear risk changed, which in turn drove up risk premia as compared to the period before the crisis. From a financial accelerator point of view, firms facing higher external finance premia (which can be proxied in practice by corporate bond spreads) can find that their balance sheet or creditworthiness deteriorates further, making future external finance even harder to obtain. This can have a protracted negative effect on future investment and economic output.

This thesis provides an empirical investigation of the importance of corporate bond spreads for future real economic activity. This has been studied before in the literature mostly for US data. Corporate bond spreads have been shown to contain significant explanatory power for future economic outcomes [Gertler and Lown (1999), Chan-Lau and Ivascenko (2001), Mody and Taylor (2004), King et al. (2007), Mueller (2009), Gilchrist et al. (2009), Gilchrist and Zakrajšek (2012a) and Faust et al. (2011)]. There are very few studies for Europe, partly because the European corporate bond market is younger than that of the US [Davis and Fagan (1997), De Bondt (2004) and Buchmann (2011)].

Given the limited empirical evidence on Europe, our aim is to shed light on the importance of the corporate bond spreads as predictors of future real activity using a unique dataset of country-level corporate spreads constructed using a bottom-up approach from bond level data in eight major European economies.

1.2 Structure and Objectives

The broad research objective of this thesis is to examine the predictive content of European corporate bond spreads for real economic activity. As already mentioned, the empirical literature for European data is limited to a few papers. De Bondt (2004) offered the first empirical examination for Europe since the introduction of the Euro at the Euro-area aggregate level but for a short data sample. Buchmann (2011) is to the best of our knowledge the only other recent study for the Euro-area. He uses the Euro-area aggregate corporate bond index provided by Merrill-Lynch and distinguishes between the securities' quality, their term-to-maturity, and the forecast horizon. He finds strong predictive content for the spread along with alternative leading indicators such as M1 money growth and a measure of dispersion in consumers' expectations.

Our objective and contribution is to construct a unique dataset for European corporate bonds from bottom-up at the disaggregated country level. We do so by constructing a credit spread index using Bloomberg data on 500 outstanding nonfinancial corporate bonds issued in eight European countries (namely, Austria, Belgium, France, Germany, Italy, Netherlands, Spain and the UK) between July 1994[1] and May 2011. This involves the construction of an artificial risk-free rate that mimics the exact structure of the coupon payments of the underlying bond for each bond in our sample at each pricing date. The price of this artificial bond is then obtained as the sum of the present values of the coupon payments discounted by an interpolated rate obtained from the Euro and GBP Benchmark curves at each pricing date. The yield of the artificial bond is then obtained from its price and the spread is defined as the difference between the actual bond yield and the yield on its corresponding artificial risk-free bond. We focus on the careful selection of bonds and guide our approach by Gilchrist et al. (2009) and Gilchrist and Zakrajšek (2012a, GZ hereafter) methodology. We thus ensure that our credit spread index is not distorted by bonds with embedded options or illiquid bonds, and ensure that the maturity structure corresponds to business cycle frequencies rather than the very short term.

We then evaluate the independent explanatory power of our credit spread index for future changes in real economic activity against measures of monetary policy tightness (the real interest rate and the term spread), indicators capturing private sector expectations (consumer confidence and economic sentiment) and the information content of a large array of macroeconomic variables summarized by latent factors (following the methodology of Stock and Watson, 2002a,b). We consider four measures of economic activity, namely industrial production, employment, unemployment and real GDP at three forecasting horizons (h=3-, 12- and 24-months for monthly data; and h=1-, 4- and 8-quarters for quarterly data). We also consider three additional versions of the credit spread index as unweighted and value-weighted averages of individual bonds, and also the detrended levels of economic activity as the dependent variable.

[1] Only UK data is available from July 1994; most other European country data start from October 2001.

We then repeat the exercise for bond spreads purged of expected default and bond-specific characteristics (such as duration, amount outstanding, coupon, and age). Through this decomposition we obtain a measure for the unpredictable part of the credit spread termed the excess bond premium (EBP).

This allows us to make several contributions to the literature. Firstly, we can evaluate the importance of the credit spread index and the EBP as leading indicators for Europe. This provides the first test of Gilchrist and Zakrajšek's (2012a) findings for data outside the US. We find that both the credit spread index and the EBP have significant predictive content for future growth in our four real activity measures at various horizons. We also find that the EBP accounts for most of the credit spread's predictive content and represents a measure of financial market tightness which provides strong support for Gilchrist and Zakrajšek's findings.

A weakness of empirical work such as that of Gilchrist and Zakrajšek (2012a) is that credit spreads are shown to function as a type of a leading indicator, but not that they carry more information than other leading indicators, as the Bernanke, Gertler and Gilchrist (1996, 1999) model suggests. Our second contribution is thus to test whether credit spreads in Europe still have predictive content for macro variables even after controlling for expectations through other leading indicators[2]. Thus, we examine whether they provide an independent effect on output because of their impact on investment through the balance sheet channel. We find that the credit spread and the EBP maintain their explanatory power even when indicators of private sector expectations are added, which lends support to the empirical relevance of the balance sheet channel and the financial accelerator theory in operation.

Taking advantage of the country panel dimension of our dataset, a further contribution of this study is to disentangle the effect of the credit spread index and the excess bond premium on future real activity across the eight European countries by allowing the coefficients on these variables to differ across countries. We find that there is a certain degree of heterogeneity among these countries, with the Euro-area core countries being the most similar. We now present a brief outline of each chapter.

[2] We include the economic sentiment and consumer confidence indicators as measures of private sector expectations of future growth, and in the working paper version of this study (available on the CFCM website) we also include the OECD's Composite Leading Indicators at country-level.

1.2.1 The Financial Accelerator – Theory and Empirics

Chapter Two of the thesis provides a brief outline of the financial accelerator model developed by Bernanke, Gertler and Gilchrist (1999). It also provides an insight into the recent financial crisis in the context of the financial accelerator theory, and briefly discusses the most recent developments in the theoretical literature focusing on the financial accelerator mechanism. Within the credit view of monetary policy transmission, the financial accelerator framework of Bernanke, Gertler and Gilchrist (1999) constitutes the theoretical underpinnings of our study. In this model, decreases in net worth exacerbate the information asymmetries inherent in debt financing, thus deepening downturns. Equally, increases in net worth imply more credit, thus amplifying expansions. Thus, if the financial accelerator is empirically relevant, then credit risk should be closely related to the business cycle.

1.2.2 A Descriptive Analysis of the Data

In Chapter Three of the thesis, we provide a detailed description of the data sources and construction employed in this study. The aim of this chapter is to provide a descriptive analysis of the bond-level and country-level data that will be used in the subsequent empirical chapters. We outline the methodological details in constructing the credit spread index and provide a descriptive analysis of key variables to be used in further work. Guided by Gilchrist and Zakrajšek (2012a), we also impose a series of criteria in selecting the final bonds in our sample. We also provide information on the Moody's KMV dataset of the firm-level expected default frequencies (which is available between January 1992 and August 2010) and how we map this with the bond issuers in our sample.

It is worth noting several differences between Gilchrist and Zakrajšek's (2012a) and Buchmann's (2011) datasets and ours, which also distinguish our measure of the credit spread index from theirs. Firstly, we have eight countries in our sample representing eight different bond markets as opposed to a single market in the US. In constructing the bond spread index, we use the same Euro-benchmark rate for the seven Euro-area countries in our sample while the UK has the GBP benchmark rate. Our approach also differs from De Bondt (2004) in that he uses aggregate data and excludes the UK, whereas we include it as it represents a sizable bond market with data going back to 1994.

Secondly, we have very few callable bonds (bonds with the option to repay early) in our dataset (9% compared to about 60% in Gilchrist and Zakrajšek's, 2012a dataset). Since the loss in the number of observations is not significant, we decide to exclude any bonds with embedded options with the aim of removing any problems associated with prepayment risk. Bonds with embedded options are valued in a different way to straight bonds (bonds with no options) and fluctuate closely with interest rates, so it is preferable to exclude them.

Thirdly, while Gilchrist and Zakrajšek (2012a) include in their analysis a spread for commercial paper rates and a Baa-Aaa spread, we have very limited available data on these measures. As opposed to the US, the commercial paper market in Europe has only recently grown in size and only the largest corporations and financial institutions access this market. However, the exclusion of these spreads is not likely to have any substantial impact on our results since Gilchrist and Zakrajšek (2012a) conclude that they provide limited additional explanatory power in their results.

Fourthly, Buchmann (2011) uses the readily available Merrill Lynch index of investment-grade corporate bonds issued in Euro domestic markets available for a variety of maturity classes (for example, maturities range from 1-3, 3-5, 5-10, 7-10, and more than 10 years). They then calculate the spread as the difference between the corporate bond yield and the relevant benchmark government bond yield, where the latter is averaged across maturities in accordance with the maturities of the underlying corporate bond. We, however, construct our spread measure as the difference between the yield on a corporate bond (available from Bloomberg) and the yield on its corresponding theoretical risk-free bond. This involves two steps. Firstly, we calculate the price of the theoretical risk-free bond as the sum of the present values of the bond's cash flows until maturity. Each cash-flow is discounted by an interpolated benchmark rate to match the term to maturity of that respective cash-flow at each pricing date. This process was very data-intensive and time-consuming as it involved gathering benchmark rate data for each bond's cash flow payment at each pricing date available. Secondly, with the price and the cash flow schedule at hand we then solve for the yield. This methodology, widely used in finance and guided by Gilchrist and Zakrajšek (2012a), ensures that the two bonds being compared are not mismatched in terms of maturity and coupon structure.

1.2.3 The European Corporate Bond Spread Index and Economic Activity

There is a vast literature on the predictive ability of financial variables for real economic activity, much of which has been surveyed by Stock and Watson (2003). The methods used for this exercise have included latent factor models (Marcellino, Stock and Watson, 2003; Stock and Watson, 2006), models of the term structure (Ang et al., 2006; Wright, 2006), as well as leading indicator models (Marcellino, 2006). Their usefulness as predictors of future activity stems simply from the fact that as forward-looking assets, their prices incorporate the view of economic agents on where the economy is heading, and therefore, should constitute good leading indicators of future economic activity.

Within the financial accelerator framework discussed above, our focus is on the premium on market-based financing (i.e. corporate bond instruments issued in European corporate bond markets), where the premium is approximated by the spread between corporate bonds and risk-free bonds. Over time the empirical literature has updated its focus on which corporate bond spread to use. For example, Gertler and Lown (1999) argue that, due to the greater risk of default in high-yield bonds, the spread has a relatively large component that is due to bond risks, and a smaller component that reflects prepayment or liquidity risk, hence they are a better measure of the external finance premium. Mody and Taylor (2004) and King et al. (2007) confirm Gertler and Lown's results that the high-yield bond spread outperforms other financial spreads. Chan-Lau and Ivaschenko (2001) suggested, however, that it is not necessary to use high yield bonds to explain real activity. They suggested that prices of investment-grade bonds could accurately reflect economic fundamentals (such as expected return on investment) if they were correctly organized by maturity and bond rating.

The recent financial crisis has injected new interest into the literature on bond spreads and economic activity because economic activity has declined during the recent recession, and because bond spreads have become more volatile after the collapse of Lehman Brothers in September 2008. The most recent research on US bond markets has been conducted by Gilchrist, Yankov and Zakrajšek (2009), Gilchrist and Zakrajšek (2012a) and Faust et al. (2011) on US bond market data. In contrast to previous papers, these contributions employ a bottom-up approach to the construction of spreads, and they carefully select the bonds based on certain criteria in order to remove prepayment and liquidity effects and problems associated with outliers, mismatching coupon schedules and durations, among others.

We employ the same bottom-up approach guided by Gilchrist et al. (2009) and Gilchrist and Zakrajšek (2012a) to construct a country-level bond spread index from European bond level data. By using appropriate selection criteria suitably adjusted for European bonds, we construct a European index of bond spreads, with the same advantages as the US studies. The aim of Chapter Four is thus to examine the information content of the European credit spread index in addition to the real interest rate, the term spread, and indicators of market expectations (consumer confidence and economic sentiment). As robustness checks, we consider the detrended levels of economic activity (industrial production, unemployment, employment and real GDP) and three alternative measures of the spread, a log (L), re-scaled (R) and weighted (W) version. The log version takes the log of the spread before aggregating it into a country-level index by taking the cross-sectional average. The re-scaled version re-scales the spread by the risk-free rate such that the spread becomes a function of pure credit risk. The weighted version considers a weighted average (as opposed to a simple average) when aggregating the spread at country-level, where the weights are the market values of the amounts outstanding of each bond. Taking advantage of the panel dimension of our dataset, we then consider the individual impact of credit spreads on future economic activity across the eight countries. We find that the credit spread index is a robust significant predictor of most measures of economic activity at all horizons.

1.2.4 The European Excess Bond Premium and Economic Activity

The finance literature has identified various components of the credit spread, including tax, liquidity and prepayment premia in addition to the default risk premium of the underlying issue (as compared to a risk-free issue). These components make up a small fraction of the spread between corporate debt and risk-free debt, which has prompted the literature in the direction of a "credit spread puzzle". It is believed that there is also a significant risk premium for having exposure to the systematic risk in corporate bond markets, which can account for up to 41% of spreads (Elton et al., 2001).

In Chapter Five, we aim to establish what drives the predictive content of the credit spread index by decomposing it in a similar fashion to Gilchrist and Zakrajšek's (2012a) methodology. We thus purge the spread of expected default and tax and liquidity effects, by regressing the spread on a default measure provided by Moody's KMV and bond specific characteristics that proxy tax and liquidity effects (such as duration, age, coupon, amount outstanding). Since the bonds in our sample do not have embedded options, we do not have to worry about prepayment risk. Thus, we obtain the fitted credit spread which we term the predicted spread and a residual component obtained as the difference.

This linear decomposition takes place at bond level such that both the predicted spread and the EBP are bond-specific, and the EBP is obtained as the difference between the actual bond spread (at bond level) and the predicted spread average across bonds at a given date. Our approach differs slightly from Gilchrist and Zakrajšek (2012a) since they define the EBP as the difference between the averaged bond spread and the averaged predicted spread at a given date (i.e. they average before differencing so the actual and predicted spread averages of Gilchrist and Zakrajšek, 2012a may contain different samples of bonds). Also, as described in the earlier section, we consider the log (L), re-scaled (R) and weighted (W) versions of the predicted spread and the EBP in a similar fashion to our strategy described in section 1.2.3.

The objective of this chapter is to examine and compare the information content of these two components within the same empirical framework as Chapter Four. We find that both components are consistent predictors of future real activity, but, in some cases (namely, in five out of twelve specifications when the sentiment indicators are also included) the EBP is the only source of information content in the spread. We also provide informal evidence of the strong correlation between the EBP and measures of financial market tightness proxying for the risk attitudes or risk capacity of major European financial intermediaries. This may suggest that these forces are important for the balance sheet channel affecting real economic activity. Our findings are in line with Gilchrist and Zakrajšek's (2012a) results for the US.

1.2.5 Credit Spreads and Factor Analysis - Evidence from Europe

Chapter Six aims to evaluate further the usefulness of the credit spread index and the EBP as leading indicators once we control for a much wider array of macroeconomic and financial variables. This acknowledges that using a small number of leading indicators may reflect only specific shocks over certain periods of time, and at the same time underlines the usefulness of a large dataset. Factor models can usefully reduce the high-dimensionality problem by modelling the co-variability of a large number of series with a small number of unobserved latent factors. We gather data on about 70 variables at monthly frequency between 2001 and 2011 for each of the eight European countries in our sample. We then describe the steps taken in processing the data and also the various selection criteria used in choosing the number of estimated factors. We group factors into clusters based on the underlying economic variables, and we identify certain factors such as the interest rate factor (loading on interest rates) as strongly significant. Thus, in the second part of the chapter we further aim to disentangle the information content of the term structure of interest rates by including the level, slope and curvature factors (extracted in a separate exercise for each country from government bond data of maturities between 1 month and 10 years) in addition to the re-estimated macro factors from the dataset which now excludes interest rates. We repeat these exercises for the two components of the credit spread as well, and we find that both the credit spread index and the EBP remain significant and robust predictors of future economic activity for most measures of economic activity.

1.2.6 Conclusion

Chapter Seven summarizes the main contributions and empirical findings of the thesis, implications for policy and also presents areas for further research.

Chapter 2 The Financial Accelerator – Theory and Empirics

2.1 Introduction

With the recent global financial crisis and ensuing recession triggered by the US sub-prime mortgage market collapse, it has become increasingly clear that financial frictions are important for business cycle amplification and can have severe consequences on real economic activity.

The two benchmark models developed to analyse the post-war business cycle fluctuations in developed economies, the Real Business Cycle and the Dynamic New Keynesian models, were silent on the relationship between financial intermediation and macroeconomic volatility. Bernanke and Gertler (1989), Kiyotaki and Moore (1997), Carlstrom and Fuerst (1997) and Bernanke, Gertler, and Gilchrist (1996, 1999) were the first contributions to the literature to incorporate credit market imperfections into standard macroeconomic models to show that credit market imperfections can amplify business cycle fluctuations.

The seminal paper of Bernanke, Gertler and Gilchrist (1999, BGG hereafter) provides the theoretical basis for our empirical work. The purpose of this chapter is thus to provide an overview of the financial accelerator model and how it relates to the recent financial crisis and our empirical study. The BGG framework features a "financial accelerator" mechanism, in that endogenous developments in credit markets propagate and amplify shocks to the macroeconomy.

Bernanke, Gertler and Gilchrist (1999) incorporate the costly-state verification (CSV)[3] debt contracting problem of Townsend (1979) into a standard Dynamic New Keynesian general equilibrium model. The key ingredient in their framework is the "external finance premium" which is inversely related to the net worth of potential borrowers. As explained by Bernanke, Gertler and Gilchrist (1999), this arises because when borrowers have little wealth to finance a project, a conflict of interests emerges between the borrower and the provider of external funds, as lenders must be compensated for higher agency costs by a larger

[3] The CSV refers to the idea that verifying a company's performance is costly and a lender has to pay a monitoring cost to perform that.

premium. In addition, they also add price stickiness à la Calvo (1983); money, which allows studying the effects of monetary policy; decision lags for investment, which generates the hump-shaped output dynamics and a lead-lag relationship between asset prices and investment consistent with the data; and heterogeneous firms, which captures the differential access of borrowers to credit.

2.2 Overview of the Financial Accelerator Model

The model has three agents: households, entrepreneurs and retailers. Households and entrepreneurs are distinct in order to explicitly motivate lending and borrowing, retailers allow incorporating price stickiness; there is also a government which sets monetary and fiscal policy.

Households live forever, consume, work and save. Entrepreneurs produce wholesale goods in competitive markets and sell their output to retailers, who are monopolistic competitors. The only role of the retailers is to generate nominal price stickiness in the model through their monopoly power, namely they buy the goods from the entrepreneurs, differentiate them and re-sell them to households.

Entrepreneur *j*, assumed to be risk-neutral and with finite horizons, purchases physical capital denoted K_{t+1}^{j}, with the subscript denoting the period in which the capital is actually used. The price paid per unit of capital in period *t* is Q_t for use in production in period *t + 1* (in combination with hired labour). Capital acquisition is financed by entrepreneur's wealth, and borrowing. At the end of period *t*, entrepreneur *j* has available net worth, N_{t+1}^{j}, which comes from two sources: profits from previous capital investment and labour income supplied to the general labour market.

The investment project can be financed through external borrowing on top of internal funds, $B_{t+1}^{j} = Q_t K_{t+1}^{j} - N_{t+1}^{j}$. The financial intermediary obtains its funds from households. Given that $R_{t+1}^{k}$is the ex post aggregate gross return capital investment, then the expected revenue from the investment project is given by $R_{t+1}^{k} Q_t K_{t+1}^{j}$. The realized revenue for the entrepreneur in the next period is $\omega^{j} R_{t+1}^{k} Q_t K_{t+1}^{k}$, where ω^{j} is an idiosyncratic disturbance to firm *j*'s return which is i.i.d. across firms and time.

Assuming a CSV problem in which lenders pay a fixed auditing cost in order to monitor a borrower's realized return on capital, the monitoring cost is then a fixed proportion μ of the realized gross payoff, $\mu\, \omega^J R_{t+1}^k Q_t K_{t+1}^k$.

The optimal contract under CSV is then a standard risky debt contract characterised by a gross non-default loan rate, Z_{t+1}^J and a threshold value of the productivity shock, $\bar{\omega}^J$, such that for any value greater than $\bar{\omega}^J$, the entrepreneur is able to repay the loan at the contractual rate, Z_{t+1}^J. It follows that:

- If $\omega^J \geq \bar{\omega}^J$ the lender is paid in full and the entrepreneur's net return is $\omega^J R_{t+1}^k Q_t K_{t+1}^k - Z_{t+1}^J B_{t+1}^J$
- If $\omega^J < \bar{\omega}^J$ the entrepreneur defaults on its loan and receives nothing. The lender pays the auditing cost and receives what is found, $(1-\mu)\omega R_{t+1}^k Q_t K_{t+1}^k$.

The model requires that the financial intermediary receives an expected return equal to the opportunity cost of its funds. Since the loan risk is perfectly diversifiable, the opportunity cost to the lender is then equal to the risk-free rate, R_{t+1}. Consequently, the financial intermediary's expected return is a function of the cut-off value of the firm's idiosyncratic productivity shock, $\bar{\omega}^J$; a rise in $\bar{\omega}^J$ increases the expected return (which reaches a maximum at a unique interior value of $\bar{\omega}^J$) and as $\bar{\omega}^J$ rises above this value the expected return then declines due to an increased probability of default, $F(\bar{\omega})$.

The entrepreneur's contracting problem is thus to maximize his expected return subject to an optimal choice of K_{t+1}^J and a schedule for $\bar{\omega}^J$ (as a function of the realized values of R_{t+1}^k). Let $s = E\left[\frac{R_{t+1}^k}{R_{t+1}}\right]$ be the expected discounted return to capital. For entrepreneurs to purchase capital in the competitive equilibrium it must be that $s \geq 1$. As Bernanke, Gertler and Gilchrist (1999) suggest, s can be interpreted as the external finance premium (EFP). The following relationship provides the link between the entrepreneur's capital expenditures and financial conditions (as measured by the EFP and the entrepreneur's net worth):

$$Q_t K_{t+1}^J = \Psi(s_t) N_{t+1}^J, \text{ with } \quad \Psi(1) = 1,\ \Psi'(\cdot) > 0$$

Or
$$\frac{Q_t K_{t+1}^J}{N_{t+1}^J} = \Psi(s_t) \qquad (1)$$

This relation shows that the capital expenditures of each firm are proportional to the net worth, where the proportionality factor is increasing in the expected discounted return to capital. This translates into the idea that the higher the proportion of the entrepreneur's capital investment that is financed through its own net worth (i.e. collateral), the lower the external finance premium is. All else equal, a higher expected discounted return to capital reduces the expected probability of default, which means the entrepreneur can take on more debt to expand his firm size. An equivalent way of expressing the entrepreneur's optimal choice of capital is:

$$E[R^k_{t+1}] = s\left(\frac{N^j_{t+1}}{Q_t K^j_{t+1}}\right) R_{t+1},\ s'(\cdot) < 0 \tag{2}$$

This relation depicts the inverse relationship between firms' net worth and cost of external finance, which is the cornerstone of the financial accelerator mechanism. Higher levels of net worth imply a higher ability to self-finance (or equivalently, collateralized external finance) which mitigates the agency problems and reduces the EFP faced by the entrepreneur in equilibrium.

Now, let V_t be the entrepreneurial equity (i.e. wealth accumulated by entrepreneurs from operating firms) and let W^e_t denote the entrepreneurial wage. The aggregate entrepreneurial net worth at the end of period *t* is then given by the sum of the two:

$$N_{t+1} = \gamma V_t + W^e_t \tag{3}$$

where γ represents the proportion of entrepreneurs who are still in business at time *t* (i.e. the constant probability of surviving to the next period).

Entrepreneurial equity equals the difference between the earnings of employing capital from t to t+1 and the repayment of debt:

$$V_{t+1} = R^k_{t+1} Q_t K_{t+1} - (R_{t+1} + EFP_t)(Q_t K_{t+1} - N_t)$$

With
$$EFP_t = \frac{\mu \int_0^{\bar{\omega}} \omega R^k_{t+1} Q_t K_{t+1} dF(\omega)}{Q_t K_{t+1} - N_t} \tag{4}$$

EFP represents the ratio between the cost of default (the auditing cost as a proportion of what the business has generated) and the amount borrowed for investment. The entrepreneurial equity represents the main source of variation in N_{t+1} and it is sensitive to movements in asset prices, especially if firms are leveraged. Equation (4) may be viewed as the connecting line between theory and empirics. The EFP is a decreasing function of entrepreneurs' net wealth; net wealth can be negatively affected by shocks to the profitability of the firm, changes in the entrepreneurial equity via asset prices or high levels of debt relative to equity (leverage). This in turn will attract a higher external finance premium. Net worth is pro-cyclical (mainly due to the fact that asset prices and cash flows are high during booms) while the EFP is counter-cyclical rising before and during recessions thus magnifying negative shocks further and propagating them through the economy.

2.3 The Financial Accelerator and the Financial Crisis

The financial mechanism linking balance sheet conditions of borrowers to real activity is termed the "broad credit channel." Financial institutions are also likely to suffer from asymmetric information and moral hazard problems when raising funds to finance their lending activities, as explained by Gilchrist and Zakrajšek (2012b). The focus of this so-called "narrow credit channel" is the health of financial intermediaries and its impact on the ability of financial institutions to extend credit.

So the financial accelerator mechanism applies not only to the balance sheets of firms but it also extends to the balance sheets of financial intermediaries. Adrian and Shin (2010) show that, in periods of high economic growth and high asset prices, banks' balance sheets strengthen; as they target a certain level of leverage, they tend to purchase more assets, which amplifies the upward trend in prices and strengthens balance sheets further; while the reverse is true in the case of an economic downturn. Thus, leverage is pro-cyclical and entails an amplification of the financial cycle (BIS, 2011). He and Krishnamurthy (AER, forthcoming) show that adverse macroeconomic conditions, by depressing the capital positions of financial intermediaries, can reduce the risk-bearing capacity of the marginal investor. Thus, the willingness or ability to take on risk is reduced, and financial intermediaries revise their risk premium upwards, which makes borrowing more expensive both in the wholesale (inter-bank) market and the corporate bond market, thus magnifying the downturn.

The subprime boom and bust, which fuelled the financial crisis, originated from the increased supply of loans. As Shin (2009) argues, ultimately, during the credit boom financial intermediaries were driven by the imperative to use up their balance sheet capacity even if that meant bad loans. Before the onset of the crisis, securitisation played a key role in the rapid growth of loan supply, in particular residential mortgage lending. In the US, securitization of mortgage loans started in the 1970s, and by the end of 2000, 46% of all mortgage loans were securitized. In the EU, securitization started with the introduction of the Euro, and the size of the market remains considerably smaller than in the US. Securitization is a form of financial innovation which provides banks with a new source of financing by allowing them to convert illiquid, hard to sell loans into marketable securities. Thus the traditional channel of raising funds (deposits) is supplemented by an off-balance sheet channel (securitization). Before the credit crisis, securitisation was regarded as a positive development as it enabled the financial system to diversify away credit risk. However, recent events have proven that it remains highly sensitive to the systematic risks of the underlying assets. The capital positions of banks with exposure to the sub-prime mortgage market deteriorated as they were forced to write off bad loans, which weakened their financial position and made credit in the inter-bank market much harder to obtain.

Thus the recent financial crisis featured a disruption of financial intermediation which can be explained within the financial accelerator framework. As Ćorić (2011) explains, with the collapse of the subprime mortgage market, financial intermediaries were forced to write off hundreds of billions of dollars in non-performing loans which eroded their balance sheets. This raised issues of possible insolvency and harmed their ability to raise funds, which in turn reduced their lending capacity. The market started pricing in the increased risk which drove up the lending rates non-financial borrowers (firms) were facing and tightened lending standards and the loan supply froze. This affected investment, consumption and property prices that are sensitive to the flow of credit in the economy. Declining real estate prices further worsened the net worth of households and firms which, in turn, increased the external finance premium thus amplifying the existing squeeze on investment, consumption and output. On an aggregate level, poor economic growth and further downward pressures on real estate prices triggered new waves of write-offs for financial intermediaries, which further worsened their net worth. Thus, the initial shock originating from the financial sector caused the deterioration of the net worth or balance sheet position of all these economic agents (households, firms, financial intermediaries) and was intensified through the financial accelerator mechanism.

The policy measures taken during the crisis by the US and other countries' monetary and fiscal authorities can also be explained in the context of the financial accelerator. As Ćorić (2011) explains, these credit measures were aimed at improving the flow of credit and boosting the net worth of financial institutions by lending directly in private credit markets.

While in the Bernanke, Gertler and Gilchrist (1999) model the productivity shock is idiosyncratic to the firm, it can also be interpreted as a negative shock originating from the financial sector, for example. While lenders can diversify away idiosyncratic shocks, they cannot isolate themselves from global shocks or systematic risk (i.e. the global financial crisis) (Christiano et al., 2010). Work by De Graeve (2008), Christensen and Dib (2008), Queijo von Heideken (2009) and Christiano et al. (2010), among others, incorporate credit market imperfections through the financial accelerator mechanism into medium-scale macroeconomic models. These papers show that the model fit improves significantly with a financial accelerator mechanism and also document the important role financial sector shocks have played in economic fluctuations in US and Europe.

While the Bernanke, Gertler and Gilchrist (1999) model treats the financial intermediation process largely as a veil, in the light of recent events and the policy responses of monetary policy authorities both in the US and other countries, there have been important contributions to the literature incorporating a financial intermediary sector into a canonical macroeconomic framework (Gertler and Kiyotaki, 2010, Cúrdia and Woodford, 2010, Gertler and Karadi, 2011). The financial intermediaries may be subject to endogenously determined balance sheet constraints and in addition the central bank can also lend directly to the private credit markets.

Gertler and Kiyotaki (2010) develop a general equilibrium model in which the financial accelerator effect emerges due to changes in the banks' net worth. Thus, the asymmetric information problem means that banks find it harder to obtain funds in both the retail and wholesale markets. They show that quantitative easing can have beneficial effects on economic activity by lowering the external finance premium. Cúrdia and Woodford (2010) propose modifying the standard Taylor rule within the standard DSGE model with credit frictions by adjusting for variations in credit spreads (segmentation of the participation in different financial markets) and conclude that this modification can also improve the economy's response to financial disturbances. Gertler and Karadi (2011) present a crisis experiment where the initiating disturbance is a shock to the quality of financial intermediaries' assets with and without credit policy. They find that central bank credit intermediation dampens the contraction in economic activity by dampening the rise in the spread which in turn dampens the investment decline.

Most recently, Gilchrist and Zakrajšek (2012b) sidestep the highly stylized nature of the credit intermediation process in these models by assuming that fluctuations in the GZ-estimated financial bond premium provide an adequate description of the disruptions in the financial intermediation process. The financial bond premium provides a measure of distress in the financial sector and is constructed in a similar fashion to the Gilchrist and Zakrajšek's (2012a) methodology. They use fluctuations in the estimated financial bond premium as a proxy for exogenous disturbances to the efficiency of private financial intermediation. They augment the widely used DSGE models of Christiano et al. (2005) and Smets and Wouters (2007) with the Bernanke, Gertler and Gilchrist (1999) financial accelerator. Their results show that fluctuations in the financial bond premium can account for a substantial fraction of fluctuations in real economic activity (consumption, investment, output, and hours worked) observed during the 1985–2009 period. Their simulations show that an intensification of financial market distress implies a sharp widening of credit spreads and a significant slowdown in economic activity, and also accounts for the bulk of the contraction in economic activity during the last three recessions in the US (1990, 2001 and 2007-09).

Gilchrist and Zakrajšek (2012b) also find a high degree of negative co-movement between the return on assets in the US financial corporate sector (as a broad measure of profitability of the financial sector) and their estimated financial bond premium, which is consistent with the view that risk premia in asset markets fluctuate closely in response to movements in the capital and balance sheet conditions of financial intermediaries, a finding in line with Adrian and Shin (2010).

Empirical support for the above findings is given by Gilchrist and Zakrajšek (2012a). They find that the corporate bond spread is a robust predictor of future economic growth in the US for the period 1973-2010. They also find that the majority of the information content of credit spreads for future economic activity is attributable to movements in this excess bond premium—that is, to deviations in the pricing of corporate debt claims relative to the expected default risk of the underlying issuer. This reflects shifts in the risk aversion of the financial sector, which leads to a contraction in the supply of credit, both through the corporate bond market and the broader commercial banking sector.

2.4 Conclusion

In conclusion, there has been strong renewed interest in the impact of financial market disruptions on the real economy from both a theoretical and empirical standpoint. These models emphasize the importance of the financial positions of borrowers and financial intermediaries in the transmission of monetary policy and economic shocks. The quality of these agents' financial position is reflected in the premium they face on obtaining finance from external sources. The net worth thus provides a mechanism of amplification of initial shocks, the *financial accelerator* theory.

In the present study we aim to empirically investigate the importance of the external finance premium for real economic activity, where the external finance premium is approximated by the spread on non-financial corporate bonds issued by firms in eight European countries. Thus, our aim is to shed light on the usefulness of the corporate bond spread as a leading indicator for Europe, and in other words, establish the empirical relevance of the balance sheet channel of monetary policy transmission.

Chapter 3 A Descriptive Analysis of the Data

3.1 Introduction

The financial performance of firms and the financing constraints they face are important for both monetary policy and stability of the financial sector. "Credit channel" models emphasise the importance of the financial position of borrowers and lenders for the transmission of monetary policy and economic shocks.

There are two broad credit channels through which monetary policy operates – the bank lending channel and the balance sheet channel. The bank lending channel operates through the balance sheets of banks which in the face of unanticipated economic distress may reduce the supply of available bank loans. Some borrowers would be able to substitute for other forms of finance with negligible change in their cost of finance; however, other borrowers may be less able to obtain other sources of finance and can face a rise in their total financing costs or a decrease in total available credit.

The balance sheet channel is the mechanism behind the external finance premium emphasized by Bernanke, Gertler and Gilchrist (1999). Unanticipated shocks weaken the balance sheets of borrowers (by reducing the present value of future cash flows or the value of collateral held against loans for example). In the absence of perfect information regarding the financial health of borrowers, lenders may require a higher premium on loans due to an increase in default risk as demand for external finance increases and the borrowers' balance sheets deteriorate. The external finance premium is the key concept behind Bernanke, Gertler and Gilchrist's (1999) financial accelerator. In this study we focus on the cyclical behaviour of this mechanism, i.e. spreads tend to widen when real activity slows down.

Given that the US bond market has been explored in most studies so far, we decide to focus on the European bond market which has been less explored. Although it is smaller in size and less mature than the US bond market, it has grown considerably in size especially since the adoption of the Euro currency in 1999, which has marked the transition towards a more integrated financial market. We decide to focus on the largest European economies within the EU which include Austria, Belgium, France, Germany, Italy, Netherlands, Spain and the UK.

The purpose of this chapter is to provide a descriptive analysis of the databases used in this thesis and also to provide preliminary evidence of the effect of financial factors on the overall economic activity. The remaining chapter is organized as follows. Section 2 provides a brief description of the databases used in this thesis; Section 3 discusses the construction of the bond sample used throughout the following chapters; Section 4 describes the characteristics of the corporate bonds in our dataset; and section 5 concludes the chapter.

3.2 Databases

The data for the empirical analyses of this thesis come from various sources. We used Bloomberg L.P. to extract market data at bond and firm level and other macroeconomic data available from various major international databases via Bloomberg. Additionally, we used Moody's KMV database of Expected Default Frequencies (EDFs) at firm level to obtain a credit risk measure for the bond issuers in our sample. Details regarding the selection and construction of our data sample will be presented in the next section.

3.2.1 The Bloomberg Dataset

Bloomberg Financial L.P. makes up one third of the global financial data market and provides real-time and historical financial market and economic data to financial companies and organizations covering all sectors worldwide. It also features software tools such as analytics and equity trading platforms, and a global news service.

Bloomberg L.P. uses Bloomberg Generic Price (BGN) to price securities. Bloomberg Generic Price is Bloomberg's market consensus price for corporate and government bonds. Bloomberg Generic Prices are calculated by using prices contributed to Bloomberg from different sources such as brokers, analysts, investment banks, stock exchanges and any other information that they consider relevant. Bloomberg does not make a market in any of the securities that they price. The actual methodology used is proprietary and depends on the type of pricing and the markets involved. The goal of the methodology is to produce "consensus" pricing. To the extent that they are not comfortable that a bond can be assigned a consensus price at any time, it will be marked "not priced". They constantly and vigorously review the performance of the system and alter it as they determine necessary to achieve their goal.

Bloomberg BGN Matrix is Bloomberg's pricing method for corporate bonds. Bloomberg receives prices from many dealers via transactions which are recorded on the Bloomberg Trading System. An average is derived from the compiled prices and the yield is compared to the interpolated point on the benchmark yield curve for the bond. This determines a basis point spread that will be used in the next day's trading. On the next day, the Corporate BGN price and yield will continuously change throughout the trading day as underlying benchmarks change in order to maintain the basis point spread that was derived from the previous day. When the day is over, the BGN price is recalculated for the next trading day.

In constructing our bond sample, we worked with the corporate debt sector of Bloomberg which covers both public and private firms, financial and non-financial. Bloomberg offers a multitude of search criteria that allowed us to select our final sample. Bloomberg also allows one to choose a provider's pricing for fixed income securities. 98% of our final dataset (which comprises 500 bonds) used the Bloomberg's BGN pricing source for price and yield data, and the other 2% of bonds with no BGN pricing were sourced from several national stock exchanges (Berlin and Paris Stock Exchanges) via Bloomberg. All other macroeconomic data used in our empirical analyses were sourced from various international sources such as IMF, OECD, and EUROSTAT via Bloomberg.

3.2.2 Moody's KMV Data

Moody's KMV provides the EDF™ (Expected Default Frequency) measure—a forward-looking probability of default metric—which is available on public firms and sovereigns and is the market standard credit risk measure used by financial professionals around the world to assess credit risk. The EDF measure is backed by the world's largest default database and leverages market data, industry, volatility, financial statement data, and historical default information in a proprietary financial model. It has been tested on over 29 years of data representing over 4,000 defaults in the US alone as well as on smaller samples in various countries around the globe. It outperforms internal and agency ratings, simple Merton-based and scoring models in anticipating credit events and default.

The EDF credit measure is a firm-specific probability of default over the next one-year period and is estimated by the software called Credit Monitor. These together with the exact methodology and assumptions employed are proprietary to Moody's KMV. The EDF is expressed in percentages and ranges from 0.01% to 35% (or equivalently 1 basis point to 3,500 basis points). So for example, a company with an EDF credit measure of 0.01% has a 0.01% probability of defaulting within the next twelve months. A company with a 0.01% EDF credit measure is 100 times less likely to default than a company with a 1% EDF credit measure and would have a corresponding S&P rating of AA and above. MKMV publish EDF-implied ratings which match an EDF value to an S&P rating or other widely used credit ratings. These are calculated for each firm and updated on a monthly basis however this dataset is only available to paying subscribers.

Following a detailed research proposal, we were granted access to the EDF dataset for a series of European countries free of charge by Moody's KMV. The dataset consisted of two parts: one with the EDF time-series data for companies identified by a PID code which is Moody's specific and the second part consisting of a mapping of Moody's unique PID with the company's name and ticker. Thus, we manually matched the bond issuers in our sample with a Moody's PID based on name and ticker (cross-checked between Moody's and Bloomberg). All bond issuers with a PID were then merged with the EDF time-series data which runs monthly from January 1992 until August 2010. 81% (407 bonds) of our bonds had a PID code, but due to the different coverage of sampling periods between the two datasets, the final matched dataset consisted of 269 bonds (92 companies) across 176 time periods from January 1996 until August 2010.

The Expected Default Frequency is an option theoretic measure of default and is a function of the firm's capital structure, the volatility of the asset returns and the current asset value.

Table 3.1 and Figure 3.1 below present the distribution of the EDF measure for the 269 bonds in our sample.

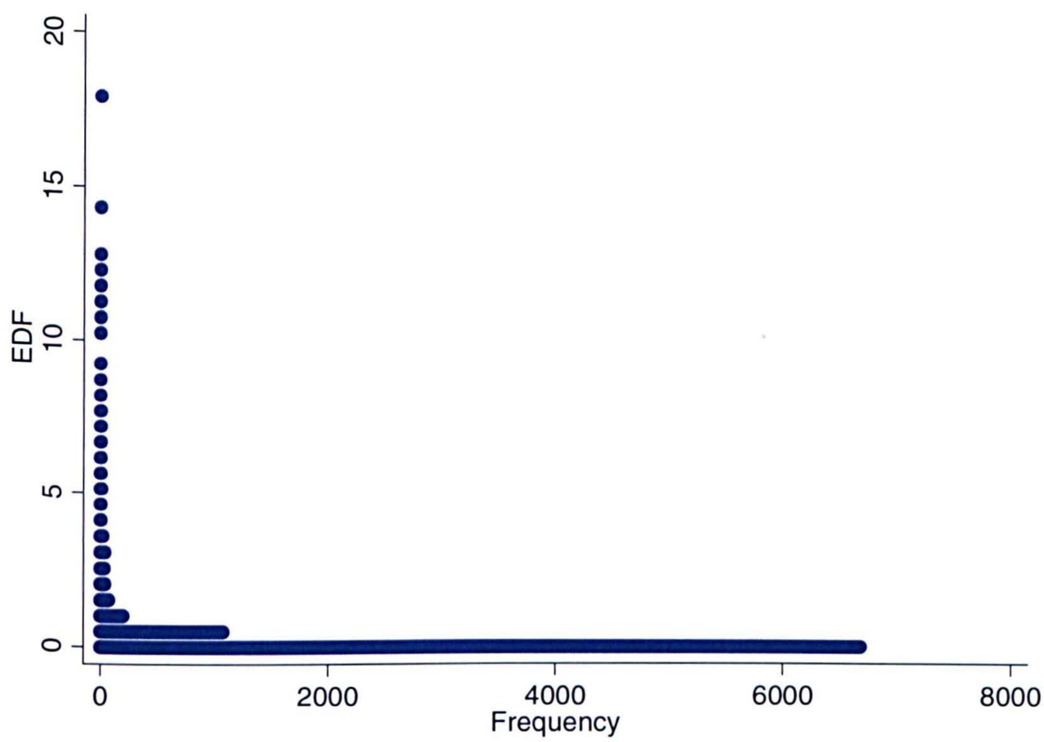
Table 3.1. The distribution of EDF values (%)

Percentiles	EDF	Smallest
1%	0.01	0.01
5%	0.01	0.01
10%	0.017	0.01
25%	0.043	0.01
50%	0.076	**Largest**
75%	0.171	12.394
90%	0.497	12.998
95%	0.870	14.325
99%	3.295	17.915

Note: Sample period: January 1996 – August 2010;

No. of bonds=269; No. of countries=8

Figure 3.1. The Distribution of EDF data



From Table 3.1 and Figure 3.1 we can note that the distribution of the EDF measure is highly skewed with the majority of its values lying between 0.01% and 5%.

3.3 The bonds' sample construction

3.3.1 Constructing the Data Sample

The data used in this study comprise 500 corporate bonds across eight countries between July 1994 and May 2011 for the UK and between October 2001 and May 2011 for Austria, Belgium, France, Germany, Italy, Netherlands, and Spain. The sample of countries has been chosen to represent the largest economies in the Euro-zone, plus the UK. The choice of the time span was imposed by data availability.

The analysis is based on the universe of domestic corporate bonds with Bloomberg coverage. The rich aspect of the fixed income data available in Bloomberg has allowed us to select corporate bonds in Europe according to the same criteria that Gilchrist and Zakrajšek (2012a) use for the US, detailed below:

- Bonds issued by non-financial corporates
- Bonds issued in the following markets: Austria, Belgium, France, Germany, Italy, Netherlands, Spain and the UK
- Bonds denominated in local currency (i.e. Euro for the seven Euro-zone countries and British Pound for the UK respectively)
- Bonds with a fixed coupon schedule (no index-linked or step-ups)
- Senior unsecured bonds
- Outstanding bonds only (i.e. bonds which have not yet matured)

We employ two sub-samples drawn from Bloomberg for our econometric analyses. The first sub-sample contains bond-level data at monthly frequency, such as yield to maturity, the fixed coupon rate, the full schedule of coupon payments at each pricing date available for each bond issue and the zero-coupon continuously compounded Euro and UK Government Benchmark rates. These data allow us to construct our own measure of the corporate bond spread defined as the difference between the actual yield to maturity of the bond and its corresponding theoretical risk-free yield. The next section describes the steps we took in constructing the spread.
Additionally, this sub-sample also contains other bond-specific data such as Macaulay duration, amount outstanding, amount issued, whether the bond has any embedded

options, the issue and maturity dates, Standard & Poor's bond rating, market of issue, currency, issuer name, the issuer's industry sector description and industry BICS (Bloomberg Industry Classification System) level II code. The issue, maturity and pricing dates are used to calculate the term to maturity, age and the maturity at issue in the following way:

$$Term\ to\ maturity_t = \frac{Maturity\ date - Pricing\ date_t}{365}$$

$$Age_t = \frac{(Pricing\ date_t - Issue\ date)}{365}$$

$$Maturity\ at\ issue = \frac{(Maturity\ date - Issue\ date)}{365}$$

Table 3.2 in the Appendix presents the meaning of the S&P ratings.

The second sub-sample includes macroeconomic data summarized in Tables 3.3 and 3.4 below:

Table 3.3. Macro variables' construction

Variable	Definition
Term Spread	10-year - 3-month generic government bond yield
Real GDP	GDP at constant prices
Real Interest Rate	(Nominal Interest Rate - Inflation rate[1])

[1]The inflation rate data are drawn from IMF's International Financial Statistics. As a robustness check, we repeat the regressions with an additional measure of inflation calculated as the percentage change in the Consumer Price Index (between period *t* and *t-12*). The real interest rate series are re-calculated accordingly. As the regression results with these two measures of inflation are highly consistent, they are not reported.

Table 3.4. Macro variables definition and sources

Variable	Definition	Source
10-year generic government bond yield	Country specific benchmark bond yield of constant maturity (%)	Bloomberg
3-month generic government bond yield	Country specific benchmark bond yield of constant maturity (%)	Bloomberg
Real GDP	Level constant prices 2000, SA (€mil.)	EUROSTAT
Industrial Production (Manufacturing)	Volume Index 2005=100, SA	EUROSTAT
Unemployment	Unemployment rate, SA	EUROSTAT
Nominal Interest Rate	ECB Main Refinancing Rate (%) / BoE Official Bank Rate (%)	ECB / BoE
Inflation Rate	%	IMF IFS

Consumer Price Index	CPI All items excluding food & energy, NSA	OECD Main Economic Indicators
Employment	Employment All persons civilian stock persons, SA (thousands)	OECD Main Economic Indicators
Consumer Confidence	Index	European Commission
Economic Sentiment	Index	European Commission

The "generic" government rates are constructed by Bloomberg in-house and refer to the synthetic yield history that is created by piecing together observed closing yields for benchmark bonds of a given maturity. The rest of the variables come from various national and international sources via Bloomberg.

The European Central Bank Main Refinancing Rate - The main refinancing operations are regular liquidity-providing reverse transactions with a weekly frequency and a maturity of normally one week. The main refinancing operations play a pivotal role in pursuing the objectives of the Eurosystem's open market operations. The rate changes values on the ECB announcement dates, with the rate becoming effective at a later date (generally a week after the announcement).

The Bank of England Official Bank rate - The Minimum Lending Rate is the lowest rate at which banks can borrow from the Bank of England. Changes in the minimum lending rate are likely to trigger changes in the base rates of the commercial banks. This index is also known as the official Bank of England repo rate.

Consumer Confidence represents the arithmetic average of the answers (balances) to the four questions on the financial situation of households and general economic situation (past and future) together with that on the advisability of making major purchases.

The EU harmonised consumer confidence indicator is based on answers to the following four questions with five answer alternatives to each question (a lot better, a little better, the same, a little worse, a lot worse).

(1) Expected change in financial situation of household over the next 12 months;

(2) Expected change in general economic situation over next 12 months;

(3) Expected change in unemployment over the next 12 months;

(4) Expected change in savings of household over next 12 months.

The confidence indicator is expressed as the balance of positive over negative results. The confidence indicator published by the European Commission is constructed with double weights on the extremes. Responses "a lot better" and "a lot worse" get the weight 1 and " a little better" and " a little worse" get the weight 1/2, and "the same" has zero weight.

Economic Sentiment reflects general economic activity of the EU. This indicator combines assessments and expectations stemming from business and consumer surveys. Such surveys include different components of the economy: industry, consumers, construction and retail trade.

3.3.2 Constructing the Corporate Bond Spread

In this paper, we employ the same bottom-up approach used by Gilchrist et al. (2009) and Gilchrist and Zakrajšek (2012a) to construct a country-level credit spread index from bond-level data which proves to have high-information content for future economic outcomes. The credit spread is the primary variable of interest and is defined as the difference between a corporate bond's actual yield to maturity and a risk-free synthetic (or theoretical) bond yield which has the exact maturity and cash flow structure as the underlying bond.

For a sample of European nonfinancial firms covered by Bloomberg, we obtain month-end yield to maturity data of their outstanding bonds trading in the secondary market. We also collect data on coupon payment schedules for each bond and other bond characteristics. In order to measure the borrowing costs of firms consistently at the same point in their capital structure we limit the sample to senior unsecured bonds with a fixed coupon schedule only. We also excluded from the sample small corporate issues with an amount outstanding of less than 1 million euros and observations with a remaining term to maturity of less than 1 year and more than 30 years.

The rich bond-level aspect of our Bloomberg dataset allows us to construct a theoretical risk-free bond yield for every bond in the sample at every pricing date. This theoretical bond mimics exactly the coupon payment schedule and maturity of the underlying corporate bond (which are available from Bloomberg). The difference between these two bonds (the actual bond and its theoretical counterpart) lies in the fact that when calculating the price as the sum of all present-valued coupon payments, instead of using the bond's yield to maturity to

discount the cash flows (this is how the market price is calculated) we use the stripped (zero-coupon) government benchmark rate (this is how the theoretical price is calculated). So instead of using one single yield to discount all coupon payments (which are paid at different dates in the future), the theoretical price calculation involves using zero-coupon government rates which have been interpolated by Bloomberg to match exactly the term of each coupon payment. So for example, if a bond's cash flows are to be paid in 1.243, 2.243, and 3.243 years from now, these cash flows are discounted using the government rate at exactly 1.243, 2.243, and 3.243 years, respectively. These rates are interpolated by Bloomberg's internal calculations using simple piecewise linear interpolation (function: BInterpol) off the Euro and UK government benchmark curves and they are available for each coupon payment at each pricing date for every bond in our sample (the Bloomberg function is PFC1).
The formula to calculate the linear interpolated benchmark yield is as follows:

$$Yield = Y_1 + \left(\frac{I_3 - I_1}{I_2 - I_1}\right) * (Y_2 - Y_1)$$

Y_1 = yield of the benchmark with the lower maturity
Y_2 = yield of the benchmark with the higher maturity
I_1 = exact maturity in years of the lower benchmark
I_2 = exact maturity in years of the higher benchmark
I_3 = maturity/term of the coupon payment

We thus calculate the price of this artificial risk-free bond and then the yield using the standard yield to maturity formula. Then, we subtract from the actual market yield of the bond the so-calculated theoretical yield to obtain the spread and we do this for every bond in the sample across the sample period. The reason for this construction (which is quite standard in the finance literature) is to avoid problems resulting from mismatching maturities or coupon rates between the two yields being compared.

To be more specific, consider a corporate bond *k* issued by firm *j* in country *i* that promises a sequence of cash-flows at time *t* consisting of the regular coupon payments $\{CPN_t: t = 1,2,\ldots,N\}$ and the repayment of principal at maturity $\{PAR_N\}$. According to the standard finance formula[4] which says that the price of an asset is the sum of all its payment streams in

[4] See Hull, "Options, Futures and Other Derivatives", 6th ed. Page 81

present value terms, we calculate the price of the hypothetical risk-free security, P^f, using the continuously-compounded government spot rates $\{r_t: t = 1,2,\ldots,N\}$.

$$P^f_{jit[k]} = \sum_{t=1}^{N} \frac{CPN_t}{e^{r_t * t}} + \frac{PAR_N}{e^{r_N * N}}$$

CPN = coupon payment

PAR = principal payment

r = zero-coupon government rate

N = maturity date

t = time period

The main idea here is to use the government interest rate curve to calculate the discount factor at any date within the curve's range thus providing us with the present value of each cash flow at a specified date. Thus, each cash flow is discounted by a unique spot rate off the government curve which is interpolated to match the exact maturity or term of the cash flow. As the sample of bonds from the seven Euro-area countries and the UK pay their coupons in Euro and British Pound respectively, the Euro Benchmark curve and the UK government curve have been used. Thus, the cash flows of the artificial bond are discounted using continuously-compounded zero-coupon Euro Benchmark and UK government yields respectively, (also known as spot rates) at period *t*[5]. These yields off the Euro Benchmark curve[6] are linearly interpolated such that the maturity of a given cash-flow payment exactly matches the maturity of the spot rate that is used to discount that cash flow. As the spot rates are basically unique to each cash-flow they had to be collected manually and individually at each pricing date from Bloomberg, a process that proved to be extremely time-consuming[7]. In addition, the spot rates available in Bloomberg had to be converted from annual compounding basis to continuous compounding basis.

[5] A zero rate (or spot rate) for maturity t is the interest rate earned on an investment that provides a payoff only at time t.

[6] The Euro Benchmark curve is comprised of euro-denominated fixed-rate government bonds from France and Germany, where bonds and bills are selected based on the closest current nominal maturity to the indicated term. The UK curve is comprised of British pound-denominated UK government debt.

[7] As each spot specific to the maturity of each cash flow at a given pricing date for each individual bond represents a unique point on the interest rate curve, Bloomberg's resources did not allow the

The resulting price can then be used to solve for the risk-free yield, y^f , in the following manner:

$$\sum_{t=1}^{N} \frac{CPN_t}{e^{y^f * t}} + \frac{PAR_N}{e^{y^f * N}} = P^f_{jit[k]}$$

These two steps in the calculation of the final risk-free yield have been performed in Matlab. Now, we can subtract the risk-free yield, y^f, from the actual yield to maturity of the underlying bond, y , to obtain the credit spread as:

$$S_{jit[k]} = y_{jit[k]} - y^f_{jit[k]}$$

In order to be consistent with Gilchrist and Zakrajšek (2012a) and mitigate the outliers' problem we ensured that all bond spread observations are positive and not greater than 3,500 basis points. Thus, the final dataset consists of 500 individual corporate bonds for the period between July 1994 and May 2011 across the eight European countries.

The credit spread index at country-level in period *t* is further calculated as the arithmetic (or cross-sectional) average of all credit spreads in a given period for each country as follows:

$$S_{it} = \frac{1}{N_t} \sum S_{jit[k]}$$

where *i* indexes the country, *k* indexes the bond, *N* is the number of bond observations in month or quarter *t*, and *t* is the time dimension.

As a robustness check to our credit spread index construction, we also obtain data on a related credit spread measure computed by Bloomberg, namely the Z-spread. The Z-spread is available at bond-level and we gather these data for the 500 bonds in our sample. Although, the Z-spread data is available for the majority of the bonds in our sample, it only becomes available from the second half of 2005.

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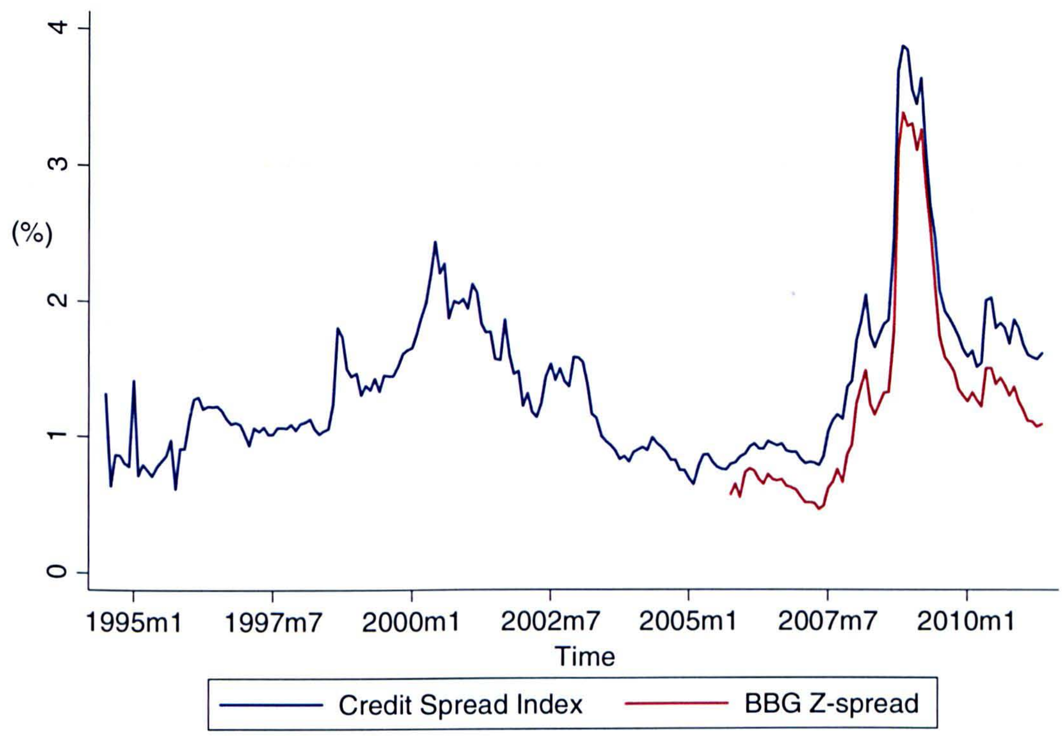
direct downloading of these spot rates into Excel which resulted in having to manually copy blocks of data for each bond in the sample monthly across the sampling period.

The Z-spread is defined as the spread that must be added to the respective zero-coupon swap rate curve so that a security's discounted cash flows equal its mid-price, with each dated cash flow discounted at its own rate. One of the major differences between the two ways of constructing the spread lies in that we use the Euro Benchmark and UK government zero-coupon curves continuously compounded while Bloomberg utilize the default Bloomberg swap curve at annual compounding frequency. Finally, from the Z-spread bond-level data we construct a Z-spread index in a similar fashion by taking the cross-sectional average at every time period for each country. The two spread indices show extremely high correlation over the period when the Z-spread is available. Therefore, we believe using the Z-spread index would yield very similar results, however, it would be at a greater disadvantage given the very short time span covered compared to our self-constructed spread index.

Figure 3.2. The Credit Spread Index and the Bloomberg Z-spread Index



As compared to Gilchrist and Zakrajšek's (2012a) paper, an important characteristic of their sample is that two thirds of securities are callable whereas in our sample only a very small proportion, 9%, of bonds are callable. Embedded options can cloud our analysis as the value of any embedded option changes over time with movements in the interest rate. While Gilchrist and Zakrajšek (2012a) take account of the interest sensitivity of callable bonds by including the 3 principal factors that summarize the entire yield curve. As the loss in the number of observations is negligible, we decided to exclude callable bonds and also any putable bonds from the final sample.

The baseline regressions will involve the credit spread index and a series of control variables (the term spread, the real interest rate, the consumer confidence and economic sentiment indicators). These are regressed on various measures of economic activity described in the earlier section (e.g. manufacturing industrial production growth and the change in unemployment rate at monthly frequency; and the real GDP growth and employment stock growth at quarterly frequency).

3.4 A Descriptive Analysis of the Corporate Bonds Dataset

Our empirical analysis explores the predictive ability of corporate bond spreads for macroeconomic outcomes across the eight European economies. Thus, the credit spread index definition is based on the underlying bonds in the respective countries we analyse. In the following sections we aim to give a description of the underlying bonds sample.

3.4.1 Descriptive Statistics

Our dataset for the eight European countries consists of 500 straight corporate bonds during the period between July 1994 and May 2011. This yielded a matched sample of 190 companies across 45 industry sectors.

Table 3.5 contains summary statistics for the key characteristics of our bonds in the sample.

Table 3.5. Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
No. of bonds/firm	19574	4.91	3.258	1	13
Actual market yield	19574	4.869	1.735	.295	29.845
Theoretical yield	19574	3.164	1.17	.415	8.439
Credit Spread (bps.)	19554	170.72	152.5	1.504	2794.74
Bloomberg Z-spread (bps.)	13958	142.27	143.6	0.01	2338.01
Coupon (%)	19574	5.359	1.189	.5	8.875
Amount outstanding (€mil.)	19574	614	405	8	3,270
Amount issued (€mil.)	19574	632	430	10	3,500
Duration (yrs.)	18988	7.063	3.395	.79	16.792
Term to maturity (yrs.)	19574	9.66	6.68	1.036	30
Age (yrs.)	19439	2.94	2.61	0	16.781
Maturity at issue (yrs.)	19574	12.58	7.35	3.003	40.027
S&P rating	17311	-	-	B-	AA

Notes: Sample period July 1994 – May 2011; No. of bonds = 500; No. of firms = 190; No. of months = 203; No. of industry sectors = 45; No. of bonds/months for Austria (33/69), Belgium (24/96), France (207/116), Germany (61/101), Italy (46/107), Netherlands (45/92), Spain (10/88) and UK (74/203). There are 2 observations with a bond spread of less than 5 bps and 67 observations (12 bonds) that have a term to maturity higher than 30 years. The bond spreads for these observations is however within the range of the full bonds sample and have therefore been included.

According to Table 3.5, the average firm in our sample has 4 senior unsecured issues outstanding in any given month, with the majority of the firms having less than 10 issues trading in the secondary market at a point in time. The bonds have an average actual nominal yield of 4.87% and an average artificial yield of 3.16%, and the distribution of actual yields is much more positively skewed with a maximum of almost 30%. The average coupon rate in the sample is 5.36% with a maximum of 8.875%. The corporate bond spread has a minimum of 1.5 basis points and a maximum of approximately 2,800 basis points as per the selection criteria. An average bond has an expected return of 170.72 basis points above the comparable risk-free artificial bond and a sizeable standard deviation of 152.5 basis points which reflects the wide range of the credit quality of the sample. The Bloomberg Z-spread has a mean of 142. basis points and follows the same selection criteria as our constructed corporate bond spread by excluding any negative observations and observations above 3,500 basis points. The distribution of the amount of debt outstanding of these issues is positively skewed, with the range running from €7.7 million to €3.2 billion. The average duration is shorter than the average term-to-maturity and equal to approximately 7 years, as all bonds in our sample pay regular non-zero coupon payments over their life. The maturity of the issues in our sample is long, with an average maturity at issue of 12.6 years and an average remaining term-to-maturity of 9.7 years. In terms of default risk as measured by the S&P credit ratings our sample spans almost the entire spectrum of credit quality from "B-" (which according to S&P rating categories stands for vulnerable financial security) to "AA" (which belongs to the secure range and is an excellent and highly safe financial security).

Further, we also present the descriptive statistics of the explanatory variables used in the country level forecasting regressions in Table 3.6. In order to control for common factor trends (shocks that are common for all eight countries but vary across time) across the sample countries, we average out the term spread and the real interest rate at every time period across the eight countries.

Table 3.6. Summary statistics of country-level variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Credit Spread (bps.)	872	140.3	85.017	32.05	612.63
Consumer Confidence	872	-9.86	10.98	-47.6	20.3
Economic Sentiment	872	100.15	9.9	65.4	117.3
Term Spread	872	1.509	1.18	-2.182	3.368
Real Interest Rate	872	1.265	1.561	-0.851	6.302

Note: Sample period July 1994 – May 2011; No. of countries = 8; No. of months = 203

Once averaged across time at country level, the credit spread index has a mean of 140.3 basis points above the risk-free rate. As per our hypothesis stated in the introduction, a rise in credit spreads which proxy the external finance premium reflects a deterioration in economic fundamentals. According to the financial accelerator theory, the size of the external finance premium is a function of corporate net worth. A change in the firm's net worth induced by real or monetary shocks will determine the costs the firm will face to obtain finance and ultimately its economic performance. Therefore, before and during an economic downturn credit spreads widen as lenders demand compensation given an increase in credit risk and the presence of financial market imperfections. The firm's borrowing capacity deteriorates and external finance becomes more expensive than internally generated funds, which implies an increase in the external finance premium. Thus, we expect a negative relationship between credit spreads and future economic activity, and thus a negative and significant coefficient on the credit spread index.

In addition, in order to establish that the predictive power of credit spreads is not driven by the information contained in government yields, we also include the term spread and the short-term real interest rate. The term spread has a mean of 1.5% and a maximum of 3.37% with a low standard deviation of 1.18%. A positive spread between long- and short-term interest rates (i.e. a steepening of the yield curve) is associated with an increase in real economic activity, while a negative spread (i.e. a flattening or inverted yield curve) is associated with a decline in real activity. In general, this relationship is positive and the main explanation for this lies in the expectations hypothesis. The term spread reflects the expectations of financial market participants of future economic growth. If agents anticipate a recession, they will expect a decline in future interest rates. As the long term rates reflect the expected path of future short-term rates, this will imply a decline in long-term rates as per the expectations hypothesis. Alternatively, if agents anticipate an economic boom, they expect rise in future short-term rates, and therefore a rise in long-term rates relative to short term rates.

The real interest rate has a mean of 1.26% and a maximum of 6.3%. An expansionary monetary policy (i.e. a drop in short-term interest rates) is aimed at boosting economic activity while a tightening monetary policy (i.e. an increase in short-term interest rates) leads to a slowdown in activity. This results from the countercyclical nature of monetary policy which is designed to stimulate the economy. Therefore, we expect a negative relationship between the real interest rate and economic activity and thus a negative coefficient on the real interest rate.

We also add consumer confidence and economic sentiment to the basic specifications of Gilchrist and Zakrajšek (2012a) in order to confirm whether the credit spread index contains information over and above market consensus. The consumer confidence indicator has a mean of -9.8 with a minimum of -47.6 and maximum of 20.3. The economic sentiment indicator has a mean of 100.1, a minimum of 65.4 and a maximum of 117.3. Strong consumer confidence and a good general economic sentiment are associated with positive economic outcomes over the next periods, and therefore we expect the coefficients on these variables to be positive and significant.

Compared to the US sample of bonds of Gilchrist and Zakrajšek (2012a), there are a few things worth noting:

- The average firm in Europe has twice as many bonds outstanding than in the US, however the US distribution is more highly skewed with a maximum of 74 bonds per firm, compared to a maximum of 13 bonds per firm in Europe
- The average market yield in the US is almost 3 percentage points higher than in Europe, and the credit spread is also higher by around 30 bps
- The average duration, term to maturity and maturity at issue are relatively similar across the US and European samples
- The bonds in the US sample cover a much wider distribution of credit ratings as compared to Europe from D to AAA

In order to better understand the dynamics of the data, we also present plots of the credit spread index, the term spread, the real interest rate and real GDP growth for comparison purposes.

Figure 3.3 shows the credit spread index over time. From a quick inspection of this graph, we can notice straight away that the two major recessionary periods captured by our sample period (the early 2000s and the 2007-2009 recessions) are clearly matched by sharp increases in the credit spread, while the period between late 2001 and early 2007 is marked by very low credit spreads of less than 100 basis points corresponding with a period of looser credit terms.

Figure 3.3. The Credit Spread Index over time

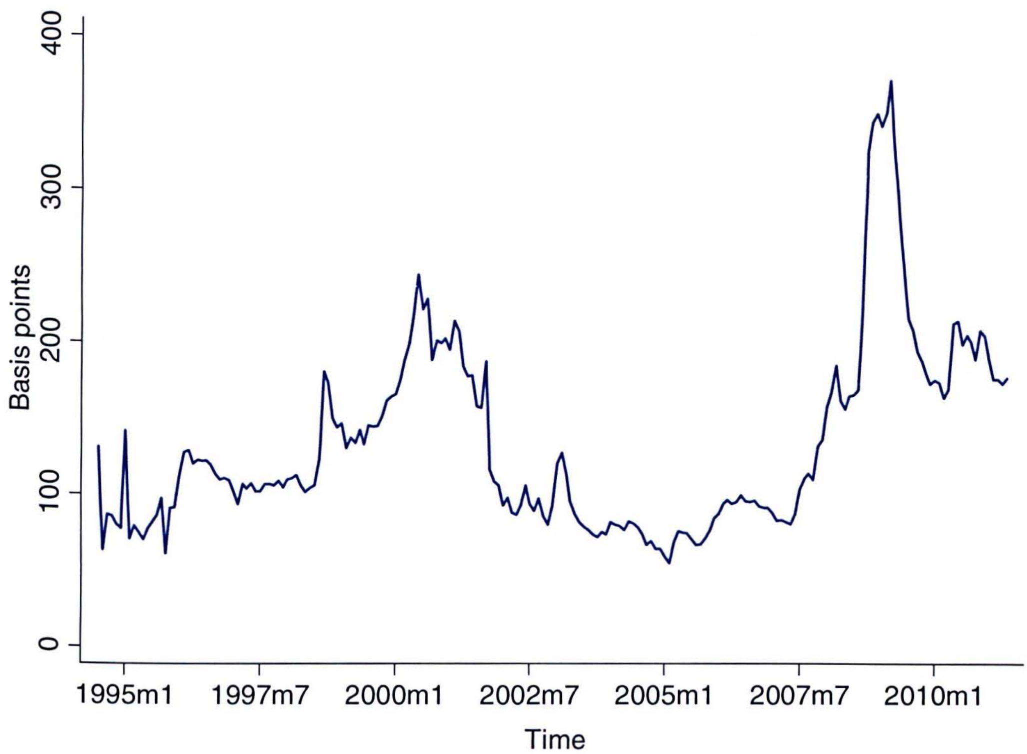
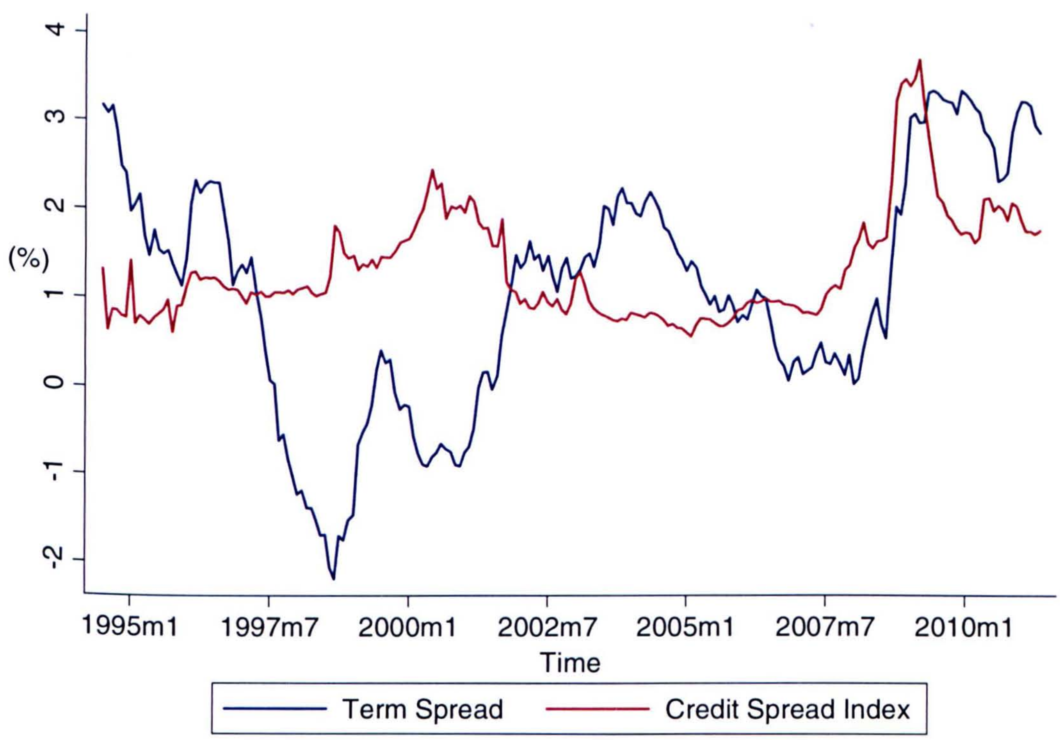


Figure 3.4 plots the credit spread index versus the term spread.

Figure 3.4. The Credit Spread Index and the Term Spread



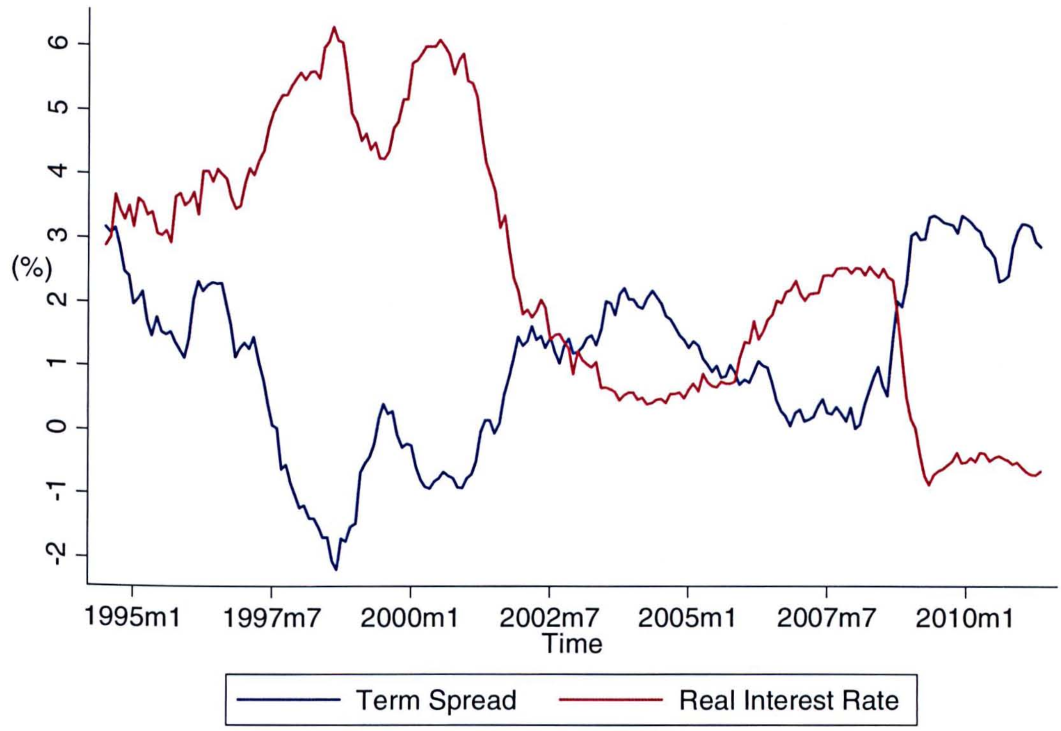
We can see a fairly opposite relationship between the two (according to economic theory, an increasing term spread and a declining credit spread are associated with good economic times) with the exception of the most recent recession. We can note that the term spread is negative during the late 1990s and early 2000s. This inversion of the yield curve coincides with the early 2000s recession.

However, during the second recessionary period captured by our sample (the 2008-2009 financial crisis) the term spread actually increases in line with the credit spread. This may be due to the fact that since the onset of the financial crisis the central bank short-term rates were reduced systematically down to almost 0%, which resulted in a positive term spread. For example, in early 2009 the term spread starts increasing sharply just above 3% in the context of agents expecting a quick recovery and authorities to increase short-term interest rates to cool off the economy. This is then followed by a drop in the term spread presumably reflecting market expectations of an imminent easing in short-term rates due to slowing macroeconomic activity as agents become more pessimistic.

The term spread's behaviour (during the most recent recession) is suggestive of the fact that the term spread can be a misleading predictor of economic outcomes and may not prove entirely reliable. This will also be reflected later on in our regression results.

Figure 3.5 below plots the real interest rate against the term spread.

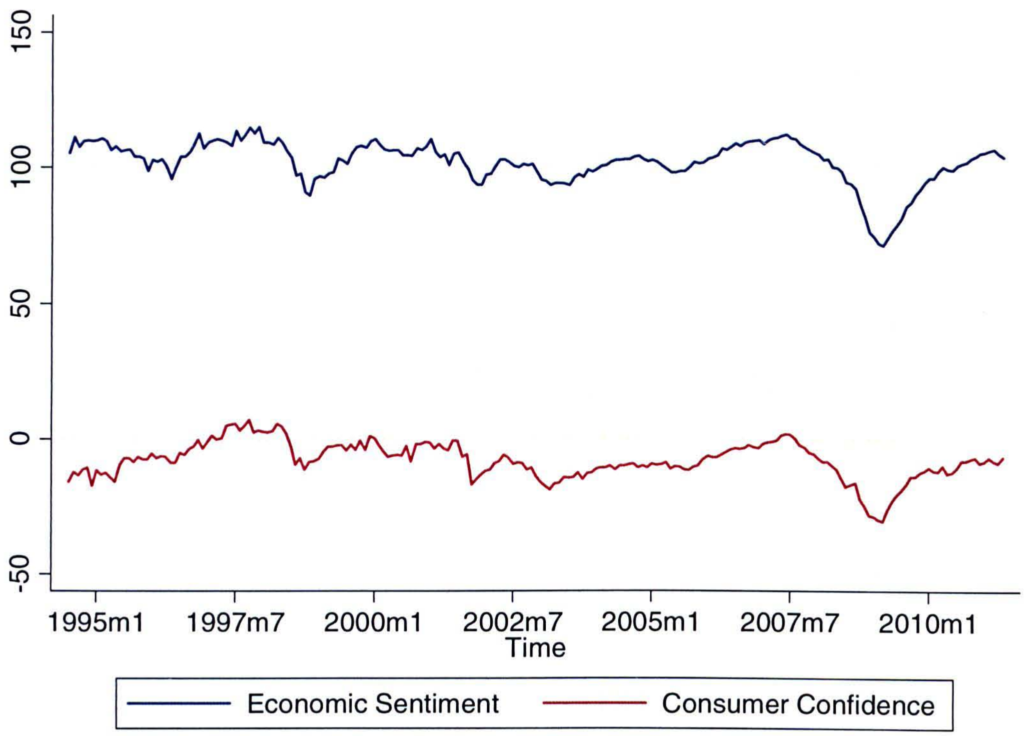
Figure 3.5. The Real Interest Rate and the Term Spread



Overall this shows a clear opposite relationship between the two indicators with the real interest rate reaching very low levels and going into negative territory during the recent financial crisis.

Figure 3.6 plots the consumer confidence and economic sentiment indicator.

Figure 3.6. Economic Sentiment and Consumer Confidence



This graph shows the two sharpest drops correspond to the two recession periods captured by our sample period, namely the recession of the early 2000s and the great recession of 2009. The two indicators are also highly correlated (with a correlation coefficient of 70%) and are centred around 100 and 0 respectively.

We further present the cross correlations among the variables at each monthly and quarterly frequency in turn in Tables 3.7 to 3.12 (included in the Appendix) due to the significant variation in the number of observations. A few things are worth noting. The pair-wise correlation between the credit spread index and the consumer confidence and economic sentiment indicators are negative and are approximately 30% and 60%, respectively. Also, the correlation between the consumer confidence and economic sentiment indicators is positive and approximately 70%. In all the tables presented, the highest correlation in absolute terms is between the real short-term interest rate and the term spread at approximately 80%. As expected, the credit spread exhibits negative correlations with industrial production, employment stock and Real GDP growth and positive correlation with unemployment rate. The correlation between the credit spread index and the real interest rate is negative and approximately 20% at the 3- and 12-months horizons and approximately 3% at the 24-months horizon. The correlation between the credit spread index and the term spread is positive and between 30%-40%.

3.4.2 Structure of the Panel

The next step is to present the main properties of our panels at both bond and country levels. The data consist of longitudinal information on 500 bonds across eight countries between July 1994 and May 2011. Tables 3.13 and 3.14 present the structure of the panel at bond level. From Table 3.14 we can note that the country panel is unbalanced with relatively limited data availability for the first 9 years (i.e. 102 months) which improves significantly from 2003 onwards with a majority of countries being observed until the end of the sample.

Table 3.13. Structure of the bond-panel by country

Country	No of bonds	Percent	No of bond-month	Percent
AT	33	6.6	674	3.45
BE	24	4.8	527	2.7
DE	61	12.2	1909	9.76
FR	207	41.4	7627	38.91
GB	74	14.8	4661	23.84
IT	46	9.2	1918	9.8
NL	45	9	1872	9.57
SP	10	2	386	1.97
Total	500	100	19574	100

Table 3.14. Structure of the bond-panel by year and country

Year	No. of bonds	Cumulative no. of bonds	No. of bond-month obs.
1994	1	1	6
1995	1	2	18
1996	1	3	36
1997	1	4	48
1998	0	4	48
1999	4	8	76
2000	1	9	106
2001	3	12	120
2002	8	20	179
2003	32	52	460
2004	21	73	751
2005	29	102	1030
2006	41	143	1475
2007	32	175	1880
2008	55	230	2356
2009	145	375	3627
2010	91	466	5003
2011	34	500	2355
Total	500	-	19574

The next two tables present the country panel structure where the bond spreads are averaged at each time period within a country to generate a credit spread index at country level; hence the number of spread-month observations is now smaller.

Table 3.15. Structure of the country-panel

Country	Mean Credit Spread Index	No. of credit spread-month obs.	Percent
AT	238.05	69	7.92
BE	106.71	96	11.02
DE	142.15	101	11.6
FR	126.54	116	13.32
GB	146.01	203	23.2
IT	110.09	107	12.28
NL	137.14	92	10.56
SP	141.28	88	10.1
Total	140.10	872	100

Table 3.16 presents the summary statistics of the credit spread by country and Figure 3.7 plots the spread over time for each country. We can note there is a high correlation in the series and very strong co-movement among countries. The spread series for Austria has the highest mean and maximum values while the series for Belgium has the smallest.

Table 3.16. Credit Spread Summary Statistics by Country

Country	Obs.	Mean	Std. Dev.	Min.	Max.
AT	69	238.05	131.90	96.83	612.63
BE	96	106.71	50.90	38.54	245.78
DE	101	142.15	85.50	51.61	439.86
FR	116	126.54	85.95	51.00	430.15
GB	203	146.01	56.97	61.51	401.22
IT	107	110.09	68.52	32.05	314.71
NL	92	137.14	72.88	61.53	374.12
SP	88	141.28	91.42	42.00	374.32

Figure 3.7. The Credit Spread by Country

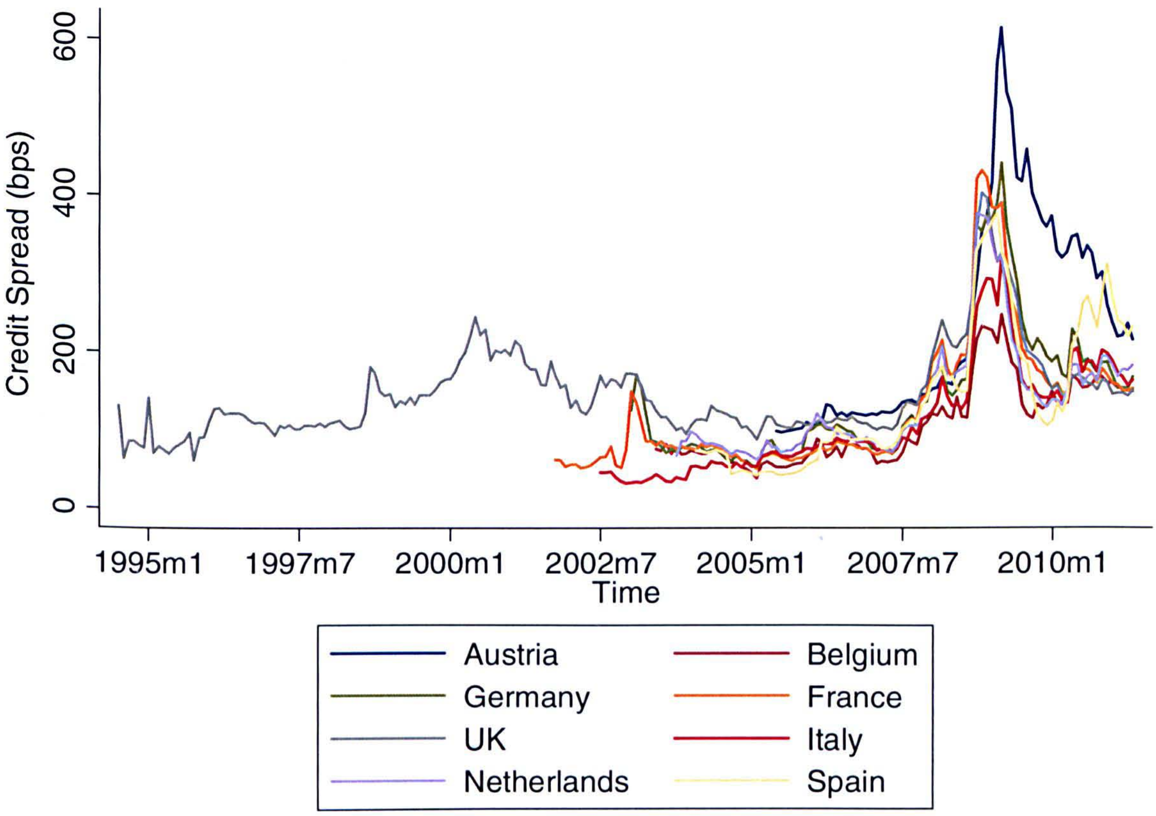


Table 3.17 presents the structure of the panel by year and country:

Table 3.17. Structure of the country-panel by year and country (number of observations)

Year	AT	BE	DE	FR	GB	IT	NL	SP	Total
1994					6				6
1995					12				12
1996					12				12
1997					12				12
1998					12				12
1999					12				12
2000					12				12
2001				3	12				15
2002				12	12	6			30
2003		7	12	12	12	12	3		58
2004		12	12	12	12	12	12	11	83
2005	4	12	12	12	12	12	12	12	88
2006	12	12	12	12	12	12	12	12	96
2007	12	12	12	12	12	12	12	12	96
2008	12	12	12	12	12	12	12	12	96
2009	12	12	12	12	12	12	12	12	96
2010	12	12	12	12	12	12	12	12	96
2011	5	5	5	5	5	5	5	5	40
Total	69	96	101	116	203	107	92	88	872

From Table 3.17 we can note that the country panel is unbalanced with relatively limited data availability for the first 9 years (i.e. 102 months) which improves significantly from 2003 onwards with most of the countries being observed until the end of the sample.

3.5 Conclusion

The purpose of this chapter was to provide a detailed description of the bottom-up approach adopted in the construction of our credit spread index and also a descriptive analysis of the datasets used in the subsequent chapters. Several findings are worth noting. First, we find that the credit spread consistently rises before and during economic downturns. Its sharpest drop coincides with the recent financial crisis of 2007-09, which is also the most severe recession within the sample period. Secondly, the credit spread moves exactly opposite to the consumer confidence and economic sentiment indicators and has negative correlations with economic activity growth. Thirdly, we find that the credit spread variation is correlated across countries which may lead us to believe that there are no significant differences in the credit spread's predictive ability across countries. Last but not least, we find that our self-constructed credit spread index shows very strong co-movement with the Bloomberg Z-spread, which provides a robustness check not only to our construction methodology but also to using an alternative benchmark curve (when discounting the cash-flows).

These findings can be seen as preliminary evidence of the cyclical behaviour of the credit spread and its predictive content for future macroeconomic outcomes.

Chapter 4 The European Corporate Bond Spread Index and Economic Activity

4.1 Introduction

The monetary policy transmission mechanism has been part of the research agenda for many economists for a long period of time, and particularly in the light of the recent financial turmoil, the role of financial factors in the transmission process of monetary policy has gained renewed interest.

The credit channel of monetary policy transmission complements the traditional (Keynesian) money channel in that it tends to amplify and propagate the standard interest rate effects of monetary policy on real activity. Two mechanisms are at work within the credit channel: the bank lending channel and the balance sheet channel. The bank lending channel predicts that monetary policy affects the supply of bank loans and therefore bank-dependent borrowers and private investment. The balance sheet channel predicts that monetary policy affects the real economy through its impact on borrowers' financial positions (which determines the cost and availability of external finance). Proponents of the credit channel of monetary policy transmission maintain that the existence of credit market imperfections, due to information asymmetries between borrowers and lenders, gives rise to an external finance premium (i.e. the difference between the cost of funds raised externally and the opportunity cost of internal funds). In this view, monetary policy affects not only the general level of interest rates but also the magnitude of the external finance premium (which can amplify and propagate business cycles).

The external finance premium is a key ingredient in the financial accelerator literature which was pioneered by Bernanke and Gertler (1989) and Bernanke, Gertler and Gilchrist (1996, 1999). The external finance premium is an endogenous variable and is inversely related to the balance sheet strength of the borrower, so financial structure plays a particularly important role in the balance sheet channel of monetary policy transmission. Furthermore, the borrowers' financial position depends positively on aggregate economic activity. For example, during a boom or economic upturn, the asset values and cash flows of companies are high relative to their debt. Borrowers with strong financial positions will then face a lower external finance premium. Conversely, during periods of economic downturn, the asset values and cash flows of companies are low relative to their debt and this weakens their financial strength. This, in turn, leads to a higher external finance premium as the potential lenders demand more compensation for a potential loss in case the borrower is not able to repay the loan (which takes the form of higher interest rates). Thus, the borrowers' financial positions behave pro-cyclically which further implies counter-cyclical movement in the external finance premium.

This counter-cyclical behaviour of the external finance premium works not only to propagate, as discussed above, but also to amplify negative or positive shocks. For example, in good times the borrower's financial position is strong, which attracts a low external finance premium, and this allows the borrower to obtain more finance and produce more. This further strengthens the borrower's balance sheet enabling them to borrow and produce even more which enhances aggregate economic activity. Equally, in bad times the borrower's balance sheet position is weak and borrowers face a higher cost to obtain external funds for investment projects. This further weakens their position and hence slows down aggregate economic activity.

Thus, firms face an external finance premium on bank-based financing [Bernanke and Gertler (1995), Gilchrist and Zakrajšek (1995), Bernanke et al. (1996)] but also on market-based financing such as corporate bonds. Our work is related to the literature examining whether the balance sheet channel via the corporate bond market is macroeconomically relevant, in other words, if a rise in the external finance premium on corporate bonds leads to a decline in real economic activity. The issue of the macroeconomic relevance of the balance sheet channel through the corporate bond market relates to a strand of literature that examines the leading indicator properties of corporate bond spreads. This falls under the vast umbrella of the broader literature that examines the predictive ability of various financial spreads (such as, the spread between long and short government debt instruments or the term spread, the spread between commercial paper rates and Treasury Bill rates and CDS spreads). However, the part of this literature that focuses specifically on corporate bond spreads on longer-term securities is limited to a few studies for the US and even fewer for Europe.

The ability of corporate bond spreads to predict economic activity has been documented by Duca (1999), Gertler and Lown (1999), Chan-Lau and Ivascenko (2001), Mody and Taylor (2004), King et al. (2007), Mueller (2009), Gilchrist et al. (2009), Gilchrist and Zakrajšek (2012a) and Faust et al. (2011) for the US market; and Davis and Fagan (1997), De Bondt (2004) and Buchmann (2011) for Europe. The general finding of these papers is that corporate bond spreads have information content for future output.

Duca (1999) examines the information from corporate bond spreads over Treasuries, such as the Baa-Treasury spread and attempts to deal with the fact that this spread contains information on the economic cycle from bond default risk, but also includes prepayment and liquidity risk. Authors have sought to control for these effects by using different types of spreads that place greater emphasis on the components.

Gertler and Lown (1999) argue that the due to the greater risk of default in high-yield bonds, the spread has a relatively large component that is due to bond risks, and a smaller component that reflects prepayment or liquidity risk. They show that the high-yield spread has significant explanatory power for the GDP gap one quarter and one year ahead. Their results are robust to using two different risk-free benchmarks (the AAA corporate bonds and the 10-year government bond yield) and various other explanatory variables for both the entire sample between 1980Q1 and 1999Q1 and the subsample between 1985Q1 and 1999Q1. They conclude that the high-yield spread outperforms other leading financial indicators of economic activity, including the paper-bill spread, the term spread and the Federal Funds rate.

Two further studies by Mody and Taylor (2004) and King et al. (2007) confirm these results using high yield bond spreads over a longer sample period. Mody and Taylor (2004) use US quarterly indices of sub-investment grade bonds (rated BBB3 or lower) obtained from the commercially available Merrill Lynch database between 1998Q1 and 2001Q4. Using standard time series regression analysis, they conclude that the high yield spread seems to predict well from horizons as short as one quarter to horizons as long as 18 quarters. Additionally, they test the predictive content of the term spread for real GDP over two different sample periods. Their results for the sample period between 1975Q1–1987Q4 confirm the term spread's predictive ability, whereas the results for the sample period between 1988Q1–2001Q4 reveal a complete breakdown of its predictive nature.

King et al. (2007) estimate logit models, univariate and bivariate models for the US from 1988 to 2007 for 54 different financial-market variables including AAA, AA, A, BBB, BB and B credit spreads, and the high yield credit spread at various maturities. They find that credit spreads on risky debt have been at least as informative as term spreads over the past two decades for predicting recessions; bivariate models fit the data much better than univariate models, both in and out of sample; and that the BMA model results in substantially better out-of-sample forecasts than simple averages.

However, Chan-Lau and Ivaschenko (2001) suggest it is not necessary to use high yield bonds to explain real activity. They suggest that prices of investment-grade bonds could accurately reflect economic fundamentals (such as expected return on investment) if they were correctly organized by maturity and bond rating. These authors split their bond indices according to maturity and rating class and use three different risk-free benchmarks (the US Treasury bond, Agency bond and AAA corporate bonds). Using Generalized Method of Moments (GMM) they find that the all-maturity and intermediate-maturity bond indices have significant predictive content while the long-maturity spreads lack explanatory power both in and out of sample across rating classes and forecasting horizons. They also extract one main common factor affecting yield spreads using Principal Component Analysis (PCA) which accounts for 95% of the variation in yield spreads. They argue that PCA helps filter idiosyncrasies associated with particular credit classes and isolate the systematic component of risk and conclude the main factor contains significant information content for future economic activity.

This echoes subsequent work by Mueller (2009) who finds that spreads across maturities and rating classes are informative of future growth. He uses quarterly US data for CPI and real GDP growth between 1992Q2 and 2006Q1 to test the information content of zero-coupon corporate bond yields (AAA to B) for the whole term structure (3m to 10yrs). He finds that a seemingly arbitrary combination of credit spreads results in the highest R^2, suggesting that the whole term structure of credit spreads across rating classes contains relevant information. He also decomposes the credit spread using Principal Component Analysis and concludes that one of the three latent factors (which is independent of the macro variables), termed as the credit factor, captures virtually all predictive power in corporate bond spreads. The credit factor is highly correlated with the Federal Reserve's Index of Tighter Loan Standards and can also be interpreted as a proxy for credit conditions.

All of these studies were conducted on US data, where the bond market is large, and different rating classes of bonds are well populated. There has been some work on predictions using bond spreads in Europe, where national markets are less well populated than the United States. Davis and Fagan (1997) test for the predictive content of the credit quality spread (defined as the difference between private[8] and government bonds) for three European countries individually (i.e. Denmark, Germany and the UK). They find a significant relationship only in Germany for both inflation and output growth, however, the out of sample forecasting results are weak.

De Bondt (2004) offers the first empirical examination of the balance sheet channel in the euro area since the introduction of the single currency. He approximates the EFP by the monthly average of daily observations of the spread between long-term BBB-rated euro area corporate bond yields and the 7 to 10 year government bond yield. His sample period is fairly short (January 1999 to June 2001), however, he uses three different empirical methods (i.e. pairwise Granger causality tests, multivariate regression framework and bivariate unrestricted VARs). He distinguishes between two hypotheses - he firstly tests whether the balance sheet is operative and secondly, he examines whether it is macroeconomically relevant. His second hypothesis is confirmed after performing Granger causality analysis, time series regression analysis and impulse response analysis.

Buchmann (2011) uses euro-area data on economic activity and corporate debt, namely the Merrill Lynch corporate bond index for investment grade bonds including both financial and non-financial corporations of various credit qualities and terms to maturity. To calculate the spread, he uses the averaged relevant benchmark government bond yield series for maturities ranging from 1 up to 10, 15, 20, and 30 years. He also includes other financial indicators such as the slope of the yield curve, the Dow Jones Eurostoxx 50 index, the price of Brent crude oil (1-month forward), industrial confidence, monetary aggregates (M1, M2, M3), the USD-EUR exchange rate, the short-term interest rate, and the dispersion in consumers' expectations. In terms of methodology, he considers a number of model variants for forecasting, including univariate, bivariate, random walk with drift and Least Angle Regression (LAR) models. He concludes that in particular at longer horizons, LAR outperforms the set of bivariate models and ranks first with regard to point, direction, and density forecast accuracy measures.

[8] He uses corporate bonds for the UK and Denmark and bank bonds for Germany.

In this chapter we contribute to the above literature by empirically investigating the predictive power of the corporate bond spread for future economic growth in the European corporate bond market. The introduction of the Euro has marked the movement towards more integrated financial markets and also an increased growth and development of the corporate bond market. Although still smaller in size compared to the US, the European corporate bond market has grown considerably and constitutes novel ground for examining the information content of corporate spreads taking account of cross-country heterogeneity (and further, shed light on the existence of a cross-country financial accelerator).

We also contribute to the above literature by examining whether the credit spread remains a significant predictor of future economic growth once we control for market participants' expectations of future growth. This opens up the question whether the expectations of future growth are already reflected within credit spread changes, or the credit spread contains independent information above that contained in market participants' expectations. This is an empirical examination of the credit spread's independent impact on future output in line with the financial accelerator theory.

Our work is most closely related to and guided by the recent research agenda led by Gilchrist, Yankov and Zakrajsek (2009) (GYZ hereafter), Faust et al. (2011) and Gilchrist and Zakrajšek (2012a) (GZ hereafter) in the US. GYZ and GZ bring important contributions to the literature in terms of the construction of the spread data using a bottom-up approach, their empirical methodology and their findings.

Gilchrist, Yankov and Zakrajšek (2009) construct a credit spread index from monthly data on prices of senior unsecured corporate debt traded in the secondary market over the 1990–2008 period, issued by approximately 900 U.S. nonfinancial corporations. They construct portfolio-based bond spreads (according to the issuer's expected probability of default, and use Moody's KMV EDF measure) which are shown to contain substantial predictive power for economic activity. They also construct portfolios of stock returns, which serve as controls for news about firms' future earnings, and examine the information content of bond spreads that is orthogonal to the information contained in stock prices of the same set of firms. They conclude that most of the predictive power of spreads comes from the middle of the credit-quality spectrum. They further assess the impact on the macroeconomy of movements in the credit spread in a structural VAR framework. They conclude that unexpected increases in the bond spreads cause large and persistent contractions in economic activity. Such credit market shocks explain 30% of the variance in economic activity at a two- to four-year horizon.

Gilchrist and Zakrajšek (2012a) employ the same dataset developed by Gilchrist, Yankov and Zakrajšek (2009) to examine the predictive content of the credit spread index for future economic activity. They then regress the spread on a distance-to-default measure and other bond-specific characteristics to separate a predicted spread from the unexplained part, labelled the excess bond premium, in order to determine which component accounts for the spread's information content.

Faust et al. (2011) adopt a similar methodology to Gilchrist, Yankov and Zakrajšek's (2009) and Gilchrist and Zakrajšek's (2012a), but include bonds issued by financial firms as well as non-financial firms in their sample. Using a modelling approach similar to earlier dynamic factor models, they extract the first principal components from a database of 15 macroeconomic indicators and 110 financial indicators, which they use along with bond spreads to predict real activity. The models are selected using a Bayesian Model Averaging method, and the preferred models assign the largest posterior weight to bond spreads for a range of different real activity measures such as real GDP growth, industrial production, personal consumer expenditure, business fixed investment, employment, unemployment, exports and imports.

Our contribution to the literature on the information content of corporate bond spreads can be summarized by three cardinal points:

a) A unique corporate bond spread for Europe. Different authors measure the spread differently and these differences can be potentially important especially when comparing results across different papers. By employing the bottom-up approach guided by Gilchrist et al. (2009) and GZ (2012a), we construct the first country-level credit spread index from bond-level data for Europe. The corporate bond spread is defined as the difference between the yield on the actual non-financial corporate bond and the yield on a corresponding theoretical risk-free bond[9]. By constructing the spread in this way rather than using readily available credit spread indices, we ensure that our results are not contaminated by mismatched maturities or coupon

[9] This is detailed further in Chapter 3 – A Descriptive Analysis of the Data.

rates between the two instruments compared. We also guide our choice of the fixed income securities to be included in the index according to the same criteria as Gilchrist et al. (2009) and GZ (2012a). For example, embedded options can substantially alter the information content of movements in corporate bond yields. Also, small corporate issues or issues with a remaining term-to-maturity of less than one year or more than 30 years can influence the spread via liquidity premia. These selection criteria together with the methodology of calculating the credit spread have not been addressed in the earlier literature and they seek to improve on the measurement of bond spreads.

b) We focus on the European corporate bond market. The empirical evidence for this market is very scarce and our analysis contributes to this literature in two ways: we construct a unique country-specific credit spread index of non-financial outstanding senior unsecured bonds in eight European economies (Austria, Belgium, France, Germany, Italy, Netherlands, Spain and the UK) and shed light on its predictive content for future economic growth taking account of cross-country differences. As compared to De Bondt (2004), who aggregates the spreads of euro-zone bonds into one index by averaging across countries, we construct a country-specific index and employ panel data methods. In addition, we take advantage of the panel dimension by examining differences in the predictive content of the spread across the eight European economies.

c) Market participants' expectations of future growth. Beyond establishing the cyclical behaviour of credit spreads, we also test whether credit spreads remain significant predictors of future economic activity once we control for private sector's expectations of future growth. Thus, we test an alternative hypothesis that expectations of future growth are the driving source of the changes we notice in spreads (rising before and during recessions). In other words, we examine whether credit spreads have an independent effect on output through investment as per the financial accelerator theory.

The remaining sections of the chapter are organized as follows. Section 2 outlines the estimation methodology employed; Section 3 discusses the main results; Section 4 considers several robustness checks; and Section 5 concludes the chapter.

4.2 Estimation Methodology

To assess the predictive ability of credit spreads we employ the same forecasting specification used by Gilchrist and Zakrajšek (2012a), in which the contemporaneous value of the credit spread is used to predict the change in real economic activity over the following *h* periods.

The basic forecasting specification is:

$$\Delta^h Y_{it+h} = \alpha + \beta * S_{it} + \textstyle\sum_{k=1}^{4} \gamma_k * X_{itk} + u_i + e_{it+h} \qquad (4.1.)$$

$\Delta^h Y_{it+h}$ is the growth rate of the economic activity indicator, namely manufacturing industrial production index, the change in unemployment rate, employment stock, and real GDP.

Following Gilchrist and Zakrajšek (2012a), the log growth rate of *Y* in country *i* between period *t* and *t+h* is defined as:

$$\Delta^h Y_{it+h} = \frac{c}{h+1} ln\left(\frac{Y_{it+h}}{Y_{it-1}}\right)$$

where *h* denotes the forecast horizon (i.e., h = 3, 12, and 24 months for monthly data; and h = 1, 4, and 8 quarters for quarterly data) and *c* is a scaling constant that depends on the frequency of the data (i.e., c = 1200 for monthly data, and c = 400 for quarterly data), such that the dependent variable is similar to an annualized percentage growth rate. The timing adopted in this growth rate specification is intended to capture, as explained by GZ (2012a), the fact that when trying to forecast economic activity in period *t*, economists do not observe the current value and report lags whereas the prices for financial assets are readily available in the current period.

S_{it} denotes the credit spread index constructed as described in Chapter 3, where $i = \{1, \dots, 8\}$ indexes the country, and *t* captures the time dimension

X_{itk} is a set of k = 4 control variables (i.e. the term spread, the real short-term interest rate, the consumer confidence, and economic sentiment indicators)

u_i represents the country-specific intercept, also called fixed effect or unobserved heterogeneity

α, β and γ_k are the coefficients to be estimated

e_{it+h} is the idiosyncratic forecasting error, where $u_i + e_{it+h}$ is also known as the composite error.

Gilchrist and Zakrajšek (2012a) also include two additional financial spreads to the baseline regression (namely, the paper-Bill spread and the Baa-Aaa spread) with the aim of comparing their explanatory power against the credit spread index. The paper-Bill spread is defined as the difference between the yield on non-financial commercial paper and the yield on a Treasury-Bill of similar maturity. The Baa-Aaa spread is defined as the spread between yields on indexes of Baa- and Aaa-rated corporate bonds. The Baa-Aaa spread reflects credit market conditions for well-established, highly-rated firms; it is also known as the investment-grade spread. Gilchrist and Zakrajšek (2012a) perform such comparison and conclude that neither spread provides additional explanatory power in the full sample results. In contrast to these two spreads, the credit spread remains stable across the full sample. In Europe, however, the Commercial Paper market is not as developed and only the biggest and most credit-worthy firms are able to access this market. The data on non-financial commercial paper, Baa or Aaa corporate indices were very limiting in either DataStream or Bloomberg databases. However, their elimination is unlikely to have a substantial impact on our results, since GZ find that these spreads provide little additional explanatory power for the US dataset.

We have already noted that the paper-Bill spread and the Baa-Aaa spread have diminished predictive power over real activity in the most recent studies, despite their strong performance in earlier decades. Therefore, we follow Gilchrist and Zakrajšek (2012) by including the term spread and the real interest rate to predict real activity. The choice of these variables refers to an earlier literature by Harvey (1988), Estrella and Hardouvelis (1991), Estrella and Mishkin (1998) and Hamilton and Kim (2002), where these spreads were used. We also include measures of consumer confidence and economic sentiment to measure forward-looking indicators of real activity.

Thus, our aim is to examine the predictive content of the credit spread index in a panel of eight European countries employing linear panel data techniques. As compared to other studies in the credit spread literature that focus on the US economy, we are interested in the cross-sectional differences amongst the largest European economies in the Euro-zone plus the UK. Studying each country's individual time series would also result in a considerably reduced number of observations. Thus, in our analysis we take advantage of both the cross-sectional and time-series dimensions of our dataset to investigate whether the credit spread index has predictive content for future economic activity controlling for unobserved heterogeneity (both related to the country group and random).

Methodologically, there are three linear models for estimating panel data. The pooled OLS model assumes there is no unobserved country heterogeneity. If the covariance between the explanatory variables and u_i is non-zero and the pooled OLS model is used then the estimates of all parameters might be biased. The estimated coefficients are consistent if the explanatory variables are not correlated with the idiosyncratic error (also known as the Strict Exogeneity assumption). A pooled model also imposes restrictions on its parameters, assuming that the coefficients (α, β, γ) are the same across all countries.

The fixed effects (FE) and random effects (RE) models assume the existence of unobserved country heterogeneity, u_i; the main difference between the two is whether the unobserved heterogeneity is correlated with the explanatory variables or not. The fixed effects model treats country-level effects as correlated with the observed regressors, whereas the random effects model considers the country-level effects as uncorrelated with each explanatory variable in all time periods. If the RE assumption is valid, then the RE estimates are more efficient (precise). So while in an FE model we control for u_i by using dummy variables, in a RE model, the u_i is omitted and is part of the disturbance. The difference between Pooled OLS and RE estimation is that the RE model uses some sophisticated GLS (Generalized Least Square) method. Since u_i is part of the error term, observations over time are correlated for the same country *i*. In the RE approach this correlation is eliminated by the GLS correction which is not present in pooled OLS estimation.

Panel data presents two kinds of variations: variation in observations from country to country (i.e. 'between' variation) and variation from observation to observation within a single country over time (i.e. 'within' variation). The *Between* estimator averages the equation over time for each individual and therefore ignores important information on how the variables change over time. The *Within* estimator takes averages of the variables over the time dimension and subtracts this from the original data, such that the unobserved (fixed) effect disappears. Thus, fixed effects estimators measure the variation in data only over time within the individual as explanatory variables that are time invariant are dropped. The RE estimator uses both variations, namely, it controls for some omitted variables that may be constant over time but vary between cases, and others that may be fixed between cases but vary over time. Stata's random-effects estimator is a weighted average of fixed and between effects.

For robustness, we will present all three models, pooled OLS, Fixed Effects and Random Effects. Assuming that a common error structure applies to all countries is most likely too strong a restriction, and we therefore model unobservable factors (that are not captured by our regressors) and influence the dependent variable as both fixed parameters and random error terms. Thus, we use both the FE and RE models, and the estimates are compared by implementing a robust version of the Hausman test and the p-value of this test is reported in the regression tables. The Hausman basically tests whether the unique u_i are correlated with the regressors, where the null hypothesis is that they are not correlated. If the estimates turn out to be very different, the RE assumption is probably invalid and the FE model is preferred. Otherwise, the RE model is more efficient.

An important issue arising with predictive regressions is the overlapping observations problem. By constructing the dependent variable as the growth rate over then next *h* periods of an economic activity indicator we introduce serial correlation in the error terms within a country. For example, suppose we are interested in forecasting GDP growth over the next year using monthly data. Then, two consecutive observations of the variable being forecasted correspond to time periods that have eleven months in common. This serial correlation in the error term will cause least squares to yield inconsistent estimates of the standard errors and thus lead to invalid statistical inference (i.e. underestimating the standard errors and correspondingly overestimating the t-statistics). Therefore, standard measures of statistical significance have to be adjusted by using estimators that take into account this overlapping structure, Newey West (1987) being the most commonly used in such cases.

With the experience of the recent global financial crisis, it is now more evident than ever that economic performance in a globalised world is highly interconnected, that domestic markets cannot 'de-couple' from the global financial and goods markets and, in econometric terms, that latent forces drive all of the observable and unobservable variables and processes we are trying to model (Eberhardt, 2011). This means that we need to take account of cross-sectional dependence that is likely to emerge in cross-country studies to ensure unbiased standard errors.

Newey-West (1987) standard errors correct for both heteroskedasticity and autocorrelation of type MA(q) in the disturbances, however they do not account for cross-sectional dependence. Driscoll-Kraay (1998) standard errors are Newey-West-type standard errors that allow for autocorrelated errors of general form and error correlation across panels is assumed. Hoechle (2007) provides an implementation and a test for this in Stata.

Table 4.1 gives a brief overview of selected Stata commands and options that produce robust standard error estimates for linear panel models.

Table 4.1. Selection of Stata commands and options for robust standard error estimates

Command	Option	SE estimates robust to disturbances being
reg, xtreg	robust	heteroskedastic
reg, xtreg	cluster ()	heteroskedastic and autocorrelated
xtregar		autocorrelated with AR(1)
newey		heteroskedastic and autocorrelated of type MA(q)
xtgls	panels(), corr()	heteroskedastic, contemporaneously cross-sectionally correlated and autocorrelated of type AR(1)
xtpcse	correlation()	heteroskedastic, contemporaneously cross-sectionally correlated and autocorrelated of type AR(1)
xtscc		heteroskedastic and autocorrelated of type MA(q), and cross-sectionally dependent

Source: Hoechle (1997)

Thus, in our regression tables we will also present the p-value for the test of cross-sectional dependence (denoted in the tables as the CD p-value). Where cross-sectional dependence is not present, we use Newey-West standard errors. While the pooled OLS and FE models can be fitted with both Newey-West or Driscoll-Kraay standard errors, the RE model will use cluster robust standard errors only. Lastly, we also report the p-value for the significance of fixed-effects, and the p-value for the Breusch and Pagan Lagrangian multiplier test for the significance of random effects versus the pooled OLS model. If these tests are significant (p-value<0.1 at 10% level) it implies that there are significant fixed and random effects, respectively compared to the pooled OLS model.

4.3 Results

The objective of this section is to discuss the main set of econometric results examining the predictive ability of the credit spread for economic growth. All regressions are based on panel data between July 1994 and May 2011 and are estimated by OLS, Fixed Effects and Random Effects models. We focus on three forecasting horizons (namely, 3-, 12- and 24-month for monthly data and 1-, 4- and 8-quarter for quarterly data), and report the estimates of the coefficients as well as the in-sample goodness-of-fit as measured by the R-squared. We report the R-squared, the within R-squared and the overall R-squared for the pooled OLS, FE and RE models, respectively.

Every table will present 4 panels, each panel containing 3 columns corresponding to the pooled OLS, Fixed Effects (FE) and Random Effects (RE) estimations. Panel 1 investigates the predictive content of the corporate bond spread index for economic growth. Panel 2 investigates the predictive content of two widely used financial indicators (the term spread and the real interest rate). Panel 3 investigates the additional predictive content of the credit spread above and beyond that of the term spread and the real interest rate. Panel 3 will be our reference panel in comparing our results to those of GZ's for the US[10].

In addition to GZ, in panel 4 we test an alternative hypothesis which can be formulated as follows. Economic growth can be predicted to some extent, and given the predictions are right, the market participants' expectations of future growth are reflected by the movements in spreads. While GZ do not explicitly distinguish between these two hypotheses, in panel 4 we include two sentiment indices to capture market participants' expectations and investigate this very hypothesis. If spreads are significant predictors of future economic growth, they will have a significant and negative coefficient in panels 1 and 3, which test our first hypothesis.

[10] Due to the standardization of the coefficient estimates in GZ's results, we can only refer to a qualitative comparison rather than a direct reference to the coefficients' magnitudes.

Moreover, if spreads remain significant after we include sentiment indices capturing expectations in panel 4, then spreads can amplify economic cycles if output growth is predictable. On the other hand, if spreads do not cause growth, their significance will disappear in a regression where other variables capture expectations (economic sentiment and consumer confidence). In this case, market expectations are reflected/incorporated in the spread and the spread contains no additional information on top of this for future growth. In other words, it is the expectations that drive the spread as the spread adds no additional explanatory power. However, as mentioned above, if both the credit spread and the sentiment indices remain significant it implies that the credit spread captures information beyond that contained in sentiment indices that is significant for future growth. Thus, in this case, credit spreads move by more than is implied from the sentiment indices and can therefore amplify cycles.

For ease of exposition, we start off by firstly presenting the summary of the main regression results in Table 4.2 and then move on to discuss the detailed results tables in turn. These tables (i.e. 4.3-4.14) are included in the Appendix. Table 4.2 reports the significance of the credit spread and the sentiment indices at 10% level, where Panel (a) corresponds to Panel 3 while Panel (b) corresponds to Panel 4 from the detailed results tables in the Appendix. The significance of the credit spread is based on the joint inference of the significance of fixed and random effects versus the pooled OLS model and also the significance of the robust Hausman test which compares the FE versus the RE models (i.e. for p-values greater than 0.1 the RE model is preferred over the FE model). The significance of the sentiment indicators is based on either the economic sentiment or the consumer confidence indicator being significant at the 10% level. These criteria will apply to all summary tables throughout the thesis.

Table 4.2. The Credit Spread Index and Economic Growth - Summary

Panel		(a)	(b)	
		Credit Spread	Credit Spread	Sentiment Indicators
Industrial Prod.	3-m	y	y	y
	12-m	y	y	y
	24-m	y	y	y
Unemployment	3-m	y	-	y
	12-m	y	-	y
	24-m	y	y	y
Employment	1-q	y	y	y
	4-q	y	-	y
	8-q	y	y	y
Real GDP	1-q	y	y	y
	4-q	y	y	y
	8-q	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

Panel (a) of Table 4.2 indicates that the credit spread contains significant predictive content for all economic activity measures at all horizons over and above that contained in the financial indicators (i.e. the real interest rate and the term spread). Our results are thus in line with the literature documenting the predictive content of corporate bond spreads for future economic activity outcomes for Europe (De Bondt, 2004) and the US (Gilchrist et al., 2009; GZ, 2012a; among others).

Due to their forward-looking nature, credit spreads incorporate financial market participants' expectations of future growth. Thus, compared to the existing literature, we go further by exploring whether credit spreads remain significant predictors of future growth once we control for the private sector's expectations of future economic activity. As Panel (b) of Table 4.2 suggests, this hypothesis is confirmed in all but three cases, namely for unemployment at the 3- and 12-month horizons, and employment at the 4-quarter horizon. In these specifications, the sentiment indicators are statistically significant and we can therefore conclude that the market participants predict future growth correctly and their expectations are entirely captured by the spread.

4.3.1 The Credit Spread and Industrial Production

Table 4.3 investigates the predictive content of financial indicators for manufacturing industrial production growth at the 3-month horizon. The coefficients on the credit spread are highly statistically significant and of negative sign in all panels. This is consistent with our hypothesis that higher credit spreads signal a downturn in industrial production over the following 3 months. From panels 1 and 2 we can note that the credit spread index alone explains more of the variation in the dependent variable as evidenced by the R-squared in panel 1 as compared to the term spread and the real interest rate in panel 2. In panel 4, we can note a further improvement in the R-squared which reaches 25%. As suggested by panel 4, the credit spread index adds significant predictive content over and above the sentiment indices which confirms our first hypothesis that the credit spread has an independent impact on future output which is not captured by expectations of private market participants.

Overall, the controls (i.e. term spread, the real interest rate, and the sentiment indicators) improve the in-sample goodness-of-fit of regressions which suggests that they are also relevant for explaining future economic growth. The term spread enters significantly only in panel 4 carrying the expected sign, which suggests that a positive term spread (or equivalently an upward sloping yield curve) signals an improvement in industrial production growth over the following 3 months. Similarly, a flat or inverted yield curve would signal a future deceleration in industrial production. The real interest rate enters significantly and with the expected sign in most specifications. The economic sentiment indicator is insignificant, however, the consumer confidence indicator enters significantly and carries a positive sign which is in line with the hypothesis that positive consumer confidence is associated with a strong economic performance over the next 3 months. To quantify the impact of a change in the credit spread on future industrial production, we can note, as suggested by panel 4, that an increase in the credit spread index of 100 basis points (equivalent to 1%) leads to an approximately 4 percentage point drop in industrial production growth over the next 3 months.

Table 4.4 presents the results at the 12-month horizon. The credit spread enters significantly with the expected sign in most specifications. Compared to the previous table we observe a general decrease in the size of the coefficients on the credit spread and an improvement in the R-squared. As suggested by panel 4, the credit spread adds significant predictive content over and above the consumer confidence indicator. Thus, an increase of 100 basis points in the credit spread implies an approximately 2.4 percentage point drop in industrial production over the next 12 months in the European economies. The real interest rate enters significantly only in the FE regressions while the term spread has some explanatory power in panels 3 and 4.

Table 4.5 presents the results at the 24-months horizon. The credit spread enters significantly only in panels 3 and 4 and once again we observe a further decrease in the magnitude of the coefficient. The term spread coefficient is now statistically significant in most specifications carrying a positive sign while the real interest rate has no explanatory power. The coefficient on the economic sentiment indicator is significant but it changes sign. This behaviour will be consistent for most measures of economic activity at the 24-month and 8-quarter horizons.

Overall, our results are consistent with GZ's results for the US, in that we find a statistically significant and negative relationship between the credit spread index and future industrial production growth in Europe at all three forecasting horizons. According to our reference panel 3, an increase of 100 basis points in the GZ credit spread in month *t* implies a 3 percentage points drop in the growth rate of industrial production over the subsequent three months in the US, whereas the same change in the European spread implies a drop of around 6 percentage points in European industrial production over the same horizon.

4.3.2 The Credit Spread and Unemployment

Table 4.6 investigates the predictive ability of the financial indicators for unemployment rate at the 3 months horizon. The credit spread is highly statistically significant in panels 1 and 3. This confirms our hypothesis that higher credit spreads imply a rise in the unemployment rate over the next 3 months. In panel 4, the credit spread is insignificant while the two sentiment indicators are both highly statistically significant. Thus, our second hypothesis is also confirmed – market expectations of a future downturn are incorporated into higher credit spreads. The term spread is significant but with a positive sign in panel 2 which is contrary to what we would expect, while in panel 4 the coefficient changes sign and is significant. There is also a switch in the sign of the term spread's coefficient in the case of real GDP at the 1-quarter horizon and it will remain consistently negative for employment at the 1- and 4-quarter horizons. As some studies have shown, based on data for the US, Canada, and the UK, the term spread - output relation might not be linear and its predictive content might also have asymmetric effects (Galbraith and Tkacz, 2000; Venetis et al., 2003). The real interest rate has no additional predictive content.

Table 4.7 presents the results at the 12-month horizon. The results in this table are consistent with the previous table. For panels 1-3, the R-squared improves while the size of the credit spread's coefficient decreases slightly. As suggested by panel 3, an increase of 100 basis points in the credit spread leads to an approximately 7.5 percentage point increase in the unemployment rate over the next 12 months. Panel 4 confirms our alternative hypothesis which is in line with Table 4.6. For example, from panel 4 of this table, we can say that 1 unit of negativism or low confidence in the market leads to an increase in unemployment of about 0.8 percentage points. The real interest rate has no predictive content while the term spread enters significantly and with the correct sign only in one specification.

Table 4.8 presents the results at the 24-month horizon. The credit spread is now statistically significant and with the expected sign in all regressions. All other variables behave consistently with Table 4.7, with the exception of the economic sentiment indicator which is no longer significant. In Table 4.8, as compared to the previous two tables, we can note, as suggested by panel 4, that the credit spread adds significant information content over and above the sentiment indices.

4.3.3 The Credit Spread and Employment

Table 4.9 investigates the predictive ability of the financial indicators for civilian employment stock growth at the 1-quarter horizon. The credit spread coefficient enters significantly in most specifications with the correct sign. The magnitude of coefficients is much lower compared to the case of industrial production and unemployment over the same forecasting horizon. The term spread is highly statistically significant in most regressions but with a negative sign on the coefficient. The real interest rate enters significantly only in the pooled regressions in panels 2 and 4. Both consumer confidence and economic sentiment indicators are statistically significant in panel 4. All panels are in line with our first hypothesis that the credit spread is a significant predictor of employment at the 1-quarter horizon over and above other financial and leading indicators[11].

Table 4.10 considers employment at the 4-quarter horizon. Panel 3 is in line with our hypothesis that the credit spread adds significant predictive content for future employment over and above the real interest rate and the term spread while in panel 4 the credit spread adds no significant explanatory power on top of the sentiment indices (as suggested by the pooled OLS specification which is also preferred in this case as per the p-values).

Table 4.11 presents the results at the 8-quarter horizon. We find that the credit spread is a significant predictor of future employment across all panels. For example, an increase of 100 basis points in the credit spread leads to a decrease in employment of approximately 0.6 percentage points over the 8-quarter period ahead (as indicated by panel 4). The two financial indicators (the term spread and the real interest rate) have no additional predictive content.

Overall, the term spread coefficient carries a negative sign at the 1- and 4-quarter horizons, which is contrary to our hypothesis, and has no significant explanatory power at the 24-month horizon while the real interest rate has limited information content.

4.3.4 The Credit Spread and Real GDP

The forecasting results for the credit spread are especially striking in the case of real GDP growth. Tables 4.12-4.14 in the Appendix present the regression results.
The credit spread is highly statistically significant in all specifications at all horizons and carries the expected sign, suggesting that an increase in the credit spread leads to a dampening in future real GDP growth.

The current stance of monetary policy has no predictive power while the term spread enters significantly only in a few specifications and with mixed signs. In panel 4, the sentiment indicators are mostly significant across horizons. There is also a noticeable improvement in the goodness-of-fit as measured by the R-squared, which reaches 50% but this decreases y

[11] Note that in panel 4 the pooled OLS model is preferred according to the FE/RE p-value, suggesting there are no significant fixed or random effects.

with the forecasting horizon. These results are highly consistent with GZ's conclusions for the US in terms of statistical significance and directional change. For example, a 100 basis point increase in the credit spread leads to a 1.25 percentage point decline in real GDP in the US over the next 4 quarters, and to a 1.6 percentage point drop in real GDP in Europe over the same horizon.

Overall, the above results indicate that the credit spread is a robust predictor of economic activity in line with the empirical evidence for the US and has significant additional information content on top of the term spread and the real interest rate. This finding holds true across different forecast horizons and for all economic activity measures. Our alternative hypothesis that expectations of market participants are already reflected in the spread is confirmed for the change in unemployment rate and employment growth (as indicated by panel 4 of the respective tables).

4.4 Robustness Checks

In this section we provide a robustness analysis of our results. Firstly, we examine the predictive content of spreads for the detrended levels of the economic activity indicators relative to their trend. Secondly, we consider three alternative ways of defining and aggregating the spread into a country-level index denoted as versions L (log), R (re-scaled) and W (weighted). Thirdly, we examine to what extent the credit spread's information content differs across the individual countries by allowing the coefficient to be different for each country.

4.4.1 Detrended levels of economic activity and the credit spread index

In this section we investigate whether the credit spread index can predict actual economic activity relative to its trend *h* periods ahead. The aim of this exercise is to distinguish between the credit spread's predictive content for the level of economic activity relative to its trend versus the growth rate in economic activity. In other words, we are trying to investigate whether output relative to trend is low as long as credit spreads are high and equivalently whether credit spreads are low when output relative to trend is high. So far, in our earlier exercise we have confirmed that credit spreads start decreasing once the recovery is expected to start and output growth is positive, and equally, credit spreads start increasing once output is expected to drop and the growth rate is negative.

The methodology implemented to test the above hypothesis can be stipulated as follows. We obtain a measure of the "output gap" or *the level of an economic activity indicator relative to its trend* by fitting a log-linear trend to each of the four measures of economic activity (i.e., manufacturing industrial production, unemployment rate, civilian employment stock, real GDP). This is achieved by a pooled OLS regression of the log of each economic activity variable[12] on a constant and a time trend interacted with a dummy variable for each country as follows:

$$\ln Y_{it} = \alpha + \beta_i * (T * \delta_i) + \varepsilon_t$$

Y_{it} represents the actual level of economic activity (i.e., industrial production, employment, unemployment and real GDP)

T is a linear time trend

δ_i represents a dummy variable for each of the 8 countries

ε_t is the idiosyncratic error

$i = \{1, \dots, 8\}$ indexes the 8 countries, and t indexes the time period.

The *residuals* from this regression represent the detrended level of the respective economic activity measure, $\bar{Y}$, which then become the dependent variable in our baseline specification as follows:

$$\bar{Y}_{it+h} = \alpha + \beta * S_{it} + \sum_{k=1}^{4} \gamma_k * X_{itk} + u_i + e_{it+h}$$

$\bar{Y}_{it+h}$ represents the detrended level of economic activity (industrial production, employment, unemployment and real GDP)

S_{it} denotes the credit spread index constructed as described in Chapter 3, where *i* indexes the country, and *t* captures the time dimension

X_{itk} is a set of k = 4 control variables (i.e. the term spread, the real short-term interest rate, the consumer confidence, and economic sentiment indicators)

[12] In the case of unemployment rate, we do not apply the logarithmic transformation and thus include the variable in levels.

u_i represents the country-specific intercept, also called fixed effect or unobserved heterogeneity

α, β and γ_k are the coefficients to be estimated

e_{it+h} is the idiosyncratic forecasting error, where $u_i + e_{it+h}$ is also known as the composite error

h denotes the forecast horizon (i.e., h = 3, 12, and 24 months for monthly data; and h = 1, 4, and 8 quarters for quarterly data).

We repeat the same forecasting exercise as in the previous section for each of the four economic activity measures at each horizon and we present the summary of our main results in Table 4.15[13]:

Table 4.15. The Credit Spread Index and Economic Activity relative to Trend - Summary

Panel		(a)	(b)	
		Credit Spread	Credit Spread	Sentiment Indicators
Industrial Prod.	3-m	y	-	y
	12-m	y	-	y
	24-m	y	y	-
Unemployment	3-m	y	y	y
	12-m	-	y	y
	24-m	y	-	y
Employment	1-q	y	-	-
	4-q	y	-	-
	8-q	y	y	y
Real GDP	1-q	y	-	-
	4-q	-	-	-
	8-q	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

As indicated by Panel (a), the credit spread index is a significant and robust predictor of the level of future economic activity relative to trend in most specifications, with the exception of unemployment at the 12-month horizon and real GDP at the 4-quarter horizon.

As indicated by Panel (b), the credit spread index has significant predictive content over and above that contained in the sentiment indicators in five out of twelve specifications (namely,

[13] The full results tables are included in the Appendix (Tables 4.16-4.27).

for industrial production at the 24-month horizon, unemployment at the 3- and 12-months horizons, and for employment and real GDP at the 8-quarter horizon). In four specifications neither the credit spread nor the sentiment indicators are significant while in the other three specifications our second hypothesis is confirmed, that the predictive content of spreads is already reflected by the sentiment indicators.

Compared to the original results for *the growth rate* in economic activity in section 4.3, these results are slightly weaker in terms of significance, but they are still robust, with the exception of the results for unemployment rate where the coefficient of the credit spread has a negative sign. In the exercises for the level of employment and real GDP, the credit spread coefficients are higher in magnitude while for unemployment they are lower compared to section 4.3. In the exercise for the level of industrial production, the magnitude of the credit spread coefficients is higher at the 12- and 24-month horizons and lower at the 3-month horizon compared to section 4.3.

4.4.2 Re-defining the credit spread index

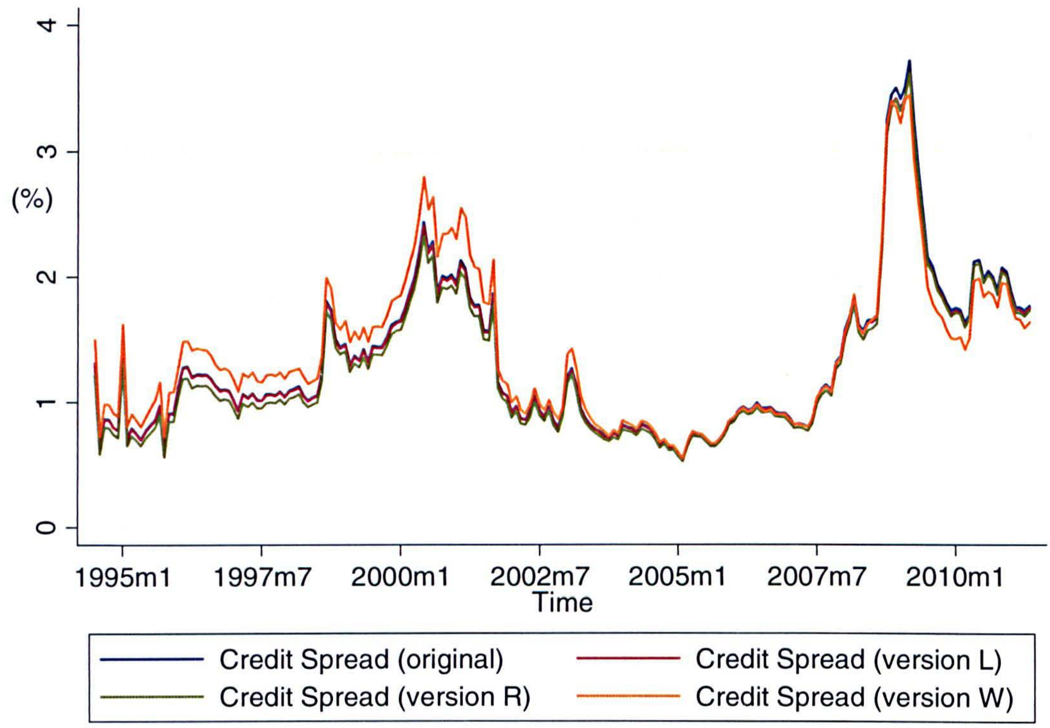
In re-defining the credit spread index we take three approaches. Firstly, we apply a log transformation to the corporate bond spreads before aggregating them into a country-level index (by taking cross-sectional averages at every time period). We denote this *version L* of the credit spread. Secondly, we divide the corporate bond spread (at bond level) by its corresponding risk-free rate to obtain a pure measure of default risk. We denote this *version R* of the credit spread. Thirdly, in aggregating the bond spreads into a country level index we use a weighted average instead of a simple average, where the weights are given by the market values of the amount outstanding. We denote this *version W* of the credit spread. Table 4.28 below provides a summary of the main statistics of these three variants compared to the original credit spread index.

Table 4.28. Summary Statistics of the Credit Spread Variants

Variable	No. of obs.	Mean	Std. Dev.	Min.	Max.
Credit Spread (original)	872	1.401	0.848	0.320	6.126
Credit Spread (version L)	872	1.384	0.825	0.320	5.923
Credit Spread (version R)	872	1.354	0.831	0.308	6.005
Credit Spread (version W)	872	1.323	0.747	0.320	5.829

We can note the three variants of the spread are on average smaller than the original credit spread and they are also very highly correlated as shown in the figure below.

Figure 4.1. The Credit Spread and its Variants



We now describe each of the three versions in more detail.

1. Version L

In our previous exercise we constructed the country-specific credit spread index by taking the cross-sectional average of all bonds' spreads in a given period of time within each country as follows:

$$S_{it} = \frac{1}{N_t}\sum S_{jit[k]}$$

The first modification we make is to firstly take the logarithm of the spread before taking the cross-sectional average as in the equation below. The aim of this transformation is to dampen sharp spikes or drops in the credit spread, given its highly skewed distribution.

$$S_{it}^{l} = \frac{1}{N_t}\sum \ln\left(1 + S_{jit[k]}\right)$$

As the credit spread is a very small value, taking the log of a number close to 0 would result in negative values, and we therefore use the following transformation: $ln(1 + variable)$.

We present a summary of the results in Table 4.29[14]. As indicated by Panel (a), our first hypothesis is confirmed for all economic activity measures at all horizons. As indicated by Panel (b), the credit spread's information content is captured by the sentiment indicators in three specifications, for unemployment at the 3- and 12-months horizons and employment at the 4-quarter horizon. These findings suggest that our results are highly consistent with the earlier exercise for the original credit spread index. The magnitude of the coefficients on version L of the credit spread is slightly higher compared to the original coefficients.

Table 4.29. The Credit Spread Index (version L) and Economic Activity - Summary

Panel		(a)	(b)	
		Credit Spread	Credit Spread	Sentiment Indicators
Industrial Prod.	3-m	y	y	y
	12-m	y	y	y
	24-m	y	y	y
Unemployment	3-m	y	-	y
	12-m	y	-	y
	24-m	y	y	y
Employment	1-q	y	y	y
	4-q	y	-	y
	8-q	y	y	y
Real GDP	1-q	y	y	y
	4-q	y	y	y
	8-q	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level.

Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

2. Version R

For our main forecasting exercise, we defined the credit spread as the difference between the actual yield to maturity of the bond issue and its corresponding risk-free rate (constructed as detailed in Chapter 3):

$$S_{jit[k]} = y_{jit[k]} - y^f_{jit[k]}$$

[14] The full results tables are included in the Appendix (Tables 4.30-4.41).

Thus, the second modification we make consists of rescaling the spread by the risk free rate as follows:

$$S^r_{jit[k]} = \frac{y_{jit[k]} - y^f_{jit[k]}}{1 + y^f_{jit[k]}}$$

The aim of this transformation is to define the credit spread as a pure function of default risk. The derivation of S^r and the difference between the two spreads are illustrated in Derivation 4.1 in the Appendix.

The summary results are presented in Table 4.42[15] and indicate that our results are highly consistent with our previous results both in terms of magnitude, significance and directional changes of the credit spread.

Table 4.42. The Credit Spread Index (version R) and Economic Activity - Summary

Panel		(a)	(b)	
		Credit Spread	Credit Spread	Sentiment Indicators
Industrial Prod.	3-m	y	y	y
	12-m	y	y	y
	24-m	y	y	y
Unemployment	3-m	y	-	y
	12-m	y	-	y
	24-m	y	y	y
Employment	1-q	y	y	y
	4-q	y	-	y
	8-q	y	y	y
Real GDP	1-q	y	y	y
	4-q	y	y	y
	8-q	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

3. Version W

Lastly, the third modification we make is to re-define the credit spread index as a weighted mean (rather than a simple average) of all bond spreads in a given period of time within

[15] The full results tables are included in the Appendix (Tables 4.43-4.54).

each country, where the weights represent the market value of the amount outstanding (deflated by CPI) of the respective bond issue:

$$S_{it}^{w} = \frac{\sum\left(S_{jit[k]} * AOS_{jit[k]}\right)}{\sum AOS_{jit[k]}}$$

As the weight attached to each bond in the index represents the size of the respective bond, the aim of this transformation is to allow for bigger issues to account for a greater proportion of the index and potentially have a greater impact on our economic variables. The summary results are presented in Table 4.55[16].

Table 4.55. The Credit Spread Index (version W) and Economic Activity - Summary

Panel		(a)	(b)	
		Credit Spread	Credit Spread	Sentiment Indicators
Industrial Prod.	3-m	y	y	y
	12-m	y	y	y
	24-m	y	y	y
Unemployment	3-m	y	-	y
	12-m	y	-	y
	24-m	y	y	y
Employment	1-q	y	y	y
	4-q	y	y	y
	8-q	y	y	y
Real GDP	1-q	y	y	y
	4-q	y	y	y
	8-q	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level.

Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

This table also indicates that the results are highly consistent with our previous findings, the only difference being that in panel (b) the credit spread is now significant for employment growth at the 4-quarter horizon.

16 The full results tables are included in the Appendix (Tables 4.56-4.67).

4.4.3 The Credit Spread Index by Country

In this section we explore to what extent the credit spread's predictive content differs across the eight European economies by relaxing the assumption that the credit spread coefficient is the same for all countries. We do so by creating interaction terms between the credit spread index and a dummy variable for each of the eight countries and conduct our analysis as before. The results are presented in Tables 4.68-4.79 in the Appendix. Each table will present two panels, each containing three specifications corresponding to the pooled OLS, FE and RE models. Panel 1 investigates the credit spread's predictive content by country beyond that contained in the real interest rate and the term spread, while panel 2 investigates our second hypothesis whether the private sector's expectations of future growth are already incorporated in credit spreads' movements. To test whether there are significant differences across countries, we perform the F-test and report the p-values. The null hypothesis is that the eight interactive terms are jointly equal to each other. For a significant p-value we then reject the null hypothesis.

If we consider, for example, panel 2 across all tables, the general finding is that, with the exception of industrial production growth at the 12-month horizon, the F-test indicates significant differences across countries, thus there is a certain degree of heterogeneity across our sample countries. This also holds for the case when we exclude the UK and re-evaluate the F-test. When we group certain countries together (for example, the Euro-core comprised of France, Germany and Netherlands) the p-value is insignificant (in the case of industrial production at all horizons and employment at the 1-quarter horizon) which suggests a higher degree of homogeneity within this country group compared to the whole sample. Similar conclusions apply to panel 1 across tables.

The results for industrial production growth are presented in Tables 4.68-4.70. We can note that the credit spread coefficients are significant and negatively signed in panel 1 for most countries at the 3-month horizon but less significant at the 12- and 24-month horizons. Once we include the sentiment indicators in panel 2, the credit spread is now significant for most countries at all horizons. The R-squared also improves overall compared to the results where the credit spread coefficient is the same for all countries.

The results for the change in unemployment rate are presented in Tables 4.71-4.73. In panel 1 of these tables, we can note that the credit spread is significant and correctly signed for most countries with minor exceptions (i.e. Austria at the 12- and 24-month horizons, Belgium at 3-months, Germany at all horizons, and Spain at 24-months). In panel 2 of these tables, the credit spread loses most of its significance in the presence of the sentiment indicators, and the credit spread for Germany at the 3-month horizon takes on an incorrect negative sign.

The results for employment growth are presented in Tables 4.74-4.76. We can note that in panel 1 of these tables, the credit spread is significant and correctly signed for all countries (except for Netherlands at 1-quarter which is insignificant). In the presence of the sentiment indicators in panel 2, the credit spread loses most of its significance, especially at the 1- and 4-quarter horizons. At the 8-quarter horizon, however, the credit spread re-enters significantly for all countries except the UK.

The results for real GDP growth are presented in Tables 4.77-4.79. With a few exceptions (namely, Austria and Germany in panel 2 at the 4-quarter horizon; and Austria and UK in panel 1 at the 8-quarter horizon), the credit spread enters significantly in both panels for all eight countries at all three forecasting horizons.

4.5 Conclusion

This chapter analysed the leading indicator properties of corporate bond spreads for real activity in eight European countries. We did so by constructing a unique corporate bond index at country-level (as opposed to using widely available indices or aggregated data) using an extensive micro-level data set for outstanding senior unsecured bonds issued by non-financial corporations.

We explored its predictive content for four different measures of economic activity (manufacturing industrial production, unemployment rate, employment stock and real GDP) at three forecasting horizons (3-, 12- and 24-months for monthly data; and 1-, 4-, and 8-quarters for quarterly data). We employed static panel data techniques also taking account of cross-country differences and controlling for other financial indicators (such as the term spread and the real interest rate) and market expectations of future economic activity (such as consumer confidence and economic sentiment).

We have found that the credit spread index has significant information content for future economic outcomes over and above that contained in the term spread and the real interest rate in all specifications. When we control for market expectations, the credit spread remains a robust predictor in most specifications with the exception of unemployment at the 3- and 12-months horizons and employment at the 4-quarter horizon. In these cases, the sentiment indicators are statistically significant which confirms our alternative hypothesis that the credit spread's information content is entirely captured by market sentiment, and therefore market expectations lead to movements in the credit spread.

Comparing our results with Gilchrist and Zakrajšek (2012), we found that all four real activity measures in European economies show similar directional changes in the credit spread when compared to the US, but the magnitudes are somewhat different. These differences could be due to the sample periods used for the US study (1973M1 – 2010M9) versus our European study (1994M7 – 2011M5). While both samples include the Great Moderation and the volatility of the global financial crisis, the European sample does not include the Great Inflation of the 1970s. However, when we compared magnitudes for real GDP, we found greater similarity.

We have also explored whether the credit spread's information content remains significant for the level of the four economic activity measures relative to their trend. Our findings are robust but slightly weaker compared to our main forecasting exercise, with the credit spread index entering significantly in all but two specifications. When we control for market sentiment, the credit spread index remains significant in 5 out of 12 specifications; the other 7 specifications lend support to our second hypothesis. Also, the coefficients of the credit spread index carry the wrong sign for unemployment at the 3- and 12-months horizons.

We further employed three variations in defining and aggregating the bond spreads into a country-level index. Firstly, we applied the following log transformation to the credit spread, ln(1+spread) and denoted this *version L*. Secondly, we re-scaled the credit spread by its corresponding risk-free rate such that the spread was a pure function of default risk and we denoted this *version R*. Thirdly, we used a weighted average instead of a simple average for aggregating the spread into a country-level index, where the weights were given by the market values of the amount outstanding of the respective bond issues. We denoted this *version as W*. We found that all three versions were highly robust and consistent with our original version both in terms of significance and magnitude of the credit spread's coefficients.

Lastly, by taking advantage of the cross-country dimension of our dataset, we explored whether there were significant differences across countries in terms of the predictive content of the spread. Thus, we allowed for the credit spread coefficients to vary across countries by considering interactive terms with country dummy variables. Overall, we found that there was a high degree of consistency in the predictive ability of the spread at different horizons for all countries, most predominantly for real GDP at all horizons, industrial production at 24-months and employment at 8-quarters. The predictive content of the credit spread was less robust in the presence of the sentiment indicators, especially for employment at 1- and 4-quarters, and unemployment at the 3- and 12-month horizons. In terms of country differences, we have found that there is a significant degree of heterogeneity across the entire sample but also when we excluded the UK. This was less prominent, however, for the Euro-area core countries (such as, France, Germany and Netherlands), in the case of industrial production growth at all horizons and employment at the 1-quarter horizon. This may point to differences within the Euro-area but also between the Euro-area and the UK, with an important caveat however, the bond sample size in the peripheral Euro countries is significantly smaller compared to the core countries.

Chapter 5 The European Excess Bond Premium and Economic Activity

5.1 Introduction

In this chapter we take advantage of the micro-level aspect of our dataset to decompose our credit spread index into two components: one reflecting the expected default risk of individual firms and a residual component which is called, in line with GZ (2012a), the excess bond premium (EBP). The EBP is a credit risk premium due to the uncertainty of default losses on corporate bonds in general, after controlling for the bond's characteristics and the financial condition of the issuing company. In other words, it represents the common component in the pricing of corporate bonds after allowing for the expected default risk of their underlying issuer, and reflects variations in the risk aversion of the financial sector as a whole (i.e. the willingness or ability of the major financial intermediaries to take on risk).

Our decomposition of the spread is partly motivated by a "credit spread puzzle" documented in the corporate finance literature. According to this, less than half of the variation in corporate bond spreads can be attributed to the financial health of the issuer. For example, as Amato and Remolona (BIS, 2003) document, during the period 1997-2003 the average spread on BBB-rated US corporate bonds of 3-5 years to maturity was about 170 basis points at annual rates. However, during the same period, the average yearly loss from default was only 20 basis points. The fact that expected loss accounts only for a small fraction of the spread, such that the spread is not mainly attributable to fundamentals, is what is referred to in the literature as the credit spread puzzle.

Papers that have documented the information content of corporate bond spreads for the economic cycle have recognized the fact that this may come from bond default risk (for example, in times of recession the frequency of defaults increases) but also prepayment and liquidity risks (Duca, 1999). Prepayment risk arises from the callability of bonds as callable bonds tend to have higher yields to compensate the lender for the possibility that the borrower/firm will refinance existing debt at a cheaper cost if interest rates fall, for example.

Liquidity risk stems from the fact that corporate bond markets are less liquid, which implies that it is generally more costly to undertake transactions in these instruments as compared to equities or government debt. Therefore, investors require additional compensation for this, as evidenced by Longstaff et al. (2005) and Driessen (2005), who find that liquidity premia account for 20% of the spread. Also, taxes may account for part of corporate bond spreads since investors demand higher yields to be compensated for higher tax bills compared to other bonds or investments. As explained by Amato and Remolona (BIS, 2003), since their effect is constant across rating classes they explain less of the spread on lower-rated bonds compared to higher-rated bonds.

The literature has also documented a risk premium component of the spread which cannot easily be diversified away by holding stocks in the same portfolio. Therefore, risk-averse investors will require a premium in addition to compensation for expected default. For example, Elton et al. (2001) find that less than half of the variation in corporate bond spreads can be attributed to fundamentals (or the financial health of the issuer). They conclude that the spreads include a systematic (or undiversifiable) risk premium which accounts for up to 41% of the spread.

Also, Collin-Dufresne et al. (2001) maintain that the unexplained portion of the variation in credit spreads, amongst other things, includes a premium to compensate investors for the risk of unexpected default losses (for bearing exposure to the corporate bond market), on top of the compensation for expected default. This evidence of market-wide components and commonalities in corporate bond spreads is also consistent with Mueller's (2009) results. After decomposing the spread using principal factor analysis, he finds that the principal factor capturing most of the variation in spreads is closely related to the overall credit conditions.

This finding is in line with the argument proposed by Philippon (2009). He claims that in perfect financial markets (with no frictions) the credit spread would be purely reflective of the expected default of the underlying issue. However, in the context of imperfect financial markets, frictions can generate an even higher increase in the credit spread than that implied solely by expected default risk as in perfectly functioning markets.

The empirical strategy we adopt in performing the decomposition has been employed before in the literature. Longstaff et al. (2005) linearly decompose the credit default swaps into a default and non-default component. In extracting the default component, they do not use the option-theoretic measure of default risk (along the lines of Merton, 1974). They develop a reduced-form model à la Duffie and Singleton (1999) to obtain closed-form expressions for corporate bond prices and CDS premia. They find that default risk accounts for the majority of the corporate spread. They also find evidence of a significant non-default component in corporate spreads which is strongly related to measures of bond-specific illiquidity. They find only weak support for the hypothesis that the non-default component is due to taxes.

Elton et al. (2001) perform a spread decomposition whereby the part of the spread on corporate bonds which is not explained by expected default loss and taxes (i.e. the unexplained spread) is regressed on the three Fama-French (1993) risk factors[17]. They show that the vast majority of the unexplained spread is compensation for systematic risk and is affected by the same influences that affect systematic risks in the stock market. They find that as much as 85% of the unexplained spread can be explained as a reward for bearing systematic risk.

Berndt et al. (2008) use the 5-year credit default swap rates belonging to different industry groups as the dependent variable and regress it on the option-theoretic EDF measure obtained from Moody's KMV. Their aim is, however, to obtain a measure of the sensitivity of CDS rates to default probabilities and to estimate how default risk premia vary over time using panel-regression models and arbitrage-free term-structure time-series models.

GZ (2012a) is the only contribution to the literature that considers a linear decomposition of the corporate bond index by regressing it on a measure of expected default and bond-specific characteristics (described in more detail in the next section) in order to examine the information content of the spread's components. Therefore, at present it constitutes our only direct reference point in the related literature. GZ also show that fluctuations in the residual component of the spread, the excess bond premium, are closely related to the financial condition of major US broker-dealers, which are highly leveraged financial intermediaries that play a key role in most financial markets.

[17] The Fama-French model employs the excess return on the market, the return on a portfolio of small stocks minus the return on a portfolio of large stocks (the SMB factor), and the return on a portfolio of high minus low book-to-market stocks (the HML factor).

This chapter contributes to the above literature in multiple ways. Firstly, we perform a linear decomposition of the corporate bond index in a similar fashion to GZ's (2012a) methodology for European data. This is achieved with the help of Moody's KMV dataset on Expected Default Frequency (EDFs) for European firms and additional bond-specific data we collect from Bloomberg. Our aim is to investigate the extent to which the information content of the credit spread index documented in Chapter 4 is attributable to either the predicted component or the excess bond premium. In other words, we are trying to disentangle and pin down what drives the European credit spread's information content.

Secondly, we contribute to the above literature by exploring whether either component of the credit spread retains its statistical significance once we control for the private sector's expectations of future growth in line with Chapter 4. Thus, we investigate whether the predictive content of the excess bond premium (or the predicted spread) is due to private sector expectations or whether the excess bond premium has additional independent explanatory power for future economic growth.

Thirdly, in a similar fashion to Chapter 4, we construct the log (L), re-scaled (R) and weighted (W) versions of both the predicted spread and the excess bond premium and we also test whether the predictive content of either component performs better for the level of economic activity relative to trend. Fourthly, by taking advantage of the panel dimension of our dataset, we disentangle the contribution of the excess bond premium to the spread's predictive content across the eight European countries by allowing the coefficients on the EBP to differ.

The rest of the chapter is organized as follows. Section 2 outlines the empirical strategy; Section 3 presents our default risk measure (the Expected Default Frequency) in more detail; Section 4 discusses the results; Section 5 considers several robustness checks; Section 6 provides a brief interpretation of our findings; and Section 7 concludes.

5.2 Empirical Strategy

Our empirical methodology follows the lines of GZ and Berndt et al. (2008) in that the log of the credit spread on bond *k* issued by firm *j* in country *i* at time *t*, $ln\ S_{jit}[k]$, is assumed to be related linearly to a firm-specific measure of expected default to be explained later in the section, EDF_{jit}, and a vector of bond-specific characteristics, $Z_{jit}[k]$, according to specification 5.1 below:

$$\ln(1 + S_{jit}[k]) = \alpha + \beta * \ln(1 + EDF_{jit}) + \gamma * \ln(Z_{jit}[k]) + \varepsilon_{jit}[k]$$

(5.1)

The vector of bond-specific characteristics (which includes the mid-Macaulay duration, $DUR_{jit}[k]$, the amount outstanding, $AOS_{ji}[k]$, the fixed coupon rate, $CPN_{ji}[k]$, and the age of the bond issue, $AGE_{jit}[k]$) is aimed at capturing liquidity and tax premia. These will be discussed in more detail in section 5.4.

Taking logs of the credit spread and the EDF provides a useful transformation to control for heteroskedasticity, given that the distribution of the two variables is highly skewed. As the credit spread, the EDF and the coupon rate represent very small values in percentages, taking the direct log transformation of these variables would result in negative values. Therefore, we use the following transformation: $ln(1 + variable)$. In this case, the percentage change interpretations are closely preserved and it is acceptable to interpret the estimates as if the variable were $ln(variable)$(Wooldridge, 2006).

The specification (5.1) is estimated using OLS at bond level at monthly frequency, with multi-way clustering of standard errors at both country (i) and time (t) dimensions (Cameron et al., 2011). The resulting standard errors are thus robust to arbitrary within-panel autocorrelation (clustering on country) and to arbitrary contemporaneous cross-panel correlation (clustering on time). There is no point in using 2-way cluster-robust standard errors if the categories are nested, because the resulting standard errors are equivalent to clustering on the larger category. The regression also includes industry and credit rating fixed effects. Industry fixed effects control for all variables that are constant over time but specific to each industry, such as expected recovery rates across industries. Credit rating effects capture soft information that is complementary to the market-based measure of default risk (Löffler, 2007).

In general, when predicting y with *log(y)* being the dependent variable, we need to adjust the predicted value, $\hat{y} = exp(\widehat{\ln y})$, by the expected value of $\exp(\varepsilon)$ which is equal to $\exp\left({}^{\sigma^2}/_2\right)$ under the assumption that $\varepsilon \sim N(0, \sigma^2)$ (Wooldridge, 2006).

Therefore, in our case, assuming normally distributed disturbances, we obtain the (antilog) point prediction for the credit spread for bond *k* of firm *j* in country *i* at time *t* as follows:

$$\hat{S}_{jit}[k] = \exp\left(\hat{\beta}\ln\left(1 + EDF_{jit}\right) + \hat{\gamma}\ln Z_{jit} + \frac{\hat{\sigma}^2}{2}\right) - 1$$

where $\hat{\beta}$ and $\hat{\gamma}$ are the OLS estimates of the corresponding parameters and $\hat{\sigma}^2$ is the estimated variance of the disturbance term, $\varepsilon_{jit}[k]$.

Having obtained our measure of the predicted spread as the fitted values from specification (5.1), we can now define the excess bond premium as the difference between the actual credit spread of bond *k* issued by firm *j* in country *i* at time *t*, and the predicted spread of the same bond at time *t* as follows:

$$EBP_{jit}[k] = S_{jit}[k] - \hat{S}_{jit}[k]$$

This linear decomposition takes place at bond level such that both the predicted spread and the EBP are bond-specific. We then take the cross-sectional average across bonds in country *i* at time *t*, and construct a country-level index for the EBP and the predicted spread as follows:

$$\hat{S}_{it} = \frac{1}{N_t}\sum_j\sum_k \hat{S}_{jit}[k]$$

And

$$EBP_{it} = \frac{1}{N_t}\sum_j\sum_k EBP_{jit}[k]$$

Our approach in constructing the EBP and the predicted spread differs slightly from GZ. While GZ define the EBP as the difference between the averaged credit spread and the averaged predicted spread which would result in averaging out different samples of bonds, we perform the decomposition at bond level as we do not have complete data for every bond characteristic at every point in time.

As the EDF dataset does not cover fully all the firm-months in our sample, the number of observations in the final dataset with the EDF data drops considerably and we are left with approximately 54% of our initial bond-level dataset. Therefore, we considered it useful to show the descriptive statistics of this sub-sample.

Table 5.1 presents the summary statistics. We now have 269 bonds across 92 firms and 35 industry sectors. The time span is also slightly reduced to the period between January 1996 and August 2010 as EDF data are only available until August 2010.

Table 5.1. Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
No. of bonds/firm	9176	5.359	3.325	1	12
Actual market yield	9176	5.054	1.659	0.295	25.671
Theoretical yield	9176	3.358	1.126	0.509	8.226
Credit Spread (bps.)	9160	169.98	143.70	3.173	2379.31
Bloomberg Z-spread (bps.)	6639	143.35	143.52	5.45	2338.01
Coupon (%)	9176	5.512	1.187	0.5	8.75
Amount outstanding (€mil.)	9176	652	447	7.733	3,270
Amount issued (€mil.)	9176	683	483	15	3,500
Duration (yrs.)	9037	7.249	3.374	0.790	16.654
Term to maturity (yrs.)	9176	10.069	6.8	1.8	31.463
Age (yrs.)	9092	2.748	2.495	0	14.605
Maturity at issue (yrs.)	9176	12.791	7.387	3.003	40.027
EDF	8215	0.248	0.723	0.01	17.915
S&P rating	8669	-	-	B-	AA-

Note: Sample period January 1996 – August 2010; No. of bonds = 269; No. of firms = 92; No. of months = 176; No. of industry sectors = 35; No. of bonds/months for Austria (10/34), Belgium (12/87), France (138/89), Germany (24/91), Italy (25/88), Netherlands (17/82), Spain (2/14) and UK (41/176).

As Table 5.1 indicates, the average firm in our sample has 5 senior unsecured issues outstanding in any given month. The bonds have an average actual nominal yield of 5.05% and an average artificial yield of 3.36%. The distribution of actual nominal yields is more positively skewed compared to that of the artificial yields with a maximum nominal yield of 25%. The average coupon rate in the sample is 5.5% with a maximum of 8.75%. The corporate bond spread has a minimum of 3.2 basis points and a maximum of approximately 2,400 basis points as per the selection criteria. An average bond has an expected return of approximately 170 basis points above its corresponding risk-free theoretical bond and a sizeable standard deviation of 143.7 basis points which reflects the wide range of the credit quality of the sample. The Bloomberg Z-spread has a mean and standard deviation of around 143 basis points. These characteristics are slightly higher compared to the ones from the entire sample of bonds.

The distribution of the amount of debt outstanding of these issues is positively skewed, with the range running from €7.7 million to €3.2 billion. The average duration is shorter and equal to approximately 7.3 years. The maturity of the issues in our sample is long, with an average maturity at issue of 12.8 years and an average remaining term-to-maturity of 10 years. The maturity of the bond issues in this sub-sample is slightly higher than in the full sample. In terms of default risk as measured by the S&P credit ratings our sample spans almost the entire spectrum of credit quality from "B-" to "AA-". Overall, this sub-sample of bonds is a good representation of the full sample preserving all its main characteristics.

5.3 Measuring the Default Component

Moody's KMV define default risk as the failure of the obligor to make payments on its debt or a restructuring of its debt that is not in line with the creditors' interests. The term default risk is used interchangeably with credit risk. This should be distinguished from bankruptcy (a legal finding that imposes court supervision over the financial affairs of those who are insolvent or in default) and insolvency (which is an accounting term referring to the state when one's liabilities exceed their assets).

There are various methods to assess the likelihood of such an event occurring, the first ones of which were the scoring methods based on accounting data, such as Altman's Z-score and Ohlson's O-score. These scores had however a number of shortcomings as they entirely relied on financial statement data to predict default. As an improvement on these scores, and in addition taking into account qualitative factors too, credit ratings were then developed by rating agencies such as Standard and Poor's, Fitch and Moody's. With financial innovation and the increased use and importance of derivative products, the quantitative modelling of credit risk emerged as an important area of focus for both academics and the financial industry.

One major quantitative model of default risk that is vastly popular today was first introduced by Robert Merton in 1974. Based on the pioneering work in credit risk research of Black and Scholes (1973) on the pricing of options and corporate liabilities, Merton developed a model to forecast a firm's default.

Merton's framework is based on Black-Scholes' idea that a firm's equity can be viewed as a call option on the underlying value of the firm's assets with a strike price equal to the face value of its debt. Merton's framework uses the market price and volatility of equity and other observables to determine the firm's assets and volatility (both unobservable) and assumes that the value of the firm follows a geometric Brownian motion to arrive at the firm's probability of default. Thus, a firm-specific distance to default is calculated as:

$$Distance\ to\ Default = \frac{[Mkt\ Value\ of\ assets] - [Default\ Point]}{[Mkt\ value\ of\ assets] * [Asset\ Volatility]}$$

Once the asset value of the firm drops beyond a threshold level which is called the default point (DD) the firm immediately defaults (i.e. market value of assets < book value of liabilities payable within one year).

Merton's framework was later developed by an American company called KMV Corporation in the late 80's and this is why sometimes the model is referred to as Merton's KMV. Some of Merton's original simplifying assumptions were not realistic in practice and KMV Corporation, founded by Oldrich Vasicek and Stephen Kealhofer, later developed a new model based on it, which they called the Vasicek-Kealhofer (VK) model. This model proved to be very successful and in 2002, the KMV Corporation was acquired by Moody's and is now known as Moody's KMV. Moody's KMV have refined the VK model further and developed their own measure of default and use their large proprietary empirical distribution of historical defaults to translate the DD into an Expected Default Frequency (EDF).

The EDF has become the financial industry's standard (the majority of the world's largest financial institutions are subscribers) and as per Berndt et al. (2008) it has numerous important merits for business and research practices. It is not sensitive to model misspecification as the EDF is fitted non-parametrically to the distance-to-default, where the distance-to-default is a sufficient statistic for computing conditional default probabilities. Moreover, the alternative industry measure of default would be the average historical default frequency of firms that have the same credit rating as the firm in question. However, this is a less reliable measure due to the gradual and rather slow adjustment of credit ratings to new market information. "When a rating change appears necessary, we undertake a preliminary review that may lead to a CreditWatch listing. The next step is a comprehensive analysis, including, if needed, a meeting with management and a presentation to the rating committee. The rating committee considers the circumstances, comes to a decision and notifies the issuer, subject to the appeal process noted above" (Standard & Poor's "Credit Rating Facts Sheet").

5.4 Decomposing the Credit Spread

With our firm-specific measure of default risk, we now turn to the estimation of the credit spread model given by specification 5.1 from section 5.2, also copied below:

$$\ln(1 + S_{jit}[k]) = \alpha + \beta * \ln(1 + EDF_{jit}) + \gamma * \ln Z_{jit}[k] + \varepsilon_{jit}[k]$$

In our baseline specification, we regress $ln(1 + S_{jit}[k])$, the logarithm of the credit spread on bond *k* (issued by firm *J* in country *i*) in month *t*, on $ln(1 + EDF_{jit})$, the logarithm of the EDF measure, while controlling for bond-specific characteristics that could influence the spread through term or liquidity premia.

The choice of the explanatory variables is guided by GZ (2012a) and King and Khang (2005). Due to the fact that we have excluded the callable bonds from our sample, we do not need to evaluate the impact of the level, slope and curvature of the term structure of interest rates on bond spreads as Gilchrist and Zakrajšek (2012) have done. Therefore our models are simpler to estimate. Thus, the vector of bond-specific characteristics includes: mid-Macaulay duration, $DUR_{jit}[k]$; the amount outstanding, $AOS_{ji}[k]$; the fixed coupon rate, $CPN_{ji}[k]$; and the age of the bond issue, $AGE_{jit}[k]$. As $CPN_{ji}[k]$ expressed as a percentage is a small quantity we applied the following transformation to it: $ln(1 + CPN_{ji}[k])$. We now discuss each of the explanatory variables in turn.

$DUR_{jit}[k]$ is defined as the weighted average maturity of the bond's cash flows, where the weights are the present values of the cash flows, also known in finance as Macaulay duration. It basically measures the number of years it takes to recover the true cost of a bond (taking account of the present value of all coupon and principal payments in the future). Hence the yield of the bond and duration are inversely related and therefore we expect a significant and negative coefficient.

$CPN_{ji}[k]$ is the fixed interest rate used to pay periodic interest payments by the bond issuer. A bond with a yield-to-maturity higher than the coupon rate is said to be trading at a discount, and if the yield-to-maturity is lower than the coupon rate the bond is said to be trading at a premium. The relationship between the yield and the coupon is as follows:

$$Yield\ (\%) = \frac{Coupon\ payment}{Clean\ price}$$

We include the coupon rate as a control variable to allow for the possibility that the spread includes a tax-related component[18]. The regular income an investor receives in the form of coupon payments is taxed at the investor's marginal income tax rate, whereas any price appreciation of the bond is taxed at the capital gains tax rate. The higher the coupon is, the higher the income tax liability and therefore a higher coupon bond demands a higher yield in order to compensate the investor for a the higher tax bill (as opposed to investing in a lower coupon bond which would imply a lower income tax bill).

$AOS_{ji}[k]$ represents the amount of debt outstanding which has not matured and the issuer has yet to fully pay back. It is equal to the number of bonds in circulation multiplied by the bond's par value. The par value is the minimum trading size and is constant. The amount outstanding is used to control for any liquidity effects as large issues are usually thought of as more visible in the market. A higher amount outstanding (sometimes associated with young issues as well) implies a higher price and a lower yield. This variable is however insignificant in our regressions.

$AGE_{jit}[k]$ represents the years since the issue date of a bond. Age increases over time until maturity. Age has been suggested by the literature (Elton and Green, 1998) to be a measure of liquidity for bonds. Older bonds are thought to be less liquid which implies that they should have higher yields. For example, bonds in the first year of issuance are less likely to default compared to more mature bonds so the yields should in theory be higher the higher the age of the bond. There are two plausible reasons behind this. First, companies that recently raised money in the bond markets are likely to have the cash to pay their creditors. Second, bond markets generally do not lend to companies in immediate danger of default (Helwege and Kleiman, 1996). This variable is however insignificant in our regression.

EDF_{jit} is the Expected Default Frequency and is our measure of credit risk. This dataset has been obtained from Moody's KMV. A firm with a higher EDF value is more likely to default

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[18] An investor with a marginal income tax rate τ would need to receive a pre-tax coupon of $c/(1-\tau)$ in order to have an after-tax coupon of c. Thus, the markup in the coupon that compensates the investor for tax-related expenses should be roughly proportional to the coupon rate (Longstaff et al., 2005) if capital gains are untaxed.

over the next year and would therefore have a higher spread over the corresponding risk-free rate to compensate the buyer for the increased risk.

We evaluate two specifications presented in Table 5.2; the first includes the variables mentioned above as regressors, and the second one includes in addition a quadratic term of the EDF to allow for any non-linear effects of leverage on credit spreads (Levin et al., 2004)[19]. We conducted a sensitivity analysis by including terms of higher order to the baseline specification, but these additional terms were statistically insignificant and would have virtually no effect on any of our results. In addition, the regression includes industry (BICS level II industry group code) fixed effects to control for unobserved time-invariant differences across industries and credit rating (S&P) fixed effects to capture any additional information complementary to the EDF market-based measure of expected default.

Table 5.2. Credit Spreads and Expected Default Frequency

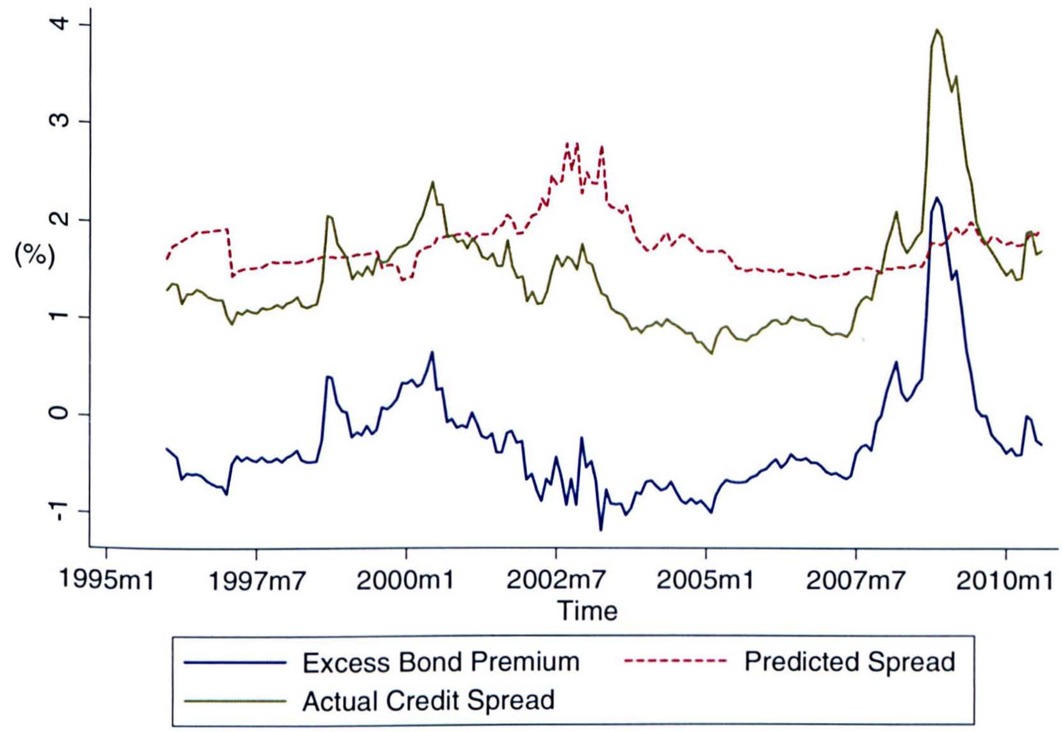
	OLS1	**OLS2**
VARIABLE	**Est.**	**Est.**
	(S.E.)	**(S.E.)**
Ln(1+*EDF*)	0.854***	1.299***
	(0.299)	(0.316)
$[\text{Ln}(1+EDF)]^2$		-5.648***
		(1.886)
Ln(1+*CPN*)	0.139***	0.130***
	(0.031)	(0.031)
Ln(*DUR*)	-0.00233	-0.00201
	(0.002)	(0.001)
Ln(*AOS*)	-0.00076	-0.00073
	(0.000)	(0.001)
Ln(*AGE*)	0.000598***	0.000606***
	(0.000)	(0.000)
Observations	7,639	7,639
R-squared	0.459	0.470
Industry Effects	0.000	0.000
Credit Rating	0.000	0.000

Sample period: January 1996 – August 2010
Standard errors clustered at country and time dimensions in parentheses *** p<0.01, ** p<0.05, * p<0.1

[19] The probability of default is a convex function of leverage – as leverage increases the probability of default increases, however after leverage increases up to a certain point default becomes almost certain.

Table 5.2 indicates that the EDF measure of default risk is a statistically significant predictor of credit spreads. The estimated coefficient on the EDF measure in specification OLS2 implies that an increase of 1% in the year-ahead EDF leads to a widening of credit spreads of about 1.3 percentage points. As evidenced by the R-squared, the credit spread model explains a considerable portion of the variation in the log of credit spreads (approximately 50%). Coupon and age enter significantly and have the expected sign on the estimated coefficient while the amount outstanding and duration are not statistically significant. The magnitude of these coefficients and hence their impact on the log of the credit spread is very small, almost zero with the exception of the log of the coupon rate. We base our prediction on specification number 2. In Figure 5.1, we show the actual credit spread index and its components as per the decomposition.

Figure 5.1. The Actual Credit Spread and its Components



Probably the most striking feature of this figure is the close resemblance between the actual credit spread and the EBP series which constitutes preliminary evidence that the EBP is the main source for most of the credit spread's predictive content documented in the previous chapter. This will be supported formally by the regression results presented in the next section. On the other hand, with the exception of the period between 2002 and 2003, the predicted spread series is quite flat. We can note sharp increases in the EBP prior to and during the economic downturns captured by our sample period (namely, the early 2000s and the 2007-2009 recessions). The EBP falls to a historically low level in early 2003 and remains comparatively low for the following years as well. In July 2007, corresponding with the start of the financial crisis, the EBP starts increasing rapidly up to just above 2 percentage points at the end of 2008-early 2009. We note a second surge shortly after in the context of market-wide concerns of the viability of major financial institutions and an emerging European sovereign debt crisis.

The EBP series is very similar to the one for the US in GZ's paper. The US EBP reaches a record high of 2.75 percentage points in October 2008. So, the magnitude of the EBP spike during the crisis was markedly higher in the US and was felt slightly later in Europe than in the US, suggestive of a "ripple" effect.

5.5 Results

In this section we investigate whether an important component of the variation in corporate credit spreads is due to fluctuations in the excess bond premium versus the predicted spread. In other words, we are interested in determining the extent to which the forecasting power of the credit spread index is due to the information content of the expected default component ($\hat{S}_{it}$) versus movements in the excess bond premium (EBP_{it}). As in the forecasting exercise of Chapter 4, we use the same specification (4.1) which is copied below. Our original credit spread index is now replaced by its two components - the predicted spread and the EBP in order to examine their predictive content for future economic activity.

$$\Delta^h Y_{it+h} = \alpha + \beta * \hat{S}_{it} + \gamma * EBP_{it} + \sum_{k=1}^{4} \delta_k * X_{itk} + u_i + e_{it+h}$$

$\Delta^h Y_{it+h}$ is the growth rate of the economic activity indicator in country *i* over *h* time period from *t* to *t+h*, namely manufacturing industrial production index, change in unemployment rate, employment stock, and real GDP

$\hat{S}_{it}$ and EBP_{it} denote the predicted credit spread and the EBP obtained as described in section 2 of this chapter, where *i* indexes the country, and *t* captures the time dimension

X_{itk} is a set of k = 4 control variables (i.e. the term spread, the real short-term interest rate, the consumer confidence, and economic sentiment indicators)

u_i represents the country-specific intercept, also called fixed effect or unobserved heterogeneity

α, β, γ and δ_k are the coefficients to be estimated

e_{it+h} is the idiosyncratic forecasting error, where $u_i + e_{it+h}$ is also known as the composite error.

The aim of this section is to investigate the marginal predictive content of the credit spread's components against various financial and leading indicators for four measures of economic activity (namely, manufacturing industrial production and unemployment rate at monthly frequency; and employment and real GDP at quarterly frequency) over the period between January 1996 and August 2010 for a panel of eight European countries.

As in Chapter 4, every table will present 4 panels, each panel containing 3 columns corresponding to the pooled OLS, Fixed Effects (FE) and Random Effects (RE) estimations. Panel 1 investigates the predictive content of the two components of the corporate bond index for economic growth. Panel 2[20] investigates the predictive content of two widely used financial indicators (the term spread and the real interest rate). Panel 3 investigates the additional predictive content of the credit spread's components above and beyond that of the term spread and the real interest rate. Panel 3 will be our reference panel in comparing our results with GZ's results for the US. Lastly, panel 4 investigates our alternative hypothesis, namely, whether the EBP contains predictive content over and above the sentiment indicators or whether the expectations of the private sector are incorporated in the EBP.

For ease of exposition, we start off by presenting the summary of the main regression results in Table 5.3 and then move on to discuss the full results tables in more detail. These tables (i.e. 5.4-5.15) are included in the Appendix.

[20] Note that Panel 2 in the current forecasting exercise is identical to Panel 2 of the previous forecasting exercise in Chapter 4 (as it does not include either the credit spread or its components), however, it is still reported for ease of comparison among panels.

Table 5.3. The Credit Spread Components and Economic Growth – Summary

Panel		(a)		(b)		
		Predicted Spread	EBP	Predicted Spread	EBP	Sentiment Indicators
Industrial Prod.	3-m	y	y	y	y	y
	12-m	-	y	-	y	y
	24-m	-	y	-	y	y
Unemployment	3-m	-	y	-	-	y
	12-m	-	y	y	y	y
	24-m	-	y	-	y	y
Employment	1-q	y	y	-	-	y
	4-q	y	y	-	y	y
	8-q	y	y	y	y	y
Real GDP	1-q	y	y	y	y	y
	4-q	-	y	-	y	y
	8-q	-	y	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level.

Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

Table 5.3 reports the significance of the predicted spread, the EBP and the sentiment indices at 10% level, where panel (a) corresponds to panel 3 and panel (b) corresponds to panel 4 in the detailed results tables presented in the Appendix. As in Chapter 4, the significance of the predicted spread and the EBP is based on the joint inference of the significance of fixed and random effects versus the pooled OLS model and also the significance of the robust Hausman test which compares the FE versus the RE models. The significance of the sentiment indicators is based on either the economic sentiment or the consumer confidence indicator being significant at 10% level. These criteria will apply to all summary tables throughout the following sections.

Panel (a) of Table 5.3 confirms our hypothesis that the EBP is a significant and robust predictor of the growth rate of future economic activity at all horizons and for all measures of economic activity while the predicted spread enters significantly in five specifications only.

Panel (b) indicates that the EBP has significant predictive content over and above the sentiment indicators for all measures of economic activity except for unemployment at 3-months and employment at 1-quarter. In these cases our second hypothesis is confirmed, namely, that the EBP's and predicted spread's information content is already captured by private sector expectations. Panel (b) also indicates that in five out of twelve specifications, the EBP accounts for the entire information content of the credit spread. We now proceed to discuss the results in more detail.

5.5.1 The Excess Bond Premium and Industrial Production

Table 5.4 investigates the predictive content of the credit spread's components for manufacturing industrial production growth at the 3-month horizon. According to our estimates, both the excess bond premium and the predicted spread contain significant independent explanatory power for industrial production growth at the 3-month horizon in most specifications. However, the absolute value of the estimated coefficients on the excess bond premium tends to be significantly larger than that of the coefficients associated with the predicted credit spread. For example, as indicated by panel 4, an increase of 100 basis points in the EBP leads to a drop of 8 percentage points in industrial production growth over the next 3 months, a magnitude that is approximately twice as high as that of the predicted spread. This finding indicates that the information content of credit spreads for economic activity is largely attributed to fluctuations in the non-default component of the credit spread (i.e. the EBP) as opposed to movements in expected default.

Table 5.5 investigates the predictive content of the credit spread's components for manufacturing industrial production growth at the 12-month horizon. According to our estimates, the predicted component of the credit spread has no forecasting power in panels 3 and 4 while it enters significantly but with an incorrect positive sign in panel 1 (which will also be the case in the next table at the 24-month horizon). The excess bond premium continues to provide economically and statistically significant signals regarding economic growth prospects in all specifications while the magnitude of its coefficients is considerably smaller compared to the previous table. The economic sentiment indicator enters significantly but with the opposite sign; this behaviour will be consistent also for unemployment at the 24-month horizon, and employment and real GDP at the 8-quarter horizon.

Table 5.6 investigates the predictive content of the credit spread's components for manufacturing industrial production growth at the 24-month horizon. The excess bond premium enters significantly in most specifications and also on top of the economic sentiment indicators. The coefficients on the EBP decrease further compared to the previous two tables suggesting that as the forecasting horizon increases the EBP has a smaller impact on future industrial production growth.

5.5.2 The Excess Bond Premium and Unemployment

Table 5.7 investigates the predictive content of the credit spread's components for unemployment growth at the 3-month horizon. This table indicates that the predicted spread has very limited marginal forecasting power while the EBP is highly statistically significant in panels 1 and 3. In panel 4 neither the predicted spread nor the EBP are significant which lends support to our second hypothesis that expectations of future unemployment captured by the sentiment indicators are already incorporated by the credit spread's components.

Table 5.8 and Table 5.9 investigate the predictive content of the credit spread's components for unemployment growth at the 12- and 24-month horizons, respectively. The EBP enters significantly in all specifications while the predicted component has almost no explanatory power, entering significantly only in the FE specification of Panel 4 of Table 5.8, but with the wrong sign. Thus, panels 3 and 4 of both tables confirm our hypothesis that the majority of the credit spread's information content is attributable to the EBP, and increases in the EBP imply significant future increases in the unemployment rate. The real interest rate and the term spread do not provide consistent signals for future economic prospects as their significance is very limited and completely vanishes at higher forecasting horizons; in some cases their coefficients carry the opposite signs.

Due to the standardization of the coefficient estimates in GZ's results, we can only refer to a qualitative comparison rather than a direct reference to the coefficients' magnitudes. Thus, in line with GZ, we also find that the EBP has a greater impact on future economic growth as suggested by the higher magnitude of its coefficients relative to that of the predicted spread. In addition, while GZ find that both components of the credit spread have significant information content across specifications, we find that the predicted spread enters significantly in many fewer specifications and, therefore its predictive content is much weaker being mostly dominated by the EBP.

5.5.3 The Excess Bond Premium and Employment

Table 5.10 investigates the predictive content of the credit spread's components for employment stock growth at the 1-quarter horizon. Both the EBP and the predicted spread are highly statistically significant in panels 1 and 3 confirming our first hypothesis. In panel 4 their information content is reflected by the sentiment indicators, which confirms our second hypothesis.

Tables 5.11 and 5.12 investigate the predictive content of the credit spread components for employment stock growth at the 4- and 8-quarter horizons. The EBP continues to give robust and consistent signals with regard to future economic performance across all specifications and on top of the sentiment indicators. The predicted spread enters significantly in most panels with the exception of panel 4 in Table 5.11, which is suggestive of the fact that the fundamentals as measured by the predicted component are already reflected by market sentiment. For example, as indicated by panel 4, an increase of 1% in the EBP leads to a drop of 0.4 percentage points in employment growth over the next 4 quarters.

While the real interest rate has very limited marginal information content at the three forecasting horizons, the term spread enters significantly in most specifications in Tables 5.10 and 5.11 but with the opposite sign. This behaviour is consistent with the results from Chapter 4.

5.5.4 The Excess Bond Premium and Real GDP

Table 5.13 investigates the predictive content of the credit spread's components for real GDP growth at the 1-quarter horizon. According to our estimates, both the EBP and the predicted credit spread contain significant independent explanatory power for real GDP growth in all panels. The absolute magnitude of the estimated coefficients on the EBP is larger than that of the coefficients associated with the predicted spread. For example, considering panel 4, an increase of 100 basis points in the EBP implies an approximately 2.4 percentage point drop in the real GDP growth over the next 1 quarter, while the same change for the predicted spread implies a drop of approximately 0.8 percentage points.

Tables 5.14 and 5.15 investigate the predictive content of the credit spread components for real GDP growth at the 4- and 8-quarter horizons. According to our estimates, the predicted spread has no marginal forecasting power, while the EBP remains highly statistically significant in all panels. This reinforces our finding that the EBP is a robust predictor of future economic activity. We also observe that the magnitude in absolute terms of the EBP coefficients decreases with the forecasting horizon.

Across these three tables, we can note that the term spread and the real interest rate do not provide consistent and robust information content across the economic activity indicators and horizons and their coefficients change sign in some cases. The consumer confidence indicator is generally significant while the economic sentiment indicator takes on the opposite sign at the 8-quarter horizon. This will also be the case for most economic activity indicators at the 24-month and 8-quarter horizons.

GZ report the results for real GDP only at the 4-quarter horizon for two different sample periods[21] (between 1973 and 2010, and between 1985 and 2010). Compared to their results, an increase of 100 basis points in the EBP leads to a drop in real GDP growth of approximately 2 percentage points over the following 4 quarters for the European countries, and to a 1.5 percentage point drop in US real GDP for the first sample period and to a 2 percentage point drop for the second period.

In summary, our results are highly consistent with GZ's results for the US in terms of significance and robustness of the EBP as a useful indicator for future economic activity across horizons, and also as the major driving force behind the credit spread's predictive content. Also, in terms of magnitudes, the coefficients on our EBP measure are in line with the US in the case of real GDP growth.

5.6 Robustness

In this section we provide a robustness analysis of our results. Firstly, we examine the predictive content of the predicted spread and the EBP for the detrended levels of economic

[21] They find a possible structural break in the coefficients associated with the real federal funds rate, and therefore split the sample in 1985 to examine the robustness of the results across the two sample periods.

activity indicators relative to their trend. Secondly, in line with the previous chapter we now construct the log [L], re-scaled [R], and weighted [W] versions of the predicted spread and the EBP in a similar manner. Thirdly, we examine to what extent the predicted spread and EBP's information content differs across the individual countries.

5.6.1 Detrended levels of economic activity and the credit spread index

In this section we investigate whether the EBP and the predicted spread are useful predictors of the level of economic activity relative to its trend *h* periods ahead.

As in Chapter 4, we fit a log-linear trend through industrial production, unemployment, employment and real output and obtain the detrended level of the respective economic activity measure, $\bar{Y}$, which then becomes the dependent variable in our baseline specification as follows:

$$\bar{Y}_{it+h} = \alpha + \beta * \hat{S}_{it} + \gamma * EBP_{it} + \sum_{k=1}^{4} \delta_k * X_{itk} + u_i + e_{it+h}$$

$\bar{Y}_{it+h}$ represents the detrended level of economic activity (industrial production, employment, unemployment rate and real GDP)

$\hat{S}_{it}$ denotes the predicted component of the credit spread index and EBP_{it} is the excess bond premium, where *i* indexes the country, and *t* captures the time dimension

X_{itk} is a set of k = 4 control variables (i.e., the term spread, the real short-term interest rate, the consumer confidence and economic sentiment indicators)

u_i represents the country-specific intercept, also called fixed effect or unobserved heterogeneity

α, , γ and δ_k are the coefficients to be estimated

e_{it+h} is the idiosyncratic forecasting error, where $u_i + e_{it+h}$ is also known as the composite error

h denotes the forecast horizon (i.e., h = 3, 12, and 24 months for monthly data; and h = 1, 4, and 8 quarters for quarterly data).

We repeat the same forecasting exercise as in the previous section for each of the four economic activity measures at all horizons. We start off by presenting the summary of our main regression results in Table 5.16[22]:

Table 5.16. The Credit Spread Components and De-trended Levels – Summary

Panel		(a)		(b)		
		Predicted Spread	EBP	Predicted Spread	EBP	Sentiment Indicators
Industrial Prod.	3-m	y	y	-	-	y
	12-m	-	y	-	y	-
	24-m	-	-	y	y	-
Unemployment	3-m	y	y	y	y	y
	12-m	y	-	y	y	y
	24-m	-	y	y	y	y
Employment	1-q	-	y	y	y	y
	4-q	-	y	-	y	y
	8-q	y	y	y	y	-
Real GDP	1-q	-	y	y	y	y
	4-q	-	y	-	y	y
	8-q	y	-	y	y	-

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

Panel (a) confirms our hypothesis that the EBP is a significant and robust predictor of the level of future economic activity relative to trend, with the exception of industrial production at 24-months, unemployment at 12-months and real GDP at 8-quarters, while the predicted spread has significant predictive content in five specifications only.

Panel (b) indicates that the EBP has significant predictive content over and above the sentiment indicators for all measures of economic activity except industrial production at 3-months. This specification confirms our second hypothesis that the EBP's information content is already captured by private sector expectations.

Compared to the original results that consider the growth rate in economic activity (in Tables 5.4-5.15), these results are consistent but slightly weaker for Panel (a) and stronger for Panel (b) in terms of the EBP's significance. The EBP enters significantly in nine out of twelve specifications as compared to all specifications as per Table 5.3. In panel (b), the EBP enters significantly in eleven specifications and the predicted spread in eight specifications as

[22] The full results tables are included in the Appendix (Tables 5.17-5.28).

compared to ten and five specifications, respectively as per Table 5.3. Also, in three specifications the EBP accounts for all of the credit spread's predictive content as the predicted spread is insignificant.

In terms of magnitude, the coefficients of the predicted spread and the EBP are generally higher for employment and real GDP, and mostly smaller for industrial production and unemployment compared to the original results (i.e. Tables 5.4-5.15). In addition, we can also note that in the current specifications using the detrended level of unemployment rate as the dependent variable, the predicted spread and the EBP coefficients carry a negative sign, which is contrary to economic intuition. This finding is actually consistent with the results from Chapter 4 that investigate the predictive content of the original credit spread for the detrended levels of unemployment at the 3- and 12-month horizons.

5.6.2 Re-defining the predicted spread and the EBP indices

Consistent with Chapter 4, we now construct the log [L], re-scaled [R] and weighted [W] versions of the predicted spread and the EBP in a similar way. Firstly, after regressing the credit spread at bond-level on bond-specific characteristics and the firm-specific probability of default as in Equation (5.1), we keep the fitted values in log form and then obtain the EBP as the difference between the original spread and the predicted spread. We denote this version of the predicted spread and the EBP as *version L*.

Secondly, we use version R of the actual credit spread constructed in Chapter 4 and now decompose it as described earlier in section 5.2. The newly obtained predicted spread and the EBP are denoted as *version R*.

Thirdly, when aggregating the predicted spread and the EBP into country-level indices we use a weighted average instead of a simple average, where the weights are given by the market values of the amount outstanding of the respective bond issues. We denote this *version W*.

In order to have a sense of how these three versions of the predicted spread and the EBP compare against their corresponding original series, we present the summary statistics in Table 5.29.

Table 5.29. Summary Statistics of the Credit Spread Components Variants

Variable	No. of obs.	Mean	Std. Dev.	Min.	Max.
Predicted Spread (original)	660	1.713	0.764	0.566	7.032
Predicted Spread (version L)	660	1.683	0.736	0.561	6.755
Predicted Spread (version R)	660	1.656	0.751	0.540	6.885
Predicted Spread (version W)	661	1.254	0.384	0.000	6.860
EBP (original)	660	-0.197	0.714	-2.057	2.733
EBP (version L)	660	-0.186	0.689	-1.981	2.663
EBP (version R)	660	-0.191	0.693	-2.031	2.633
EBP (version W)	661	-0.140	0.519	-1.434	2.352

We can note that the means of versions L and R of the predicted spread are slightly smaller than the original predicted spread series and very highly correlated amongst each other as shown by Figure 5.2. Version W of the predicted spread, on the other hand, is strikingly different from the other three versions. We can notice here a much clearer picture of the relatively small variation of the predicted spread over time and hence its potentially small contribution to the predictive content of the actual credit spread. The variants of the EBP are closely correlated as shown by the summary statistics and Figure 5.3.

Figure 5.2. The Predicted Spread and its Variants

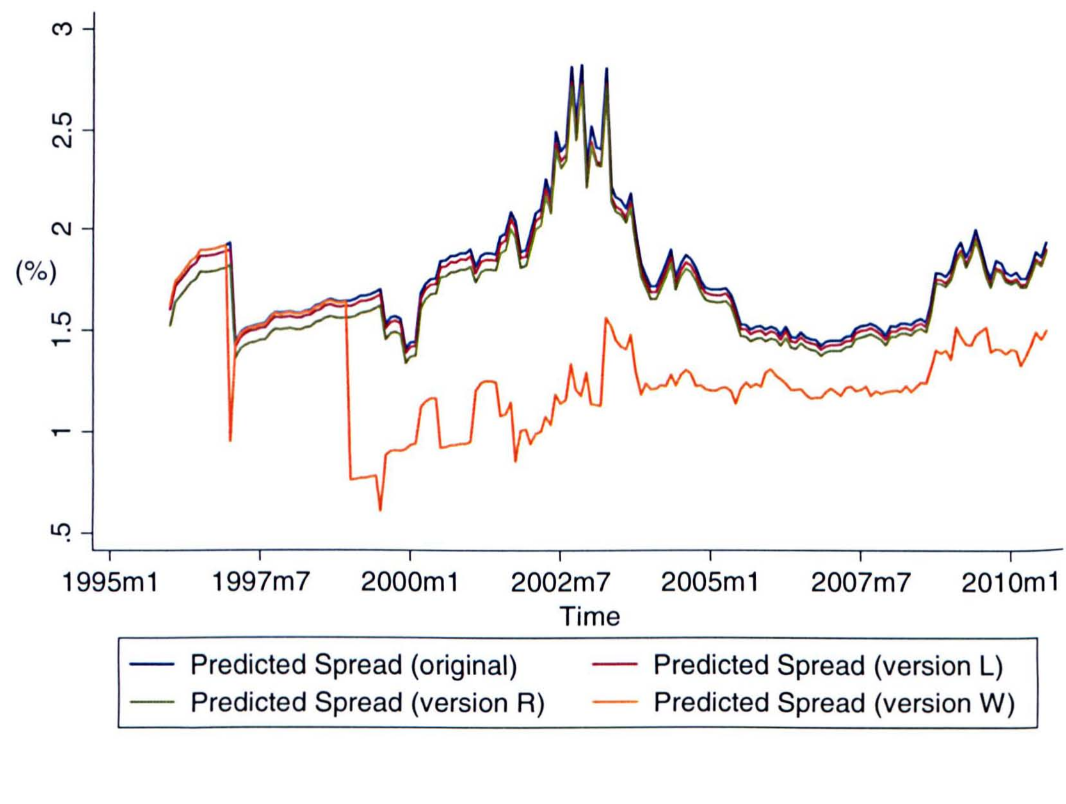
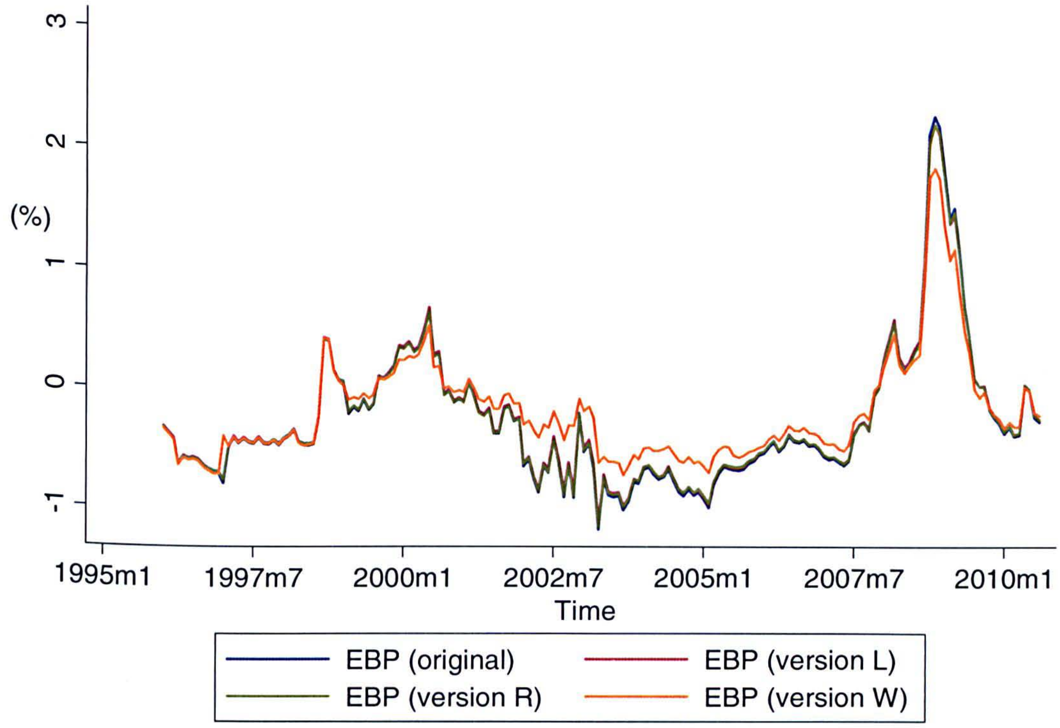


Figure 5.3. The EBP and its Variants



We now describe each of the three versions in more detail.

1. Version L

The decomposition is performed as before and is given by Equation (5.1) (copied below). Compared to the methodology described earlier in section 5.2, the difference here lies in how we further define the predicted spread and the EBP:

$$\ln(1 + S_{jit}[k]) = \alpha + \beta * \ln(1 + EDF_{jit}) + \gamma * \ln(Z_{jit}[k]) + \varepsilon_{jit}[k]$$

(5.1)

In section 5.2, we obtained the antilog point prediction for the credit spread which we then termed as the predicted spread as follows:

$$\hat{S}_{jit}[k] = \exp\left(\hat{\beta} \ln(1 + EDF_{jit}) + \hat{\gamma} \ln Z_{jit} + \frac{\hat{\sigma}^2}{2}\right) - 1$$

In this section for version L, however, we do not take the antilog in order to obtain the predicted value since our aim is to preserve the log version of the two components anyway.

Therefore, we obtain the (log) point prediction for the credit spread for bond k of firm j in country i at time t as follows:

$$\ln(1+\hat{S}^{l}_{jit}[k]) = \left(\hat{\beta}\ln(1+EDF_{jit}) + \hat{\gamma}\ln Z_{jit} + \frac{\hat{\sigma}^2}{2}\right)$$

where $\hat{\beta}$ and $\hat{\gamma}$ are the OLS estimates of the corresponding parameters and $\hat{\sigma}^2$ is the estimated variance of the disturbance term, $\varepsilon_{jit}[k]$.

To obtain the EBP, we subtract the predicted spread (version L) thus obtained from the original (log) credit spread expressed as in Equation 5.1:

$$\ln(1+EBP^{l}_{jit}[k]) = \ln(1+S_{jit}[k]) - \ln(1+\hat{S}^{l}_{jit}[k])$$

We present a summary of the main results in Table 5.30[23].

Table 5.30. The Credit Spread Components (version L) and Economic Growth – Summary

Panel		(a)		(b)		
		Predicted Spread	EBP	Predicted Spread	EBP	Sentiment Indicators
Industrial Prod.	3-m	y	y	y	y	y
	12-m	-	y	-	y	y
	24-m	-	y	-	y	y
Unemployment	3-m	-	y	-	-	y
	12-m	-	y	y	y	y
	24-m	-	y	-	y	y
Employment	1-q	y	y	-	-	y
	4-q	y	y	-	y	y
	8-q	y	y	y	y	y
Real GDP	1-q	y	y	y	y	y
	4-q	-	y	-	y	y
	8-q	-	y	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

Both panels (a) and (b) of Table 5.30 are highly consistent with the original results in terms of significance and magnitude of the predicted spread and the EBP coefficients. These results

[23] The full results tables are included in the Appendix (Tables 5.31-5.42).

also suggest that the EBP accounts for most of the credit spread's predictive content as indicated by the EBP coefficients' significance and higher magnitude relative to those of the predicted spread.

2. Version R

As a reminder, version R of the actual credit spread from Chapter 4 rescales the spread by its corresponding risk-free rate to obtain a pure measure of default risk, as below:

$$S_{jit}^{r}[k] = \frac{y_{jit}[k] - y_{jit}^{f}[k]}{1 + y_{jit}^{f}[k]}$$

Note this transformation is performed at bond level. With this measure of the credit spread, we now perform the decomposition using the same strategy described earlier in section 5.2. Equation (5.1) then becomes:

$$\ln\left(1 + S_{jit}^{r}[k]\right) = \alpha + \beta * \ln\left(1 + EDF_{jit}\right) + \gamma * \ln Z_{jit}[k] + \varepsilon_{jit}[k]$$

We present the estimates of the decomposition in Table 5.43 below. The magnitude and the significance of coefficients are highly consistent and as before, we base our prediction on specification OLS2. In this specification we can note that a 1% increase in the year-ahead EDF implies an approximately 1.3 percentage point increase in the credit spread (version R). The industry and credit rating effects are also highly statistically significant and the goodness-of-fit as measured by the R-squared is comparable to our original results.

Table 5.43. Credit Spread (version R) and Expected Default Frequency

	OLS1	OLS2
VARIABLE	Est. (S.E.)	Est. (S.E.)
Ln(1+*EDF*)	0.836***	1.278***
	(0.296)	(0.312)
[Ln(1+*EDF*)]^2		-5.608***
		(1.857)
Ln(1+*CPN*)	0.136***	0.127***
	(0.0300)	(0.0304)
Ln(*DUR*)	-0.00253	-0.00221
	(0.00154)	(0.00141)
Ln(*AOS*)	-0.000740	-0.000712
	(0.000475)	(0.000495)
Ln(*AGE*)	0.000584***	0.000592***
	(0.000160)	(0.000173)
Observations	7,633	7,633
R-squared	0.458	0.470
Industry Effects	0.000	0.000
Credit Rating	0.000	0.000

Sample period: January 1996 – August 2010
Standard errors clustered at country and time dimensions in parentheses *** p<0.01, ** p<0.05, * p<0.1

Version R of the predicted spread is obtained in a similar fashion to section 5.2 as the antilog point prediction of $S^r_{jit}[k]$, and version R of the EBP is obtained as the difference between version R of the credit spread and version R of the predicted spread.

$$EBP^r_{jit}[k] = S^r_{jit}[k] - \hat{S}^r_{jit}[k]$$

Thus, with the two components of spread R at hand we now turn to the forecasting estimations and we present the summary of the main results in Table 5.44[24].

[24] The full results tables are included in the Appendix (Tables 5.45-5.56).

Table 5.44. The Credit Spread Components (version R) and Economic Growth – Summary

Panel		(a)		(b)		
		Predicted Spread	EBP	Predicted Spread	EBP	Sentiment Indicators
Industrial Prod.	3-m	y	y	y	y	y
	12-m	-	y	-	y	y
	24-m	-	y	-	y	y
Unemployment	3-m	-	y	-	-	y
	12-m	-	y	y	y	y
	24-m	-	y	-	y	y
Employment	1-q	y	y	-	-	y
	4-q	y	y	-	y	y
	8-q	y	y	y	y	y
Real GDP	1-q	y	y	y	y	y
	4-q	-	y	-	y	y
	8-q	-	y	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

This table suggests once again that this transformation is highly consistent with our original results in terms of significance and magnitude of the predicted spread and EBP coefficients. The table is also supportive of the fact that the EBP is the major contributor for the credit spread's information content.

3. Version W

Lastly, we re-consider the way we aggregate the predicted spread and the EBP into country-level indices. Instead of using the simple average, we take a weighted mean of the predicted spread and the EBP, respectively in every period within each country. The weights represent the market value of the amount outstanding (deflated by CPI) of the respective bond issue. Note this transformation is performed at bond level.

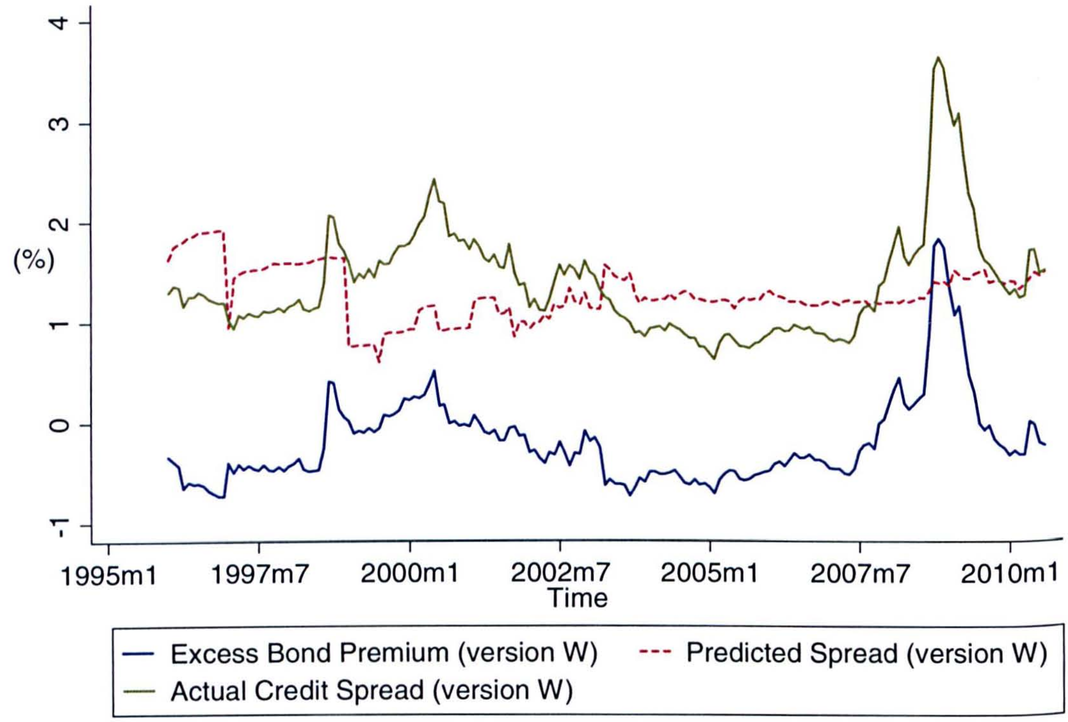
$$\hat{S}_{it}^{w} = \frac{\sum\left(\hat{S}_{jit[k]} * AOS_{jit[k]}\right)}{\sum AOS_{jit[k]}}$$

And

$$EBP_{it}^{w} = \frac{\sum\left(EBP_{jit[k]} * AOS_{jit[k]}\right)}{\sum AOS_{jit[k]}}$$

As this transformation yields a slightly different series for the predicted spread as compared to the other two versions and the original one, we show the credit spread (version W) against its two components in Figure 5.4 below:

Figure 5.4. The Credit Spread (version W) and its components



We can notice more easily from this figure the relatively low co-movement of the predicted spread series with the actual credit spread, while on the other hand, the EBP series is very closely related to movements in the actual credit spread.

We run the same forecasting exercise and present the summary of the main results in Table 5.57[25].

[25] The full results tables are included in the Appendix (Tables 5.58-5.69).

Table 5.57. The Credit Spread Components (version W) and Economic Growth – Summary

Panel		(a)		(b)		
		Predicted Spread	EBP	Predicted Spread	EBP	Sentiment Indicators
Industrial Prod.	3-m	y	y	y	y	y
	12-m	-	y	-	y	-
	24-m	-	y	-	y	y
Unemployment	3-m	-	y	-	-	y
	12-m	-	y	-	y	y
	24-m	-	y	-	y	y
Employment	1-q	-	y	-	-	y
	4-q	-	y	-	y	y
	8-q	-	y	-	y	y
Real GDP	1-q	-	y	-	y	y
	4-q	-	y	-	y	y
	8-q	-	y	-	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 3 and 4 of the regression tables in the Appendix, respectively.

This table indicates once again that our results are robust in terms of significance and magnitude of the two components. In addition, it emphasises much more clearly (compared to the previous versions) that the predicted spread has very limited information content (almost non-existent) compared to the EBP. The predicted spread now enters significantly in only one specification as compared to five specifications in the earlier results for versions L and R.

5.6.3 The Excess Bond Premium by Country

In this section we explore to what extent the excess bond premium's predictive content differs across the eight European economies by relaxing the assumption that the EBP's coefficient is the same for all countries. We do not study the coefficients of the predicted spread by country as we are mainly interested in the EBP's predictive content, as established by earlier results. Thus, we create interaction terms between the EBP index and a dummy variable for each of the eight countries as per our analysis in Chapter 4.

The results are presented in Tables 5.70-5.81 in the Appendix. Consistent with Chapter 4, each table will present two panels each containing three columns for the pooled OLS, FE and RE models, respectively. In panel 1 we investigate the EBP's predictive content in each country beyond that contained in the real interest rate and the term spread, while in panel 2 we investigate our second hypothesis whether the EBP adds significant additional predictive content on top of private sector expectations. All results are based on seven countries. We drop Spain from our analysis, firstly because it has only a small number of observations so that at longer horizons Spain is dropped automatically; and secondly, because the results including Spain suggest it is an outlier with positively signed coefficients on the credit spread.

Compared to the other countries, Spain has a very small sample, as Table 5.82 below indicates:

Table 5.82. Summary of Excess Bond Premium (%) by Country

Country	Mean	Std. Dev.	No. of Obs.
AT	-0.4038	1.0341	33
BE	-0.1431	0.3733	87
DE	-0.0700	0.8088	91
FR	-0.3748	0.7884	89
GB	-0.1717	0.6678	176
IT	-0.1609	0.6560	88
NL	-0.1960	0.8191	82
SP	-0.2801	0.1549	14
Total	-0.1968	0.7142	660

Sample period: January 1996 – August 2010

As in the previous chapter, we also test whether there are significant differences across countries and report the p-values. The null hypothesis is that the eight interactive terms are jointly equal to each other. If we consider panel 2 across all tables (which includes the sentiment indicators), the general finding is that we mostly reject the null hypothesis both for the whole sample, and when we consider only Euro-area countries excluding the UK (with the exception of real GDP at 1-quarter).

For the Euro-area core countries according to panel 2, we generally find a higher degree of homogeneity compared to the other country groups but also compared to our findings in Chapter 4. We cannot reject the null that the EBP coefficients are equal in the case of industrial production at 3- and 12-months, employment at 4-quarters, and real GDP at 1- and 4-quarters.

Tables 5.70-5.72 present the results for industrial production growth. The EBP enters significantly and negatively signed consistently for all countries at the 3- and 12-months horizons even after we control for market sentiment (with the one exception of UK in panel 1 at the 12-month horizon). At the 24-month horizon, the interaction terms for Belgium, Germany, UK and Italy are insignificant in panel 1, but they all regain significance in panel 2 with the exception of Germany.

Tables 5.73-5.75 present the results for the change in unemployment rate. The results seem consistent with the corresponding tables for the credit spread in Chapter 4. The EBP is statistically significant for all countries in panel 1 at all horizons, with the exception of Austria at the 24-month horizon. However, the EBP loses its predictive content in panel 2 for most countries at the 3- and 12-month horizons, but this improves at the 24-month horizon. We can also note that the EBP's coefficient for Germany at the 3-month horizon carries a wrong negative sign.

Tables 5.76-5.78 present the results for employment growth. For employment growth, we notice a similar pattern to unemployment, in that the EBP for each country is correctly signed and highly significant in panel 1 but loses most of its significance in panel 2 when the sentiment indicators are included at the 1- and 4-quarter horizons. At the 8-quarter horizon, however, the EBP enters significantly for all countries in both panels.

Tables 5.79-5.81 present the results for real GDP growth. The predictive ability of the EBP is highly significant and consistent for all countries in both panels and at all horizons (with the one exception of Germany at the 8-quarter horizon in panel 1). As we have already noted, the results for real GDP are in general the strongest and most robust overall.

5.7 Interpretation

Our results so far indicate that the Excess Bond Premium is the main source of the credit spread's predictive content as suggested by its significance and the higher magnitude of its coefficients relative to the predicted spread. In other words, this finding implies that the majority of the variation in credit spreads is not accounted for by fundamentals (i.e. the expected default) but by a residual component which can be interpreted as a risk premium in the bond market. This EBP reflects the risk attitudes of the major players in the corporate bond market, i.e. large institutional investors trading in these bonds such as investment banks, insurance companies and pension funds (GZ, 2012a).

In this section, we provide some informal evidence on the interpretation that the EBP represents a timely and useful gauge of credit supply conditions, or more widely, market tightness. Since the recent economic downturn originated in the financial sector, we collected Bloomberg data on the 5-year credit default swap (CDS) rate of the major European banks and the spread between London Interbank Offered rate (LIBOR) and the Overnight Indexed Swap (OIS). The former provides a measure of the health of the financial sector while the latter is a barometer of distress in money markets or the reluctance of banks to lend.

Figure 5.5. The Excess Bond Premium and the 5-year Credit Default Swap Rate

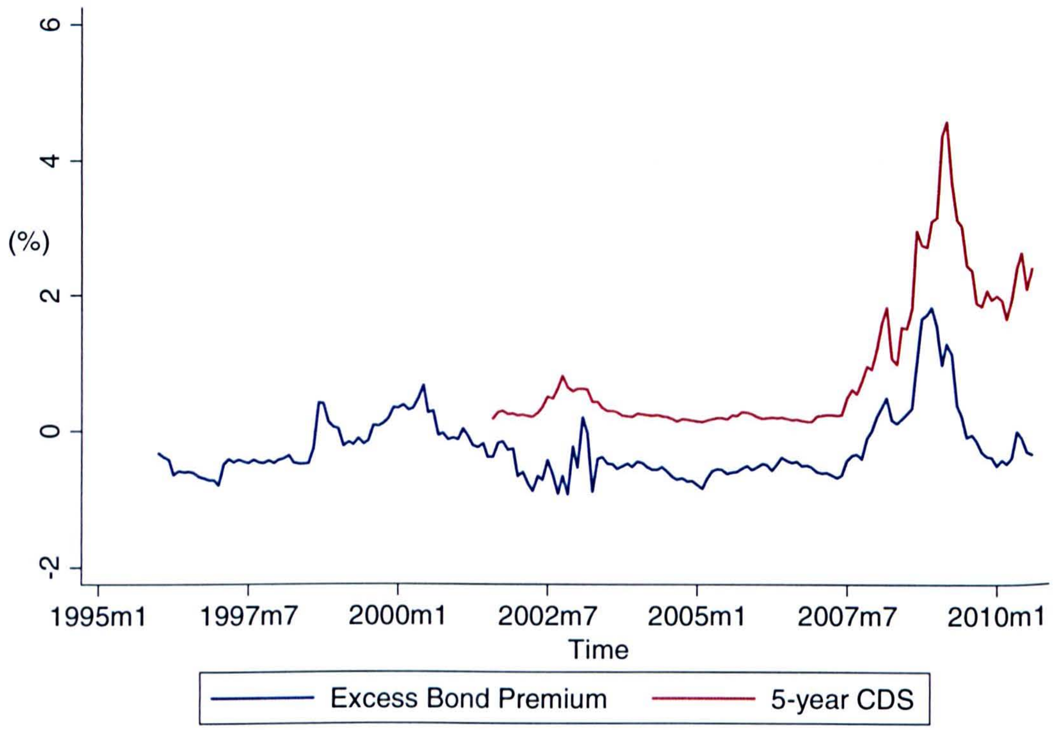


Figure 5.5 shows a striking degree of co-movement between the EBP series and the 5-year CDS rate. This result implies that credit supply conditions are closely related to the balance sheet conditions of major financial intermediaries as captured by the CDS rate. These major European banks are highly leveraged financial institutions and play a key role in the corporate cash market. Adrian and Shin (2010) point out that broker-dealers compared to

other institutional investors, manage their leverage in a pro-cyclical way, whereby expansions in their assets are associated with increases in leverage.

This result is also documented more formally by GZ (2012a) who show that an adverse shock to the equity valuations of US financial intermediaries—relative to the market return—leads to an immediate and persistent increase in their credit default swap (CDS) premia, a response which is almost perfectly mirrored by an increase in the EBP. This suggests that disruptions in the risk-bearing capacity or profitability of primary dealers can lead to a contraction in the supply of credit as reflected by the increase in the EBP.

Figure 5.6. The Excess Bond Premium and the LIBOR-OIS Spread

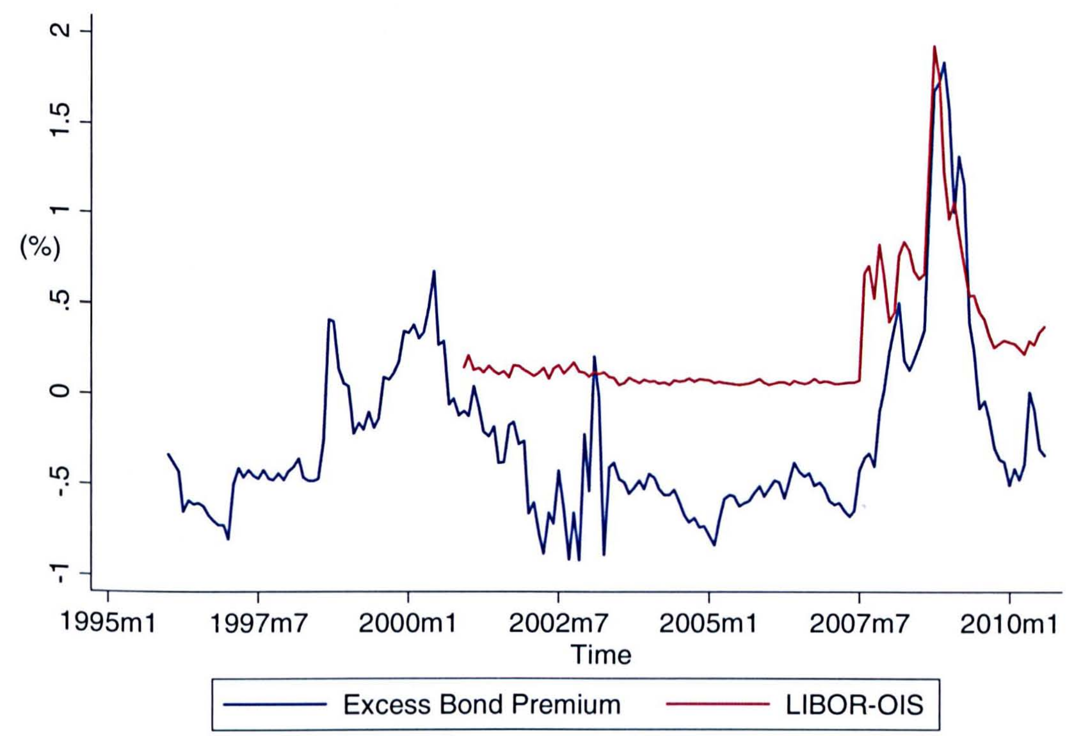


Figure 5.6 suggests a very strong co-movement between the LIBOR-OIS spread and the EBP series, especially from 2007 onwards. The LIBOR-OIS spread rises from around 10 basis points in the summer of 2007 to almost 200 basis points at the height of the financial turmoil.

Thus, these co-movements are consistent with the view that the EBP fluctuates very closely in response to changes in the risk-attitudes or reluctance of banks to lend (as measured by the LIBOR-OIS spread) and the risk-bearing capacity of these major financial intermediaries (as measured by the 5-year CDS rate). This emphasises the importance of risk capacity or risk attitudes of major financial intermediaries for the balance sheet channel affecting real economic activity in Europe.

5.8 Conclusion

In this chapter we decomposed the credit spread index into two parts: a component reflecting the available firm-specific information on default risk and a residual component – the excess bond premium. This residual component is a risk premium after we control for the bond's characteristics (such as duration, amount outstanding, age, and coupon rate) and the financial condition of the issuing company (as measured by the Expected Default Frequency). By performing the decomposition, our goal was to investigate which component accounted for most of the credit spread's predictive content. This was motivated in the context of the "credit spread puzzle" literature and the argument proposed by Philippon (2009), that in the presence of financial frictions the spread moves by more than what is implied by an increase in default risk.

Consistent with Chapter 4, we explored the predictive content of the two components for four different measures of economic activity (manufacturing industrial production, unemployment rate, employment stock and real GDP) at three forecasting horizons (3-, 12- and 24-months for monthly data; and 1-, 4-, and 8-quarters for quarterly data). We employed static panel data techniques also taking account of cross-country differences and controlling for other financial indicators (such as the term spread and the real interest rate) and market expectations of future economic activity (such as consumer confidence and economic sentiment).

According to our results, the EBP is a significant and robust predictor of future economic outcomes over and above the term spread and the real interest rate. We also found that most of the predictive power of the credit spread was accounted for by movements in the EBP. In the majority of cases, the EBP actually accounted for all of the predictive content of the actual credit spread index. When we controlled for market expectations, the EBP remained a robust predictor in most specifications with the exception of unemployment at the 3-months horizon and employment at the 1-quarter horizon. In these cases, the sentiment indicators were statistically significant while the predicted spread was insignificant, which confirmed our alternative hypothesis that the EBP's information content was entirely captured by market sentiment.

We also explored whether the information content of the EBP remained significant for the level of the four economic activity measures relative to their trend. In terms of our first hypothesis as tested in Panel (a) of Table 5.16, our findings were robust but slightly weaker compared to our original results in Table 5.3, as the EBP entered significantly in all but three specifications. When we controlled for market sentiment, the EBP remained significant in all but one specification which improved on our earlier exercise. We also found that the coefficients of the predicted spread and the EBP carried the wrong sign for unemployment at the 3- and 12-months horizons.

We further employed three variations in defining and aggregating the two components of the credit spread. In a similar fashion to versions L, R and W of the credit spread in Chapter 4, we constructed the log [L], re-scaled [R] and weighted [W] versions of the predicted spread and the EBP. We found that all three versions were highly robust and consistent with our original results, in that the EBP remained the major contributor to the credit spread's predictive content as evidenced by its significance and higher magnitude relative to that of the predicted spread. This was particularly evident for version W.

In addition, by taking advantage of the cross-country dimension of our dataset, we explored whether there were significant differences across countries in terms of the predictive content of the EBP. We generally rejected the null of equal coefficients across countries for the entire sample and the Euro-area with a few exceptions. For the Euro-area core countries, we found a higher degree of homogeneity with an important caveat, however, the bond sample size in the peripheral Euro countries is significantly smaller compared to the core countries

Lastly, we provided informal evidence of the strong link between the EBP and indicators measuring financial market tightness emphasising the importance of financial intermediary risk as a major component of market-wide bond premium.

Chapter 6 Credit Spreads and Factor Analysis – Evidence from Europe

6.1 Introduction

In this chapter we aim to evaluate whether the credit spread index and its components retain their predictive ability documented in the previous chapters after we control for the information content from a wide series of macroeconomic and financial variables, as summarized by principal factors. On the one hand, using only some specific leading indicators (the CLI, term spread, etc.) may be limiting as these indicators may reflect only specific shocks over certain periods of time. On the other hand, with an ever-increasing wealth of data, there are many candidate predictor series to choose from, and including too many predictors in the regression would substantially reduce the degrees of freedom.

A recent strand of literature has shown that the high-dimensionality problem can be simplified by modelling the co-variability of the series with a relatively small number of unobserved latent factors using factor models. This technique can be viewed as a particularly efficient way of summarizing the information contained in large datasets by extracting a few common factors which can then be used in subsequent regression models to predict key macroeconomic variables. This method is referred to as diffusion index forecasting and outperforms many competing methods because of the large amount of information that such models are able to summarise.

The main empirical applications for factor models are forecasting, instrumental variables and indexes of coincident and leading indicators.
Some papers' main focus is, for example, the forecasting performance of factor models. Eikemeir and Ziegler (2008) conduct a meta-study of 46 forecasting exercises in the literature in which dynamic factor models (DFM) are compared to a variety of benchmarks. They find mixed results, with factor forecasts outperforming other benchmarks in some instances but not others. However, there are differences across these studies, as some use different methods and benchmarks. Stock and Watson (2011) also compare factor forecasts from studies on the US data and find mixed results. They claim that for some series, such as real variables, factor forecasts improve on other small and large-dimensional competitors,

however, for other series, such as real wage growth, large-model forecasting approaches are more valuable compared to small models.

In the area of instrumental variables, Kapetanios and Marcellino (2010) and Bai and Ng (2010) constitute some of the most recent contributions. They consider the case where the endogenous regressors are linear functions of a set of unobserved factors, and show that the estimated factors are valid and efficient instruments for the endogenous regressors. The estimated factors also provide a superior GMM estimator with respect to the one based on the observed set of instruments.

Factor models also provide a statistical framework for the construction of real-time coincident and leading indices of economic activity based on very large datasets. For example, for the US, the Federal Reserve Bank of Chicago publishes the monthly Chicago Fed National Activity Index (CFNAI) where the index represents the single factor extracted by principal components from 85 monthly real activity variables. In Europe, the CEPR publishes the monthly EuroCOIN indicator, which represents the single factor extracted from a DFM estimated by weighted PCA from a panel of 1,000 economic variables of the Euro-zone countries (Altissimo et al., 2001).

We concentrate here on studies that use factor models to forecast real economic activity, which has generated a considerable amount of applied work in recent years. Dynamic factor-models have been successfully applied to forecasting in the US [Stock and Watson (1999, 2002a,b); Boivin and Ng (2006); Banerjee and Marcellino (2006); Faust et al. (2011); D'Agostino and Giannone (2012)], in the Euro-area [Angelini et al. (2001); Forni et al. (2003); Marcellino, Stock and Watson (2003); Banerjee, Marcellino and Masten (2005)], and various other studies at individual country-level in Europe.

6.1.1 U.S. studies

One of the most prominent works in the area of "approximate dynamic factor models" is Stock and Watson (1999, 2002a,b) (hereafter SW). They find substantial forecasting improvements for real variables using dynamic factors estimated by principal components analysis (PCA) for the US from a panel of up to 215[26] monthly macroeconomic variables between 1959 and 1998. Stock and Watson (2002a) find that the factor models offer substantial improvement and that nearly all of the forecasting gain comes from the first two or three factors and that once these factors are included, no additional gain is realized from including lagged values of the dependent variable. Stock and Watson (1999 and 2002b) find that only six factors are needed to forecast real activity, suggesting that a very small state vector may be necessary for forecasting macroeconomic time series.

Boivin and Ng (2006) compared forecasts using PCA and weighted PCA estimators of the factors for US monthly data comprising 147 macroeconomic series. They found that the weighted PCA forecasts tend to outperform unweighted PCA forecasts for real variables but not for nominal variables. They also show that the factors extracted from as few as 40 series seem to do no worse, and in many cases, better than the ones extracted from 147 series.

Banerjee and Marcellino (2006) evaluate three alternative approaches to information extraction from a large data set for forecasting, namely, the use of an automated model selection procedure, the adoption of a factor model, and of single-indicator-based forecast pooling for the US inflation and GDP growth. The starting point for their analysis is the univariate leading indicator model of Cecchetti et al. (2000), who show that, in forecasting inflation, simple autoregressions outperform forecasts using single indicators taken individually. Using quarterly data between 1975 and 2001, Banerjee and Marcellino (2006) show that all methods are systematically beaten by single indicator models, for both inflation and GDP forecasting. They finally compare the real-time forecasting performance of indicator based forecasts and conclude they outperform the autoregressions in about 80% of the cases for GDP growth.

More recently, Faust et al. (2011) use factor-based forecasts from a series of 15 different macroeconomic series and 110 financial indicators. The financial indicators include 20 bond portfolios of option-adjusted credit spreads constructed using a bottom-up approach as in GYZ (2009) and GZ (2012a), as well as average distance-to-defaults and excess equity returns for different default-risk portfolios. In addition, they consider the predictive content of the three Fama-French risk factors (i.e., the excess market return and the SMB and HML factors), a range of standard interest rates and interest rate spreads, implied volatilities from options

[26] They also use a balanced panel subset of 149 variables (SW, 1999 and 2002a).

quotes, commodity prices, and conventional credit spreads. Their aim is to compare various forecasting models against the Bayesian Model Averaging (BMA) model.

D'Agostino and Giannone (2012) present a detailed comparison between the static factor model of Stock and Watson (2002a,b) and the dynamic factor model of Forni, Hallin, Lippi, and Reichlin (2005) using a large panel of US macroeconomic variables between 1959 and 1999. Their main conclusion is that, for the dataset at hand, the two methods have a similar performance and produce highly collinear forecasts.

6.1.2 European studies

There is also a large body of applications of factor forecasts to European data. Angelini et al. (2001) use SW's diffusion index methodology to extract a set of factors from balanced and unbalanced panels of nominal variables for eleven countries of the Euro-zone between 1977 and 1999. They show that the resulting first factor is non-stationary and cointegrated with standard measures of euro area inflation, such as the HICP and the Private Consumption deflator. This supports the idea that the factor represents "a common trend of inflation" for the euro area.

Forni et al. (2003) simulate out-of-sample predictions of the Euro-area industrial production and consumer price indexes and also evaluate the role of financial variables in forecasting. They use a short monthly data set (1987:2–2001:3) with 447 time series for six countries in the Euro area. They use both PCA and weighted PCA forecasts, where the weighted principal components were constructed using the Forni et al. (2005) methodology. Their results indicate that multivariate methods outperform the univariate ones in forecasting inflation at all horizons, and industrial production at 1 and 3 month horizons, and also that financial variables are helpful in forecasting inflation, at all horizons, but not industrial production.

Marcellino, Stock and Watson (2003) compare several time-series methods for forecasting Euro-area industrial production, inflation and unemployment between 1982 and 1997. They use a very comprehensive dataset available from the OECD database at individual country level which we use to guide our choice of variables. They find that there are gains from forecasting these series at the country level, then pooling the forecasts, relative to forecasting at the aggregate level. This suggests that structural macroeconometric modelling of the Euro area is appropriately done at the country-specific level, rather than directly at the aggregate level. Also, they argue that forecasts based on estimated factors are more accurate than other multivariate methods, however, the most accurate forecasts are produced by pooling country-specific univariate autoregressions.

Banerjee, Marcellino and Masten (2005a) conduct a detailed evaluation of the properties of a set of variables as leading indicators for Euro-area inflation and GDP growth using both Euro-area and US macroeconomic variables. Following Banerjee and Marcellino (2006), they first compare the performance of single indicator models with pure autoregressions. They then employ a dynamic factor model, an automated model selection procedure, and forecast pooling procedures based on combining the forecasts derived from single indicators and groups of indicators. The main finding that emerges from their study is that both for inflation and GDP growth, ex-post, autoregressions are systematically outperformed by univariate leading indicator models, however, the best indicator changes over time.

There are also numerous studies at individual country level in Europe. Artis, Banerjee and Marcellino (2005) use data on 81 macroeconomic time-series for the UK economy, and find that 6 factors explain about 50% of the variability in the data which are then used for forecasting various real, nominal and financial variables. The factor forecasts are compared with alternative time series modelling techniques in terms of a mean square forecast error criterion; the authors also evaluate the empirical performance in the presence of structural breaks. They find that factor forecasts substantially improve the forecasting for real variables especially at longer horizons.

Bandt et al. (2007) assess the forecasting performance of a large set of economic indicators for the annual change in inflation one year ahead for France for the sample period between 1988 and 2001. They use individual equations, where single indicators are used to forecast inflation and introduced individually, and compare them against dynamic factor models. They find that the dynamic factor model exhibits good forecasting properties, especially when using blocks of homogeneous variables, in particular those derived from survey data and from employment/unemployment data.

Dreger and Schumacher (2002) and Schumacher (2007) conduct factor forecasts for the German economy and compare their performance against alternative univariate and multivariate models. Out-of-sample forecasts show that the prediction errors of the factor model are smaller than the errors of the rival models. However, these advantages are not statistically significant, and the efficiency gains of using large data sets seem to be limited.

In addition, Funke and Bandholz (2003) develop two new composite leading indicators of economic activity in Germany estimated using a dynamic factor modelling approach between 1971 and 2001 with and without regime switching and evaluate their ability to forecast business cycle developments. The historical performance of their indices suggests that the information they convey about the timing and the likelihood of a recession or expansion shows great promise and represents an improvement over the information offered by other "headline" survey measures (such as the Ifo Institute and the ZEW business climate measures or the R-word index).

Den Reijer (2005) applies large-scale factor models for the Dutch economy using quarterly data in order to generate forecasts of GDP growth rates. His main conclusion is that optimizing the size and composition of the data substantially improves the forecasting performance of the factor models. However, only the dynamic factor model systematically outperforms and encompasses the autoregressive benchmark model with an optimal subset of the data of around 110 series.

Camacho and Sancho (2003) use the Stock-Watson diffusion index methodology to show that forecasting prices and output with factors outperforms other standard alternative forecasting procedures in the case of Spain. In addition, Nieuwenhuyzen (2005), Duarte and Rua (2007), Schneider and Spitzner (2004) employ factor forecasts for Belgium, Portugal and Austria, respectively.

The method of using the estimated factors as leading indicators has also been proven to perform well for acceding countries. Banerjee, Marcellino and Masten (2005b) represents the first paper to employ dynamic factor models to model and forecast data from new Member States. They use quarterly data from the five new EU Member States between 1994 and 2002 and conclude that factor models dominate the traditional autoregressive forecast models roughly two-thirds of the time.

6.1.3 Contributions of this study

In the current chapter we exploit the information contained in a dataset of approximately 70 macroeconomic and financial variables using a factor model framework as in Stock and Watson (2002a,b). The estimated factors are further used in our forecasting specifications from previous chapters to examine the additional predictive content of the corporate bond spread index and the excess bond premium for future real economic activity in eight European countries between 2001 and 2011.

While the aim of this chapter is not to assess and compare the forecasting performance of factor models, we employ the factor model framework in order to reduce the dimensionality of our dataset of potentially relevant indicators for future economic activity. Our study contributes to the literature that investigates the predictive content of the corporate bond spreads for future economic activity by incorporating a much larger number of indicators as summarized by a few principal factors for European countries.

To the best of our knowledge, the only similar exercise is by Faust et al. (2011) for the US. We differ from Faust et al. (2011) in that they examine the predictive content of factors extracted from 125 US variables including credit spreads, and they repeat the exercise by excluding the 20 models that utilize the distance-to-default (DD) based portfolios of credit spreads from the pool of prediction models. According to the BMA predictive accuracy, they find that, in general, any forecasting gains over the univariate autoregression (which is a direct autoregression projecting y_{t+h} onto p lags of y_t) are due to the information content of the DD-based portfolio credit spreads. We, on the other hand, extract the principal factors from macroeconomic series excluding the corporate bond spread index and add these factors to our forecasting regression along with the corporate spread index (as in section 6.5), and in a separate exercise alongside its two components (as in section 6.6). To the best of our knowledge, this is the first study to assess the information content of both the spread and its components in such a framework.

Furthermore, in the second part of this chapter we re-examine the predictive content of the credit spread and its components by further disentangling the information content of the term structure of interest rates by including the level, slope and curvature factors (in line with the Nelson and Siegel, 1987 methodology) along with the principal factors extracted from our original dataset of 70 variables, which now excludes any relevant interest rates and spreads. The macro factors and the interest rate factors are extracted for each country in turn.

The rest of the chapter is organised as follows. Section 2 presents the outline of the factor model; Section 3 gives a description of the data used; Section 4 presents the factor estimation steps and the choice of the number of factors; Section 5 outlines the results from the predictive regressions with the country factors and the credit spread; Section 6 outlines the results for the excess bond premium and the predicted spread. Section 7 presents the new factor estimation excluding interest rates; Section 8 outlines the results from the predictive regressions with the new country factors (including the three factors summarizing the term structure of interest rates) and the credit spread; Section 9 presents the results for the excess bond premium; and Section 10 concludes.

6.2 The Factor Model

The idea underlying factor models is that the correlation among a large number of macroeconomic variables can be explained by a few common factors or shocks that drive the economy, an idea which can be traced back to Burns and Mitchell (1946) and Sargent and Sims (1977). Factor models efficiently reduce the dimension of large datasets by exploiting the co-movement among variables and extracting a few underlying factors. These estimated factors can then be used in forecasting equations to predict real activity, with the advantage of having only a few parameters to estimate.

A factor model takes the form:

$$X_t = \Lambda F_t + e_t$$

X_t is a N x 1 vector of observed time series

F_t is the vector of r unobserved static factors

Λ is the N x r matrix of factor loadings (i.e. the correlations between the variables and the factor)

e_t are the idiosyncratic disturbances

t= 1,...,T captures the time dimension.

The factor literature is vast and long-standing with Lawley and Maxwell (1971) being the first contribution on classical factor models (historically used by psychologists to examine correlations among a set of test scores) followed by the works of Sargent and Sims (1977) and Geweke (1977), who introduced the dynamic factor approach to macroeconomics. Factor models can be static, dynamic and approximate. A dynamic factor model can be "approximated" and estimated as a static factor model, in which both N and T dimensions are large and F_t and e_t are serially uncorrelated (or mutually orthogonal). Dynamic factor models exploit the information of both leads and lags of variables, whereas the static factors exploit only the contemporaneous variation which is summarized by a few factors, typically smaller than the number of variables (N).

Let us now describe in more detail the assumptions underlying the various factor models. The classical factor model assumes that the idiosyncratic disturbances are cross-sectionally independent and temporally iid, and both traditional static and dynamic factor models require that the cross-sectional dimension (N) is small. Connor and Korajczyk (1986) is the first contribution to note that with large N consistent estimation is possible by principal components, with $N \to \infty$ and T fixed, even when errors are allowed to be weakly cross-sectionally correlated.

Starting with Chamberlain (1983) and Chamberlain and Rothschild (1983), the underlying asymptotic theory (for large N and T) is formalized under weaker assumptions on the covariance of the idiosyncratic elements (approximate factor structure) and non-parametric estimators of common factors based on principal components are developed. Thus, as explained by Doz, Giannone and Reichlin (2008), some papers show that if $N \to \infty$ the principal components of the observations become increasingly collinear with the common factors and identification is achieved asymptotically for N [Forni, Hallin, Lippi, and Reichlin (2000); Forni and Lippi (2001)]. Furthermore, principal components are shown to be both N and T consistent estimators of the factor space [Bai (2003); Bai and Ng (2002); Forni, Hallin, Lippi, and Reichlin (2005); Stock and Watson (2002a,b); Forni, Giannone, Lippi, and Reichlin (2009)].

The prominent work of Stock and Watson (1999, 2002a,b) introduces dynamics into the serially correlated version of the approximate static factor model of Chamberlain and Rothschild (1983). Thus, assuming the common factors hit the variables only up to a finite lag, the dynamic factor model admits a static representation. This static representation has the advantage that the factors can be easily estimated by the principal components technique, which is an eigenvalue decomposition of the contemporaneous covariance matrix (Connor and Korajczyk, 1988). The estimated factors effectively summarize all contemporaneous cross-sectional information of the N variables by a few *r* common factors, where *r* is typically smaller than N. A condition that is worth mentioning for this result to hold is that the number of factors included in the estimated model has to be equal or larger than the true number (Stock and Watson, 2002a).

Thus, the *r* static factors can be consistently estimated by means of principal components. The principal components estimator can then be derived as the solution to the least squares problem:

$$\min_{F_1,\dots,F_T,\Lambda} V_r(\Lambda, F) \text{ , where}$$

$$V_r(\Lambda, F) = \frac{1}{NT}\sum_{t=1}^{T}(X_t - \Lambda F_t)'(X_t - \Lambda F_t) \quad (6.1)$$

$$\text{subject to} \qquad N^{-1}\Lambda'\Lambda = I_r.$$

The resulting estimator of the factors is the vector consisting of the first *r* principal components of X_t as in:

$$\hat{F}_t = \hat{\Lambda}'X_t$$

where $\hat{\Lambda}$ is the N x r matrix of the eigenvectors associated with the *r* largest eigenvalues of the sample covariance matrix, $\hat{\Sigma}_X$, where $\hat{\Sigma}_X = T^{-1}\sum_{t=1}^{T} X_t X'_t$.

For the purpose of this study, we will follow Stock and Watson (2002a) methodology as it is the most commonly used estimator for our empirical purposes. But there is also a generalized version of principal components which involves various weighting schemes of the principal components estimator (PC). The idea behind this is that if the idiosyncratic error variance is not proportional to the identity matrix then the solution to the least squares problem will involve a weighted version of (6.1), where the weighting matrix is the inverse of the idiosyncratic error variance matrix, Σ_e^{-1}. There have been three main versions of the generalized principal components estimation for the dynamic factor model. Firstly, Forni, Hallin, Lippi and Reichlin (2005) consider a two-step weighted principal components estimator, where the variance of the idiosyncratic component is obtained as the difference between the variances of X_t and the common component, and estimate the spectral density matrix of the common component. Boivin and Ng (2006) consider estimating the diagonal elements of the Σ_e by the sample variances of the residuals from a preliminary regression of X_t onto a relatively large number of factors estimated by principal components. Lastly, Stock and Watson (2005) propose a three-step approach to further adjust for the possible serial correlation in e_t, overlooked by the previous two approaches.

The other issue that arises with factor models is identification. As $\Lambda F_t = \Lambda RR^{-1}F_t$ for any non-singular matrix R, Stock and Watson (2002a) impose a normalization $(N^{-1}\Lambda'\Lambda) \rightarrow I_r$ in order to uniquely identify the factors. They restrict R to be an orthonormal diagonal matrix with elements ±1 and in other words, the model with factor loadings ΛR and factors $R^{-1}F_t$ is observationally equivalent to the model with factor loadings R and factors F_t. While this lack of identification is problematic when interpreting the factors in a structural way, it is unproblematic for forecasting, since the factors F_t and $R^{-1}F_t$ are equivalent summaries of the information in X_t.

Finally, Stock and Watson (2002a) also show that the principal component estimator remains consistent in the presence of changes in the factor loadings, $\Lambda = \Lambda_t$.

6.3 The Data

The selection of the variables included is guided mostly by Marcellino, Stock and Watson (2003). They construct and compare both country-specific and EMU-wide approximate dynamic factor models from OECD data to evaluate the homogeneity of the EMU countries, that is, whether the driving forces of their economies are common across countries. The vast majority of the series used in their exercise have been discontinued or redefined, therefore the current data set reflects the availability for the countries concerned. In addition, we also include various other variables guided by Faust et al. (2011), Hatzius et al. (2010), and De Bondt and Hahn (2010). All data have been extracted via Bloomberg.

There are 72 variables[27] at monthly frequency for each of the eight European countries in our sample, which include disaggregated production, sales, new orders, consumer and producer prices, monetary aggregates (M1, M2, M3), savings and credit to the economy, short and long-term interest rates, effective exchange rates, the exchange rate with the US dollar, international trade, components of the balance of payments and other miscellaneous variables such as the composite leading indicator (CLI), survey private sector expectations, stock and commodity price indices and spreads. We have not included variables closely related to industrial production, employment and unemployment data as these variables are used as dependent variables in our predictive regressions[28]. The dataset is at monthly frequency between 2001 and 2011. The dataset and the sample range have been chosen in order to have a fairly homogeneous set of variables across countries over a comparable period of time which corresponds with the time span over which the credit spread and the EBP are also available (the time periods are presented in Table 6.2 in Appendix A). Also, some variables with a short time span have been excluded in order to preserve the balanced nature of the panel when conducting factor analysis.

Following Marcellino, Stock and Watson (2003), the data have been processed in several stages. Firstly, the series were transformed to achieve stationarity by taking logs and differencing. We apply the same transformations to all variables of the same type. The exact transformation for each variable is reported in Appendix A. Prices have been treated as I(1) as most are stationary after first-differencing of logs. Secondly, all variables were tested for seasonality using the robust F-test for the significance of regressors in a regression of the variables on seasonal dummies. If seasonality was detected, we further tested using the X-12 ARIMA F-tests for seasonality. The final decision was based on the combined test for the presence of identifiable seasonality as part of the X-12 ARIMA output. We used the linear approximation of the X-12 ARIMA filter in EViews to adjust the respective series. Thirdly, all variables were standardized in order to have a zero mean and a unit variance[29].

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[27] The number of variables across countries varies due to some being available at quarterly frequency, some being excluded due to a short time span, and some not being available at all.

[28] Please refer to Table 6.1 in Appendix A for a complete list of the variables used.

[29] In a separate exercise we perform the factor analysis excluding outliers (defined as exceeding six times the interquartile range), however, there are no significant differences in the factor and regression results. We recorded outliers as missing data in cases where the number of outliers did not exceed 2-3 observations in order to preserve the balanced nature of the panel.

6.4 Factor Estimation

In this section we estimate and present the results of the country-specific factor models. As described earlier, we estimate the factors by static principal components (which model the *contemporaneous correlations in the dataset and summarize the informational content* by a few factors) in line with Stock and Watson (2002a).

The other issue that arises after estimating the factors is selecting the number of factors. There are several methods for determining the number of static factors, *r*, including a combination of a-priori knowledge, visual inspection of a scree plot and the use of information criteria.

One of the most common practices in selecting the number of factors is the scree plot introduced by Cattell (1966). The scree test involves plotting the eigenvalues in descending order of their magnitude against their factor numbers and determining where they level off. The scree criteria involves choosing the number of meaningful factors up to which there is a break between the steep slope and the levelling off portion, or the *scree* of the mountain.

Forni et al. (2000) provide some criteria for choosing the number of dynamic factors, *q*, on the basis of two properties[30]:

a. when the number of variables increases, the average over frequencies of the first *q* dynamic eigenvalues diverges, while the average of the *(q+1)-th* eigenvalue remains relatively stable;
b. there should be a big gap between the variance explained by the first *q* dynamic principal components and that explained by the *(q+1)-th* principal component (in our case chosen to be 10%).

SW (2002) suggest determining the number of factors by minimizing a particular information criterion but, from their simulation experiments, more standard criteria like the AIC or BIC perform better as explained by Marcellino et al. (2005). Bai and Ng (2002) further extend the study of information criteria to determine the optimal number of factors as a trade-off

[30] Although this refers to the choice of *dynamic* factors, we will use the second property as an additional guiding criterion in choosing the number of factors.

between the goodness-of-fit and overfitting. Thus, they extend the familiar AIC and BIC criteria by including the cross-section dimension N in the penalty function of overfitting.

Ahn and Horenstein (2009) build on the theoretical results of Bai and Ng (2002) and propose estimating r as the maximum of the ratio of two adjoining eigenvalues. Their Monte Carlo simulation results suggest this may be a promising new approach that sidesteps the arbitrary choice of the penalty factor in Bai and Ng (2002) information criterion approach, as explained by Stock and Watson (2010).

As there are no formal testing procedures available at the moment and the small-sample performance of all the criteria is still uncertain, we follow several approaches. Firstly, we use the scree plot as a visual diagnostic that indicates the fraction of total variance in the data explained or represented by each factor. The screeplots for each country are presented in Appendix B. Secondly, we also use the maximum of the ratio of two adjoining eigenvalues as per Ahn and Horenstein (2009). These two criteria suggest using 3 factors for all countries, with the exception of Belgium and the UK for which only 1 factor is selected, and Spain for which 4 factors are selected. Thirdly, as per the Forni et al. (2000) criterion, if the marginal explained variance is set at 10%, then only three factors are chosen consistently for all eight countries. Fourthly, both the AIC and BIC criteria suggest using a relatively large number of factors (between 21 and 48 for AIC and between 9 and 14 for BIC) which would not be feasible for our further estimation purposes. Table 6.3 in the Appendix A presents the number of factors selected by these criteria. Fifthly, the empirical literature for European countries and the US generally seems to agree on six static factors (Artis et al., 2005 and Marcellino, Stock and Watson, 2003 for UK and Euro-area; SW 1999 and 2002b for the US).

Lastly, when deciding on the number of factors we also consider the meaning of the factors by looking at the squared rotated factor loadings. For example, higher-order factors (i.e. from factor 9 onwards) either have very small loadings (in terms of magnitude we consider only loadings above 0.5) or they load on a variety of single variables or none at all, which makes it difficult to associate factors with the same variable or cluster of variables across countries. Therefore, for the purpose of our estimation we choose a maximum of 9 factors. For homogeneity we proceed with a minimum of 4 factors in all country models and we also consider models with 5, 7 and 9 factors for robustness. Appendix C presents the eigenvalues and the proportion of variance explained by each factor by country.

After estimation, we then rotate the factor solution using Varimax rotation in order to have a better interpretation of the factors. We use Varimax rotation as it is an orthogonal rotation, which assumes there is no relationship between the factors and maximizes the amount of variance that is uniquely accounted for by each factor while minimizing the number of variables with high loadings on each factor (Coughlin, 2005). Rotating the factors is an important step as it simplifies the interpretation of each factor. Because the transformation is orthogonal, the distribution of the observations is unchanged. We then predict the factors which will be further used in our predictive regression analysis. A factor then represents a linear combination of all of the original variables that were relevant in generating the new factor.

Factor loadings represent the correlation of each variable and the factor and therefore can be used to interpret the role each variable plays in defining each factor. Loadings indicate the degree of correspondence between the variable and the factor, with higher loadings making the variable representative of the factor. The squared factor loadings would then be equivalent to the R-Square in a regression analysis, indicating the percentage of the variance of the original variable that is explained by that factor. The squared loadings are presented graphically up to factor 4 in Appendix D. According to the squared rotated factor loadings the estimated factors appear to be related to relevant subsets of the variables and we therefore interpret the factors as per the clusters of variables. As mentioned earlier, we also guide the choice for the number of factors by selecting "interpretable" factors.

The 9 factor labels that we identify are as follows:

1. **An interest rate (IR) factor** loading mostly on: the nominal interest rate, LIBOR 3-months rate, and the Immediate Call Money Total Bank Rate.
2. **An exchange rate (ER) factor** loading mostly on: CPI Based Real Effective Exchange Rate, the Nominal and Real Effective Exchange Rate (narrow and broad).
3. **A real prices (P) factor** loading mostly on: PPI (energy, manufacturing and industrial), HICP and Brent Crude oil price.
4. **A market risk (MR) factor** loading mostly on: the S&P dividend yield, the VIX, the LIBOR-OIS spread, and the 5-year CDS rate of major European banks.
5. **A stock price index (SPI) factor** loading on: Wilshire, Eurostoxx, S&P500.
6. **A net trade (NT) factor** loading on: Intl. Trade Net Trade Value Total.
7. **A retail trade (RT) factor** loading on: retail trade value and volume.

8. **A CPI factor** loading on: CPI excluding food and energy.
9. **An M1 factor** loading on M1.

6.5 Prediction with Country Factors and the Credit Spread Index

In this section we evaluate the predictive content of the credit spread index for future real activity against the extracted factors from the previous section.
We use the same forecasting specification as in Chapter 4 now also incorporating up to nine principal factors[31]:

$$\Delta^h Y_{it+h} = \alpha + \beta * S_{it} + \sum_{k=1}^{9} \gamma_k * F_{itk} + u_i + e_{it+h}$$

$\Delta^h Y_{it+h}$ is the growth rate of the economic activity indicator, namely manufacturing industrial production index, unemployment rate, employment stock, and real GDP, where *h* denotes the forecast horizon, $i = \{1, \dots, 8\}$ indexes the country, and t captures the time dimension
S_{it} denotes the credit spread index (which will be replaced by its two components, the predicted spread and the EBP, in the following section)
F_{itk} is a set of k = 9 estimated principal factors
u_i represents the country-specific intercept, also called fixed effect or unobserved heterogeneity
α, β and γ_k are the coefficients to be estimated
e_{it+h} is the idiosyncratic forecasting error, where $u_i + e_{it+h}$ is also known as the composite error.

All regressions are based on panel data between September 2001 and May 2011 and are estimated by pooled OLS, Fixed Effects and Random Effects. The results are presented in Appendix E, Tables 6.4-6.15. We focus on the same forecasting horizons as before, and present the results for the models with 4, 5, 7 and 9 factors. The R-squared, the within R-squared and the overall R-squared are reported for the OLS, FE and RE models, respectively.

[31] In the following section, which investigates the predictive content of the credit spread's components, the credit spread will then be replaced by its two components as in Chapter 5, section 5.5.

Panel 1 of each table includes 6 country groups while Panels 2-4 include all 8 country groups. This is because France and the UK do not have a CPI factor.

We also provide below a summary of the expected signs for the coefficients of the nine selected factors with respect to economic growth:

IR	ER	P	MR	SPI	NT	RT	CPI	M1
-	-	-	-	+	+	+	-	+

Thus, we expect strong stock price performance, increased retail and net trade and higher money growth to be beneficial for future growth, whereas we expect higher interest and real exchange rates, higher growth in consumer and producer price indices and increased market risk to have a contractionary effect on future activity.

For ease of exposition, we start off by presenting the summary of the main regression results in Table 6.16 and then move on to discuss the full results tables (which are included in Appendix E) in more detail. The summary table reports the significance of the credit spread index at 10% level, where Panel (a) corresponds to Panel 2 with 7 factors while Panel (b) corresponds to Panel 4 with 4 factors in the detailed results tables presented in the Appendix. The significance of the credit spread is based on the joint inference of the *significance of fixed and random effects versus the pooled OLS model and also the* significance of the robust Hausman test.

Table 6.16. The Credit Spread Index and Economic Growth - Summary

		Credit Spread	
		(a)	(b)
Industrial Prod.	3-m	y	y
	12-m	y	y
	24-m	-	-
Unemployment	3-m	y	y
	12-m	y	y
	24-m	y	y
Employment	1-q	y	y
	4-q	y	y
	8-q	y	y
Real GDP	1-q	y	y
	4-q	y	y
	8-q	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 2 and 4 of the regression tables in the Appendix, respectively.

Table 6.16 indicates that the credit spread contains significant information content for all economic activity measures at all horizons over and above that summarized by the latent macro factors, with the exception of industrial production at the 24-month horizon.

6.5.1 The Credit Spread and Industrial Production

Tables 6.4-6.6 investigate the predictive content of the credit spread against the principal factors for manufacturing industrial production growth at the 3-, 12- and 24-month horizons. The coefficients on the credit spread are highly statistically significant and with the expected negative sign in all panels, with the exception of industrial production at 24-months. The magnitude of the coefficients decreases with the forecasting horizon and is comparable to that from the corresponding tables in Chapter 4. The R-squared improves slightly with the number of factors.

The IR factor enters significantly in all specifications with a consistent negative sign suggesting that an increase in the level of interest rates has a contractionary effect on future economic activity. The ER and MR factors enter significantly with a negative and positive sign, respectively mostly at the 24-month horizon. The P factor is positive and significant at the 3-month horizon, then changes sign at the 12-month horizon and is insignificant at the 24-month horizon. The SPI and NT factors enter significantly and with a positive sign at most horizons while the RT factor is mostly insignificant. The CPI and M1 factors enter significantly at the 12-month horizon only.

The fact that some factors change sign and some have coefficients with signs contrary to expectations may be because the interpretation of the factor groups is tentative since the factors are not uniquely identified but represent linear combinations of the underlying variables. Also, the composition of a factor may change across countries.

To quantify the impact of a change in the credit spread on future industrial production, we can note, as suggested by Panel 4, that an increase in the credit spread index of 100 basis points leads to an approximately 3.3 percentage point drop in industrial production growth over the next 12 months.

6.5.2 The Credit Spread and Unemployment Rate

Tables 6.7-6.9 investigate the predictive content of the credit spread against the principal factors for the change in unemployment rate at the 3-, 12- and 24-month horizons. The coefficients on the credit spread are highly statistically significant and with the expected positive sign in all panels at all horizons. The R-squared is comparable across Panels 2-4 suggesting that increasing the number of factors does not significantly improve the goodness of fit while the R-squared in Panel 1 is lower due to the drop in the number of observations.

The IR factor enters significantly and positively signed at the 12- and 24-month horizons while the ER factor remains significant with the correct sign at the 24-month horizon only. The MR factor enters significantly with a wrong negative sign mostly in the OLS and FE specifications at all horizons. The P factor enters positively and significantly only at the 24-month horizon suggesting an increase in inflation leads to higher unemployment. The RT and SPI factors enter significantly with the correct signs at the 3- and 12-month horizons, respectively. The NT and CPI factors are mostly insignificant while the M1 factor is significant only at the 12- and 24-month horizons.

To quantify the impact of a change in the credit spread index on unemployment, we can note from Panel 4 of Table 6.8 that an increase of 100 basis points in the spread leads to an increase of approximately 8 percentage points in the unemployment rate 12 months ahead. The magnitude of the credit spread coefficients decreases with the forecasting horizon and is comparable to that from the corresponding tables in Chapter 4.

6.5.3 The Credit Spread and Employment

Tables 6.10-6.12 investigate the predictive content of the credit spread against the principal factors for employment growth at the 1-, 4- and 8-quarter horizons. The coefficients on the credit spread are highly statistically significant and with the expected negative signs at all horizons. For employment growth at the 1- and 4-quarter horizons increasing the number of factors does not significantly improve the R-squared whereas at the 8-quarter horizon there is a slight improvement of about 6 percentage points between Panel 4 with 4 factors and Panel 1 with 9 factors.

The IR factor enters significantly at the 1- and 8-quarter horizons but it changes sign. The ER and MR factors behave consistently with previous findings and are significant in most specifications, especially at the 4- and 8-quarter horizons. The P factor is significant only at the 8-quarter horizon while the NT, RT and M1 factors are not statistically significant. The SPI factor behaves consistently carrying a positive sign and is statistically significant at the 4- and 8-quarter horizons while the CPI factor enters significantly only at 1- and 8-quarters.

To quantify the impact of a change in the credit spread on future employment growth, we can note that an increase in the credit spread index of 100 basis points is associated with an approximately 1 percentage point decrease in employment growth over the next one quarter (as indicated by all four panels).

6.5.4 The Credit Spread and Real GDP

Tables 6.13-6.15 investigate the predictive content of the credit spread against the principal factors for real GDP growth at the 1-, 4- and 8-quarter horizons. The coefficients on the credit spread are highly statistically significant and with the expected negative sign in all specifications. There is a general improvement in the goodness of fit with an increasing forecasting horizon and also with increasing the number of factors of up to 10 percentage points comparing, for example, Panels 1 and 4 at the 4- and 8-quarter horizons.

The IR and ER factors enter significantly with the correct sign in most specifications, especially at the 4- and 8-querter horizons. The MR factor enters significantly only in some FE specifications predominantly at the 4- and 8-quarter horizons, while the P factor is significant but changes signs between the 1-quarter results and the 8-quarter results. The SPI is mostly significant and correctly signed at the 4-quarter horizon while the NT, RT and CPI factors are mostly insignificant. The RT factor is significant in only one OLS specification at the 8-quarter horizon but of the wrong sign. The M1 factor is significant at the 4- and 8-quarter horizons.

Overall, we find that the credit spread index remains a significant and robust predictor of future economic activity and has additional explanatory power on top of a wider series of macro and financial time series as summarised by up to nine principal factors.

6.6 Prediction with Country Factors and the Excess Bond Premium

In this section we evaluate the predictive content of the predicted spread and the excess bond premium for future real activity against the estimated principal factors. All regressions are based on panel data between September 2001 and August 2010 and are estimated by pooled OLS, Fixed Effects and Random Effects. The results are presented in Appendix E, Tables 6.18-6.29. Panel 1 of each table includes 5 country groups while Panels 2-4 include 7 country groups. This is because in addition to not having a CPI factor for France and the UK, we also exclude Spain from our estimation since it is an outlier according to our findings in Chapter 5.

For ease of exposition, we start off by presenting the summary of the main regression results in Table 6.17 and then move on to discuss the full results tables in more detail. Panel (a) presents the results with 7 factors and Panel (b) with 4 factors.

Table 6.17. The Excess Bond Premium and Economic Growth - Summary

		(a)		(b)	
		Predicted Spread	EBP	Predicted Spread	EBP
Industrial Prod.	3-m	y	y	y	y
	12-m	-	y	-	y
	24-m	-	-	-	-
Unemployment	3-m	-	y	-	y
	12-m	-	y	-	y
	24-m	-	y	-	y
Employment	1-q	y	y	y	y
	4-q	y	y	y	y
	8-q	y	y	y	y
Real GDP	1-q	y	y	y	y
	4-q	y	y	y	y
	8-q	y	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 2 and 4 of the regression tables in the Appendix, respectively.

Table 6.17 indicates that the EBP contains significant information content for all economic activity measures at all horizons on top of that contained in the estimated factors, with the exception of industrial production at the 24-month horizon. The predicted spread enters significantly in seven out of twelve specifications, while in four out of twelve specifications, the EBP accounts for the entire information content in the credit spread. We now discuss the tables in more detail.

6.6.1 The EBP and Industrial Production

Tables 6.18-6.20 investigate the predictive content of the credit spread's components against the estimated principal factors for manufacturing industrial production growth at the 3-, 12- and 24-month horizons. The coefficients on the EBP are highly statistically significant and with the expected negative sign in all panels, except at the 24-month horizon. The magnitude of the coefficients decreases with the forecasting horizon, while the goodness-of-fit improves with the forecasting horizon, however increasing the number of factors does not significantly increase the R-squared.

The IR and SPI factors enter significantly with the correct signs in all specifications across all forecasting horizons. The ER factor is significant with the expected negative sign mostly at the 24-month horizon. The MR factor carries the correct negative sign and is significant only in some RE specifications at the 3-month horizon while the P factor is significant but changes signs between the 3- and 12-month horizons. The change of sign for the P factor is also consistent with the earlier results for the credit spread index at the same forecasting horizon. The NT and RT factors are mostly significant at the 3-month horizon. The CPI and M1 factors are mostly significant at the 12-month horizon.

To quantify the impact of a change in the EBP on future industrial production, we can note that an increase in the EBP of 100 basis points leads to an approximately 4 percentage point drop in industrial production growth over the next 12 months as indicated by panel 4.

6.6.2 The EBP and Unemployment Rate

Tables 6.21-6.23 investigate the predictive content of the credit spread's components against the principal factors for the change in the unemployment rate over the 3-, 12- and 24-month horizons. The coefficients on the EBP are highly statistically significant and with the expected positive sign in all specifications. The predicted spread component has very limited independent explanatory power with the EBP accounting for the entire predictive content of the credit spread, especially at the 24-month horizon. Increasing the number of factors does not have a substantial improvement in the R-squared at any horizon.

The IR and the M1 factors enter significantly with the correct sign mostly at the 24-month horizon, while at the 3-month horizon they take on opposite signs and are significant. The MR, SPI and NT factors are insignificant while the RT factor is significant only at the 3-month horizon and the ER factor is significant with the correct sign only in the first panel at the 24-month horizon. The CPI factor is mostly significant with the expected sign across horizons while the P factor is statistically significant in all specifications at the 24-month horizon and only in the RE specifications at the 12-month horizon.

6.6.3 The EBP and Employment

Tables 6.24-6.26 investigate the predictive content of the credit spread's components against the principal factors for employment growth at the 1-, 4- and 8-quarter horizons. The coefficients on the EBP are highly statistically significant and with the expected negative sign in all specifications while the predicted spread also has additional independent explanatory power. The R-squared improves significantly from the 1-quarter horizon to the 4- and 8-quarter horizons, however, increasing the number of factors does not improve the goodness-of-fit substantially.

The IR factor is statistically significant in most specifications across horizons and of the correct sign only at the 8-quarter horizon while at the 1- and 4-quarter horizons the coefficients are of opposite signs. This is consistent with previous results for the credit spread index at the 1-quarter horizon. Also, the RT factor is significant but carries the wrong sign in the first panels of all three tables. The ER factor enters significantly only at the 1- and 8-quarter horizons, while the NT factor is completely insignificant. The P, SPI and M1 factors are significant at the 4- and 8-quarter horizons, while the CPI factor is mostly insignificant. The MR factor is significant at the 1-quarter horizon with the correct negative sign suggesting higher market risk is detrimental for future growth.

6.6.4 The EBP and Real GDP

Tables 6.27-6.29 investigate the predictive content of the credit spread's components against the principal factors for real GDP growth at the 1-, 4- and 8-quarter horizons. The coefficients on the EBP are highly statistically significant and with the expected negative sign in all specifications. Both the EBP and the predicted spread contain independent explanatory power. There is a general improvement in the goodness of fit with an increasing number of factors especially at the 4- and 8- quarter horizons of up to 9 percentage points. The R-squared in these tables is overall higher than the R-squared in the models of comparable forecasting horizons for the other economic activity measures.

The IR, ER and M1 factors are significant with the correct signs mostly at the 4- and 8-quarter horizons. The P factor is mostly significant and correctly signed at the 4- and 8-quarter horizons, but changes sign to positive in the RE specification of panel 1 at the 1-quarter horizon, which is consistent with the behaviour for the credit spread index results. The SPI factor carries the correct sign and is significant mostly at the 4-quarter horizon. The RT factor is only significant in the first panel at the 8-quarter horizon but carries the wrong sign which is consistent with the results for employment growth above, and also the results for the credit spread index at the same horizon. The MR, NT and CPI factors are mostly insignificant.

In contrast to earlier results for the credit spread index (where the coefficient of the MR factor was incorrectly positively signed suggesting higher market risk is good for future growth), the MR factor now behaves according to expectations with the correct negative sign for industrial production at the 3-month horizon, employment at the 1-quarter horizon, and for real GDP at the 4- and 8-quarter horizons.

6.7 Factor Estimation Excluding Interest Rates

As a further extension to our factor estimation, in this section we use the methods developed by Nelson and Siegel (1987) and extended by Diebold and Li (2006), in order to extract the level, slope and curvature factors summarising the entire term structure of interest rates for each country *i* at time *t*. We exclude all the interest rates previously included in our factor estimation in section 5.4, and we now re-estimate the remaining macro and financial variables (excluding interest rates) in a similar fashion as described in sections 5.2 and 5.4. Thus, for the purpose of our predictive empirical exercise we will have three interest rate factors (level, slope and curvature) obtained using the Nelson-Siegel methodology, in addition to the factors extracted using principal components (Stock and Watson, 2002a,b) from our macro dataset excluding all interest rates, all at country-level.

More specifically, we exclude a total of eight variables from our initial dataset:

- the ECB Household Interest Rates on new loans for consumption (three series);
- the Immediate Call Money Bank Rate;
- the Generic Government Bond Yield at 10-year maturity;
- the Nominal interest rate;
- LIBOR 3-months;
- the term spread.

The differences between the Nelson-Siegel methodology and the standard factor estimation are that it restricts the number of factors to three, and it imposes some pre-determined factor loadings as in the model below:

$$y_{it}(\tau) = L_t + S_t\left(\frac{1 - e^{\lambda\tau}}{\lambda\tau}\right) + C_t\left(\frac{1 - e^{\lambda\tau}}{\lambda\tau} - e^{-\lambda\tau}\right) + v_{it}$$

$$y_{it}(\tau) = \Gamma_{yf}F_t + v_{it}$$

y_{it} is a vector of bond yields in country *i* at time *t* of maturities τ (ranging from 1 month to 10 years).

F_t is the vector of latent factors extracted from the yield curve interpreted as level (L), slope (S) and curvature (C), $F_t = (L_t, S_t, C_t)'$.

Γ_{yf} is the matrix of pre-determined loadings, $\Gamma_{yf} = \left(1, \left(\frac{1-e^{\lambda\tau}}{\lambda\tau}\right), \left(\frac{1-e^{\lambda\tau}}{\lambda\tau} - e^{-\lambda\tau}\right)\right)$.

v_{it} is the vector of idiosyncratic disturbances.

λ is a decay parameter of the factor loadings, chosen to be a constant 0.0609.

τ denotes the maturity of the bond.

Diebold and Li (2006) show that this functional form of the factor loadings implies that the three yield curve factors can be interpreted as the level, slope, and curvature of the yield curve. As explained by Coroneo et al. (2012), the loading equal to one on the first factor, for all maturities, implies that an increase in this factor increases all yields equally, shifting the *level* of the yield curve. The loadings on the second factor are high for short maturities, decaying to zero for the long ones. Thus, an increase in the second factor increases the *slope* of the yield curve. Loadings on the third factor are zero for the shortest and the longest maturities, reaching the maximum for medium maturities. Therefore, an increase in this factor increases the *curvature* of the yield curve. The parameter λ governs the exponential decay rate: a small value of λ can better fit the yield curve at long maturities, while large values can better fit it at short maturities. The value is chosen in line with the literature.

With the interest rate factors obtained and having excluded all interest rate variables from our original macro dataset, we now turn to the estimation of the new factors by principal components (Stock and Watson, 2002a,b).

In deciding the number of factors to retain we employ the same criteria as in the previous section. Firstly, we use the scree plots which are graphed for each country and presented in Appendix F. Visually, these plots suggest using between 2 and 4 factors. Secondly, the maximum of the ratio of two adjoining eigenvalues criterion suggests using only one factor for all countries, with the exception of Germany and Spain for which 2 and 4 factors are selected, respectively. The tables of eigenvalues for each country are presented in Appendix G. Thirdly, according to the marginal explained variance of 10% criterion, and then only two factors are chosen consistently for all eight countries. Fourthly, both the AIC and BIC criteria suggest using a relatively large number of factors (between 17 and 28 for AIC and between 10 and 14 for BIC) which would not be feasible for our further estimation purposes. Table 6.30 at the end of Appendix H presents the number of factors selected by these criteria.
Lastly, when deciding on the number of factors, as before, we also look at the squared rotated factor loadings in order to group the factors by clusters of variables. These are graphed for each country up to factor 4 in Appendix H.

We identify 8 factor groups which are consistent with our findings in section 6.4:

1. **An exchange rate (ER) factor** loading mostly on: CPI Based Real Effective Exchange Rate, the Nominal and Real Effective Exchange Rate (narrow and broad).
2. **A real prices (P) factor** loading mostly on: PPI (energy, manufacturing and industrial), HICP and Brent Crude oil price.

3. **A market risk (MR) factor** loading mostly on: the S&P dividend yield, the VIX, the LIBOR-OIS spread, and the 5-year CDS rate of major European banks.
4. **A stock price index (SPI) factor** loading on: Wilshire, Eurostoxx, S&P500.
5. **An M23 factor** loading on M2 and M3.
6. **A net trade (NT) factor** loading on: Intl. Trade Net Trade Value Total.
7. **A retail trade (RT) factor** loading on: retail trade value and volume.
8. **A CPI factor** loading on: CPI excluding food and energy.

Thus, for homogeneity we proceed with a minimum of 2 factors in all country models, and we also consider models with 4 and 6 factors for robustness, on top of the already estimated three interest rate factors. For table space considerations, we do not include the RT and CPI factors in our estimation, however, we find as part of a separate exercise that including these factors does not qualitatively change the results (as per Panels 2 and 3 in our results tables in Appendix I).

The start date of these newly estimated factors is the same as in Table 6.2 of Appendix A with the exception of Belgium (Feb-03).

We also provide below a summary of the expected signs for the coefficients of the eight selected factors with respect to economic growth:

ER	P	MR	SPI	M23	NT	RT	CPI
-	-	-	+	+	+	+	-

Thus, we expect strong stock price performance, increased retail and net trade and higher M2 and M3 growth to be beneficial for future economic activity, whereas we expect higher real exchange rates, higher growth in consumer and producer price indices and increased market risk to have a contractionary effect on future activity.

6.8 Prediction with New Country Factors and the Credit Spread

Our predictive specification is consistent with the previous sections, whereby in addition to the principal factor components we also now include the three interest rate factors.

All regressions are based on panel data between September 2001 and May 2011 and are estimated by pooled OLS, Fixed Effects and Random Effects. The results are presented in Appendix I, Tables 6.32-6.43. Panels 1-3 of each table include 6, 7 and 8 country groups, respectively. This is because Italy does not have an MR factor while the UK does not have an M23 factor. Panels 1-3 represent models with 6, 4 and 2 macro factors, respectively in addition to the three interest rate factors.

The summary Table 6.31 reports the significance of the credit spread index at 10% level, where Panel (a) corresponds to Panel 2 with 4 latent macro factors while Panel (b) corresponds to Panel 3 with 2 latent macro factors in the detailed results tables presented in the Appendix. We choose Panel 2 because in Panel 1, factor M23 makes the credit spread behave strangely and lose its significance as explained in more detail in the next section. The significance of the credit spread is based on the joint inference of the significance of fixed and random effects versus the pooled OLS model and also the significance of the robust Hausman test.

Table 6.31. The Credit Spread Index and Economic Growth - Summary

		Credit Spread	
		(a)	(b)
Industrial Prod.	3-m	y	y
	12-m	y	y
	24-m	y	y
Unemployment	3-m	y	y
	12-m	y	y
	24-m	y	y
Employment	1-q	y	y
	4-q	y	y
	8-q	y	y
Real GDP	1-q	y	y
	4-q	y	y
	8-q	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level.

Panels (a) and (b) refer to Panels 2 and 3 of the regression tables in the Appendix, respectively.

Both panels (a) and (b) of Table 6.31 confirm our hypothesis that the credit spread is a significant and robust predictor of the growth rate of economic activity on top of the interest rate factors and up to four latent macro factors at all horizons and for all measures of economic activity.

6.8.1 The Credit Spread and Industrial Production

Tables 6.32-6.34 investigate the predictive content of the credit spread against the level, slope and curvature of interest rates and the principal factors for manufacturing industrial production growth at the 3-, 12- and 24-month horizons. The coefficients on the credit spread are highly statistically significant and with the expected negative sign in all panels, with the exception of panel 1 at the 12- and 24-month horizons. The magnitude of the coefficients decreases with the forecasting horizon (with the exception of Panel 1) and is comparable to that from the corresponding tables in the previous section (including interest rates). The R-squared improves slightly with the number of factors and more notably with the forecasting horizon.

A notable result that will be consistent across the remaining tables at all horizons is that factor M23 (which loads primarily on M2 and M3 and appears only in panel 1) seems to make the credit spread behave strangely. The credit spread is either insignificant or significant with the wrong sign (in the case of unemployment) in Panel 1 throughout the tables. For the UK there is no M23 factor as M2 and M3 do not load very highly on any particular factor. However, if we include an M23 factor for the UK, where this factor loads mostly on M1 (50%) and less on M2 and M3 (around 23%) and redo the regressions including the UK, all the results for the credit spread are again in line with expectations (i.e. the credit spread is significant and with the correct sign in all first panels across tables).

Back to Tables 6.32-6.34, we can note the L (level) and S (slope) factors enter significantly with a negative sign across horizons while the C (curvature) factor is mostly significant at the 24-month horizon. A negative sign on the L factor suggests that an increase in the level of interest rates has a contractionary effect on future economic activity, however the signs on the S and C factors are contrary to intuition as one would expect a positive slope and curvature to be associated with positive economic growth. The coefficients on the L, S and C factors are also decreasing in magnitude with the L factor having the greatest impact in absolute terms on future industrial production growth.

The ER factor enters significantly with a positive sign in one specification at the 3-month horizon but then changes sign to negative at the 24-month horizon. The P factor is positive and significant at the 3-month horizon, it changes sign to significantly negative at the 12-

month horizon, and is then insignificant at the 24-month horizon. The MR and NT factors are statistically significant with a positive sign in most specifications across horizons. The M23 factor enters significantly only at the 24-month horizon, however with an incorrect negative sign. An increase in money supply should stimulate spending because it puts more money in the hands of consumers which makes them feel wealthier, and thus increase their spending. The SPI factor enters significantly and with a correct positive sign in Panel 1 at the 3- and 12-months horizons, however, at the 24-month horizon it changes signs between the FE specifications of Panel 1 and Panel 2.

As mentioned earlier, the fact that some factors change sign and some have coefficients with signs contrary to expectations may be because the interpretation of the factor groups is tentative and the composition of a factor is not exactly identical across countries.

To quantify the impact of a change in the credit spread on future industrial production, we can note, as suggested by panel 3, that an increase in the credit spread index of 100 basis points within a country leads to an approximately 4 percentage point drop in industrial production growth over the next 12 months (a magnitude that is comparable to the results including interest rates in section 6.5.1).

6.8.2 The Credit Spread and Unemployment

Tables 6.35-6.37 investigate the predictive content of the credit spread against the interest rate and principal factors for the change in unemployment rate at the 3-, 12- and 24-month horizons. The coefficients on the credit spread are highly statistically significant and with the expected positive sign at all horizons except Panel 1, where the credit spread either takes on a significant negative sign or is insignificant. Panel 1 of these tables is the only case where the credit spread enters significantly but with the wrong sign. The magnitudes are similar to our previous exercise and the R-squared does not considerably improve with the number of factors.

The L factor enters significantly with the correct sign at all horizons, while the S factor is mostly significant but with incorrect signs at the 12- and 24-month horizons. The C factor is mostly significant at the 3- and 24-month horizons. The ER and NT factors are insignificant, whereas the M23 factor enters significantly with the correct sign at all horizons. The MR and SPI factors are significant mostly at the 12- and 24-month horizons, while the P factor enters significantly and with a negative sign in Panel 1 at the 3- and 12-month horizons, however, in panels 2 and 3 at the 24-month horizon its coefficients change sign to positive.

6.8.3 The Credit Spread and Employment

Tables 6.38-6.40 investigate the predictive content of the credit spread against the interest rate and principal factors for employment growth at the 1-, 4- and 8-quarter horizons. The coefficients on the credit spread are highly statistically significant and with the expected negative sign in all specifications with the exception of Panel 1 across horizons where it is insignificant. There is a slight improvement in the goodness of fit with increasing the number of factors at larger horizons (of up to 4 percentage points comparing, for example, Panels 1 versus Panels 3 at the 4- and 8-quarter horizons).

The L factor enters significantly with the correct negative sign mostly at the 8-quarter horizon while the S factor enters significantly with the correct positive sign only at the 1-quarter horizon while at the 8-quarter horizon it changes signs to negative. The C factor is mostly insignificant. The ER factor is significant with the correct sign mostly at the 1-quarter horizon in Panels 2-3, whereas the P factor enters significantly with the correct negative sign only at the 8-quarter horizon in Panels 2-3. The M23 and SPI factors enter significantly with the correct positive signs mostly at the 4- and 8-quarter horizons. The MR factor is significant mostly at the 4-quarter horizon while the NT factor is insignificant at all horizons.

6.8.4 The Credit Spread and Real GDP

Tables 6.41-6.43 investigate the predictive content of the credit spread against the interest rate and principal factors for real GDP growth at the 1-, 4- and 8-quarter horizons. The coefficients on the credit spread are highly statistically significant and with the expected negative sign in all specifications, except Panel 1 at the 4- and 8-quarter horizons. There is a considerable improvement in the R-squared with an increasing forecasting horizon, of up to 13 percentage points between 1-quarter and 8-quarter horizons. The R-squared for real GDP is the highest compared to all other economic activity indicators; and increasing the number of factors also improves the goodness-of-fit.

The L factor is statistically significant with the correct sign mostly at the 4- and 8-quarter horizons. The S factor consistently carries the incorrect negative sign and is mostly significant at the 4- and 8-quarter horizons. The C factor enters significantly with the correct sign only in panel 2 at the 1-quarter horizon, while it changes sign and is significant at the 8-quarter horizon. The ER factor enters significantly with the correct sign in only two specifications at the 1- and 8-quarter horizons, respectively. The P factor is significant with the wrong sign at the 1-quarter horizon, and correctly changes sign to negative at the 8-quarter horizon in Panels 2 and 3, which is consistent with the tables for real GDP in the earlier results. The MR factor enters significantly mostly at the 1- and 4-quarter horizons. The SPI factor is significant with the correct sign mostly in panel 1 across horizons, however, at the 8-quarter horizon it changes signs in panel 2. The M23 factor is correctly signed and significant only at the 4-quarter horizon while the NT factor is insignificant.

Overall, we find that the credit spread index remains a significant and robust predictor of future economic activity and has significant explanatory power in addition to the term structure of interest rates as summarised by the L, S and C factors, and also the informational content extracted from a large dataset of macro and financial variables as summarised by the first six principal components.

6.9 Prediction with New Country Factors and the Excess Bond Premium

In this section we evaluate the predictive content of the predicted spread and the excess bond premium for future real activity against the estimated interest rate and latent macro factors, whereby the credit spread in our forecasting specification is now replaced by its two components.

As before, all regressions are based on panel data between September 2001 and August 2010 and are estimated by pooled OLS, Fixed Effects and Random Effects. The results are presented in Appendix I, Tables 6.45-6.56. Panels 1-3 of each table include 5, 6 and 7 country groups, respectively. This is because in addition to not having an MR factor for Italy and an M23 factor for the UK, we also exclude Spain from our estimation since it is an outlier according to our findings in Chapter 5. In addition to the three interest rate factors, Panels 1-3 include the 6, 4 and 2 latent factors, respectively.

For ease of exposition, we start off by presenting the summary of the main regression results in Table 6.44 and then move on to discuss the full results tables in more detail.

Table 6.44. The Excess Bond Premium and Economic Growth - Summary

		(a)		(b)	
		Predicted Spread	EBP	Predicted Spread	EBP
Industrial Prod.	3-m	y	y	y	y
	12-m	-	y	-	y
	24-m	y	y	-	y
Unemployment	3-m	-	y	-	y
	12-m	-	y	-	y
	24-m	-	y	-	y
Employment	1-q	y	y	y	y
	4-q	y	y	y	y
	8-q	-	y	y	y
Real GDP	1-q	y	y	y	y
	4-q	-	y	y	y
	8-q	y	y	y	y

Note: "y" indicates significance at 1%, 5% or 10% levels, "-" indicates no significance at 10% level. Panels (a) and (b) refer to Panels 2 and 3 of the regression tables in the Appendix, respectively.

Table 6.44 reports the significance of the predicted spread and the EBP at 10% level, where Panel (a) corresponds to Panel 2 with 4 macro factors and Panel (b) corresponds to Panel 3 with 3 macro factors from the full results tables presented in the Appendix.

Panel (a) of Table 6.44 confirms our hypothesis that the EBP is a significant and robust predictor of the growth rate of all four measures of economic activity on top of the four latent factors and three interest rate factors at all horizons. The predicted spread has independent explanatory power in six specifications only while the EBP accounts for the entire information content of the credit spread in six out of twelve specifications. Panel (b) indicates stronger results for both components. The EBP remains a robust predictor in all specifications while the predicted spread enters significantly in seven out of twelve specifications. We now proceed to discuss the results in more detail.

6.9.1 The EBP and Industrial Production

Tables 6.45-6.47 investigate the predictive content of the credit spread's components against the interest rate and principal factors for industrial production growth at the 3-, 12-

and 24-month horizons. The coefficients on the EBP are highly statistically significant with the exception of Panel 1 at the 12- and 24-month horizons, while the predicted spread contains only limited independent explanatory power, especially notable at the 12- and 24-month horizons.

The L, S and C factors behave consistently with previous results in Tables 6.32-6.34. The L factor is significant with the correct negative sign across horizons, while the S and C factors are significant but with the wrong sign (specifically, at the 12- and 24-month horizons for the C factor). The coefficient on the ER factor is significant and positive in the RE specifications at the 3-month horizon and then correctly changes sign to being negative in one specification at the 24-month horizon, while it loses significance at the 12-month horizon. The SPI factor coefficient has the reverse behaviour, being positive and significant in panel 1 at the 3- and 12- month horizons, but changes to negative in panel 2 at the 24-month horizon. The P factor is mostly significant and positively signed at the 3-month horizon but becomes negatively signed and significant at the 12-month horizon, consistent with Tables 6.32-6.33. The MR factor is positive and significant across horizons. The NT factor is mostly significant at the 3-month horizon, and the M23 factor is significant at the 3- and 24-month horizons but with an incorrect negative sign.

To quantify the impact of a change in the EBP on future industrial production, we can note that an increase in the EBP of 100 basis points leads to an approximately 4.4 percentage point drop in industrial production growth over the next 12 months as indicated by panel 3. This magnitude is comparable to the results including interest rates in section 6.6.1.

6.9.2 The EBP and Unemployment

Tables 6.48-6.50 investigate the predictive content of the credit spread's components against the interest rate and principal factors for the change in unemployment rate at the 3-, 12- and 24-month horizons. The coefficients on the EBP are highly statistically significant and with the expected positive sign in all specifications, with the exception of Panel 1 at all horizons. The predicted spread is insignificant with the exception of two cases in Panel 1 at the 12- and 24-month horizons when it enters significantly but with a wrong negative sign.

The L factor is significant and correctly signed at all horizons. The S factor has the correct negative sign in panel 1 at the 3-month horizon, but changes sign in some specifications at the 12- and 24-month horizons. The C factor is insignificant across horizons. The P factor enters significantly but changes sign from negative in panel 1 at the 3-month horizon to positive in panels 2 and 3 at the 24-month horizon. The SPI factor carries the correct sign and is significant in panel 1 across horizons, while the ER, MR, NT and M23 factors are largely insignificant.

6.9.3 The EBP and Employment

Tables 6.51-6.53 investigate the predictive content of the credit spread's components against the interest rate and principal factors for employment growth at the 1-, 4- and 8-quarter horizons. The coefficients on the EBP are highly statistically significant and with the expected negative sign in all specifications except Panel 1 at all horizons, while the predicted spread also contains independent additional explanatory power in most cases.
Both S and C factors enter significantly and correctly signed at the 1- and 4-quarter horizons, while the L factor is mostly significant and correctly signed at the 4- and 8-quarter horizons. The ER factor is significant with the correct sign mostly at the 1- and 4-quarter horizons while the P factor is mostly significant at the 4- and 8-quarter horizons. The NT and M23 factors are largely insignificant, and the MR and SPI factors are mostly significant in panel 1 at the 4- and 8-quarter horizons.

6.9.4 The EBP and Real GDP

Tables 6.54-6.56 investigate the predictive content of the credit spread's components against the interest rate and principal factors for real GDP growth at the 1-, 4- and 8-quarter horizons. These tables represent the first case among the other economic activity indicators where the EBP remains significant with the correct sign in Panel 1 at all horizons. The predicted spread is also significant in most panels. There is a further improvement in the R-squared compared to Tables 5.41-5.43 (which present the results for the credit spread index and real GDP) reaching approximately 78% at the 8-quarter horizon. There is generally a slight improvement in the R-squared with the number of factors, however, this is more notable at the 8-quarter horizon.

The L and S factors are significant mostly at the 4- and 8-quarter horizons, but while the L factor is correctly signed, the S factor is not. The C factor is significant at the 8-quarter horizon. The ER factor is mostly significant with the correct signs at the 1- and 4-quarter horizons and changes signs at the 8-quarter horizon (between panel 1 and 3), while the P factor changes sign from being positive at the 1-quarter horizon to being negative at the 4- and 8-quarter horizons. The MR factor is significant most predominantly at the 4- quarter horizon. The SPI enters significantly and positively signed mostly in panel 1 across horizons, while the NT and M23 are mostly insignificant.

The behaviour of the MR factor is notable in this second exercise (excluding interest rates) compared to the first exercise (including interest rates) as its coefficients consistently carry a positive sign throughout, counter-intuitively suggesting that an increase in market risk (as captured by the VIX, LIBOR-OIS and CDS spreads) has a positive impact on future economic activity.

To quantify the impact of a change in the EBP on future real GDP, we can note that an increase in the EBP of 100 basis points leads to an approximately 2.4 percentage point drop in real GDP growth over the next 12 months, as indicated by panel 3. This magnitude is similar to the results including interest rates from section 6.6.4 (panel 4).

Overall, these results indicate that the EBP is a robust predictor of economic activity on top of the interest rate and macro factors and the predicted spread, which in some cases loses its significance altogether, reinforcing once again our finding that the EBP is majorly accountable for the credit spread's predictive content.

6.10 Conclusion

In this chapter, we investigated whether the information content of the credit spread and its components remained significant in addition to the information content of a large dataset of macroeconomic and financial variables summarised by a few latent factors. Our empirical investigation consisted of two parts: in the first part, we used the entire dataset ranging between 58 and 69 variables to extract common factors; and in the second part, we separated out interest rate factors which we estimated using the Nelson-Siegel routine, and re-estimated our factor model via principal components excluding any interest rates from our original dataset.

Thus, in the first part of our exercise we estimated the factors for each country at monthly frequency within the approximate dynamic factor model framework proposed by Stock and Watson (2002a,b). Before extracting the factors, the data underwent several steps of transformation (such as seasonal adjustment and achieving stationarity by taking logs or first differencing).

According to the squared rotated factor loadings, the estimated factors appeared to be related to relevant subsets of variables and we therefore interpreted the factors as per the clusters of variables. We suggested: (1). An interest rate (IR) factor loading mostly on: the nominal interest rate, LIBOR 3-months rate, and the immediate call money total bank rate; (2). An exchange rate (ER) factor loading mostly on: CPI-based real effective exchange rate, the nominal and real effective exchange rate (narrow and broad); (3). A real prices (P) factor loading mostly on: PPI (energy, manufacturing and industrial), HICP and Brent crude oil price; (4). A market risk (MR) factor loading mostly on: the S&P dividend yield, the VIX, the LIBOR-OIS spread, and the 5-year CDS rate of major European banks; (5). A stock price index (SPI) factor loading on: Wilshire, Eurostoxx, S&P500; (6). A net trade (NT) factor loading on: international trade net value; (7). A retail trade (RT) factor loading on: retail trade value and volume; (8). A CPI factor loading on: CPI excluding food and energy; (9). An M1 factor loading on M1.

We then evaluated the predictive content of the credit spread index for future real activity against these extracted factors. We found that both the credit spread index and the EBP were significant and robust predictors of all four measures of economic activity at all horizons (with the exception of industrial production at the 24-month horizon) over and above the information contained in a large dataset summarized by up to 9 principal factors.

In the second part of our chapter, we separately summarized the term structure of interest rates by the level, slope and curvature factors as per the Nelson-Siegel methodology. This was performed for all available government bond yields (of constant maturity) with maturities ranging from 1 month to 10 years at monthly frequency for each country. We then re-estimated the macro factors from the newly reduced dataset excluding any relevant interest rates and spreads.

According to the squared rotated factor loadings, we found eight factors related to various clusters of variables as follows: (1). An exchange rate (ER) factor loading mostly on: CPI-based real effective exchange rate, the nominal and real effective exchange rate (narrow and broad); (2). A real prices (P) factor loading mostly on: PPI (energy, manufacturing and industrial), HICP and Brent crude oil price; (3). A market risk (MR) factor loading mostly on: the S&P dividend yield, the VIX, the LIBOR-OIS spread, and the 5-year CDS rate of major European banks; (4). A stock price index (SPI) factor loading on: Wilshire, Eurostoxx, S&P500; (5). An M23 factor loading on M2 and M3; (6). A net trade (NT) factor loading on: international trade net value; (7). A retail trade (RT) factor loading on: retail trade value and volume; (8). A CPI factor loading on: CPI excluding food and energy.

These factor groups were highly consistent with the clusters identified in the first part (which also served as a robustness check confirming that excluding or including various variables did not qualitatively change the factor solution), with the exception of factor M1 which was replaced by factor M23. This is not unreasonable, since factor M23 was, in the first part, mostly associated with the interest rates and the term spread clusters, and once we exclude these variables it then emerges as a more dominant standalone factor compared to M1.

We then re-evaluated the predictive content of the credit spread and its components incorporating the three interest rate factors and up to 6 principal macro factors. We found that both the credit spread and the EBP remained statistically significant with the correct signs for all economic activity measures at all horizons, with the exception of Panel 1 in most tables which included the M23 factor. We established that this factor caused the credit spread and the EBP to either lose significance or change signs (as was the case with unemployment). In the case of real GDP, the credit spread retained its significance and correct sign only at the 1-quarter horizon while the EBP remained significant at all horizons. We also confirmed our previous findings from Chapter 5 that the EBP was the main driver of the credit spread's predictive content.

Chapter 7 Conclusion

The main contribution of this thesis is an empirical assessment of the relationship between corporate bond spreads and future economic activity. It complements the work of Gilchrist and Zakrajšek (2012a) in the United States, and draws several new conclusions for the European Union.

Starting with the Bernanke, Gertler and Gilchrist's (1999) financial accelerator model, the theoretical and empirical extensions in the literature motivated by the recent financial crisis have shown that credit spreads are crucial for real economic activity. Movements in credit spreads can provide early signals for economic downturns and can be used to gauge the degree of strains in financial markets. As evidenced by recent events, a contraction in the credit supply causes asset values to fall, worsening the balance sheets of borrowers, which implies a widening in the yield spreads on private debt instruments before economic downturns, as lenders demand compensation for the expected increase in defaults. This in turn has a protracted negative impact on economic activity.

7.1 Summary of main contributions

The first contribution of the thesis is to put together the first European database of credit spreads. We construct the spread using the bottom-up approach of Gilchrist and Zakrajšek (2012a) ensuring our spread measure is free from mismatched characteristics between the two bonds being compared (for example, maturity, coupon payment structure, embedded options, currency of denomination, etc). This process was highly resource-intensive as it involved the construction of an artificial bond corresponding to each bond in our sample and using benchmark rates interpolated to match the term to maturity of each coupon payment at every pricing date available.

After the introduction and literature review, in the third chapter of the thesis we offered a descriptive analysis of the bond data and detailed the steps taken in selecting the bonds and constructing the spread index for the eight European countries. We also provided a descriptive analysis of the key variables used throughout the thesis. From the visual inspection of graphs, we found preliminary evidence of the cyclical properties of the credit spread index, rising before and during recessions.

In Chapter Four we provided the first European evidence to complement the US study recently published by Gilchrist and Zakrajšek (2012a) examining the predictive content of credit spreads for future economic activity. While Gilchrist and Zakrajšek's (2012a) study lends support to the usefulness of credit spreads as leading indicators, in addition to this, we also examined whether credit spreads in Europe had additional predictive content for economic activity on top of other leading indicators, such as private sector expectations. We further differentiated our work in several ways: (i) by considering alternative measures of the credit spread index, namely a log (L), re-scaled (R) and weighted (W) version; (ii) using the detrended level of economic activity in addition to the growth rate as the dependent variable; and (iii) we also explored the cross-country impact of the credit spread on future activity. We found that the credit spread was a robust predictor of future growth in economic activity in all specifications; when the sentiment indicators were also included, the credit spread entered significantly in 9 out of 12 specifications. For the level of economic activity relative to trend, the credit spread entered significantly in 10 out of 12 specifications, and in 5 specifications once the sentiment indicators were included. The results for the three versions of the credit spread (log, re-scaled and weighted) were highly consistent with each other and our initial results. The credit spread entered significantly in all specifications, and in 9 out of 12 specifications once the sentiment indicators were included. The results for version W of the spread were slightly stronger with significance in 10 out of 12 specifications.

A further line of enquiry in Chapter Five examined the source of the credit spread's predictive content by purging it of expected default, tax and liquidity premia to obtain a residual component termed the excess bond risk premium (EBP). In decomposing the credit spread, we employed the same methodology guided by Gilchrist and Zakrajšek (2012a) to obtain the first European measure of an excess bond premium, a market-wide indicator of financial market tightness. We conducted the rest of our empirical exercise in a similar fashion to the previous chapter, and we found that both components of the spread contained independent explanatory power; however, in 5 out of 12 specifications (once the sentiment indicators are included) the EBP accounted for all of the predictive content of the credit spread. We found that the EBP was a significant predictor of future growth in all specifications, and in 10 out of 12 specifications once the sentiment indicators are included. These results were highly consistent and robust to all three versions of the EBP (log, re-scaled and weighted). For the detrended levels of economic activity, the EBP entered significantly in 9 out of 12 specifications and, when the sentiment indicators were included, in 11 out of 12 specifications. Thus, our study also constitutes the first European evidence in support of Gilchrist and Zakrajšek's (2012a) findings for the US, namely that the predictive content of spreads is not driven by fundamentals, but by a common component in the pricing of corporate bonds that correlates highly with measures of tightness and risk attitudes in financial markets (namely, the LIBOR-OIS spread and the 5-yeard CDS spread of major European banks). This emphasises the importance of risk capacity or risk attitudes of major financial intermediaries for the balance sheet channel affecting real economic activity. Our study also sheds light on differences across the European economies in our sample by examining the predictive ability of the credit spread and the excess bond premium across the eight countries. Both in Chapter Four and Five, we found a high degree of heterogeneity across the European countries, and that mainly the Euro-area core countries had similarities in the predictive ability with an important caveat, however, the bond sample size in the peripheral Euro countries is significantly smaller compared to the core countries.

Finally, in Chapter Six we took a further step by expanding the set of explanatory variables to a wide variety of macroeconomic and financial variables potentially informative of future economic outcomes. To resolve the dimensionality problem, we employed factor models to summarize the information content of this large dataset by a few latent factors. We guided our choice of macroeconomic variables and methodology for estimating the factors by the works of Stock and Watson (2002a,b) and Marcellino, Stock and Watson (2003). We subsequently included the estimated factors along with our credit spread, and its components, respectively. We found some factors changed sign or were contrary to economic intuition, while others showed consistently strong statistical significance. As per our main objective, we found that both the credit spread and the EBP retained their predictive ability even when the latent factors were included (with the exception of industrial production at the 24-month horizon). We then dug deeper by disentangling the information content of the term structure of interest rates into three interest-rate factors (level, slope, curvature) and added them along with our re-estimated macro factors from the large dataset. Overall, our results for the predictive content of the credit spread and the EBP were consistent and robust. We noted that at the inclusion of the M23 factor, the credit spread and the EBP either lost their statistical significance or changed sign (this was the case only for unemployment). However, for real GDP growth, the credit spread retained its significance at the 1-quarter horizon only, while the EBP remained significant across horizons.

7.2 Areas for future research

We have made great progress in constructing a unique dataset of corporate bond spreads for Europe (by using the latest pioneering methodology of Gilchrist and Zakrajšek, 2012a), and in shedding light on the relationship between corporate bonds and excess bond premia as measures of financial market tightness and real economic activity in Europe. Equally, we believe that it would be interesting to use alternative measures for the credit spread, such as the credit default swap premium data. Daula (2011) performs a similar exercise to Gilchrist and Zakrajšek (2012a) with US CDS data and concludes that CDS improves the performance of a simple forecasting model, particularly for employment. The CDS data for European corporates were at the time of this study limited, with a relatively short time span. However, as new data emerge with time, this would constitute a very interesting exercise to perform. It would also be interesting to repeat the exercise by including other leading indicators, for example for the US.

We plan to extend the current work along three dimensions. Firstly, we plan to examine whether syndicated loan spreads would provide a useful gauge of future macroeconomic conditions. Syndicated loans are generally priced as an interest rate spread above a floating reference rate, such as the LIBOR. The spread will mainly depend on the credit risk of the borrower, the size and terms of the loan but also on the general demand and supply conditions in the market. Prior to or during an economic downturn we would expect the financial intermediaries' capacity to take on more risk to be reduced and the spreads to reflect the *anticipation of* a future worsening in macroeconomic conditions.

Secondly, given the high degree of interconnectedness among the European economies, we plan to extend our current framework by allowing the credit spread index in one country to be influenced by the spread in the other countries. This would require a different modelling approach, and also an extended EDF dataset from Moody's KMV (our current dataset ends in August 2010).

Thirdly, as the on-going European sovereign debt crisis has emphasised, signs of contagion across national euro-area sovereign markets would be indicative that market prices do not always properly reflect country-specific fundamentals, but are also driven by common factors which may be outside the control of the national policy makers concerned. Thus, we plan to extend our current work to the area of sovereign bonds in order to establish the relative importance of fundamentals and country-specific factors versus contagion or common factors in explaining the spreads between euro-area sovereign bonds. Within this framework, our measure of the credit spread index would serve as an indicator of credit risk within Europe.

In terms of the policy implications of our work, we believe that the European credit spread and the excess bond premium can serve as useful indicators to be included as part of the monetary policy maker's tools to gauge future economic activity. From this perspective, another interesting exercise to perform would be using real-time data to examine whether the relationship holds in real time.

Chapter 8 Appendix

Appendix for Chapter 3

Table 3.2. The meaning of S&P ratings

AAA	Extremely strong capacity to meet financial commitments. Highest Rating.
AA	Very strong capacity to meet financial commitments.
A	Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances.
BBB	Adequate capacity to meet financial commitments, but more subject to adverse economic conditions.
BBB-	Considered lowest investment grade by market participants.
BB+	Considered highest speculative grade by market participants.
BB	Less vulnerable in the near-term but faces major on-going uncertainties to adverse business, financial and economic conditions.
B	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments.
CCC	Currently vulnerable and dependent on favourable business, financial and economic conditions to meet financial commitments.
CC	Currently highly vulnerable.
C	Currently highly vulnerable obligations and other defined circumstances.
D	Payment default on financial commitments.
NR	This indicates that no rating has been requested, that there is insufficient information on which to base a rating, or that Standard & Poor's does not rate a particular obligation as a matter of policy.

Notes: The ratings from 'AA' to 'CCC' may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.

Source: Standard & Poor's

Table 3.7. Cross-correlations at 3-months horizon

	Credit Spread	Real Interest Rate	Term Spread	Consumer Confidence	Economic Sentiment	Unempl. 3-months	Ind. prod. 3-months
Credit Spread	1						
Real Interest Rate	-0.2141	1					
Term Spread	0.3995	-0.8350	1				
Consumer Confidence	-0.2796	0.3123	-0.3767	1			
Economic Sentiment	-0.5707	0.4059	-0.4975	0.6918	1		
Unempl. 3-months	0.3471	-0.1655	0.2215	-0.5429	-0.6057	1	
Ind. Prod. 3-months	-0.2980	-0.1728	0.0874	0.2996	0.2773	-0.3831	1

Note: 863 observations; No. of countries = 8

Table 3.8. Cross-correlations at 12-months horizon

	Credit Spread	Real Interest Rate	Term Spread	Consumer Confidence	Economic Sentiment	Unempl. 12-months	Ind. prod. 12-months
Credit Spread	1						
Real Interest Rate	-0.1654	1					
Term Spread	0.3731	-0.8139	1				
Consumer Confidence	-0.3278	0.3818	-0.4556	1			
Economic Sentiment	-0.6207	0.5038	-0.6087	0.7011	1		
Unempl. 12-months	0.3163	-0.0314	0.0686	-0.4661	-0.4369	1	
Ind. Prod. 12-months	-0.1131	-0.3850	0.3489	0.1220	-0.0377	-0.5692	1

Note: 791 observations; No. of countries = 8

Table 3.9. Cross-correlations at 24-months horizon

	Credit Spread	Real Interest Rate	Term Spread	Consumer Confidence	Economic Sentiment	Unempl. 24-months	Ind. prod. 24-months
Credit Spread	1						
Real Interest Rate	-0.0718	1					
Term Spread	0.3233	-0.7550	1				
Consumer Confidence	-0.3787	0.4050	-0.5193	1			
Economic Sentiment	-0.6516	0.4955	-0.6399	0.7245	1		
Unempl. 24-months	0.2279	0.0514	-0.0886	-0.2795	-0.1551	1	
Ind. Prod. 24-months	0.0396	-0.4236	0.4902	-0.1102	-0.3321	-0.6175	1

Note: 695 observations; No. of countries = 8

Table 3.10. Cross-correlations at 1-quarter horizon

	Credit Spread	Real Interest Rate	Term Spread	Consumer Confidence	Economic Sentiment	Employment 1-quarter	Real GDP 1-quarter
Credit Spread	1						
Real Interest Rate	-0.2164	1					
Term Spread	0.3940	-0.8295	1				
Consumer Confidence	-0.3074	0.3486	-0.4044	1			
Economic Sentiment	-0.5976	0.4514	-0.5313	0.6897	1		
Empl. 1-quarter	-0.4395	0.2610	-0.3909	0.5203	0.5902	1	
Real GDP 1-quarter	-0.2127	0.0207	-0.1647	0.2098	0.2784	0.2132	1

Note: 282 observations; No. of countries = 8

Table 3.11. Cross-correlations at 4-quarters horizon

	Credit Spread	Real Interest Rate	Term Spread	Consumer Confidence	Economic Sentiment	Employment 4-quarters	Real GDP 4-quarters
Credit Spread	1						
Real Interest Rate	-0.1529	1					
Term Spread	0.3531	-0.8075	1				
Consumer Confidence	-0.3556	0.4044	-0.4677	1			
Economic Sentiment	-0.6512	0.5338	-0.6264	0.6991	1		
Empl. 4-quarters	-0.5163	0.1519	-0.3136	0.5863	0.6008	1	
Real GDP 4-quarters	-0.1992	-0.0789	-0.1115	0.1951	0.2455	0.2849	1

Note: 258 observations; No. of countries = 8

Table 3.12. Cross-correlations at 8-quarters horizon

	Credit Spread	Real Interest Rate	Term Spread	Consumer Confidence	Economic Sentiment	Employment 8-quarters	Real GDP 8-quarters
Credit Spread	1						
Real Interest Rate	-0.0269	1					
Term Spread	0.2677	-0.7332	1				
Consumer Confidence	-0.3783	0.4016	-0.5120	1			
Economic Sentiment	-0.6491	0.4807	-0.6118	0.7250	1		
Empl. 8-quarters	-0.4696	-0.0567	-0.0916	0.4556	0.3898	1	
Real GDP 8-quarters	-0.1259	-0.1974	-0.0315	0.1312	0.1019	0.2953	1

Note: 226 observations; No. of countries = 8

Appendix for Chapter 4

Table 4.3. The Credit Spread Index and Industrial Production Growth at 3-month horizon

Industrial production 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.756	-2.360	-2.208	0.762	0.710	0.626	1.641**	1.289	1.366*
				(1.741)	(2.159)	(2.355)	(0.784)	(0.918)	(0.989)	(0.767)	(0.852)	(0.821)
Real Interest Rate				-2.327*	-3.051*	-2.870	-1.294*	-1.877*	-1.704	-1.506**	-1.949*	-1.850
				(1.185)	(1.773)	(2.610)	(0.704)	(1.103)	(1.738)	(0.672)	(1.081)	(1.738)
Credit Spread	-3.840*	-4.653*	-4.439***				-4.766**	-6.067**	-5.376***	-3.634**	-4.263**	-4.007***
	(2.311)	(2.555)	(0.826)				(2.233)	(2.445)	(1.017)	(1.630)	(1.868)	(1.047)
Consumer Confidence										0.294***	0.285***	0.295***
										(0.0638)	(0.0938)	(0.106)
Economic Sentiment										0.0967	0.0563	0.0669
										(0.111)	(0.137)	(0.130)
Observations	864	864	864	864	864	864	864	864	864	864	864	864
R-squared	0.089	0.115	0.089	0.040	0.050	0.040	0.150	0.201	0.149	0.249	0.241	0.247
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.006	0.029
Robust Hausman			0.058			0.002			0.000			0.285

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.4. The Credit Spread Index and Industrial Production Growth at 12-month horizon

Industrial production 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.664	0.0381	0.109	1.785	1.472	1.474**	2.285	1.734*	1.788***
				(1.305)	(1.187)	(1.446)	(1.374)	(0.976)	(0.661)	(1.410)	(0.984)	(0.635)
Real Interest Rate				-1.427	-2.202*	-2.116	-0.936	-1.632*	-1.581	-1.014	-1.534*	-1.491
				(0.965)	(1.244)	(2.167)	(0.761)	(0.876)	(1.697)	(0.789)	(0.900)	(1.940)
Credit Spread	-0.947	-1.240	-1.197**				-2.104	-2.822**	-2.708***	-1.959	-2.479**	-2.375***
	(1.393)	(1.489)	(0.604)				(1.360)	(1.343)	(0.533)	(1.217)	(1.229)	(0.797)
Consumer Confidence										0.253***	0.199**	0.215*
										(0.0624)	(0.0768)	(0.117)
Economic Sentiment										-0.0852	-0.101	-0.104
										(0.101)	(0.111)	(0.158)
Observations	792	792	792	792	792	792	792	792	792	792	792	792
R-squared	0.013	0.020	0.013	0.152	0.186	0.149	0.203	0.268	0.199	0.285	0.284	0.276
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.320			0.422			0.109			0.786

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.5. The Credit Spread Index and Industrial Production Growth at 24-month horizon

Industrial production 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.948*	1.531	1.540***	2.314*	1.997*	2.002***	2.246*	1.518*	1.564***
				(1.139)	(0.927)	(0.308)	(1.229)	(1.024)	(0.190)	(1.146)	(0.822)	(0.356)
Real Interest Rate				-0.431	-0.957	-0.945	-0.267	-0.772	-0.763	-0.0135	-0.487	-0.465
				(0.795)	(0.585)	(1.228)	(0.710)	(0.473)	(1.006)	(0.715)	(0.500)	(1.144)
Credit Spread	0.233	0.250	0.248				-0.683	-0.895*	-0.887**	-1.694**	-2.211***	-2.151***
	(0.917)	(1.004)	(0.360)				(0.505)	(0.540)	(0.432)	(0.673)	(0.827)	(0.357)
Consumer Confidence										0.173***	0.0105	0.0304
										(0.0371)	(0.0529)	(0.114)
Economic Sentiment										-0.243***	-0.188**	-0.197*
										(0.0852)	(0.0897)	(0.102)
Observations	696	696	696	696	696	696	696	696	696	696	696	696
R-squared	0.002	0.002	0.002	0.247	0.310	0.240	0.258	0.331	0.251	0.340	0.379	0.279
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.964			0.969			0.813			0.701

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.6. The Credit Spread Index and Unemployment Rate at 3-month horizon

Unemployment 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				4.080**	4.105**	4.097	0.659	-0.168	-0.0269	-1.583*	-2.274***	-1.998
				(1.920)	(2.055)	(4.556)	(1.190)	(1.171)	(3.300)	(0.830)	(0.847)	(2.601)
Real Interest Rate				0.713	0.703	0.700	-0.688	-0.922	-0.878	0.237	-0.424	-0.189
				(1.228)	(1.511)	(3.877)	(0.869)	(1.065)	(2.880)	(0.595)	(0.755)	(2.343)
Credit Spread	7.107***	8.805***	8.538***				6.474***	8.449***	8.123***	1.336	0.771	1.237
	(1.990)	(1.674)	(1.883)				(2.190)	(1.853)	(2.464)	(1.373)	(1.235)	(1.361)
Consumer Confidence										-0.409***	-0.795***	-0.552***
										(0.111)	(0.215)	(0.209)
Economic Sentiment										-0.795***	-0.550***	-0.698***
										(0.0915)	(0.111)	(0.160)
Observations	864	864	864	864	864	864	864	864	864	864	864	864
R-squared	0.121	0.167	0.121	0.051	0.054	0.051	0.130	0.171	0.129	0.408	0.419	0.404
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.002	0.003	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.354			0.761			0.671			0.064

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.7. The Credit Spread Index and Unemployment Rate at 12-month horizon

Unemployment 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.678	2.195	2.121	-1.561	-1.781	-1.696	-3.892	-4.074*	-4.036
				(2.905)	(2.880)	(4.921)	(2.257)	(1.831)	(3.481)	(2.500)	(2.105)	(3.145)
Real Interest Rate				0.725	1.332	1.247	-0.692	-0.247	-0.270	0.401	0.177	0.208
				(2.039)	(2.260)	(4.704)	(1.406)	(1.415)	(3.622)	(1.428)	(1.503)	(4.245)
Credit Spread	5.509**	6.857***	6.742***				6.080**	7.826***	7.515***	2.165	1.877	1.995
	(2.231)	(1.817)	(2.364)				(2.608)	(2.137)	(2.642)	(2.654)	(2.429)	(2.202)
Consumer Confidence										-0.504***	-0.860***	-0.804***
										(0.171)	(0.299)	(0.222)
Economic Sentiment										-0.463**	-0.204	-0.238
										(0.212)	(0.211)	(0.312)
Observations	792	792	792	792	792	792	792	792	792	792	792	792
R-squared	0.100	0.148	0.100	0.006	0.010	0.006	0.104	0.160	0.103	0.320	0.335	0.303
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.522			0.863			0.789			0.871

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.8. The Credit Spread Index and Unemployment Rate at 24-month horizon

Unemployment 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.501	-0.812	-0.828	-4.115	-3.799*	-3.797	-5.485*	-4.785**	-4.808*
				(2.802)	(2.408)	(3.738)	(2.541)	(2.051)	(2.321)	(3.143)	(2.162)	(2.457)
Real Interest Rate				-0.333	0.409	0.392	-1.508	-0.778	-0.794	-1.295	-1.099	-1.104
				(2.176)	(1.792)	(4.267)	(1.615)	(1.094)	(3.164)	(1.624)	(1.249)	(3.855)
Credit Spread	3.520**	4.185**	4.161***				4.898***	5.747***	5.704***	4.351*	4.989*	4.959*
	(1.376)	(1.746)	(1.542)				(1.437)	(1.620)	(1.884)	(2.421)	(2.573)	(2.601)
Consumer Confidence										-0.527***	-0.569***	-0.570***
										(0.127)	(0.151)	(0.193)
Economic Sentiment										0.187	0.321	0.317
										(0.248)	(0.238)	(0.374)
Observations	696	696	696	696	696	696	696	696	696	696	696	696
R-squared	0.052	0.085	0.052	0.008	0.011	0.006	0.091	0.141	0.088	0.193	0.185	0.190
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.657			0.959			0.842			0.999

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.9. The Credit Spread Index and Employment Growth at 1-quarter horizon

Employment 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.018***	-0.986***	-1.000*	-0.609***	-0.486***	-0.552*	-0.412***	-0.312*	-0.356
				(0.236)	(0.246)	(0.537)	(0.168)	(0.165)	(0.311)	(0.167)	(0.176)	(0.255)
Real Interest Rate				-0.273*	-0.232	-0.25	-0.117	-0.0635	-0.0894	-0.238***	-0.142	-0.181
				(0.143)	(0.161)	(0.284)	(0.107)	(0.115)	(0.177)	(0.097)	(0.112)	(0.175)
Credit Spread	-1.066***	-1.296***	-1.120**				-0.792***	-1.026***	-0.895**	-0.321*	-0.354*	-0.347
	(0.156)	(0.212)	(0.45)				(0.221)	(0.225)	(0.432)	(0.189)	(0.196)	(0.275)
Consumer Confidence										0.0460**	0.0692**	0.0535**
										(0.018)	(0.031)	(0.0225)
Economic Sentiment										0.0640***	0.0471**	0.0579***
										(0.018)	(0.021)	(0.0186)
Observations	282	282	282	282	282	282	282	282	282	282	282	282
R-squared	0.193	0.254	0.193	0.166	0.172	0.166	0.252	0.296	0.251	0.405	0.410	0.404
CD p-value	0.041	0.197		0.000	0.000		0.259	0.475		0.237	0.229	
FE/RE		0.000	0.005		0.218	0.942		0.001	0.039		0.220	0.940
Robust Hausman			0.000			0.878			0.045			0.734

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.10. The Credit Spread Index and Employment Growth at 4-quarter horizon

Employment 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.811**	-0.835**	-0.827	-0.377**	-0.326**	-0.352	-0.153	-0.11	-0.129
				(0.307)	(0.319)	(0.549)	(0.168)	(0.132)	(0.292)	(0.188)	(0.187)	(0.254)
Real Interest Rate				-0.317	-0.348	-0.337	-0.133	-0.161	-0.157	-0.290**	-0.256*	-0.27
				(0.206)	(0.241)	(0.389)	(0.113)	(0.139)	(0.248)	(0.131)	(0.149)	(0.339)
Credit Spread	-0.990***	-1.180***	-1.078***				-0.853***	-1.064***	-0.981**	-0.387	-0.396*	-0.407**
	(0.156)	(0.128)	(0.395)				(0.191)	(0.159)	(0.393)	(0.246)	(0.218)	(0.205)
Consumer Confidence										0.0575***	0.0816***	0.0680***
										(0.0161)	(0.0284)	(0.0248)
Economic Sentiment										0.0461***	0.0294**	0.038
										(0.013)	(0.0135)	(0.0285)
Observations	258	258	258	258	258	258	258	258	258	258	258	258
R-squared	0.267	0.346	0.267	0.128	0.134	0.128	0.291	0.361	0.289	0.487	0.491	0.485
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.113	0.590		0.000	0.000		0.099	0.835
Robust Hausman			0.000			0.962			0.000			0.465

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.11. The Credit Spread Index and Employment Growth at 8-quarter horizon

Employment 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.442	-0.493	-0.481	-0.062	-0.0669	-0.0741	0.151	0.116	0.123
				(0.374)	(0.366)	(0.476)	(0.201)	(0.142)	(0.186)	(0.257)	(0.17)	(0.188)
Real Interest Rate				-0.271	-0.353	-0.332	-0.0998	-0.189	-0.177	-0.167	-0.204	-0.198
				(0.24)	(0.221)	(0.42)	(0.139)	(0.118)	(0.273)	(0.152)	(0.136)	(0.359)
Credit Spread	-0.796***	-0.892***	-0.860***				-0.782***	-0.903***	-0.872***	-0.585**	-0.631**	-0.615***
	(0.157)	(0.185)	(0.311)				(0.148)	(0.165)	(0.332)	(0.273)	(0.25)	(0.199)
Consumer Confidence										0.0597***	0.0610***	0.0605**
										(0.0122)	(0.0163)	(0.0252)
Economic Sentiment										-0.00443	-0.00961	-0.00776
										(0.0201)	(0.0171)	(0.0325)
Observations	226	226	226	226	226	226	226	226	226	226	226	226
R-squared	0.221	0.274	0.221	0.042	0.051	0.041	0.226	0.293	0.223	0.362	0.344	0.361
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.014	0.081		0.000	0.000		0.255	0.996
Robust Hausman			0.000			0.014			0.000			0.978

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.12. The Credit Spread Index and Real GDP Growth at 1-quarter horizon

Real GDP 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.901	-1.135*	-0.901*	0.0183	-0.0304	0.0183	0.287	0.169	0.287*
				(0.579)	(0.63)	(0.517)	(0.216)	(0.238)	(0.265)	(0.22)	(0.226)	(0.174)
Real Interest Rate				-0.202	-0.485	-0.202	0.152	-0.103	0.152	-0.0232	-0.233	-0.0232
				(0.367)	(0.437)	(0.482)	(0.244)	(0.269)	(0.317)	(0.216)	(0.257)	(0.299)
Credit Spread	-1.846***	-2.253***	-2.073***				-1.795***	-2.287***	-1.795***	-1.108***	-1.273***	-1.108***
	(0.655)	(0.598)	(0.344)				(0.676)	(0.622)	(0.424)	(0.361)	(0.349)	(0.271)
Consumer Confidence										0.0850***	0.0918***	0.0850***
										(0.0143)	(0.0289)	(0.0295)
Economic Sentiment										0.0847**	0.0778**	0.0847**
										(0.0355)	(0.0379)	(0.0345)
Observations	287	287	287	287	287	287	287	287	287	287	287	287
R-squared	0.304	0.413	0.304	0.078	0.082	0.078	0.310	0.415	0.310	0.528	0.556	0.528
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.030	0.047		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.001

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.13. The Credit Spread Index and Real GDP Growth at 4-quarter horizon

Real GDP 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.386	-0.716	-0.448	0.242	0.0433	0.11	0.441	0.197	0.317
				(0.566)	(0.554)	(0.569)	(0.401)	(0.315)	(0.317)	(0.396)	(0.32)	(0.281)
Real Interest Rate				-0.168	-0.583	-0.246	0.0895	-0.311	-0.138	0.0113	-0.311	-0.151
				(0.417)	(0.451)	(0.639)	(0.288)	(0.292)	(0.54)	(0.311)	(0.297)	(0.642)
Credit Spread	-1.130**	-1.410***	-1.304***				-1.218**	-1.568***	-1.359***	-1.036*	-1.232**	-1.104***
	(0.436)	(0.401)	(0.336)				(0.492)	(0.421)	(0.31)	(0.583)	(0.558)	(0.386)
Consumer Confidence										0.0922***	0.0936**	0.0919**
										(0.0151)	(0.037)	(0.0364)
Economic Sentiment										-0.0118	-0.0234	-0.0151
										(0.0442)	(0.0509)	(0.0601)
Observations	263	263	263	263	263	263	263	263	263	263	263	263
R-squared	0.171	0.251	0.171	0.013	0.042	0.012	0.176	0.289	0.168	0.294	0.329	0.289
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.001			0.000			0.000			0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.14. The Credit Spread Index and Real GDP Growth at 8-quarter horizon

Real GDP growth 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.22	-0.0979	0.00284	0.666	0.427	0.467***	0.642	0.319	0.376*
				(0.55)	(0.465)	(0.444)	(0.489)	(0.411)	(0.125)	(0.4)	(0.297)	(0.204)
Real Interest Rate				0.121	-0.292	-0.161	0.306	-0.108	-0.0263	0.424	0.0695	0.122
				(0.433)	(0.323)	(0.636)	(0.337)	(0.216)	(0.488)	(0.359)	(0.238)	(0.594)
Credit Spread	-0.639***	-0.809***	-0.774***				-0.838***	-1.027***	-0.973***	-1.297***	-1.543***	-1.474***
	(0.221)	(0.299)	(0.23)				(0.252)	(0.252)	(0.227)	(0.473)	(0.487)	(0.357)
Consumer Confidence										0.0798***	0.0574**	0.0671
										(0.011)	(0.0221)	(0.0464)
Economic Sentiment										-0.109*	-0.111**	-0.113*
										(0.0551)	(0.048)	(0.0614)
Observations	231	231	231	231	231	231	231	231	231	231	231	231
R-squared	0.083	0.141	0.083	0.005	0.029	0.000	0.125	0.216	0.100	0.238	0.283	0.203
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.039			0.019			0.001			0.122

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Derivation 4.1.

Let ***r*** be the return on a risk-free bond and ***R*** the return on a bond ***k***. Let ***p*** be the probability of default of bond ***k*** while the risk-free bond is assumed to have a probability of default equal to zero.

Thus, with probability ***p*** an investor receives ***0***, and with probability ***(1-p)*** they receive ***R***.

The spread between the two bonds is then the compensation for bearing the default risk, in other words, the probability that the investor receives R (1-p) of the time.

Therefore we have:

$$S = \frac{p}{1-p} \quad (1)$$

Expected returns are equalised when the following equation holds:

$$(1-p) * (1+R) = (1+r) \quad (2)$$

From equation (2) we can solve for p and we get that:

$$p = \frac{R-r}{1+R} \quad (3)$$

Finally, we can solve for the spread by substituting p from equation (3) into equation (1):

$$S = \frac{R-r}{1+r} \quad (4)$$

Table 4.16. The Credit Spread Index and Level of Industrial Production at 3-month horizon

Industrial prod	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-4.705***	-4.541***	-4.624***	-3.720***	-3.243***	-3.720***	-3.066***	-2.648***	-3.066***
				(0.637)	(0.692)	(1.245)	(0.540)	(0.509)	(0.854)	(0.386)	(0.328)	(0.871)
Real Interest Rate				-1.200***	-0.992**	-1.099***	-0.798***	-0.502*	-0.798**	-1.152***	-0.786***	-1.152***
				(0.349)	(0.449)	(0.396)	(0.278)	(0.289)	(0.337)	(0.213)	(0.251)	(0.397)
Credit Spread	-3.570***	-4.409***	-3.570***				-1.859***	-2.563***	-1.859**	-0.0286	-0.129	-0.0286
	(0.496)	(0.476)	(1.084)				(0.496)	(0.528)	(0.894)	(0.325)	(0.400)	(0.908)
Consumer Confidence										0.0254	0.0694	0.0254
										(0.0438)	(0.0435)	(0.0310)
Economic Sentiment										0.332***	0.314***	0.332***
										(0.0462)	(0.0423)	(0.0690)
Observations	848	848	848	848	848	848	848	848	848	848	848	848
R-squared	0.200	0.263	0.200	0.356	0.361	0.356	0.399	0.430	0.399	0.545	0.562	0.545
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.084	0.576		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.629			0.000			0.018

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.17. The Credit Spread Index and Level of Industrial Production at 12-month horizon

Industrial prod	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-3.617***	-3.955***	-3.695**	-2.237*	-2.237**	-2.237**	-1.499	-1.602*	-1.499**
				(1.250)	(1.112)	(1.554)	(1.192)	(0.876)	(0.920)	(1.161)	(0.851)	(0.705)
Real Interest Rate				-1.877**	-2.307***	-1.976*	-1.256**	-1.607***	-1.256*	-1.690***	-1.887***	-1.690*
				(0.728)	(0.880)	(1.159)	(0.536)	(0.515)	(0.735)	(0.554)	(0.542)	(0.875)
Credit Spread	-3.356***	-4.080***	-3.356***				-2.612***	-3.409***	-2.612***	-1.137	-1.446	-1.137
	(0.833)	(0.790)	(1.075)				(0.962)	(0.917)	(0.930)	(0.942)	(0.934)	(0.860)
Consumer Confidence										0.128	0.155*	0.128***
										(0.0863)	(0.0921)	(0.0342)
Economic Sentiment										0.191*	0.159	0.191
										(0.0989)	(0.104)	(0.127)
Observations	776	776	776	776	776	776	776	776	776	776	776	776
R-squared	0.179	0.229	0.179	0.131	0.139	0.131	0.218	0.266	0.218	0.317	0.327	0.317
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.086	0.312		0.000	0.000		0.031	0.218
Robust Hausman			0.000			0.730			0.000			0.016

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.18. The Credit Spread Index and Level of Industrial Production at 24-month horizon

Industrial prod	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.0902	-0.477	-0.341	1.029	0.615	0.689*	1.167	0.482	0.777
				(1.916)	(1.670)	(0.650)	(1.932)	(1.748)	(0.418)	(1.889)	(1.439)	(0.672)
Real Interest Rate				-1.147	-1.868*	-1.698	-0.706	-1.415*	-1.260	-0.560	-1.192	-0.956
				(1.206)	(0.960)	(1.409)	(1.048)	(0.802)	(0.937)	(1.114)	(0.853)	(1.089)
Credit Spread	-1.473	-1.649	-1.586				-1.840***	-2.179***	-2.067	-2.449**	-2.910**	-2.640***
	(1.034)	(1.142)	(1.180)				(0.593)	(0.691)	(1.299)	(1.039)	(1.203)	(0.925)
Consumer Confidence										0.164	0.0853	0.141
										(0.116)	(0.0823)	(0.118)
Economic Sentiment										-0.179	-0.164	-0.181
										(0.161)	(0.130)	(0.118)
Observations	680	680	680	680	680	680	680	680	680	680	680	680
R-squared	0.031	0.036	0.031	0.057	0.079	0.056	0.098	0.133	0.096	0.129	0.143	0.125
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.006	0.033		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.042			0.426			0.000			0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.19. The Credit Spread Index and Level of Unemployment at 3-month horizon

Unempl level 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.910***	0.894***	0.908	1.000***	0.958***	1.000**	0.910***	0.848***	0.910**
				(0.0832)	(0.0810)	(0.567)	(0.0882)	(0.0928)	(0.390)	(0.0915)	(0.0833)	(0.409)
Real Interest Rate				0.261***	0.240***	0.259	0.298***	0.264***	0.298	0.341***	0.285***	0.341*
				(0.0620)	(0.0728)	(0.259)	(0.0607)	(0.0736)	(0.185)	(0.0702)	(0.0838)	(0.198)
Credit Spread	0.258**	0.361***	0.258				-0.170**	-0.127	-0.170	-0.392***	-0.472***	-0.392
	(0.0997)	(0.116)	(0.485)				(0.0822)	(0.0921)	(0.327)	(0.110)	(0.131)	(0.376)
Consumer Confidence										-0.00876	-0.0405**	-0.00876
										(0.0102)	(0.0184)	(0.00897)
Economic Sentiment										-0.0380***	-0.0216	-0.0380
										(0.0140)	(0.0175)	(0.0244)
Observations	848	848	848	848	848	848	848	848	848	848	848	848
R-squared	0.015	0.025	0.015	0.174	0.176	0.174	0.179	0.178	0.179	0.214	0.222	0.214
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.050	0.916		0.397	0.519		0.716	0.281		0.048	0.790
Robust Hausman			0.000			0.793			0.047			0.009

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.20. The Credit Spread Index and Level of Unemployment at 12-month horizon

Unempl level 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.950***	1.002***	0.950*	0.907***	0.931***	0.907***	0.706***	0.680***	0.706***
				(0.123)	(0.109)	(0.486)	(0.138)	(0.137)	(0.313)	(0.156)	(0.159)	(0.266)
Real Interest Rate				0.337***	0.402***	0.337	0.318***	0.374***	0.318**	0.447***	0.455***	0.447**
				(0.0847)	(0.0925)	(0.228)	(0.0817)	(0.0960)	(0.150)	(0.0837)	(0.0844)	(0.195)
Credit Spread	0.433***	0.537***	0.433				0.0817	0.140	0.0817	-0.368***	-0.570***	-0.368
	(0.136)	(0.125)	(0.463)				(0.131)	(0.129)	(0.371)	(0.126)	(0.142)	(0.354)
Consumer Confidence										-0.0249	-0.0794*	-0.0249
										(0.0212)	(0.0414)	(0.0177)
Economic Sentiment										-0.0644***	-0.0398	-0.0644*
										(0.0173)	(0.0278)	(0.0351)
Observations	776	776	776	776	776	776	776	776	776	776	776	776
R-squared	0.041	0.054	0.041	0.158	0.160	0.158	0.159	0.163	0.159	0.257	0.285	0.257
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.027	
FE/RE		0.046	0.659		0.569	0.504		0.393	0.620		0.000	0.586
Robust Hausman			0.000			0.726			0.010			0.001

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.21. The Credit Spread Index and Level of Unemployment at 24-month horizon

Unempl level 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.515*	0.656***	0.629**	0.300	0.423	0.402***	0.0312	0.0266	0.0664
				(0.264)	(0.218)	(0.319)	(0.280)	(0.262)	(0.144)	(0.372)	(0.254)	(0.234)
Real Interest Rate				0.255	0.426***	0.393	0.154	0.329**	0.296	0.245	0.323**	0.321
				(0.205)	(0.156)	(0.378)	(0.168)	(0.138)	(0.239)	(0.190)	(0.130)	(0.318)
Credit Spread	0.511***	0.572***	0.557				0.420**	0.465**	0.452	0.115	-0.0765	0.0288
	(0.167)	(0.185)	(0.530)				(0.170)	(0.187)	(0.582)	(0.229)	(0.277)	(0.466)
Consumer Confidence										-0.0625**	-0.142***	-0.102*
										(0.0296)	(0.0302)	(0.0537)
Economic Sentiment										-0.0127	0.0331	0.0113
										(0.0249)	(0.0222)	(0.0456)
Observations	680	680	680	680	680	680	680	680	680	680	680	680
R-squared	0.053	0.063	0.054	0.032	0.049	0.030	0.063	0.084	0.059	0.171	0.228	0.161
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.386			0.729			0.083			0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.22. The Credit Spread Index and Level of Employment at 1-quarter horizon

Empl level 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				2.757	3.887***	2.757	4.853***	5.632***	4.885***	4.121*	5.053*	4.528**
				(2.966)	(1.409)	(2.966)	(1.316)	(1.209)	(1.678)	(2.022)	(2.273)	(2.061)
Real Interest Rate				4.623*	6.008***	4.623**	5.420***	6.594***	5.465***	5.967***	7.097***	6.463***
				(1.802)	(1.133)	(1.802)	(0.627)	(0.780)	(1.256)	(1.184)	(1.646)	(1.331)
Credit Spread	-3.603	-3.382	-3.603				-4.057***	-3.587***	-4.048	-6.315	-6.440	-6.350
	(2.957)	(3.749)	(2.957)				(1.238)	(1.204)	(2.652)	(4.468)	(5.997)	(4.756)
Consumer Confidence										-0.0441	-0.0378	-0.0372
										(0.056)	(0.345)	(0.0799)
Economic Sentiment										-0.385	-0.392	-0.390
										(0.294)	(0.227)	(0.294)
Observations	279	279	279	279	279	279	279	279	279	279	279	279
R-squared	0.060	0.048	0.060	0.148	0.177	0.148	0.209	0.219	0.209	0.266	0.268	0.266
CD p-value	0.158	0.232		0.513	0.015		0.040	0.006		0.406	0.107	
FE/RE		0.516	0.700		0.007	0.022		0.071	0.195		0.176	0.399
Robust Hausman			0.517			0.000			0.045			0.566

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.23. The Credit Spread Index and Level of Employment at 4-quarter horizon

Empl level 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				2.321	3.414*	2.321	4.605***	5.576***	4.605***	3.891*	4.748*	3.891**
				(2.791)	(1.847)	(2.791)	(1.690)	(1.487)	(1.534)	(1.885)	(2.243)	(1.885)
Real Interest Rate				3.912*	5.315***	3.912**	4.896***	6.124***	4.896***	5.655***	6.915***	5.655***
				(1.970)	(1.427)	(1.970)	(0.815)	(0.875)	(1.400)	(1.396)	(1.648)	(1.396)
Credit Spread	-3.685	-3.888	-3.685				-4.514***	-4.556***	-4.514	-7.016	-7.988	-7.016
	(3.053)	(3.502)	(3.053)				(1.619)	(1.469)	(3.034)	(5.013)	(6.055)	(5.013)
Consumer Confidence										0.0344	-0.0815	0.0344
										(0.0571)	(0.279)	(0.0571)
Economic Sentiment										-0.409	-0.399	-0.409
										(0.276)	(0.220)	(0.276)
Observations	255	255	255	255	255	255	255	255	255	255	255	255
R-squared	0.075	0.074	0.075	0.127	0.159	0.127	0.220	0.241	0.220	0.261	0.290	0.261
CD p-value	0.382	0.273		0.107	0.000		0.005	0.000		0.443	0.198	
FE/RE		0.953	0.234		0.108	0.273		0.235	0.528		0.094	0.368
Robust Hausman			0.539			0.002			0.014			0.024

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.24. The Credit Spread Index and Level of Employment at 8-quarter horizon

Empl level 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				3.869*	4.946**	4.402**	6.538***	7.730***	7.025***	5.964***	6.478***	5.964***
				(2.184)	(2.371)	(2.059)	(1.080)	(1.429)	(0.863)	(1.045)	(0.975)	(0.826)
Real Interest Rate				3.437**	4.732***	4.092*	4.670***	5.827***	5.195***	5.419***	6.672***	5.419***
				(1.346)	(1.381)	(2.299)	(0.645)	(0.620)	(1.396)	(0.788)	(0.765)	(1.532)
Credit Spread	-3.962***	-4.371***	-4.132				-5.651***	-6.054***	-5.739**	-8.319***	-9.669***	-8.319*
	(0.627)	(0.973)	(2.655)				(0.891)	(0.857)	(2.794)	(1.529)	(1.459)	(4.616)
Consumer Confidence										0.180	-0.0461	0.180*
										(0.204)	(0.141)	(0.0999)
Economic Sentiment										-0.487***	-0.447***	-0.487**
										(0.124)	(0.147)	(0.213)
Observations	223	223	223	223	223	223	223	223	223	223	223	223
R-squared	0.095	0.111	0.095	0.094	0.134	0.094	0.264	0.320	0.263	0.311	0.381	0.311
CD p-value	0.017	0.001		0.000	0.000		0.000	0.000		0.048	0.007	
FE/RE		0.051	0.361		0.006	0.008		0.000	0.000		0.000	0.000
Robust Hausman			0.567			0.025			0.056			0.001

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.25. The Credit Spread Index and Level of Real GDP at 1-quarter horizon

Real GDP level 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.902	-0.318	-0.902	0.928	1.269	0.928	0.360	0.754	0.531
				(0.958)	(0.944)	(2.519)	(0.995)	(0.788)	(1.273)	(1.569)	(1.664)	(1.562)
Real Interest Rate				1.563**	2.270***	1.563	2.259***	2.804***	2.259***	2.683***	3.174***	2.890***
				(0.648)	(0.768)	(1.201)	(0.406)	(0.482)	(0.623)	(0.374)	(0.529)	(0.420)
Credit Spread	-3.918	-3.861	-3.918				-3.543***	-3.263***	-3.543	-5.294	-5.567	-5.349
	(2.812)	(3.433)	(2.812)				(0.896)	(0.900)	(2.448)	(4.143)	(5.642)	(4.420)
Consumer Confidence										-0.0343	-0.0836	-0.0373
										(0.043)	(0.299)	(0.0597)
Economic Sentiment										-0.299	-0.277	-0.299
										(0.294)	(0.221)	(0.294)
Observations	279	279	279	279	279	279	279	279	279	279	279	279
R-squared	0.097	0.084	0.097	0.093	0.104	0.093	0.157	0.151	0.157	0.204	0.194	0.204
CD p-value	0.778	0.804		0.001	0.007		0.088	0.062		0.115	0.144	
FE/RE		0.678	0.463		0.105	0.678		0.470	0.687		0.622	0.525
Robust Hausman			0.844			0.000			0.000			0.937

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.26. The Credit Spread Index and Level of Real GDP at 4-quarter horizon

Real GDP level 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.876	-0.557	-0.876	1.147	1.443	1.147	0.604	0.711	0.604
				(1.394)	(1.352)	(2.265)	(0.881)	(1.004)	(0.881)	(1.329)	(1.708)	(1.329)
Real Interest Rate				0.990	1.397	0.990	1.862*	2.146	1.862***	2.482***	2.795***	2.482***
				(0.895)	(1.040)	(1.484)	(0.843)	(1.208)	(0.843)	(0.769)	(0.847)	(0.769)
Credit Spread	-3.952	-4.258	-3.952				-3.998	-4.217	-3.998	-6.073	-7.144	-6.073
	(2.868)	(3.217)	(2.868)				(2.727)	(3.047)	(2.727)	(4.546)	(5.749)	(4.546)
Consumer Confidence										0.0621	-0.0999	0.0621
										(0.042)	(0.258)	(0.042)
Economic Sentiment										-0.355	-0.318	-0.355
										(0.271)	(0.215)	(0.271)
Observations	255	255	255	255	255	255	255	255	255	255	255	255
R-squared	0.119	0.122	0.119	0.056	0.059	0.056	0.157	0.156	0.157	0.195	0.206	0.195
CD p-value	0.861	0.698		0.047	0.011		0.355	0.205		0.699	0.384	
FE/RE		0.823	0.386		0.8398	0.232		0.929	0.168		0.535	0.228
Robust Hausman			0.256			0.456			0.792			0.376

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.27. The Credit Spread Index and Level of Real GDP at 8-quarter horizon

Real GDP level 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.758	1.942	1.856	3.917***	4.272***	4.047***	3.298***	2.854***	3.240***
				(1.818)	(1.878)	(1.201)	(1.298)	(1.557)	(1.104)	(0.806)	(0.859)	(0.697)
Real Interest Rate				1.231	1.334	1.289	2.228***	2.250***	2.222**	3.023***	3.117***	3.108***
				(1.023)	(0.957)	(1.848)	(0.677)	(0.596)	(0.945)	(0.697)	(0.697)	(0.965)
Credit Spread	-3.556***	-3.992***	-3.817				-4.569***	-5.067***	-4.753*	-7.402***	-8.942***	-7.854*
	(0.572)	(0.776)	(2.446)				(0.649)	(0.815)	(2.586)	(1.136)	(1.473)	(4.188)
Consumer Confidence										0.187	-0.0954	0.135
										(0.152)	(0.120)	(0.160)
Economic Sentiment										-0.515***	-0.444***	-0.520***
										(0.152)	(0.161)	(0.178)
Observations	223	223	223	223	223	223	223	223	223	223	223	223
R-squared	0.103	0.127	0.103	0.018	0.018	0.018	0.167	0.197	0.167	0.238	0.293	0.235
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.064	0.082	
FE/RE		0.004	0.014		0.043	0.298		0.002	0.033		0.000	0.033
Robust Hausman			0.488			0.782			0.869			0.689

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.30. The Credit Spread Index (version L) and Industrial Production Growth at 3-month horizon

Ind Prod 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.756	-2.360	-2.208	0.773	0.721	0.637	1.654**	1.300	1.378*
				(1.741)	(2.159)	(2.355)	(0.785)	(0.916)	(0.975)	(0.766)	(0.850)	(0.809)
Real Interest Rate				-2.327*	-3.051*	-2.870	-1.282*	-1.867*	-1.694	-1.495**	-1.941*	-1.840
				(1.185)	(1.773)	(2.610)	(0.700)	(1.098)	(1.730)	(0.668)	(1.076)	(1.731)
Credit Spread_L	-3.958*	-4.797*	-4.577***				-4.906**	-6.250**	-5.537***	-3.751**	-4.397**	-4.134***
	(2.374)	(2.629)	(0.829)				(2.295)	(2.516)	(1.029)	(1.673)	(1.921)	(1.068)
Consumer Confidence										0.295***	0.284***	0.295***
										(0.0640)	(0.0937)	(0.106)
Economic Sentiment										0.0960	0.0565	0.0667
										(0.111)	(0.138)	(0.130)
Observations	864	864	864	864	864	864	864	864	864	864	864	864
R-squared	0.089	0.116	0.089	0.040	0.050	0.040	0.149	0.201	0.149	0.249	0.242	0.247
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.006	0.028
Robust Hausman			0.063			0.002			0.000			0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.31. The Credit Spread Index (version L) and Industrial Production Growth at 12-month horizon

Ind Prod 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.664	0.0381	0.109	1.800	1.490	1.492**	2.298	1.745*	1.800***
				(1.305)	(1.187)	(1.446)	(1.378)	(0.979)	(0.646)	(1.411)	(0.985)	(0.624)
Real Interest Rate				-1.427	-2.202*	-2.116	-0.925	-1.620*	-1.570	-0.999	-1.520*	-1.477
				(0.965)	(1.244)	(2.167)	(0.759)	(0.870)	(1.687)	(0.787)	(0.892)	(1.931)
Credit Spread_L	-1.002	-1.309	-1.264**				-2.186	-2.935**	-2.817***	-2.056	-2.603**	-2.493***
	(1.442)	(1.547)	(0.616)				(1.407)	(1.393)	(0.548)	(1.265)	(1.281)	(0.813)
Consumer Confidence										0.254***	0.199**	0.215*
										(0.0628)	(0.0765)	(0.117)
Economic Sentiment										-0.0881	-0.104	-0.107
										(0.102)	(0.111)	(0.158)
Observations	792	792	792	792	792	792	792	792	792	792	792	792
R-squared	0.013	0.021	0.014	0.152	0.186	0.149	0.204	0.270	0.200	0.286	0.285	0.277
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.305			0.422			0.097			0.771

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.32. The Credit Spread Index (version L) and Industrial Production Growth at 24-month horizon

Ind Prod 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.948*	1.531	1.540***	2.318*	2.004*	2.008***	2.248*	1.518*	1.564***
				(1.139)	(0.927)	(0.308)	(1.229)	(1.026)	(0.195)	(1.144)	(0.820)	(0.356)
Real Interest Rate				-0.431	-0.957	-0.945	-0.263	-0.768	-0.758	-0.00194	-0.475	-0.453
				(0.795)	(0.585)	(1.228)	(0.709)	(0.472)	(1.001)	(0.713)	(0.497)	(1.138)
Credit Spread_L	0.221	0.235	0.234				-0.711	-0.934*	-0.926**	-1.769**	-2.312***	-2.249***
	(0.948)	(1.040)	(0.372)				(0.521)	(0.557)	(0.446)	(0.687)	(0.846)	(0.368)
Consumer Confidence										0.173***	0.0102	0.0303
										(0.0372)	(0.0528)	(0.114)
Economic Sentiment										-0.245***	-0.191**	-0.199**
										(0.0849)	(0.0894)	(0.101)
Observations	696	696	696	696	696	696	696	696	696	696	696	696
R-squared	0.001	0.002	0.001	0.247	0.310	0.240	0.259	0.332	0.251	0.341	0.381	0.279
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.970			0.969			0.805			0.674

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.33. The Credit Spread Index (version L) and Unemployment Rate at 3-month horizon

Unemployment 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				4.080**	4.105**	4.097	0.634	-0.189	-0.0476	-1.606*	-2.290***	-2.022
				(1.920)	(2.055)	(4.556)	(1.190)	(1.171)	(3.283)	(0.830)	(0.845)	(2.597)
Real Interest Rate				0.713	0.703	0.700	-0.709	-0.938	-0.895	0.222	-0.433	-0.206
				(1.228)	(1.511)	(3.877)	(0.870)	(1.065)	(2.867)	(0.593)	(0.754)	(2.342)
Credit Spread_L	7.326***	9.074***	8.800***				6.683***	8.714***	8.378***	1.429	0.844	1.320
	(2.056)	(1.737)	(1.924)				(2.260)	(1.922)	(2.526)	(1.413)	(1.266)	(1.397)
Consumer Confidence										-0.410***	-0.795***	-0.556***
										(0.112)	(0.215)	(0.210)
Economic Sentiment										-0.792***	-0.548***	-0.693***
										(0.0914)	(0.111)	(0.160)
Observations	864	864	864	864	864	864	864	864	864	864	864	864
R-squared	0.121	0.168	0.121	0.051	0.054	0.051	0.131	0.172	0.129	0.408	0.419	0.404
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.002	0.003	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.273			0.745			0.585			0.024

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.34. The Credit Spread Index (version L) and Unemployment Rate at 12-month horizon

Unemployment 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.678	2.195	2.121	-1.605	-1.826	-1.740	-3.922	-4.097*	-4.060
				(2.905)	(2.880)	(4.921)	(2.252)	(1.824)	(3.447)	(2.497)	(2.098)	(3.127)
Real Interest Rate				0.725	1.332	1.247	-0.725	-0.278	-0.301	0.369	0.152	0.182
				(2.039)	(2.260)	(4.704)	(1.397)	(1.403)	(3.597)	(1.422)	(1.494)	(4.233)
Credit Spread_L	5.723**	7.121***	7.002***				6.324**	8.130***	7.810***	2.336	2.046	2.165
	(2.305)	(1.882)	(2.417)				(2.693)	(2.210)	(2.701)	(2.740)	(2.504)	(2.256)
Consumer Confidence										-0.507***	-0.859***	-0.804***
										(0.172)	(0.299)	(0.222)
Economic Sentiment										-0.456**	-0.198	-0.232
										(0.212)	(0.211)	(0.312)
Observations	792	792	792	792	792	792	792	792	792	792	792	792
R-squared	0.102	0.150	0.102	0.006	0.010	0.006	0.106	0.162	0.105	0.321	0.335	0.304
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.496			0.842			0.668			0.831

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.35. The Credit Spread Index (version L) and Unemployment Rate at 24-month horizon

Unemployment 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.501	-0.812	-0.828	-4.141	-3.824*	-3.822*	-5.498*	-4.787**	-4.810**
				(2.802)	(2.408)	(3.738)	(2.543)	(2.052)	(2.300)	(3.134)	(2.151)	(2.448)
Real Interest Rate				-0.333	0.409	0.392	-1.534	-0.801	-0.817	-1.335	-1.131	-1.137
				(2.176)	(1.792)	(4.267)	(1.608)	(1.086)	(3.143)	(1.615)	(1.239)	(3.840)
Credit Spread_L	3.668**	4.363**	4.337***				5.087***	5.968***	5.924***	4.589*	5.247**	5.216*
	(1.412)	(1.803)	(1.582)				(1.479)	(1.669)	(1.930)	(2.474)	(2.650)	(2.671)
Consumer Confidence										-0.530***	-0.569***	-0.570***
										(0.127)	(0.150)	(0.192)
Economic Sentiment										0.196	0.328	0.325
										(0.246)	(0.237)	(0.373)
Observations	696	696	696	696	696	696	696	696	696	696	696	696
R-squared	0.053	0.087	0.053	0.008	0.011	0.006	0.093	0.143	0.090	0.195	0.187	0.192
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.661			0.969			0.806			0.998

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.36. The Credit Spread Index (version L) and Employment Growth at 1-quarter horizon

Employment 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.018***	-0.986***	-1.000*	-0.605***	-0.481***	-0.547*	-0.408***	-0.309*	-0.353
				(0.236)	(0.246)	(0.537)	(0.137)	(0.133)	(0.307)	(0.132)	(0.156)	(0.252)
Real Interest Rate				-0.273*	-0.232	-0.250	-0.114	-0.0604	-0.0863	-0.235***	-0.139	-0.178
				(0.143)	(0.161)	(0.284)	(0.0960)	(0.105)	(0.175)	(0.0790)	(0.0921)	(0.173)
Credit Spread_L	-1.100***	-1.338***	-1.157**				-0.820***	-1.063***	-0.927**	-0.339**	-0.375**	-0.367
	(0.163)	(0.130)	(0.465)				(0.183)	(0.152)	(0.446)	(0.167)	(0.178)	(0.287)
Consumer Confidence										0.0462**	0.0691**	0.0537**
										(0.0174)	(0.0278)	(0.0225)
Economic Sentiment										0.0635***	0.0467**	0.0574***
										(0.0160)	(0.0204)	(0.0185)
Observations	282	282	282	282	282	282	282	282	282	282	282	282
R-squared	0.194	0.256	0.194	0.166	0.172	0.166	0.252	0.298	0.252	0.406	0.410	0.405
CD p-value	0.036	0.175		0.000	0.000		0.243	0.442		0.239	0.234	
FE/RE		0.000	0.005		0.218	0.942		0.000	0.037		0.219	0.944
Robust Hausman			0.000			0.878			0.043			0.737

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.37. The Credit Spread Index (version L) and Employment Growth at 4-quarter horizon

Employment 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.811**	-0.835**	-0.827	-0.372**	-0.320**	-0.346	-0.150	-0.107	-0.126
				(0.307)	(0.319)	(0.549)	(0.166)	(0.129)	(0.286)	(0.187)	(0.184)	(0.251)
Real Interest Rate				-0.317	-0.348	-0.337	-0.128	-0.156	-0.153	-0.285**	-0.251*	-0.265
				(0.206)	(0.241)	(0.389)	(0.112)	(0.137)	(0.244)	(0.130)	(0.148)	(0.336)
Credit Spread_L	-1.026***	-1.224***	-1.118***				-0.886***	-1.106***	-1.020**	-0.412	-0.424*	-0.434**
	(0.160)	(0.131)	(0.408)				(0.195)	(0.162)	(0.406)	(0.251)	(0.222)	(0.213)
Consumer Confidence										0.0577***	0.0815***	0.0681***
										(0.0161)	(0.0283)	(0.0247)
Economic Sentiment										0.0451***	0.0284**	0.0370
										(0.0129)	(0.0135)	(0.0281)
Observations	258	258	258	258	258	258	258	258	258	258	258	258
R-squared	0.270	0.350	0.270	0.128	0.134	0.128	0.294	0.364	0.292	0.488	0.493	0.486
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.113	0.590		0.000	0.000		0.099	0.826
Robust Hausman			0.000			0.962			0.000			0.479

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.38. The Credit Spread Index (version L) and Employment Growth at 8-quarter horizon

Employment 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.442	-0.493	-0.481	-0.0593	-0.0636	-0.0709	0.152	0.115	0.124
				(0.374)	(0.366)	(0.476)	(0.200)	(0.140)	(0.182)	(0.255)	(0.168)	(0.187)
Real Interest Rate				-0.271	-0.353	-0.332	-0.0960	-0.186	-0.174	-0.162	-0.199	-0.192
				(0.240)	(0.221)	(0.420)	(0.138)	(0.117)	(0.270)	(0.150)	(0.134)	(0.356)
Credit Spread_L	-0.825***	-0.927***	-0.893***				-0.811***	-0.938***	-0.905***	-0.615**	-0.666**	-0.648***
	(0.160)	(0.189)	(0.322)				(0.151)	(0.169)	(0.344)	(0.276)	(0.254)	(0.205)
Consumer Confidence										0.0600***	0.0608***	0.0606**
										(0.0122)	(0.0162)	(0.0252)
Economic Sentiment										-0.00557	-0.0107	-0.00890
										(0.0197)	(0.0170)	(0.0321)
Observations	226	226	226	226	226	226	226	226	226	226	226	226
R-squared	0.224	0.278	0.224	0.042	0.051	0.041	0.229	0.297	0.226	0.364	0.346	0.363
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.014	0.081		0.000	0.000		0.251	0.996
Robust Hausman			0.000			0.014			0.000			0.975

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.39. The Credit Spread Index (version L) and Real GDP Growth at 1-quarter horizon

Real GDP 1-q	**Panel 1**			**Panel 2**			**Panel 3**			**Panel 4**		
	OLS1	**FE1**	**RE1**	**OLS2**	**FE2**	**RE2**	**OLS3**	**FE3**	**RE3**	**OLS4**	**FE4**	**RE4**
Term Spread				-0.901	-1.135*	-0.901*	0.0218	-0.0256	0.0218	0.291	0.173	0.291*
				(0.579)	(0.630)	(0.517)	(0.217)	(0.239)	(0.263)	(0.220)	(0.225)	(0.173)
Real Interest Rate				-0.202	-0.485	-0.202	0.156	-0.0982	0.156	-0.0200	-0.230	-0.0200
				(0.367)	(0.437)	(0.482)	(0.244)	(0.268)	(0.316)	(0.215)	(0.256)	(0.298)
Credit Spread_L	-1.898***	-2.320***	-2.133***				-1.846**	-2.355***	-1.846***	-1.140***	-1.313***	-1.140***
	(0.679)	(0.622)	(0.347)				(0.701)	(0.648)	(0.430)	(0.374)	(0.364)	(0.274)
Consumer Confidence										0.0852***	0.0917***	0.0852***
										(0.0144)	(0.0289)	(0.0295)
Economic Sentiment										0.0847**	0.0780**	0.0847**
										(0.0355)	(0.0380)	(0.0345)
Observations	287	287	287	287	287	287	287	287	287	287	287	287
R-squared	0.303	0.413	0.303	0.078	0.082	0.078	0.309	0.415	0.309	0.528	0.556	0.528
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.030	0.047		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.001

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.40. The Credit Spread Index (version L) and Real GDP Growth at 4-quarter horizon

Real GDP 4-q	**Panel 1**			**Panel 2**			**Panel 3**			**Panel 4**		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.386	-0.716	-0.448	0.249	0.0517	0.117	0.446	0.203	0.321
				(0.566)	(0.554)	(0.569)	(0.401)	(0.315)	(0.311)	(0.396)	(0.319)	(0.278)
Real Interest Rate				-0.168	-0.583	-0.246	0.0952	-0.305	-0.133	0.0184	-0.304	-0.146
				(0.417)	(0.451)	(0.639)	(0.286)	(0.289)	(0.537)	(0.309)	(0.294)	(0.641)
Credit Spread_L	-1.170**	-1.464***	-1.353***				-1.262**	-1.628***	-1.411***	-1.082*	-1.291**	-1.156***
	(0.452)	(0.416)	(0.342)				(0.510)	(0.437)	(0.316)	(0.606)	(0.579)	(0.395)
Consumer Confidence										0.0927***	0.0934**	0.0923**
										(0.0152)	(0.0368)	(0.0364)
Economic Sentiment										-0.0130	-0.0246	-0.0165
										(0.0445)	(0.0513)	(0.0601)
Observations	263	263	263	263	263	263	263	263	263	263	263	263
R-squared	0.173	0.254	0.173	0.013	0.042	0.012	0.178	0.293	0.170	0.296	0.332	0.291
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.001			0.000			0.000			0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.41. The Credit Spread Index (version L) and Real GDP Growth at 8-quarter horizon

Real GDP 8-q	**Panel 1**			**Panel 2**			**Panel 3**			**Panel 4**		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.220	-0.0979	0.00284	0.669	0.432	0.471***	0.643	0.319	0.376*
				(0.550)	(0.465)	(0.444)	(0.489)	(0.412)	(0.121)	(0.397)	(0.295)	(0.201)
Real Interest Rate				0.121	-0.292	-0.161	0.310	-0.104	-0.0223	0.433	0.0792	0.131
				(0.433)	(0.323)	(0.636)	(0.336)	(0.214)	(0.485)	(0.357)	(0.235)	(0.589)
Credit Spread_L	-0.662***	-0.843***	-0.806***				-0.868***	-1.067***	-1.010***	-1.354***	-1.615***	-1.542***
	(0.228)	(0.308)	(0.235)				(0.260)	(0.259)	(0.232)	(0.482)	(0.494)	(0.363)
Consumer Confidence										0.0803***	0.0573**	0.0673
										(0.0110)	(0.0219)	(0.0461)
Economic Sentiment										-0.111**	-0.113**	-0.115*
										(0.0548)	(0.0475)	(0.0609)
Observations	231	231	231	231	231	231	231	231	231	231	231	231
R-squared	0.084	0.144	0.084	0.005	0.028	0.000	0.127	0.219	0.101	0.241	0.288	0.206
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.037			0.019			0.001			0.114

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.43. The Credit Spread Index (version R) and Industrial Production Growth at 3-month horizon

Ind Prod 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.756	-2.360	-2.208	0.700	0.649	0.565	1.600**	1.252	1.328
				(1.741)	(2.159)	(2.355)	(0.787)	(0.927)	(1.003)	(0.766)	(0.857)	(0.826)
Real Interest Rate				-2.327*	-3.051*	-2.870	-1.364*	-1.946*	-1.770	-1.562**	-2.001*	-1.901
				(1.185)	(1.773)	(2.610)	(0.719)	(1.124)	(1.753)	(0.684)	(1.098)	(1.747)
Credit Spread_R	-3.841	-4.663*	-4.445***				-4.823**	-6.144**	-5.435***	-3.661**	-4.279**	-4.027***
	(2.361)	(2.603)	(0.849)				(2.283)	(2.499)	(1.052)	(1.662)	(1.899)	(1.075)
Consumer Confidence										0.294***	0.286***	0.295***
										(0.0639)	(0.0941)	(0.107)
Economic Sentiment										0.101	0.0601	0.0712
										(0.111)	(0.138)	(0.130)
Observations	864	864	864	864	864	864	864	864	864	864	864	864
R-squared	0.085	0.111	0.085	0.040	0.050	0.040	0.147	0.198	0.147	0.247	0.037	0.246
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.056			0.002			0.000			0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.44. The Credit Spread Index (version R) and Industrial Production Growth at 12-month horizon

Ind Prod 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.664	0.0381	0.109	1.754	1.438	1.440**	2.261	1.712*	1.767***
				(1.305)	(1.187)	(1.446)	(1.369)	(0.974)	(0.669)	(1.407)	(0.986)	(0.638)
Real Interest Rate				-1.427	-2.202*	-2.116	-0.967	-1.664*	-1.613	-1.048	-1.568*	-1.525
				(0.965)	(1.244)	(2.167)	(0.764)	(0.887)	(1.708)	(0.788)	(0.909)	(1.943)
Credit Spread_R	-0.904	-1.199	-1.156*				-2.122	-2.845**	-2.730***	-1.959	-2.464**	-2.362***
	(1.420)	(1.508)	(0.618)				(1.390)	(1.366)	(0.552)	(1.240)	(1.245)	(0.812)
Consumer Confidence										0.252***	0.200**	0.216*
										(0.0625)	(0.0775)	(0.118)
Economic Sentiment										-0.0819	-0.0976	-0.100
										(0.101)	(0.110)	(0.158)
Observations	792	792	792	792	792	792	792	792	792	792	792	792
R-squared	0.011	0.018	0.011	0.152	0.186	0.149	0.201	0.266	0.198	0.283	0.282	0.275
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.343			0.422			0.106			0.798

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.45. The Credit Spread Index (version R) and Industrial Production Growth at 24-month horizon

Ind Prod 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.948*	1.531	1.540***	2.302*	1.982*	1.987***	2.227*	1.501*	1.546***
				(1.139)	(0.927)	(0.308)	(1.226)	(1.022)	(0.185)	(1.148)	(0.824)	(0.356)
Real Interest Rate				-0.431	-0.957	-0.945	-0.277	-0.783	-0.774	-0.0367	-0.511	-0.488
				(0.795)	(0.585)	(1.228)	(0.713)	(0.476)	(1.012)	(0.715)	(0.502)	(1.147)
Credit Spread_R	0.266	0.283	0.282				-0.689	-0.899	-0.892**	-1.719**	-2.236***	-2.175***
	(0.936)	(1.024)	(0.369)				(0.518)	(0.554)	(0.445)	(0.694)	(0.850)	(0.365)
Consumer Confidence										0.172***	0.0112	0.0311
										(0.0372)	(0.0531)	(0.115)
Economic Sentiment										-0.242***	-0.187**	-0.196*
										(0.0856)	(0.0900)	(0.102)
Observations	696	696	696	696	696	696	696	696	696	696	696	696
R-squared	0.002	0.002	0.002	0.247	0.310	0.240	0.258	0.330	0.251	0.339	0.378	0.279
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.961			0.969			0.819			0.667

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.46. The Credit Spread Index (version R) and Unemployment Rate at 3-month horizon

Unemployment 3-m	**Panel 1**			**Panel 2**			**Panel 3**			**Panel 4**		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				4.080**	4.105**	4.097	0.760	-0.0731	0.0683	-1.552*	-2.252***	-1.973
				(1.920)	(2.055)	(4.556)	(1.188)	(1.175)	(3.321)	(0.829)	(0.848)	(2.602)
Real Interest Rate				0.713	0.703	0.700	-0.587	-0.823	-0.780	0.267	-0.406	-0.166
				(1.228)	(1.511)	(3.877)	(0.874)	(1.074)	(2.903)	(0.595)	(0.755)	(2.343)
Credit Spread_R	7.207***	8.926***	8.653***				6.519***	8.535***	8.201***	1.295	0.716	1.192
	(2.045)	(1.736)	(1.929)				(2.252)	(1.920)	(2.525)	(1.397)	(1.262)	(1.370)
Consumer Confidence										-0.408***	-0.796***	-0.553***
										(0.111)	(0.215)	(0.209)
Economic Sentiment										-0.799***	-0.553***	-0.701***
										(0.0912)	(0.110)	(0.159)
Observations	864	864	864	864	864	864	864	864	864	864	864	864
R-squared	0.119	0.165	0.119	0.051	0.054	0.051	0.128	0.169	0.126	0.408	0.419	0.404
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.002	0.003	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.278			0.745			0.593			0.023

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.47. The Credit Spread Index (version R) and Unemployment Rate at 12-month horizon

Unemployment 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.678	2.195	2.121	-1.474	-1.698	-1.613	-3.856	-4.047*	-4.007
				(2.905)	(2.880)	(4.921)	(2.252)	(1.829)	(3.498)	(2.499)	(2.108)	(3.150)
Real Interest Rate				0.725	1.332	1.247	-0.602	-0.162	-0.186	0.447	0.213	0.246
				(2.039)	(2.260)	(4.704)	(1.412)	(1.428)	(3.643)	(1.426)	(1.504)	(4.242)
Credit Spread_R	5.573**	6.930***	6.813***				6.141**	7.916***	7.598***	2.123	1.805	1.928
	(2.286)	(1.860)	(2.429)				(2.668)	(2.182)	(2.718)	(2.689)	(2.468)	(2.238)
Consumer Confidence										-0.503***	-0.862***	-0.805***
										(0.171)	(0.300)	(0.223)
Economic Sentiment										-0.470**	-0.210	-0.244
										(0.211)	(0.210)	(0.312)
Observations	792	792	792	792	792	792	792	792	792	792	792	792
R-squared	0.098	0.144	0.098	0.006	0.010	0.006	0.102	0.156	0.101	0.319	0.334	0.303
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.506			0.842			0.678			0.818

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.48. The Credit Spread Index (version R) and Unemployment Rate at 24-month horizon

Unemployment 24-m	**Panel 1**			**Panel 2**			**Panel 3**			**Panel 4**		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.501	-0.812	-0.828	-4.051	-3.735*	-3.733	-5.434*	-4.744**	-4.767*
				(2.802)	(2.408)	(3.738)	(2.534)	(2.044)	(2.326)	(3.153)	(2.170)	(2.456)
Real Interest Rate				-0.333	0.409	0.392	-1.444	-0.720	-0.736	-1.229	-1.042	-1.047
				(2.176)	(1.792)	(4.267)	(1.621)	(1.101)	(3.182)	(1.627)	(1.251)	(3.857)
Credit Spread_R	3.588**	4.249**	4.224***				4.980***	5.838***	5.794***	4.389*	5.027*	4.997*
	(1.419)	(1.793)	(1.584)				(1.469)	(1.656)	(1.933)	(2.485)	(2.637)	(2.680)
Consumer Confidence										-0.526***	-0.571***	-0.572***
										(0.127)	(0.152)	(0.194)
Economic Sentiment										0.182	0.317	0.313
										(0.249)	(0.238)	(0.375)
Observations	696	696	696	696	696	696	696	696	696	696	696	696
R-squared	0.051	0.083	0.051	0.008	0.011	0.006	0.090	0.138	0.087	0.192	0.183	0.189
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.649			0.969			0.819			0.998

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.49. The Credit Spread Index (version R) and Employment Growth at 1-quarter horizon

Employment 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.018***	-0.986***	-1.000*	-0.618***	-0.494***	-0.560*	-0.414***	-0.313**	-0.358
				(0.236)	(0.246)	(0.537)	(0.138)	(0.133)	(0.314)	(0.133)	(0.156)	(0.255)
Real Interest Rate				-0.273*	-0.232	-0.250	-0.128	-0.0742	-0.100	-0.242***	-0.145	-0.185
				(0.143)	(0.161)	(0.284)	(0.0958)	(0.105)	(0.181)	(0.0790)	(0.0919)	(0.177)
Credit Spread_R	-1.086***	-1.320***	-1.141**				-0.803***	-1.044***	-0.908**	-0.324*	-0.360**	-0.352
	(0.160)	(0.127)	(0.459)				(0.182)	(0.150)	(0.441)	(0.165)	(0.176)	(0.279)
Consumer Confidence										0.0459**	0.0693**	0.0535**
										(0.0174)	(0.0278)	(0.0225)
Economic Sentiment										0.0643***	0.0473**	0.0581***
										(0.0159)	(0.0204)	(0.0186)
Observations	282	282	282	282	282	282	282	282	282	282	282	282
R-squared	0.193	0.254	0.193	0.166	0.171	0.166	0.250	0.295	0.250	0.405	0.409	0.404
CD p-value	0.040	0.192					0.231	0.436		0.237	0.230	
FE/RE		0.000	0.006		0.218	0.942		0.001	0.039		0.217	0.948
Robust Hausman			0.000			0.878			0.044			0.727

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.50. The Credit Spread Index (version R) and Employment Growth at 4-quarter horizon

Employment 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.811**	-0.835**	-0.827	-0.386**	-0.334**	-0.360	-0.157	-0.113	-0.132
				(0.307)	(0.319)	(0.549)	(0.169)	(0.132)	(0.294)	(0.188)	(0.187)	(0.254)
Real Interest Rate				-0.317	-0.348	-0.337	-0.144	-0.171	-0.168	-0.296**	-0.261*	-0.275
				(0.206)	(0.241)	(0.389)	(0.114)	(0.140)	(0.251)	(0.130)	(0.149)	(0.339)
Credit Spread_R	-1.009***	-1.201***	-1.097***				-0.868***	-1.083***	-0.998**	-0.389	-0.397*	-0.409**
	(0.160)	(0.132)	(0.403)				(0.195)	(0.162)	(0.401)	(0.250)	(0.224)	(0.208)
Consumer Confidence										0.0574***	0.0818***	0.0680***
										(0.0161)	(0.0284)	(0.0248)
Economic Sentiment										0.0466***	0.0298**	0.0386
										(0.0129)	(0.0135)	(0.0286)
Observations	258	258	258	258	258	258	258	258	258	258	258	258
R-squared	0.265	0.343	0.265	0.128	0.133	0.128	0.289	0.358	0.287	0.486	0.490	0.484
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.113	0.591		0.000	0.000		0.099	0.838
Robust Hausman			0.000			0.962			0.000			0.457

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.51. The Credit Spread Index (version R) and Employment Growth at 8-quarter horizon

Employment 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.442	-0.493	-0.481	-0.0708	-0.0758	-0.0828	0.145	0.111	0.118
				(0.374)	(0.366)	(0.476)	(0.201)	(0.142)	(0.187)	(0.258)	(0.171)	(0.187)
Real Interest Rate				-0.271	-0.353	-0.332	-0.110	-0.198	-0.186	-0.176	-0.212	-0.205
				(0.240)	(0.221)	(0.420)	(0.140)	(0.119)	(0.276)	(0.152)	(0.136)	(0.360)
Credit Spread_R	-0.812***	-0.908***	-0.875***				-0.797***	-0.919***	-0.888***	-0.592**	-0.636**	-0.621***
	(0.162)	(0.190)	(0.317)				(0.152)	(0.169)	(0.339)	(0.280)	(0.257)	(0.204)
Consumer Confidence										0.0596***	0.0612***	0.0605**
										(0.0123)	(0.0164)	(0.0252)
Economic Sentiment										-0.00392	-0.00913	-0.00722
										(0.0202)	(0.0172)	(0.0327)
Observations	226	226	226	226	226	226	226	226	226	226	226	226
R-squared	0.218	0.270	0.218	0.042	0.051	0.041	0.225	0.290	0.222	0.361	0.341	0.360
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.014	0.081		0.000	0.000		0.263	0.976
Robust Hausman			0.000			0.014			0.000			0.980

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.52. The Credit Spread Index (version R) and Real GDP Growth at 1-quarter horizon

Real GDP 1-q	**Panel 1**			**Panel 2**			**Panel 3**			**Panel 4**		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.901	-1.135*	-0.901*	-0.00270	-0.0517	-0.00270	0.276	0.158	0.276
				(0.579)	(0.630)	(0.517)	(0.218)	(0.241)	(0.266)	(0.222)	(0.228)	(0.173)
Real Interest Rate				-0.202	-0.485	-0.202	0.126	-0.128	0.126	-0.0398	-0.249	-0.0398
				(0.367)	(0.437)	(0.482)	(0.248)	(0.275)	(0.318)	(0.220)	(0.261)	(0.299)
Credit Spread_R	-1.876***	-2.281***	-2.100***				-1.819**	-2.317***	-1.819***	-1.117***	-1.278***	-1.117***
	(0.671)	(0.616)	(0.358)				(0.694)	(0.642)	(0.438)	(0.369)	(0.358)	(0.277)
Consumer Confidence										0.0848***	0.0922***	0.0848***
										(0.0143)	(0.0290)	(0.0294)
Economic Sentiment										0.0858**	0.0790**	0.0858**
										(0.0357)	(0.0381)	(0.0344)
Observations	287	287	287	287	287	287	287	287	287	287	287	287
R-squared	0.302	0.407	0.302	0.078	0.082	0.078	0.306	0.409	0.306	0.527	0.553	0.527
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.031	0.047		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.001

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.53. The Credit Spread Index (version R) and Real GDP Growth at 4-quarter horizon

Real GDP 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.386	-0.716	-0.448	0.227	0.0268	0.0953	0.430	0.188	0.307
				(0.566)	(0.554)	(0.569)	(0.400)	(0.316)	(0.320)	(0.396)	(0.322)	(0.281)
Real Interest Rate				-0.168	-0.583	-0.246	0.0727	-0.328	-0.153	-0.00518	-0.328	-0.167
				(0.417)	(0.451)	(0.639)	(0.291)	(0.297)	(0.543)	(0.312)	(0.300)	(0.641)
Credit Spread_R	-1.146**	-1.421***	-1.314***				-1.234**	-1.585***	-1.373***	-1.041*	-1.227**	-1.105***
	(0.444)	(0.407)	(0.348)				(0.501)	(0.428)	(0.321)	(0.591)	(0.564)	(0.392)
Consumer Confidence										0.0919***	0.0941**	0.0917**
										(0.0150)	(0.0374)	(0.0363)
Economic Sentiment										-0.0104	-0.0216	-0.0134
										(0.0440)	(0.0507)	(0.0599)
Observations	263	263	263	263	263	263	263	263	263	263	263	263
R-squared	0.168	0.243	0.168	0.013	0.041	0.012	0.173	0.283	0.165	0.292	0.325	0.287
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.002			0.000			0.000			0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.54. The Credit Spread Index (version R) and Real GDP Growth at 8-quarter horizon

Real GDP 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.220	-0.0979	0.00284	0.657	0.415	0.456***	0.629	0.308	0.364*
				(0.550)	(0.465)	(0.444)	(0.488)	(0.410)	(0.128)	(0.400)	(0.299)	(0.204)
Real Interest Rate				0.121	-0.292	-0.161	0.295	-0.119	-0.0365	0.408	0.0528	0.106
				(0.433)	(0.323)	(0.636)	(0.339)	(0.217)	(0.491)	(0.358)	(0.239)	(0.595)
Credit Spread_R	-0.655***	-0.818***	-0.784***				-0.855***	-1.042***	-0.988***	-1.322***	-1.561***	-1.493***
	(0.226)	(0.306)	(0.238)				(0.257)	(0.258)	(0.233)	(0.486)	(0.500)	(0.368)
Consumer Confidence										0.0796***	0.0578**	0.0672
										(0.0110)	(0.0224)	(0.0465)
Economic Sentiment										-0.109*	-0.110**	-0.112*
										(0.0553)	(0.0482)	(0.0616)
Observations	231	231	231	231	231	231	231	231	231	231	231	231
R-squared	0.083	0.137	0.083	0.005	0.028	0.000	0.124	0.212	0.099	0.236	0.278	0.202
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.041			0.019			0.001			0.133

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.56. The Credit Spread Index (version W) and Industrial Production Growth at 3-month horizon

Ind Prod 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.756	-2.360	-2.208	1.148	0.904	0.913	1.846**	1.387*	1.500**
				(1.741)	(2.159)	(2.355)	(0.792)	(0.886)	(0.703)	(0.758)	(0.830)	(0.677)
Real Interest Rate				-2.327*	-3.051*	-2.870	-0.969	-1.647	-1.488	-1.220*	-1.755*	-1.632
				(1.185)	(1.773)	(2.610)	(0.650)	(1.019)	(1.580)	(0.621)	(1.014)	(1.624)
Credit Spread_W	-5.144**	-5.878**	-5.712***				-6.122**	-7.268***	-6.819***	-4.877**	-5.456**	-5.228***
	(2.567)	(2.834)	(0.518)				(2.473)	(2.667)	(0.765)	(1.884)	(2.145)	(1.011)
Consumer Confidence										0.294***	0.251***	0.278***
										(0.0604)	(0.0910)	(0.0991)
Economic Sentiment										0.0538	0.0460	0.0413
										(0.113)	(0.142)	(0.129)
Observations	864	864	864	864	864	864	864	864	864	864	864	864
R-squared	0.123	0.147	0.123	0.040	0.050	0.040	0.181	0.228	0.180	0.265	0.258	0.263
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.006	0.015
Robust Hausman			0.149			0.002			0.000			0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.57. The Credit Spread Index (version W) and Industrial Production Growth at 12-month horizon

Ind Prod 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.664	0.0381	0.109	1.991	1.594*	1.613***	2.375*	1.754*	1.820***
				(1.305)	(1.187)	(1.446)	(1.360)	(0.962)	(0.548)	(1.366)	(0.950)	(0.562)
Real Interest Rate				-1.427	-2.202*	-2.116	-0.764	-1.499*	-1.442	-0.808	-1.386	-1.336
				(0.965)	(1.244)	(2.167)	(0.743)	(0.838)	(1.595)	(0.775)	(0.866)	(1.861)
Credit Spread_W	-1.624	-1.917	-1.879***				-2.791*	-3.471**	-3.375***	-2.772**	-3.313**	-3.201***
	(1.493)	(1.654)	(0.447)				(1.434)	(1.467)	(0.478)	(1.287)	(1.328)	(0.680)
Consumer Confidence										0.255***	0.176**	0.198*
										(0.0596)	(0.0720)	(0.113)
Economic Sentiment										-0.123	-0.118	-0.126
										(0.100)	(0.109)	(0.153)
Observations	792	792	792	792	792	792	792	792	792	792	792	792
R-squared	0.029	0.038	0.029	0.152	0.186	0.149	0.221	0.287	0.217	0.298	0.299	0.287
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.333			0.422			0.005			0.524

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.58. The Credit Spread Index (version W) and Industrial Production Growth at 24-month horizon

Ind Prod 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.948*	1.531	1.540***	2.367*	2.039**	2.044***	2.276**	1.523*	1.571***
				(1.139)	(0.927)	(0.308)	(1.232)	(1.022)	(0.216)	(1.130)	(0.821)	(0.362)
Real Interest Rate				-0.431	-0.957	-0.945	-0.224	-0.735	-0.726	0.0873	-0.409	-0.387
				(0.795)	(0.585)	(1.228)	(0.702)	(0.464)	(0.978)	(0.702)	(0.489)	(1.102)
Credit Spread_W	0.0827	0.111	0.108				-0.844	-1.060*	-1.054**	-2.065***	-2.593***	-2.524***
	(0.990)	(1.102)	(0.397)				(0.538)	(0.574)	(0.476)	(0.712)	(0.872)	(0.380)
Consumer Confidence										0.175***	-0.000659	0.0211
										(0.0372)	(0.0519)	(0.112)
Economic Sentiment										-0.258***	-0.191**	-0.201**
										(0.0831)	(0.0863)	(0.0973)
Observations	696	696	696	696	696	696	696	696	696	696	696	696
R-squared	0.000	0.000	0.000	0.247	0.310	0.240	0.262	0.334	0.253	0.348	0.388	0.280
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.947			0.969			0.659			0.455

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.59. The Credit Spread Index (version W) and Unemployment Rate at 3-month horizon

Unemployment 3-m		**Panel 1**			**Panel 2**			**Panel 3**			**Panel 4**	
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				4.080**	4.105**	4.097	-0.0595	-0.445	-0.364	-1.906**	-2.446***	-2.373
				(1.920)	(2.055)	(4.556)	(1.122)	(1.127)	(3.020)	(0.802)	(0.813)	(2.659)
Real Interest Rate				0.713	0.703	0.700	-1.220	-1.246	-1.228	-0.0419	-0.564	-0.512
				(1.228)	(1.511)	(3.877)	(0.837)	(1.038)	(2.622)	(0.574)	(0.741)	(2.445)
Credit Spread_W	9.102***	10.44***	10.26***				8.723***	10.14***	9.884***	2.611*	1.617	1.873
	(2.048)	(1.796)	(1.841)				(2.237)	(1.967)	(2.529)	(1.478)	(1.278)	(1.485)
Consumer Confidence										-0.420***	-0.782***	-0.693***
										(0.111)	(0.212)	(0.235)
Economic Sentiment										-0.738***	-0.527***	-0.578***
										(0.0904)	(0.112)	(0.146)
Observations	864	864	864	864	864	864	864	864	864	864	864	864
R-squared	0.153	0.187	0.153	0.051	0.053	0.051	0.164	0.193	0.163	0.413	0.421	0.399
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.003	0.005	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.358			0.745			0.573			0.588

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.60. The Credit Spread Index (version W) and Unemployment Rate at 12-month horizon

Unemployment 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.678	2.195	2.121	-2.252	-2.112	-2.092	-4.180*	-4.190**	-4.164
				(2.905)	(2.880)	(4.921)	(2.171)	(1.737)	(3.138)	(2.403)	(1.997)	(2.974)
Real Interest Rate				0.725	1.332	1.247	-1.237	-0.614	-0.658	-0.0425	-0.0628	-0.0484
				(2.039)	(2.260)	(4.704)	(1.296)	(1.324)	(3.329)	(1.365)	(1.453)	(4.135)
Credit Spread_W	7.413***	8.559***	8.478***				8.270***	9.613***	9.405***	3.944	3.181	3.326
	(2.276)	(1.941)	(2.275)				(2.715)	(2.310)	(2.514)	(2.986)	(2.661)	(2.317)
Consumer Confidence										-0.519***	-0.834***	-0.786***
										(0.171)	(0.298)	(0.211)
Economic Sentiment										-0.368*	-0.162	-0.189
										(0.209)	(0.204)	(0.308)
Observations	792	792	792	792	792	792	792	792	792	792	792	792
R-squared	0.139	0.182	0.139	0.006	0.009	0.006	0.148	0.194	0.145	0.332	0.341	0.316
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.537			0.842			0.636			0.900

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.61. The Credit Spread Index (version W) and Unemployment Rate at 24-month horizon

Unemployment 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.501	-0.812	-0.828	-4.496*	-3.997*	-4.001*	-5.653*	-4.808**	-4.829**
				(2.802)	(2.408)	(3.738)	(2.614)	(2.033)	(2.196)	(3.081)	(2.115)	(2.398)
Real Interest Rate				-0.333	0.409	0.392	-1.814	-0.989	-1.002	-1.727	-1.311	-1.320
				(2.176)	(1.792)	(4.267)	(1.558)	(1.041)	(3.028)	(1.541)	(1.199)	(3.765)
Credit Spread_W	4.448***	4.973**	4.956***				6.062***	6.666***	6.644***	5.984**	6.036**	6.025**
	(1.434)	(1.944)	(1.605)				(1.611)	(1.782)	(1.921)	(2.557)	(2.870)	(2.688)
Consumer Confidence										-0.540***	-0.542***	-0.545***
										(0.133)	(0.149)	(0.187)
Economic Sentiment										0.271	0.336	0.336
										(0.230)	(0.230)	(0.363)
Observations	696	696	696	696	696	696	696	696	696	696	696	696
R-squared	0.069	0.098	0.069	0.008	0.011	0.005	0.114	0.156	0.109	0.213	0.196	0.211
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.754			0.969			0.892			0.999

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.62. The Credit Spread Index (version W) and Employment Growth at 1-quarter horizon

Employment 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.018***	-0.986***	-1.000*	-0.541***	-0.453***	-0.494*	-0.376***	-0.291*	-0.328
				(0.236)	(0.246)	(0.537)	(0.125)	(0.140)	(0.253)	(0.124)	(0.152)	(0.223)
Real Interest Rate				-0.273*	-0.232	-0.250	-0.0651	-0.0279	-0.0443	-0.197**	-0.114	-0.148
				(0.143)	(0.161)	(0.284)	(0.0917)	(0.108)	(0.144)	(0.0769)	(0.0926)	(0.149)
Credit Spread_W	-1.311***	-1.527***	-1.382***				-1.041***	-1.253***	-1.150**	-0.510***	-0.539***	-0.534
	(0.163)	(0.142)	(0.517)				(0.169)	(0.153)	(0.503)	(0.174)	(0.199)	(0.373)
Consumer Confidence										0.0470***	0.0649**	0.0527**
										(0.0174)	(0.0275)	(0.0205)
Economic Sentiment										0.0558***	0.0432**	0.0513***
										(0.0164)	(0.0209)	(0.0163)
Observations	282	282	282	282	282	282	282	282	282	282	282	282
R-squared	0.225	0.279	0.225	0.166	0.171	0.166	0.282	0.323	0.282	0.414	0.418	0.414
CD p-value	0.011	0.030		0.000	0.000		0.309	0.333		0.325	0.347	
FE/RE		0.000	0.003		0.218	0.942		0.001	0.027		0.241	0.945
Robust Hausman			0.000			0.878			0.113			0.809

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.63. The Credit Spread Index (version W) and Employment Growth at 4-quarter horizon

Employment 4-q		**Panel 1**			**Panel 2**			**Panel 3**			**Panel 4**	
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.811**	-0.835**	-0.827	-0.322**	-0.296**	-0.311	-0.135	-0.106	-0.119
				(0.307)	(0.319)	(0.549)	(0.144)	(0.118)	(0.243)	(0.172)	(0.171)	(0.230)
Real Interest Rate				-0.317	-0.348	-0.337	-0.0789	-0.120	-0.114	-0.235*	-0.215	-0.223
				(0.206)	(0.241)	(0.389)	(0.101)	(0.130)	(0.212)	(0.121)	(0.142)	(0.309)
Credit Spread_W	-1.226***	-1.424***	-1.335***				-1.095***	-1.303***	-1.234***	-0.611**	-0.621**	-0.632**
	(0.146)	(0.150)	(0.461)				(0.178)	(0.177)	(0.461)	(0.252)	(0.239)	(0.266)
Consumer Confidence										0.0589***	0.0769***	0.0669***
										(0.0162)	(0.0281)	(0.0231)
Economic Sentiment										0.0337***	0.0214	0.0276
										(0.0118)	(0.0135)	(0.0241)
Observations	258	258	258	258	258	258	258	258	258	258	258	258
R-squared	0.315	0.393	0.315	0.128	0.133	0.128	0.339	0.408	0.336	0.503	0.505	0.501
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.113	0.590		0.000	0.000		0.128	0.827
Robust Hausman			0.000			0.962			0.000			0.842

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.64. The Credit Spread Index (version W) and Employment Growth at 8-quarter horizon

Employment 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.442	-0.493	-0.481	-0.0269	-0.0324	-0.0391	0.165	0.118	0.132
				(0.374)	(0.366)	(0.476)	(0.198)	(0.135)	(0.163)	(0.245)	(0.157)	(0.184)
Real Interest Rate				-0.271	-0.353	-0.332	-0.0678	-0.160	-0.148	-0.121	-0.168	-0.157
				(0.240)	(0.221)	(0.420)	(0.131)	(0.111)	(0.251)	(0.140)	(0.126)	(0.333)
Credit Spread_W	-0.923***	-1.042***	-1.007***				-0.915***	-1.056***	-1.023***	-0.768***	-0.820***	-0.796***
	(0.158)	(0.204)	(0.357)				(0.154)	(0.183)	(0.384)	(0.264)	(0.263)	(0.222)
Consumer Confidence										0.0617***	0.0576***	0.0603**
										(0.0127)	(0.0155)	(0.0234)
Economic Sentiment										-0.0144	-0.0157	-0.0157
										(0.0173)	(0.0158)	(0.0279)
Observations	226	226	226	226	226	226	226	226	226	226	226	226
R-squared	0.250	0.309	0.250	0.042	0.051	0.040	0.253	0.325	0.250	0.384	0.364	0.382
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.014	0.081		0.000	0.000		0.293	0.933
Robust Hausman			0.000			0.014			0.001			0.954

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.65. The Credit Spread Index (version W) and Real GDP Growth at 1-quarter horizon

Real GDP 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.901	-1.135*	-0.901*	0.0796	-0.0118	0.0172	0.299	0.173	0.277
				(0.579)	(0.630)	(0.517)	(0.211)	(0.223)	(0.184)	(0.217)	(0.216)	(0.175)
Real Interest Rate				-0.202	-0.485	-0.202	0.230	-0.0462	0.0978	0.0282	-0.192	-0.00718
				(0.367)	(0.437)	(0.482)	(0.235)	(0.253)	(0.304)	(0.210)	(0.245)	(0.307)
Credit Spread_W	-2.196***	-2.644***	-2.447***				-2.158***	-2.659***	-2.326***	-1.339***	-1.567***	-1.364***
	(0.686)	(0.631)	(0.204)				(0.694)	(0.648)	(0.228)	(0.384)	(0.393)	(0.272)
Consumer Confidence										0.0833***	0.0816***	0.0831***
										(0.0144)	(0.0285)	(0.0308)
Economic Sentiment										0.0789**	0.0772**	0.0788**
										(0.0364)	(0.0386)	(0.0362)
Observations	287	287	287	287	287	287	287	287	287	287	287	287
R-squared	0.331	0.449	0.331	0.078	0.082	0.078	0.341	0.450	0.338	0.535	0.570	0.534
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.030	0.047		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.003

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.66. The Credit Spread Index (version W) and Real GDP Growth at 4-quarter horizon

Real GDP 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.386	-0.716	-0.448	0.299	0.0823	0.155	0.454	0.192	0.305
				(0.566)	(0.554)	(0.569)	(0.396)	(0.306)	(0.265)	(0.381)	(0.299)	(0.270)
Real Interest Rate				-0.168	-0.583	-0.246	0.155	-0.256	-0.0922	0.0918	-0.243	-0.101
				(0.417)	(0.451)	(0.639)	(0.276)	(0.276)	(0.509)	(0.303)	(0.281)	(0.634)
Credit Spread_W	-1.406***	-1.756***	-1.629***				-1.513***	-1.905***	-1.698***	-1.370**	-1.653**	-1.492***
	(0.449)	(0.437)	(0.269)				(0.508)	(0.461)	(0.234)	(0.656)	(0.625)	(0.383)
Consumer Confidence										0.0927***	0.0821**	0.0899**
										(0.0149)	(0.0343)	(0.0362)
Economic Sentiment										-0.0268	-0.0330	-0.0305
										(0.0453)	(0.0507)	(0.0598)
Observations	263	263	263	263	263	263	263	263	263	263	263	263
R-squared	0.202	0.303	0.202	0.013	0.041	0.012	0.208	0.336	0.198	0.314	0.361	0.306
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.67. The Credit Spread Index (version W) and Real GDP Growth at 8-quarter horizon

Real GDP 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.220	-0.0979	0.00284	0.674	0.450	0.490***	0.640	0.307	0.367*
				(0.550)	(0.465)	(0.444)	(0.489)	(0.414)	(0.106)	(0.389)	(0.286)	(0.195)
Real Interest Rate				0.121	-0.292	-0.161	0.330	-0.0781	0.0111	0.474	0.120	0.172
				(0.433)	(0.323)	(0.636)	(0.334)	(0.210)	(0.471)	(0.356)	(0.230)	(0.572)
Credit Spread_W	-0.717***	-0.959***	-0.908***				-0.937***	-1.187***	-1.111***	-1.495***	-1.827***	-1.736***
	(0.242)	(0.320)	(0.235)				(0.268)	(0.271)	(0.238)	(0.498)	(0.502)	(0.341)
Consumer Confidence										0.0805***	0.0498**	0.0630
										(0.0116)	(0.0207)	(0.0455)
Economic Sentiment										-0.115**	-0.114**	-0.118**
										(0.0551)	(0.0455)	(0.0584)
Observations	231	231	231	231	231	231	231	231	231	231	231	231
R-squared	0.086	0.160	0.085	0.005	0.028	0.000	0.128	0.232	0.103	0.246	0.307	0.205
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.016			0.019			0.000			0.018

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.68. The Credit Spread Index by country and Industrial Production 3-m

Ind Prod 3-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	0.965	0.967	0.965	1.502*	1.647*	1.502**
	(0.836)	(0.917)	(0.671)	(0.782)	(0.906)	(0.632)
Real Interest Rate	-1.607*	-1.687	-1.607	-1.823**	-1.724*	-1.823
	(0.873)	(1.024)	(1.577)	(0.907)	(0.966)	(1.611)
CS*AT	-3.218*	-3.942***	-3.218***	-3.250**	-2.489***	-3.250***
	(1.685)	(1.294)	(0.475)	(1.334)	(0.904)	(0.609)
CS*BE	-6.13	-9.226	-6.130***	-4.896	-7.087	-4.896***
	(4.638)	(6.606)	(1.034)	(3.949)	(5.710)	(1.157)
CS*FR	-7.302***	-5.921**	-7.302***	-4.638**	-4.221**	-4.638***
	(2.661)	(2.580)	(0.680)	(2.230)	(2.065)	(1.104)
CS*DE	-5.686	-7.473*	-5.686***	-4.333	-6.448	-4.333***
	(3.549)	(4.500)	(0.696)	(3.043)	(4.255)	(0.878)
CS*UK	-4.567***	-5.477***	-4.567***	-3.230***	-2.772	-3.230**
	(1.662)	(1.952)	(1.079)	(1.190)	(1.777)	(1.339)
CS*IT	-9.600**	-7.958*	-9.600***	-6.316**	-6.552*	-6.316***
	(3.750)	(4.152)	(0.882)	(3.070)	(3.572)	(1.367)
CS*NL	-6.246***	-6.855***	-6.246***	-6.046***	-4.798***	-6.046***
	(2.261)	(1.496)	(0.734)	(1.735)	(1.211)	(1.129)
CS*SP	-8.079***	-6.503***	-8.079***	-4.966***	-3.683**	-4.966***
	(2.671)	(2.346)	(0.682)	(1.873)	(1.594)	(1.174)
Consumer Confidence				0.260***	0.298***	0.260**
				(0.069)	(0.099)	(0.111)
Economic Sentiment				0.0733	0.0587	0.0733
				(0.142)	(0.146)	(0.144)
Observations	864	864	864	864	864	864
R-squared	0.223	0.212	0.223	0.269	0.254	0.269
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.032	0.311		0.155	0.175
Robust Hausman			0.000			0.354
F-test	0.000	0.076	0.000	0.000	0.170	0.000
F-test (ex UK)	0.000	0.047	0.000	0.000	0.120	0.000
F-test (FR, DE, NL)	0.047	0.152	0.000	0.489	0.098	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.69. The Credit Spread Index by country and Industrial Production 12-m

Ind Prod 12-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	1.736	1.521	1.736***	1.988	1.737*	1.988***
	(1.215)	(1.013)	(0.476)	(1.203)	(1.023)	(0.412)
Real Interest Rate	-1.296*	-1.557*	-1.296	-1.253	-1.449	-1.253
	(0.676)	(0.913)	(1.495)	(0.762)	(0.899)	(1.752)
CS*AT	-1.214	-1.472*	-1.214***	-1.728	-1.397*	-1.728***
	(1.136)	(0.850)	(0.327)	(1.183)	(0.795)	(0.436)
CS*BE	-1.415	-3.687	-1.415**	-1.515	-3.647	-1.515*
	(2.453)	(3.239)	(0.701)	(2.309)	(2.983)	(0.919)
CS*FR	-3.732**	-2.567*	-3.732***	-2.738*	-2.332*	-2.738***
	(1.527)	(1.379)	(0.441)	(1.397)	(1.291)	(0.846)
CS*DE	-1.999	-2.755	-1.999***	-1.838	-2.639	-1.838**
	(2.001)	(1.903)	(0.467)	(2.011)	(1.915)	(0.758)
CS*UK	-1.400*	-3.110	-1.400	-1.530**	-2.940	-1.530
	(0.825)	(1.907)	(1.112)	(0.664)	(1.959)	(1.883)
CS*IT	-5.426**	-3.659	-5.426***	-4.347**	-3.907	-4.347***
	(2.487)	(2.461)	(0.594)	(2.118)	(2.421)	(1.084)
CS*NL	-2.753**	-2.978**	-2.753***	-3.754**	-2.685**	-3.754***
	(1.316)	(1.350)	(0.473)	(1.453)	(1.300)	(1.058)
CS*SP	-5.438***	-4.520**	-5.438***	-4.390**	-3.669*	-4.390***
	(1.972)	(1.908)	(0.456)	(1.879)	(1.996)	(1.134)
Consumer Confidence				0.193***	0.192**	0.193**
				(0.0587)	(0.0963)	(0.0828)
Economic Sentiment				-0.103	-0.117	-0.103
				(0.109)	(0.125)	(0.150)
Observations	792	792	792	792	792	792
R-squared	0.310	0.279	0.309	0.331	0.292	0.330
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.000	0.726		0.044	0.267
Robust Hausman			0.000			0.000
F-test	0.000	0.024	0.000	0.000	0.477	0.000
F-test (ex UK)	0.000	0.375	0.000	0.000	0.518	0.000
F-test (FR, DE, NL)	0.046	0.360	0.000	0.069	0.336	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.70. The Credit Spread Index by country and Industrial Production 24-m

Ind Prod 24-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	2.154*	1.997*	2.154***	1.837*	1.383*	1.837***
	(1.128)	(1.046)	(0.315)	(0.988)	(0.805)	(0.403)
Real Interest Rate	-0.563	-0.750	-0.563	-0.184	-0.429	-0.184
	(0.574)	(0.485)	(0.896)	(0.593)	(0.502)	(1.018)
CS*AT	-0.245	-0.323	-0.245	-1.258**	-1.633*	-1.258***
	(0.379)	(0.807)	(0.252)	(0.560)	(0.909)	(0.282)
CS*BE	1.679**	-0.214	1.679***	0.0238	-3.042**	0.0238
	(0.717)	(1.041)	(0.544)	(0.862)	(1.350)	(0.573)
CS*FR	-1.474**	-0.718	-1.474***	-2.272**	-1.898***	-2.272***
	(0.657)	(0.465)	(0.341)	(0.940)	(0.614)	(0.656)
CS*DE	0.0900	-0.376	0.0900	-1.250	-1.404*	-1.250**
	(0.676)	(0.811)	(0.374)	(0.964)	(0.839)	(0.489)
CS*UK	0.139	-1.036	0.139	-1.294**	-3.167**	-1.294
	(0.613)	(1.283)	(0.714)	(0.558)	(1.449)	(1.281)
CS*IT	-2.857***	-1.504*	-2.857***	-4.207***	-3.286***	-4.207***
	(0.977)	(0.909)	(0.455)	(1.336)	(1.249)	(0.867)
CS*NL	-0.415	-0.754*	-0.415	-2.245***	-2.334***	-2.245***
	(0.399)	(0.429)	(0.349)	(0.727)	(0.668)	(0.593)
CS*SP	-3.204***	-2.436*	-3.204***	-4.587***	-4.397**	-4.587***
	(0.964)	(1.293)	(0.337)	(1.583)	(1.799)	(0.862)
Consumer Confidence				0.0707*	-0.0107	0.0707
				(0.0406)	(0.0615)	(0.0761)
Economic Sentiment				-0.222***	-0.208**	-0.222***
				(0.0827)	(0.0941)	(0.0841)
Observations	696	696	696	696	696	696
R-squared	0.407	0.344	0.407	0.450	0.406	0.450
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.000	0.764		0.000	0.572
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.023	0.770	0.000	0.210	0.360	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.71. The Credit Spread Index by country and Unemployment Rate 3-m

Unemployment 3-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-0.271	0.297	-0.271	-1.866**	-2.004**	-1.866
	(1.111)	(1.310)	(3.015)	(0.738)	(0.870)	(2.462)
Real Interest Rate	-1.313	-0.706	-1.313	-0.253	-0.366	-0.253
	(0.912)	(1.255)	(2.553)	(0.663)	(0.842)	(2.324)
CS*AT	3.680*	5.911**	3.680***	1.889	-0.129	1.889
	(2.208)	(2.965)	(1.085)	(1.596)	(2.560)	(1.255)
CS*BE	8.948***	5.111	8.948***	2.997	-3.889	2.997
	(3.123)	(5.268)	(2.300)	(2.478)	(4.223)	(1.999)
CS*FR	9.294***	6.986***	9.294***	0.807	0.523	0.807
	(1.628)	(1.819)	(1.627)	(1.492)	(1.526)	(1.385)
CS*DE	3.311**	0.503	3.311**	-2.584**	-3.704**	-2.584*
	(1.591)	(2.334)	(1.575)	(1.125)	(1.440)	(1.388)
CS*UK	8.976***	12.58***	8.976***	2.822*	1.660	2.822
	(2.087)	(2.997)	(2.295)	(1.440)	(2.069)	(2.039)
CS*IT	9.154***	7.886***	9.154***	-1.723	1.694	-1.723
	(2.060)	(1.954)	(1.962)	(1.505)	(1.733)	(1.699)
CS*NL	8.660***	11.01***	8.660***	4.435***	3.183	4.435**
	(2.338)	(3.877)	(1.687)	(1.436)	(2.875)	(2.076)
CS*SP	15.74***	16.85***	15.74***	4.840**	6.777**	4.840***
	(3.516)	(4.389)	(1.558)	(2.316)	(3.115)	(1.548)
Consumer Confidence				-0.524***	-0.717***	-0.524***
				(0.124)	(0.194)	(0.174)
Economic Sentiment				-0.659***	-0.572***	-0.659***
				(0.100)	(0.113)	(0.151)
Observations	864	864	864	864	864	864
R-squared	0.244	0.220	0.244	0.451	0.438	0.451
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.010	0.352		0.000	0.410
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.000	0.000	0.000	0.000	0.000	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.72. The Credit Spread Index by country and Unemployment Rate 12-m

Unemployment 12-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-2.256	-2.044	-2.256	-3.905*	-4.179**	-3.905
	(1.923)	(1.731)	(2.998)	(2.085)	(1.942)	(2.518)
Real Interest Rate	-0.810	-0.674	-0.810	0.0223	-0.289	0.0223
	(1.112)	(1.442)	(2.974)	(1.272)	(1.413)	(3.625)
CS*AT	3.212	2.173	3.212***	2.781	-1.646	2.781**
	(2.079)	(1.615)	(0.711)	(2.400)	(2.301)	(1.203)
CS*BE	9.725***	9.612***	9.725***	5.636**	1.666	5.636***
	(2.422)	(3.685)	(1.591)	(2.842)	(3.664)	(2.017)
CS*FR	8.886***	6.655***	8.886***	2.251	2.080	2.251
	(1.751)	(1.839)	(1.090)	(2.005)	(1.831)	(1.713)
CS*DE	3.139**	0.935	3.139***	-1.131	-2.339	-1.131
	(1.237)	(2.774)	(1.044)	(1.844)	(2.485)	(1.603)
CS*UK	7.325***	8.877**	7.325***	3.832	1.732	3.832
	(2.158)	(3.868)	(2.349)	(2.568)	(2.761)	(3.859)
CS*IT	10.09***	10.28***	10.09***	1.796	6.448***	1.796
	(2.358)	(2.006)	(1.354)	(1.841)	(2.415)	(2.171)
CS*NL	10.58***	19.56***	10.58***	9.465***	13.49***	9.465***
	(2.836)	(3.175)	(1.133)	(1.872)	(3.268)	(2.552)
CS*SP	18.18***	15.94**	18.18***	9.496*	6.673	9.496***
	(5.882)	(6.133)	(1.101)	(5.046)	(6.520)	(2.425)
Consumer Confidence				-0.627***	-0.793**	-0.627***
				(0.163)	(0.306)	(0.222)
Economic Sentiment				-0.210	-0.169	-0.210
				(0.172)	(0.198)	(0.325)
Observations	792	792	792	792	792	792
R-squared	0.303	0.269	0.302	0.423	0.401	0.423
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.000	0.687		0.000	0.702
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.000	0.000	0.000	0.000	0.000	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.73. The Credit Spread Index by country and Unemployment Rate 24-m

Unemployment 24-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-4.279*	-4.259**	-4.279*	-5.005**	-4.978**	-5.005**
	(2.396)	(2.045)	(2.331)	(2.526)	(2.077)	(2.455)
Real Interest Rate	-1.202	-1.188	-1.202	-1.529	-1.610	-1.529
	(1.187)	(1.048)	(2.566)	(1.188)	(1.155)	(3.204)
CS*AT	2.308**	2.510	2.308***	4.131**	2.415	4.131***
	(1.013)	(1.548)	(0.567)	(1.820)	(2.117)	(1.578)
CS*BE	6.159***	7.543**	6.159***	7.602***	8.451*	7.602***
	(1.668)	(2.996)	(1.365)	(2.872)	(4.454)	(2.796)
CS*FR	6.007***	4.730***	6.007***	4.172**	4.435**	4.172**
	(1.268)	(1.567)	(0.850)	(2.041)	(2.154)	(2.048)
CS*DE	0.940	1.211	0.940	1.557	1.369	1.557
	(0.967)	(2.098)	(0.875)	(2.077)	(2.378)	(2.268)
CS*UK	4.369**	4.702*	4.369**	5.550**	4.706	5.550
	(1.886)	(2.826)	(2.035)	(2.591)	(2.994)	(4.332)
CS*IT	7.338***	8.492***	7.338***	5.545**	9.794***	5.545*
	(1.918)	(1.634)	(1.156)	(2.287)	(2.913)	(2.989)
CS*NL	7.104***	15.06***	7.104***	10.74***	14.79***	10.74***
	(2.298)	(2.495)	(0.915)	(2.158)	(3.137)	(2.951)
CS*SP	16.87***	9.877	16.87***	15.08**	7.963	15.08***
	(5.891)	(6.599)	(0.849)	(6.342)	(7.742)	(3.048)
Consumer Confidence				-0.518***	-0.554***	-0.518***
				(0.107)	(0.201)	(0.200)
Economic Sentiment				0.389**	0.393*	0.389
				(0.196)	(0.235)	(0.372)
Observations	696	696	696	696	696	696
R-squared	0.319	0.221	0.319	0.365	0.259	0.364
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.000	0.021		0.000	0.074
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.000	0.000	0.000	0.000	0.000	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.74. The Credit Spread Index by country and Employment Stock 1-q

Employment	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-0.501***	-0.436***	-0.501*	-0.403***	-0.280	-0.403
	(0.155)	(0.164)	(0.269)	(0.126)	(0.170)	(0.259)
Real Interest Rate	-0.0619	-0.0224	-0.0619	-0.180**	-0.0989	-0.180
	(0.104)	(0.102)	(0.170)	(0.0837)	(0.102)	(0.181)
CS*AT	-0.374***	-0.444**	-0.374*	-0.168	0.0184	-0.168
	(0.136)	(0.183)	(0.204)	(0.137)	(0.181)	(0.205)
CS*BE	-0.873**	-1.303*	-0.873*	-0.330	-0.445	-0.330
	(0.417)	(0.677)	(0.479)	(0.405)	(0.571)	(0.434)
CS*FR	-1.016***	-0.384***	-1.016***	-0.419*	0.150	-0.419
	(0.205)	(0.136)	(0.338)	(0.227)	(0.124)	(0.318)
CS*DE	-0.732***	-0.616***	-0.732**	-0.244	-0.257	-0.244
	(0.191)	(0.236)	(0.318)	(0.190)	(0.224)	(0.285)
CS*UK	-1.070***	-0.963***	-1.070***	-0.549**	-0.0818	-0.549**
	(0.168)	(0.163)	(0.281)	(0.209)	(0.169)	(0.260)
CS*IT	-1.397***	-0.685***	-1.397***	-0.601**	-0.109	-0.601
	(0.233)	(0.236)	(0.401)	(0.231)	(0.210)	(0.369)
CS*NL	-0.943***	-0.499	-0.943***	-0.527*	0.186	-0.527
	(0.293)	(0.521)	(0.354)	(0.316)	(0.497)	(0.355)
CS*SP	-2.000***	-3.922***	-2.000***	-1.188***	-3.133***	-1.188***
	(0.542)	(0.697)	(0.321)	(0.433)	(0.561)	(0.291)
Consumer Confidence				0.0277	0.0393*	0.0277
				(0.0183)	(0.0231)	(0.0236)
Economic Sentiment				0.0594***	0.0601***	0.0594**
				(0.0171)	(0.0181)	(0.0257)
Observations	282	282	282	282	282	282
R-squared	0.377	0.490	0.376	0.447	0.571	0.446
CD p-value	0.168	0.327	0.000	0.008	0.000	0.000
FE/RE		0.000	0.121		0.000	0.037
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.039	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.087	0.000	0.000
F-test (FR, DE, NL)	0.277	0.669	0.000	0.581	0.147	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.75. The Credit Spread Index by country and Employment Stock 4-q

Employment	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-0.306**	-0.253*	-0.306	-0.184	-0.105	-0.184
	(0.120)	(0.127)	(0.241)	(0.148)	(0.169)	(0.224)
Real Interest Rate	-0.129	-0.0848	-0.129	-0.241**	-0.175	-0.241
	(0.0963)	(0.129)	(0.210)	(0.113)	(0.135)	(0.301)
CS*AT	-0.460***	-0.447***	-0.460**	-0.339**	-0.0909	-0.339**
	(0.123)	(0.115)	(0.182)	(0.163)	(0.163)	(0.146)
CS*BE	-0.955***	-0.976***	-0.955**	-0.498	-0.163	-0.498
	(0.313)	(0.354)	(0.440)	(0.391)	(0.366)	(0.339)
CS*FR	-1.094***	-0.475***	-1.094***	-0.525*	-0.0587	-0.525**
	(0.234)	(0.108)	(0.298)	(0.281)	(0.123)	(0.261)
CS*DE	-0.782***	-0.665***	-0.782***	-0.344**	-0.332	-0.344
	(0.126)	(0.114)	(0.283)	(0.172)	(0.200)	(0.232)
CS*UK	-0.983***	-0.920***	-0.983***	-0.591**	-0.275	-0.591**
	(0.189)	(0.195)	(0.258)	(0.239)	(0.180)	(0.289)
CS*IT	-1.591***	-0.988***	-1.591***	-0.834***	-0.510**	-0.834***
	(0.262)	(0.172)	(0.371)	(0.262)	(0.209)	(0.323)
CS*NL	-1.077***	-1.202***	-1.077***	-0.858***	-0.619***	-0.858***
	(0.172)	(0.285)	(0.314)	(0.181)	(0.233)	(0.250)
CS*SP	-2.287***	-4.105***	-2.287***	-1.489***	-3.295***	-1.489***
	(0.459)	(0.643)	(0.309)	(0.380)	(0.649)	(0.301)
Consumer Confidence				0.0435***	0.0446**	0.0435***
				(0.0124)	(0.0207)	(0.0141)
Economic Sentiment				0.0298***	0.0347***	0.0298
				(0.0100)	(0.0117)	(0.0302)
Observations	258	258	258	258	258	258
R-squared	0.504	0.644	0.504	0.566	0.701	0.566
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.000	0.001		0.000	0.001
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.002	0.020	0.000	0.000	0.014	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.76. The Credit Spread Index by country and Employment Stock 8-q

Employment	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-0.0296	0.0592	-0.0296	0.0685	0.146	0.0685
	(0.163)	(0.131)	(0.172)	(0.173)	(0.154)	(0.145)
Real Interest Rate	-0.161*	-0.113	-0.161	-0.166	-0.114	-0.166
	(0.0920)	(0.101)	(0.237)	(0.101)	(0.112)	(0.320)
CS*AT	-0.412***	-0.436***	-0.412***	-0.503***	-0.352*	-0.503***
	(0.105)	(0.141)	(0.151)	(0.188)	(0.181)	(0.114)
CS*BE	-0.756***	-0.888***	-0.756**	-0.752**	-0.749***	-0.752***
	(0.240)	(0.109)	(0.348)	(0.319)	(0.224)	(0.247)
CS*FR	-0.927***	-0.454***	-0.927***	-0.688**	-0.358**	-0.688***
	(0.264)	(0.113)	(0.238)	(0.283)	(0.147)	(0.209)
CS*DE	-0.571***	-0.619***	-0.571**	-0.520**	-0.565***	-0.520***
	(0.134)	(0.121)	(0.228)	(0.219)	(0.173)	(0.186)
CS*UK	-0.646***	-0.557**	-0.646***	-0.630**	-0.414	-0.630*
	(0.215)	(0.242)	(0.220)	(0.270)	(0.259)	(0.353)
CS*IT	-1.363***	-0.863***	-1.363***	-1.047***	-0.782***	-1.047***
	(0.283)	(0.151)	(0.289)	(0.294)	(0.243)	(0.287)
CS*NL	-0.830***	-1.223***	-0.830***	-1.012***	-1.088***	-1.012***
	(0.149)	(0.251)	(0.243)	(0.197)	(0.265)	(0.182)
CS*SP	-2.055***	-3.142***	-2.055***	-1.767***	-2.898***	-1.767***
	(0.414)	(0.719)	(0.240)	(0.440)	(0.776)	(0.289)
Consumer Confidence				0.0429***	0.0332**	0.0429***
				(0.00716)	(0.0138)	(0.0134)
Economic Sentiment				-0.0186	-0.00957	-0.0186
				(0.0156)	(0.0178)	(0.0301)
Observations	226	226	226	226	226	226
R-squared	0.455	0.527	0.454	0.484	0.539	0.484
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.000	0.235		0.000	0.554
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.002	0.000	0.000	0.000	0.000	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.77. The Credit Spread Index by country and Real GDP 1-q

Real GDP	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	0.132	-0.0520	0.132	0.310	0.174	0.310*
	(0.240)	(0.287)	(0.164)	(0.213)	(0.245)	(0.169)
Real Interest Rate	0.0734	-0.0992	0.0734	-0.114	-0.210	-0.114
	(0.225)	(0.303)	(0.291)	(0.214)	(0.272)	(0.362)
CS*AT	-1.281**	-1.338**	-1.281***	-1.109***	-0.582*	-1.109***
	(0.567)	(0.521)	(0.123)	(0.366)	(0.343)	(0.194)
CS*BE	-2.895***	-2.989**	-2.895***	-2.085***	-1.742**	-2.085***
	(1.036)	(1.289)	(0.288)	(0.603)	(0.746)	(0.271)
CS*FR	-2.489***	-1.770***	-2.489***	-1.195***	-0.880***	-1.195***
	(0.451)	(0.352)	(0.207)	(0.301)	(0.233)	(0.238)
CS*DE	-2.412***	-2.414**	-2.412***	-1.612**	-1.827**	-1.612***
	(0.858)	(1.085)	(0.193)	(0.608)	(0.797)	(0.204)
CS*UK	-1.871***	-3.030***	-1.871***	-1.027**	-1.639**	-1.027**
	(0.656)	(0.873)	(0.368)	(0.393)	(0.685)	(0.462)
CS*IT	-3.631***	-2.427**	-3.631***	-2.009***	-1.544**	-2.009***
	(0.817)	(1.003)	(0.242)	(0.545)	(0.712)	(0.283)
CS*NL	-2.425***	-3.232***	-2.425***	-1.991***	-2.084***	-1.991***
	(0.704)	(0.571)	(0.216)	(0.362)	(0.315)	(0.393)
CS*SP	-2.426***	-2.559***	-2.426***	-0.808**	-1.210***	-0.808***
	(0.639)	(0.549)	(0.193)	(0.381)	(0.439)	(0.254)
Consumer Confidence				0.0989***	0.0896***	0.0989**
				(0.0232)	(0.0314)	(0.0394)
Economic Sentiment				0.0680*	0.0759**	0.0680
				(0.0344)	(0.0380)	(0.0477)
Observations	287	287	287	287	287	287
R-squared	0.432	0.449	0.432	0.581	0.577	0.580
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.002	0.591		0.125	0.190
Robust Hausman			0.000			0.036
F-test	0.000	0.001	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.001	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.985	0.019	0.000	0.035	0.000	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.78. The Credit Spread Index by country and Real GDP 4-q

Real GDP	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	0.252	0.0470	0.252	0.372	0.146	0.372
	(0.363)	(0.310)	(0.249)	(0.350)	(0.293)	(0.270)
Real Interest Rate	-0.0969	-0.275	-0.0969	-0.110	-0.252	-0.110
	(0.233)	(0.321)	(0.502)	(0.256)	(0.314)	(0.650)
CS*AT	-0.864**	-0.635**	-0.864***	-1.055*	-0.563	-1.055***
	(0.417)	(0.295)	(0.101)	(0.559)	(0.387)	(0.292)
CS*BE	-2.084***	-2.191***	-2.084***	-2.030**	-2.040*	-2.030***
	(0.664)	(0.696)	(0.266)	(0.855)	(1.033)	(0.495)
CS*FR	-1.780***	-1.220***	-1.780***	-1.225**	-1.057**	-1.225***
	(0.421)	(0.332)	(0.184)	(0.515)	(0.476)	(0.255)
CS*DE	-1.576***	-1.176**	-1.576***	-1.398*	-1.059	-1.398***
	(0.593)	(0.558)	(0.167)	(0.800)	(0.644)	(0.340)
CS*UK	-0.910**	-2.053**	-0.910*	-0.874*	-1.904*	-0.874
	(0.429)	(0.860)	(0.493)	(0.520)	(0.984)	(0.846)
CS*IT	-2.896***	-1.764***	-2.896***	-2.270***	-1.765**	-2.270***
	(0.670)	(0.577)	(0.223)	(0.745)	(0.827)	(0.357)
CS*NL	-1.766***	-2.441***	-1.766***	-2.129***	-2.197***	-2.129***
	(0.429)	(0.437)	(0.197)	(0.692)	(0.617)	(0.633)
CS*SP	-2.142***	-2.788***	-2.142***	-1.494**	-2.327***	-1.494***
	(0.420)	(0.356)	(0.194)	(0.571)	(0.621)	(0.414)
Consumer Confidence				0.0915***	0.0805**	0.0915**
				(0.0243)	(0.0399)	(0.0407)
Economic Sentiment				-0.0370	-0.0386	-0.0370
				(0.0475)	(0.0592)	(0.0689)
Observations	263	263	263	263	263	263
R-squared	0.332	0.353	0.332	0.379	0.376	0.379
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.000	0.876		0.011	0.374
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.805	0.000	0.000	0.000	0.000	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 4.79. The Credit Spread Index by country and Real GDP 8-q

Real GDP	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	0.615	0.459	0.615***	0.506	0.228	0.506***
	(0.461)	(0.428)	(0.0808)	(0.324)	(0.253)	(0.148)
Real Interest Rate	0.0738	-0.0660	0.0738	0.298	0.167	0.298
	(0.265)	(0.231)	(0.447)	(0.274)	(0.231)	(0.517)
CS*AT	-0.656***	-0.362	-0.656***	-1.269***	-0.984**	-1.269***
	(0.228)	(0.341)	(0.111)	(0.406)	(0.439)	(0.301)
CS*BE	-1.303***	-1.366***	-1.303***	-2.221***	-2.801***	-2.221***
	(0.339)	(0.371)	(0.264)	(0.520)	(0.658)	(0.480)
CS*FR	-1.150***	-0.823***	-1.150***	-1.445***	-1.416***	-1.445***
	(0.294)	(0.205)	(0.175)	(0.452)	(0.330)	(0.232)
CS*DE	-0.993***	-0.598*	-0.993***	-1.665***	-1.093***	-1.665***
	(0.302)	(0.317)	(0.168)	(0.576)	(0.401)	(0.312)
CS*UK	-0.291	-1.182	-0.291	-1.097**	-2.272***	-1.097
	(0.376)	(0.732)	(0.439)	(0.490)	(0.787)	(0.737)
CS*IT	-2.231***	-1.256***	-2.231***	-2.789***	-2.270***	-2.789***
	(0.502)	(0.329)	(0.221)	(0.658)	(0.572)	(0.331)
CS*NL	-1.046***	-1.567***	-1.046***	-2.144***	-2.352***	-2.144***
	(0.218)	(0.272)	(0.182)	(0.426)	(0.373)	(0.551)
CS*SP	-1.510***	-2.191***	-1.510***	-2.130***	-3.117***	-2.130***
	(0.230)	(0.405)	(0.179)	(0.620)	(0.650)	(0.342)
Consumer Confidence				0.0646***	0.0443*	0.0646
				(0.0121)	(0.0244)	(0.0422)
Economic Sentiment				-0.131***	-0.138***	-0.131**
				(0.0464)	(0.0477)	(0.0554)
Observations	231	231	231	231	231	231
R-squared	0.292	0.281	0.292	0.380	0.386	0.379
CD p-value	0.000	0.000	0.000	0.000	0.000	0.000
FE/RE		0.000	0.974		0.000	0.872
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.665	0.000	0.000	0.003	0.000	0.000

Note: Sample period: July 1994 – May 2011. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Appendix for Chapter 5

Table 5.4. The Excess Bond Premium and Industrial Production at 3-month horizon

Industrial growth 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-2.305	-2.609	-2.549	1.430	1.374	1.241**	1.602	1.503	1.523***
				(2.272)	(2.669)	(2.367)	(0.962)	(1.090)	(0.592)	(1.032)	(1.151)	(0.290)
Real Interest Rate				-2.642*	-3.173	-3.008	-0.477	-0.921	-0.846	-0.772	-1.041	-0.882
				(1.462)	(1.996)	(2.669)	(0.727)	(0.990)	(1.245)	(0.697)	(0.965)	(1.266)
Predicted Spread	-2.277*	-2.172	-2.190***				-3.153***	-3.916**	-3.371***	-3.282**	-3.610*	-3.292***
	(1.309)	(2.036)	(0.421)				(1.195)	(1.919)	(0.487)	(1.281)	(1.907)	(0.650)
EBP	-7.712**	-7.907**	-7.799***				-8.257***	-8.630***	-8.433***	-7.577**	-8.016***	-7.634***
	(2.997)	(3.054)	(1.119)				(2.890)	(2.850)	(1.116)	(2.910)	(2.872)	(0.706)
Consumer Confidence										0.220***	0.169*	0.215**
										(0.0512)	(0.0943)	(0.102)
Economic Sentiment										-0.0623	-0.0510	-0.0614
										(0.119)	(0.147)	(0.133)
Observations	660	660	660	661	661	661	660	660	660	660	660	660
R-squared	0.225	0.234	0.225	0.042	0.049	0.042	0.266	0.286	0.266	0.288	0.290	0.288
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.001	0.000		0.004	0.001		0.000	0.000		0.010	0.040
Robust Hausman			0.000			0.551			0.004			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.5. The Excess Bond Premium and Industrial Production at 12-month horizon

Ind prod 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.700	0.556	0.508	2.171*	1.958*	1.921***	1.869	1.700*	1.662***
				(1.422)	(1.341)	(1.397)	(1.304)	(1.040)	(0.644)	(1.199)	(0.989)	(0.476)
Real Interest Rate				-1.344	-1.805	-1.775	-0.464	-0.876	-0.868	-0.490	-0.767	-0.760
				(1.105)	(1.300)	(2.142)	(0.807)	(0.859)	(1.539)	(0.812)	(0.887)	(1.617)
Predicted Spread	0.342	2.205**	1.376***				-0.890	0.0489	-0.158	-1.527*	-0.392	-0.784
	(0.798)	(1.111)	(0.413)				(0.667)	(0.978)	(0.560)	(0.824)	(1.032)	(0.626)
EBP	-2.735	-2.635*	-2.718***				-3.542**	-3.590***	-3.582***	-4.242**	-4.274***	-4.277***
	(1.669)	(1.517)	(0.517)				(1.558)	(1.321)	(0.452)	(1.681)	(1.251)	(0.646)
Consumer Confidence										0.169***	0.159***	0.149
										(0.0503)	(0.0537)	(0.138)
Economic Sentiment										-0.209*	-0.210*	-0.202
										(0.110)	(0.107)	(0.151)
Observations	652	652	652	653	653	653	652	652	652	652	652	652
R-squared	0.079	0.123	0.071	0.163	0.196	0.162	0.266	0.318	0.260	0.303	0.334	0.296
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.029			0.566			0.078			0.001

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.6. The Excess Bond Premium and Industrial Production at 24-month horizon

Industrial growth 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.957	1.816*	1.800***	2.456*	2.191*	2.192***	1.578*	1.320	1.311***
				(1.187)	(1.008)	(0.260)	(1.335)	(1.121)	(0.111)	(0.940)	(0.826)	(0.221)
Real Interest Rate				-0.286	-0.546	-0.536	-0.0403	-0.325	-0.313	0.172	0.0180	0.0143
				(0.813)	(0.607)	(1.095)	(0.738)	(0.501)	(0.936)	(0.637)	(0.483)	(0.902)
Predicted Spread	0.498	1.641*	0.498				-0.524	0.0426	-0.0735	-1.653**	-1.095	-1.122***
	(1.012)	(0.903)	(0.900)				(0.546)	(0.590)	(0.565)	(0.769)	(0.775)	(0.329)
EBP	0.167	0.178	0.167				-0.750	-0.747*	-0.751***	-2.501***	-2.581***	-2.530***
	(0.731)	(0.828)	(0.477)				(0.521)	(0.418)	(0.240)	(0.650)	(0.603)	(0.658)
Consumer Confidence										0.109***	-0.0355	-0.00386
										(0.0397)	(0.0365)	(0.146)
Economic Sentiment										-0.315***	-0.226***	-0.244**
										(0.0856)	(0.0789)	(0.106)
Observations	556	556	556	557	557	557	556	556	556	556	556	556
R-squared	0.005	0.041	0.005	0.261	0.310	0.259	0.276	0.327	0.270	0.391	0.425	0.355
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.647			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.7. The Excess Bond Premium and Unemployment at 3-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				5.485***	4.759**	5.479	2.169*	0.907	2.169	-0.508	-1.534	-1.210
				(2.041)	(2.035)	(3.749)	(1.247)	(1.258)	(3.721)	(1.186)	(1.240)	(2.521)
Real Interest Rate				0.757	-0.145	0.749	-1.260	-2.489***	-1.260	0.193	-0.956	-0.560
				(1.243)	(1.343)	(2.233)	(0.806)	(0.931)	(1.834)	(0.778)	(0.940)	(2.202)
Predicted Spread	3.185**	4.766**	3.804				1.662	2.240	1.662	-1.205	-2.621	-1.234
	(1.552)	(2.400)	(2.336)				(1.506)	(2.179)	(1.958)	(1.369)	(2.087)	(1.670)
EBP	9.297***	9.910***	9.656***				8.430***	9.131***	8.430***	0.763	0.319	0.907
	(1.300)	(1.128)	(1.398)				(1.286)	(1.163)	(2.475)	(1.555)	(1.239)	(2.354)
Consumer Confidence										-0.280***	-0.803***	-0.405***
										(0.108)	(0.175)	(0.103)
Economic Sentiment										-0.825***	-0.518***	-0.751***
										(0.143)	(0.149)	(0.214)
Observations	660	660	660	661	661	661	660	660	660	660	660	660
R-squared	0.166	0.187	0.166	0.121	0.121	0.121	0.238	0.256	0.238	0.394	0.443	0.389
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.139	0.152	
FE/RE		0.000	0.001		0.044	0.041		0.000	0.000		0.000	0.000
Robust Hausman			0.028			0.210			0.000			0.001

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.8. The Excess Bond Premium and Unemployment at 12-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				2.645	1.921	2.325	-0.542	-1.382	-0.740	-1.510	-2.323	-2.260
				(3.119)	(3.179)	(4.756)	(1.894)	(1.826)	(3.725)	(1.901)	(1.801)	(3.035)
Real Interest Rate				0.947	0.370	0.629	-1.065	-1.987	-1.295	-0.353	-1.216	-1.126
				(2.223)	(2.332)	(3.813)	(1.303)	(1.352)	(2.631)	(1.376)	(1.538)	(3.256)
Predicted Spread	0.769	-1.104	-0.248				0.657	-1.470	0.502	-0.267	-3.641**	-1.818
	(0.901)	(1.239)	(1.972)				(0.917)	(1.127)	(1.728)	(1.539)	(1.547)	(1.988)
EBP	8.873***	9.022***	9.056***				8.984***	9.283***	9.095***	6.004*	5.304**	5.889***
	(1.855)	(1.468)	(1.756)				(2.099)	(1.782)	(1.920)	(3.158)	(2.360)	(2.148)
Consumer Confidence										-0.233*	-0.725***	-0.478***
										(0.134)	(0.274)	(0.167)
Economic Sentiment										-0.235	0.0437	-0.0942
										(0.247)	(0.258)	(0.258)
Observations	652	652	652	653	653	653	652	652	652	652	652	652
R-squared	0.256	0.294	0.252	0.027	0.020	0.027	0.265	0.312	0.265	0.317	0.409	0.289
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.001	0.003		0.000	0.000		0.000	0.000
Robust Hausman			0.136			0.656			0.000			0.002

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.9. The Excess Bond Premium and Unemployment at 24-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.605	0.0257	0.605	-2.101	-2.836	-2.101	-0.969	-1.866	-1.708
				(2.708)	(2.536)	(3.410)	(2.345)	(2.243)	(2.636)	(2.162)	(1.928)	(2.316)
Real Interest Rate				0.349	-0.289	0.349	-1.072	-2.006	-1.072	-1.243	-2.275*	-2.129
				(2.088)	(1.886)	(2.885)	(1.457)	(1.239)	(2.280)	(1.361)	(1.285)	(2.747)
Predicted Spread	0.105	-0.756	-0.556				0.723	-0.147	0.723	2.245	1.064	1.554
	(1.240)	(0.963)	(1.439)				(0.942)	(1.124)	(1.481)	(1.841)	(1.699)	(2.226)
EBP	4.987***	5.145***	5.158***				5.671***	6.034***	5.671***	7.849***	7.761***	7.902***
	(1.187)	(1.066)	(1.570)				(1.446)	(1.377)	(1.668)	(2.561)	(2.366)	(2.492)
Consumer Confidence										-0.241*	-0.621***	-0.462***
										(0.126)	(0.166)	(0.117)
Economic Sentiment										0.464**	0.709***	0.602**
										(0.231)	(0.205)	(0.242)
Observations	556	556	556	557	557	557	556	556	556	556	556	556
R-squared	0.157	0.184	0.154	0.002	0.002	0.002	0.171	0.212	0.171	0.241	0.315	0.213
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE			0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.283			0.372			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.10. The Excess Bond Premium and Employment at 1-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.841***	-0.722***	-0.775***	-0.537***	-0.375***	-0.472**	-0.354**	-0.224	-0.354*
				(0.200)	(0.203)	(0.214)	(0.195)	(0.182)	(0.208)	(0.187)	(0.185)	(0.203)
Real Interest Rate				-0.181	-0.0801	-0.108*	-0.0134	0.0987	0.0588	-0.197*	-0.0608	-0.197**
				(0.123)	(0.126)	(0.0574)	(0.112)	(0.113)	(0.0655)	(0.113)	(0.109)	(0.0948)
Predicted Spread	-0.563***	-0.799***	-0.717***				-0.305**	-0.445***	-0.304*	-0.0453	-0.0423	-0.0453
	(0.121)	(0.132)	(0.151)				(0.126)	(0.131)	(0.168)	(0.162)	(0.175)	(0.206)
EBP	-0.811***	-0.883***	-0.864***				-0.634***	-0.722***	-0.663***	0.0542	-0.0423	0.0542
	(0.189)	(0.165)	(0.137)				(0.127)	(0.119)	(0.190)	(0.196)	(0.209)	(0.288)
Consumer Confidence										0.0358**	0.0377	0.0358***
										(0.015)	(0.026)	(0.00880)
Economic Sentiment										0.0648***	0.0576***	0.0648***
										(0.021)	(0.021)	(0.0236)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.147	0.179	0.145	0.197	0.185	0.196	0.262	0.272	0.261	0.373	0.360	0.373
CD p-value	0.000	0.001		0.000	0.000		0.226	0.314		0.155	0.203	
FE/RE		0.000	0.655		0.030	0.371		0.003	0.229		0.048	0.551
Robust Hausman			0.579			0.221			0.310			0.006

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.11. The Excess Bond Premium and Employment at 4-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.724***	-0.637**	-0.669*	-0.400**	-0.279**	-0.322	-0.308**	-0.202	-0.251
				(0.258)	(0.270)	(0.347)	(0.151)	(0.133)	(0.264)	(0.151)	(0.142)	(0.252)
Real Interest Rate				-0.259	-0.208	-0.217	-0.0756	-0.0114	-0.0221	-0.199*	-0.109	-0.138
				(0.178)	(0.189)	(0.207)	(0.107)	(0.107)	(0.124)	(0.118)	(0.122)	(0.199)
Predicted Spread	-0.442***	-0.548***	-0.525***				-0.278**	-0.353***	-0.296**	-0.159	-0.128	-0.121
	(0.108)	(0.0788)	(0.141)				(0.128)	(0.0675)	(0.132)	(0.147)	(0.107)	(0.155)
EBP	-0.843***	-0.899***	-0.893***				-0.721***	-0.797***	-0.770***	-0.346*	-0.411***	-0.376**
	(0.110)	(0.0923)	(0.0629)				(0.101)	(0.0884)	(0.108)	(0.182)	(0.132)	(0.180)
Consumer Confidence										0.0395***	0.0508***	0.0469***
										(0.00707)	(0.0139)	(0.0140)
Economic Sentiment										0.0212	0.00987	0.0148
										(0.0140)	(0.00963)	(0.0155)
Observations	212	212	212	212	212	212	212	212	212	212	212	212
R-squared	0.332	0.415	0.331	0.234	0.217	0.234	0.429	0.484	0.427	0.548	0.574	0.542
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.646			0.103			0.136			0.005

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.12. The Excess Bond Premium and Employment at 8-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.475	-0.444	-0.454	-0.113	-0.0947	-0.0962	-0.146	-0.115	-0.146
				(0.304)	(0.299)	(0.399)	(0.177)	(0.160)	(0.244)	(0.157)	(0.146)	(0.205)
Real Interest Rate				-0.247	-0.220	-0.227	-0.0683	-0.0495	-0.0508	-0.0814	-0.0381	-0.0814
				(0.192)	(0.186)	(0.290)	(0.110)	(0.0997)	(0.202)	(0.113)	(0.108)	(0.193)
Predicted Spread	-0.415**	-0.364**	-0.367***				-0.386**	-0.341**	-0.343***	-0.466**	-0.382**	-0.466***
	(0.199)	(0.137)	(0.141)				(0.191)	(0.134)	(0.130)	(0.230)	(0.176)	(0.161)
EBP	-0.616***	-0.650***	-0.644***				-0.585***	-0.623***	-0.619***	-0.661***	-0.674***	-0.661***
	(0.0879)	(0.0741)	(0.0811)				(0.105)	(0.0918)	(0.0714)	(0.179)	(0.156)	(0.124)
Consumer Confidence										0.0360***	0.0361***	0.0360***
										(0.00845)	(0.0106)	(0.00771)
Economic Sentiment										-0.0350*	-0.0346**	-0.0350***
										(0.0177)	(0.0159)	(0.0116)
Observations	180	180	180	180	180	180	180	180	180	180	180	180
R-squared	0.339	0.377	0.338	0.097	0.094	0.097	0.344	0.381	0.342	0.444	0.417	0.444
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.005	0.010
Robust Hausman			0.286			0.763			0.707			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.13. The Excess Bond Premium and Real GDP at 1-quarter horizon

Real GDP growth 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.108	-1.298	-1.108**	0.209	0.110	0.106	0.380	0.274	0.297**
				(0.771)	(0.803)	(0.466)	(0.288)	(0.323)	(0.161)	(0.317)	(0.326)	(0.134)
Real Interest Rate				-0.295	-0.578	-0.295	0.459*	0.205	0.288**	0.228	0.0122	0.0828
				(0.460)	(0.502)	(0.457)	(0.240)	(0.258)	(0.126)	(0.246)	(0.278)	(0.268)
Predicted Spread	-1.009***	-1.317***	-1.192***				-0.937***	-1.247***	-1.039***	-0.748***	-0.785**	-0.790***
	(0.316)	(0.387)	(0.312)				(0.285)	(0.344)	(0.230)	(0.248)	(0.329)	(0.210)
EBP	-3.073***	-3.157***	-3.130***				-3.101***	-3.167***	-3.115***	-2.376***	-2.361***	-2.365***
	(0.579)	(0.525)	(0.152)				(0.544)	(0.510)	(0.170)	(0.539)	(0.478)	(0.144)
Consumer Confidence										0.0808***	0.0850**	0.0806**
										(0.0150)	(0.0412)	(0.0344)
Economic Sentiment										0.0377	0.0369	0.0392
										(0.0359)	(0.0463)	(0.0580)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.530	0.577	0.528	0.094	0.082	0.094	0.561	0.581	0.556	0.626	0.625	0.623
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.093	0.140		0.000	0.000		0.048	0.046
Robust Hausman			0.431			0.035			0.013			0.267

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.14. The Excess Bond Premium and Real GDP at 4-quarter horizon

Real GDP growth 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.367	-0.578	-0.491	0.387	0.200	0.226	0.303	0.147	0.164
				(0.659)	(0.629)	(0.589)	(0.401)	(0.353)	(0.319)	(0.369)	(0.332)	(0.257)
Real Interest Rate				-0.186	-0.535	-0.363	0.265	-0.0470	0.0255	0.239	-0.0373	0.0176
				(0.506)	(0.506)	(0.721)	(0.314)	(0.304)	(0.512)	(0.324)	(0.322)	(0.590)
Predicted Spread	-0.204	0.0268	-0.113				-0.293*	-0.158	-0.267	-0.515*	-0.234	-0.427
	(0.144)	(0.217)	(0.183)				(0.164)	(0.266)	(0.199)	(0.269)	(0.412)	(0.278)
EBP	-1.898***	-1.895***	-1.907***				-2.003***	-1.979***	-1.986***	-2.171***	-2.054***	-2.116***
	(0.442)	(0.391)	(0.175)				(0.474)	(0.395)	(0.181)	(0.714)	(0.554)	(0.388)
Consumer Confidence										0.0713***	0.0884**	0.0731
										(0.0142)	(0.0353)	(0.0455)
Economic Sentiment										-0.0727	-0.0780	-0.0712
										(0.0509)	(0.0551)	(0.0636)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.323	0.364	0.321	0.009	0.029	0.006	0.331	0.376	0.320	0.384	0.403	0.375
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.425			0.107			0.040			0.043

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.15. The Excess Bond Premium and Real GDP at 8-quarter horizon

Real GDP growth 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.252	0.0408	0.0794	0.832	0.605	0.631***	0.452	0.259	0.452***
				(0.618)	(0.523)	(0.441)	(0.549)	(0.472)	(0.189)	(0.347)	(0.285)	(0.141)
Real Interest Rate				0.178	-0.156	-0.0753	0.467	0.146	0.178	0.593*	0.328	0.593*
				(0.484)	(0.371)	(0.632)	(0.355)	(0.257)	(0.495)	(0.332)	(0.254)	(0.324)
Predicted Spread	0.0844	0.124	0.0734				-0.133	-0.155	-0.183	-0.701**	-0.679*	-0.701***
	(0.169)	(0.263)	(0.116)				(0.155)	(0.232)	(0.219)	(0.274)	(0.393)	(0.228)
EBP	-0.917***	-0.889***	-0.902***				-1.163***	-1.097***	-1.112***	-1.970***	-1.868***	-1.970***
	(0.216)	(0.234)	(0.183)				(0.197)	(0.181)	(0.168)	(0.400)	(0.394)	(0.356)
Consumer Confidence										0.0626***	0.0482***	0.0626
										(0.0127)	(0.0165)	(0.0388)
Economic Sentiment										-0.154***	-0.142***	-0.154***
										(0.0523)	(0.0470)	(0.0369)
Observations	185	185	185	185	185	185	185	185	185	185	185	185
R-squared	0.141	0.158	0.141	0.007	0.019	0.001	0.192	0.210	0.167	0.365	0.343	0.365
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.234			0.062			0.676			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.17. The Excess Bond Premium and Level of Industrial Production at 3-month horizon

Industrial production	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-4.307***	-4.493***	-4.291***	-3.325***	-3.088***	-3.325***	-2.597***	-2.439***	-2.597***
				(0.719)	(0.752)	(1.035)	(0.673)	(0.573)	(0.701)	(0.482)	(0.395)	(0.764)
Real Interest Rate				-1.143***	-0.969**	-0.972	-0.521	-0.171	-0.521	-0.907***	-0.582**	-0.907
				(0.385)	(0.462)	(0.614)	(0.357)	(0.307)	(0.632)	(0.306)	(0.261)	(0.604)
Predicted Spread	-1.500***	-3.581***	-1.500*				-0.0702	-1.334***	-0.0702	0.901*	-0.0707	0.901
	(0.427)	(0.580)	(0.899)				(0.342)	(0.473)	(0.710)	(0.499)	(0.602)	(0.688)
EBP	-3.926***	-4.264***	-3.926***				-2.804***	-3.021***	-2.804***	-0.755	-0.930	-0.755
	(0.666)	(0.516)	(1.077)				(0.530)	(0.408)	(0.839)	(0.717)	(0.593)	(1.107)
Consumer Confidence										0.00328	-0.0532	0.00328
										(0.0349)	(0.0528)	(0.0656)
Economic Sentiment										0.270***	0.311***	0.270***
										(0.0610)	(0.0447)	(0.0480)
Observations	636	636	636	637	637	637	636	636	636	636	636	636
R-squared	0.209	0.273	0.209	0.358	0.409	0.358	0.454	0.505	0.454	0.519	0.571	0.519
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.013		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.18. The Excess Bond Premium and Level of Industrial Production at 12-month horizon

Industrial production	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-3.553***	-3.759***	-3.553***	-1.922	-2.004*	-1.922***	-1.571	-1.604*	-1.571***
				(1.328)	(1.179)	(1.320)	(1.234)	(1.057)	(0.643)	(1.115)	(0.923)	(0.333)
Real Interest Rate				-1.835**	-2.104**	-1.835*	-0.962*	-1.071**	-0.962*	-1.151**	-1.243**	-1.151*
				(0.803)	(0.823)	(0.993)	(0.545)	(0.457)	(0.527)	(0.572)	(0.517)	(0.666)
Predicted Spread	-0.704	-0.726	-0.704				-0.132	-0.0704	-0.132	0.178	0.450	0.178
	(0.457)	(0.489)	(0.735)				(0.539)	(0.837)	(0.791)	(0.736)	(0.922)	(0.851)
EBP	-4.306***	-4.376***	-4.306***				-3.670***	-3.696***	-3.670***	-2.959***	-2.806***	-2.959***
	(0.967)	(0.996)	(0.953)				(0.986)	(1.028)	(0.925)	(0.928)	(0.896)	(0.830)
Consumer Confidence										0.0768	0.122	0.0768***
										(0.0911)	(0.0816)	(0.0254)
Economic Sentiment										0.0481	0.0309	0.0481
										(0.106)	(0.0938)	(0.101)
Observations	564	564	564	565	565	565	564	564	564	564	564	564
R-squared	0.276	0.278	0.276	0.130	0.133	0.130	0.305	0.308	0.305	0.321	0.325	0.321
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.390	0.981		0.443	0.875		0.355	0.951		0.307	0.735
Robust Hausman			0.540			0.790			0.920			0.905

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.19. The Excess Bond Premium and Level of Industrial Production at 24-month horizon

Industrial production	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.942	0.583	0.756	0.848	0.493	0.572	0.284	-0.164	0.284
				(2.243)	(2.123)	(0.737)	(2.309)	(2.195)	(0.640)	(1.793)	(1.653)	(0.821)
Real Interest Rate				-0.679	-1.109	-0.904	-0.381	-0.702	-0.650	-0.123	-0.359	-0.123
				(1.178)	(0.953)	(0.879)	(1.059)	(0.807)	(0.868)	(0.896)	(0.818)	(0.562)
Predicted Spread	-1.653	-2.075	-1.849				-0.611	-1.346	-1.118	-1.764	-2.370*	-1.764*
	(1.310)	(1.304)	(1.635)				(1.237)	(1.638)	(1.524)	(1.218)	(1.396)	(1.064)
EBP	-4.250**	-5.350***	-4.573***				-2.693	-3.713	-3.253**	-4.427***	-5.623***	-4.427***
	(1.878)	(1.868)	(1.511)				(2.115)	(2.460)	(1.356)	(1.450)	(1.677)	(1.715)
Consumer Confidence										0.0944	-0.0464	0.0944
										(0.129)	(0.0432)	(0.0922)
Economic Sentiment										-0.319	-0.229	-0.319***
										(0.207)	(0.173)	(0.0842)
Observations	478	478	478	479	479	479	478	478	478	478	478	478
R-squared	0.066	0.083	0.066	0.071	0.080	0.070	0.093	0.113	0.091	0.149	0.160	0.149
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.005	0.060		0.020	0.041		0.002	0.008		0.017	0.506
Robust Hausman			0.047			0.380			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.20. The Excess Bond Premium and Level of Unemployment at 3-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.237*	0.253*	0.240	0.458***	0.458***	0.458*	0.326***	0.336***	0.310
				(0.135)	(0.134)	(0.446)	(0.120)	(0.114)	(0.252)	(0.103)	(0.0926)	(0.306)
Real Interest Rate				-0.0534	-0.0855	-0.0864	0.0636	0.0119	0.0636	0.135*	0.0949	0.0974
				(0.0991)	(0.105)	(0.363)	(0.0803)	(0.0903)	(0.203)	(0.0720)	(0.0870)	(0.206)
Predicted Spread	-0.166*	-0.0692	-0.166				-0.366***	-0.412***	-0.366*	-0.542***	-0.659***	-0.568*
	(0.0937)	(0.162)	(0.265)				(0.0859)	(0.140)	(0.219)	(0.111)	(0.148)	(0.341)
EBP	-0.190**	-0.183**	-0.190				-0.345***	-0.370***	-0.345	-0.719***	-0.788***	-0.730**
	(0.0958)	(0.0824)	(0.290)				(0.0755)	(0.0664)	(0.240)	(0.120)	(0.112)	(0.302)
Consumer Confidence										-0.00163	-0.0138	-0.00487
										(0.00544)	(0.0139)	(0.0101)
Economic Sentiment										-0.0485***	-0.0435***	-0.0465**
										(0.00847)	(0.00878)	(0.0223)
Observations	636	636	636	637	637	637	636	636	636	636	636	636
R-squared	0.026	0.015	0.026	0.119	0.146	0.119	0.202	0.215	0.202	0.280	0.303	0.278
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.304	0.618		0.000	0.002		0.000	0.002		0.000	0.002
Robust Hausman			0.564			0.482			0.000			0.004

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.21. The Excess Bond Premium and Level of Unemployment at 12-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.459***	0.440***	0.459***	0.529***	0.520***	0.529***	0.320***	0.303**	0.320***
				(0.132)	(0.150)	(0.135)	(0.119)	(0.147)	(0.148)	(0.105)	(0.121)	(0.0771)
Real Interest Rate				0.0411	0.0154	0.0411	0.0672	0.0160	0.0672**	0.151**	0.109	0.151***
				(0.0817)	(0.107)	(0.117)	(0.0653)	(0.102)	(0.0301)	(0.0578)	(0.0952)	(0.0507)
Predicted Spread	-0.0926	-0.170	-0.138				-0.300*	-0.504***	-0.300	-0.514**	-0.786***	-0.514
	(0.204)	(0.204)	(0.497)				(0.164)	(0.179)	(0.361)	(0.199)	(0.188)	(0.385)
EBP	0.236**	0.218*	0.225				0.0415	0.00490	0.0415	-0.371***	-0.477***	-0.371
	(0.106)	(0.120)	(0.274)				(0.0883)	(0.113)	(0.340)	(0.125)	(0.123)	(0.378)
Consumer Confidence										-0.0146	-0.0620**	-0.0146
										(0.00988)	(0.0270)	(0.0128)
Economic Sentiment										-0.0479***	-0.0196	-0.0479**
										(0.0102)	(0.0189)	(0.0203)
Observations	564	564	564	565	565	565	564	564	564	564	564	564
R-squared	0.039	0.042	0.038	0.196	0.192	0.196	0.240	0.264	0.240	0.354	0.442	0.354
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.205	0.645		0.806	0.454		0.000	0.224		0.000	0.000
Robust Hausman			0.938			0.972			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5.22. The Excess Bond Premium and Level of Unemployment at 24-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.325	0.321	0.322	0.392**	0.341	0.355	0.388***	0.262	0.388*
				(0.205)	(0.265)	(0.392)	(0.159)	(0.230)	(0.259)	(0.126)	(0.184)	(0.212)
Real Interest Rate				0.0651	0.0484	0.0595	-0.0421	-0.109	-0.0889	-0.0209	-0.0815	-0.0209
				(0.119)	(0.166)	(0.173)	(0.101)	(0.161)	(0.0907)	(0.105)	(0.135)	(0.103)
Predicted Spread	-0.325	-0.590***	-0.392				-0.0431	-0.362	-0.257	-0.0144	-0.542**	-0.0144
	(0.299)	(0.186)	(0.590)				(0.211)	(0.236)	(0.613)	(0.224)	(0.261)	(0.358)
EBP	0.744*	0.698**	0.737***				1.195***	1.198***	1.190***	1.221***	0.899***	1.221***
	(0.409)	(0.341)	(0.207)				(0.224)	(0.252)	(0.175)	(0.287)	(0.231)	(0.188)
Consumer Confidence										-0.0293**	-0.0964***	-0.0293**
										(0.0139)	(0.0150)	(0.0118)
Economic Sentiment										0.0226	0.0683***	0.0226
										(0.0243)	(0.0210)	(0.0254)
Observations	478	478	478	479	479	479	478	478	478	478	478	478
R-squared	0.175	0.181	0.175	0.046	0.051	0.046	0.295	0.318	0.286	0.343	0.453	0.343
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.009	0.181		0.009	0.561		0.000	0.000		0.000	0.000
Robust Hausman			0.278			0.203			0.012			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.23. The Excess Bond Premium and Level of Employment at 1-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.891	2.850	1.891	4.540***	5.488***	4.540*	2.611	3.814**	2.611
				(1.896)	(2.051)	(3.798)	(1.608)	(1.764)	(2.430)	(1.627)	(1.774)	(2.732)
Real Interest Rate				3.847***	4.903***	3.847	5.432***	6.661***	5.432**	7.239***	8.461***	7.239***
				(1.241)	(1.440)	(3.012)	(0.872)	(0.900)	(2.273)	(0.855)	(0.962)	(1.583)
Predicted Spread	-0.827	-0.471	-0.827				-1.090	0.286	-1.090	-4.124**	-4.092	-4.124
	(0.932)	(1.968)	(3.317)				(1.060)	(2.222)	(3.007)	(2.136)	(2.766)	(3.648)
EBP	-5.917***	-5.990***	-5.917***				-6.990***	-7.088***	-6.990***	-13.73***	-14.21***	-13.73***
	(1.126)	(1.199)	(2.163)				(1.503)	(1.375)	(2.084)	(1.872)	(2.008)	(4.328)
Consumer Confidence										-0.227**	-0.343	-0.227
										(0.123)	(0.253)	(0.176)
Economic Sentiment										-0.719***	-0.639***	-0.719**
										(0.194)	(0.242)	(0.308)
Observations	209	209	209	209	209	209	209	209	209	209	209	209
R-squared	0.092	0.097	0.092	0.097	0.106	0.097	0.212	0.235	0.212	0.342	0.359	0.342
CD p-value	0.052	0.051		0.346	0.063		0.000	0.000		0.800	0.905	
FE/RE		0.408	0.915		0.310	0.998		0.097	0.367		0.127	0.328
Robust Hausman			0.153			0.000			0.000			0.229

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.24. The Excess Bond Premium and Level of Employment at 4-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				2.869	3.529	2.869	6.765***	7.681***	6.765***	4.524***	5.300***	4.524***
				(2.594)	(2.834)	(2.536)	(1.330)	(1.469)	(1.084)	(1.451)	(1.604)	(1.074)
Real Interest Rate				3.860**	4.825***	3.860	5.763***	6.942***	5.763***	6.946***	8.307***	6.946***
				(1.413)	(1.726)	(2.470)	(0.705)	(0.846)	(1.361)	(0.878)	(1.108)	(1.363)
Predicted Spread	-0.548	-1.748	-0.548				-1.823	-2.144	-1.823	-4.782	-5.755**	-4.782
	(0.830)	(1.864)	(4.119)				(1.416)	(1.742)	(4.566)	(3.110)	(3.027)	(5.040)
EBP	-5.409***	-5.743***	-5.409***				-7.203***	-7.706***	-7.203***	-12.23***	-13.41***	-12.23***
	(1.453)	(1.281)	(1.997)				(0.945)	(0.878)	(2.085)	(2.253)	(2.413)	(4.519)
Consumer Confidence										-0.0729	-0.349	-0.0729
										(0.151)	(0.321)	(0.179)
Economic Sentiment										-0.641***	-0.508***	-0.641***
										(0.212)	(0.254)	(0.246)
Observations	185	185	185	185	185	185	185	185	185	185	185	185
R-squared	0.105	0.115	0.105	0.092	0.108	0.093	0.248	0.279	0.248	0.339	0.391	0.339
CD p-value	0.081	0.028		0.528	0.035		0.000	0.000		0.467	0.240	
FE/RE		0.795	0.200		0.654	0.632		0.188	0.621		0.015	0.223
Robust Hausman			0.562			0.016			0.001			0.156

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.25. The Excess Bond Premium and Level of Employment at 8-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				6.176***	7.461***	6.306**	6.851***	7.293***	6.851**	5.849***	5.706***	5.849***
				(2.297)	(2.122)	(2.647)	(2.191)	(1.971)	(2.663)	(1.764)	(1.841)	(2.220)
Real Interest Rate				4.586***	5.967***	4.739***	6.055***	6.652***	6.055***	6.797***	7.827***	6.797***
				(1.096)	(1.127)	(1.600)	(1.092)	(0.975)	(1.610)	(1.247)	(1.577)	(1.848)
Predicted Spread	-5.733	-8.349	-6.497				-11.13***	-10.22**	-11.13***	-13.12***	-12.60***	-13.12***
	(4.509)	(6.437)	(5.392)				(4.590)	(4.217)	(3.549)	(4.883)	(5.606)	(4.233)
EBP	0.324	-2.942	-0.219				-5.643	-7.644*	-5.643	-8.426*	-12.37***	-8.426
	(4.172)	(4.472)	(2.985)				(4.647)	(4.209)	(5.208)	(4.853)	(4.737)	(5.828)
Consumer Confidence										0.0574	-0.398	0.0574
										(0.209)	(0.449)	(0.237)
Economic Sentiment										-0.544***	-0.390	-0.544
										(0.272)	(0.405)	(0.348)
Observations	157	157	157	157	157	157	157	157	157	157	157	157
R-squared	0.046	0.041	0.045	0.124	0.172	0.124	0.227	0.238	0.227	0.280	0.348	0.280
CD p-value	0.699	0.362		0.143	0.020		0.129	0.091		0.645	0.911	
FE/RE		0.025	0.425		0.000	0.002		0.009	0.619		0.000	0.227
Robust Hausman			0.307			0.001			0.000			0.007

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.26. The Excess Bond Premium and Level of Real GDP at 1-quarter horizon

Real GDP level 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.979	-1.551	-1.979	0.616	1.165	0.616	-0.742	-0.00246	-0.742
				(1.617)	(1.846)	(3.472)	(1.239)	(1.426)	(1.979)	(1.453)	(1.643)	(2.399)
Real Interest Rate				0.649	1.138	0.649	2.183***	2.822***	2.183	3.490***	4.132***	3.490***
				(0.984)	(1.073)	(2.444)	(0.547)	(0.521)	(1.633)	(0.639)	(0.742)	(1.100)
Predicted Spread	-1.781	-2.043	-1.781				-1.316	-0.876	-1.316	-3.428*	-4.008	-3.428
	(1.401)	(1.845)	(3.309)				(1.092)	(2.206)	(3.084)	(2.011)	(2.738)	(3.919)
EBP	-6.571***	-6.748***	-6.571***				-6.623***	-6.781***	-6.623***	-11.42***	-11.95***	-11.42***
	(1.206)	(1.090)	(2.039)				(1.016)	(1.010)	(1.867)	(1.714)	(1.983)	(4.310)
Consumer Confidence										-0.186*	-0.379*	-0.186
										(0.108)	(0.223)	(0.143)
Economic Sentiment										-0.494***	-0.365	-0.494
										(0.183)	(0.221)	(0.339)
Observations	209	209	209	209	209	209	209	209	209	209	209	209
R-squared	0.146	0.152	0.146	0.068	0.066	0.068	0.199	0.207	0.199	0.286	0.295	0.286
CD p-value	0.108	0.076		0.220	0.237		0.074	0.059		0.556	0.255	
FE/RE		0.419	0.958		0.607	0.468		0.368	0.993		0.321	0.968
Robust Hausman			0.233			0.653			0.004			0.807

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.27. The Excess Bond Premium and Level of Real GDP at 4-quarter horizon

Real GDP level 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.519	-0.502	-0.519	3.362***	3.727***	3.362***	1.603	1.859	1.603***
				(2.228)	(2.545)	(2.350)	(1.024)	(1.004)	(1.085)	(1.184)	(1.321)	(0.506)
Real Interest Rate				0.834	0.941	0.834	2.733***	3.047***	2.733***	3.637***	4.135***	3.637***
				(1.287)	(1.411)	(2.154)	(0.556)	(0.643)	(0.887)	(0.680)	(0.904)	(0.990)
Predicted Spread	-1.061	-2.293	-1.061				-1.728	-2.683	-1.728	-4.073	-5.518**	-4.073
	(0.909)	(1.744)	(4.061)				(1.276)	(1.690)	(4.455)	(2.936)	(3.061)	(5.035)
EBP	-6.328***	-6.672***	-6.328***				-7.233***	-7.668***	-7.233***	-11.16***	-12.20***	-11.16**
	(1.090)	(0.916)	(1.854)				(0.911)	(0.789)	(2.069)	(2.159)	(2.401)	(4.404)
Consumer Confidence										-0.0319	-0.370	-0.0319
										(0.140)	(0.301)	(0.156)
Economic Sentiment										-0.518***	-0.332	-0.518**
										(0.189)	(0.216)	(0.253)
Observations	185	185	185	185	185	185	185	185	185	185	185	185
R-squared	0.182	0.198	0.182	0.023	0.022	0.023	0.222	0.237	0.222	0.293	0.332	0.293
CD p-value	0.011	0.003		0.345	0.262		0.001	0.000		0.178	0.131	
FE/RE		0.590	0.282		0.982	0.133		0.579	0.299		0.082	0.410
Robust Hausman			0.534			0.938			0.715			0.567

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.28. The Excess Bond Premium and Level of Real GDP at 8-quarter horizon

Real GDP level 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				4.878***	5.126**	4.901**	5.367**	4.991**	5.367**	4.385***	3.439***	4.385**
				(1.800)	(1.977)	(2.394)	(2.092)	(2.013)	(2.474)	(1.521)	(1.626)	(1.952)
Real Interest Rate				2.576**	2.661***	2.596**	3.458***	3.072***	3.458***	4.157***	4.226***	4.157***
				(0.973)	(0.877)	(1.218)	(1.203)	(0.802)	(1.166)	(1.016)	(1.416)	(1.414)
Predicted Spread	-5.179	-8.814**	-7.121				-7.434	-8.993**	-7.434**	-9.450***	-11.32***	-9.450**
	(5.292)	(3.916)	(7.127)				(5.892)	(4.218)	(3.276)	(4.497)	(5.259)	(3.679)
EBP	-0.657	-4.483	-2.020				-2.766	-5.243	-2.766	-5.542	-9.859***	-5.542
	(3.150)	(3.860)	(3.087)				(3.038)	(4.200)	(4.411)	(4.331)	(4.545)	(4.824)
Consumer Confidence										0.106	-0.378	0.106
										(0.201)	(0.442)	(0.216)
Economic Sentiment										-0.573***	-0.393	-0.573*
										(0.248)	(0.387)	(0.307)
Observations	157	157	157	157	157	157	157	157	157	157	157	157
R-squared	0.039	0.057	0.038	0.060	0.066	0.060	0.121	0.124	0.121	0.189	0.258	0.189
CD p-value	0.007	0.040		0.043	0.043		0.010	0.038		0.710	0.869	
FE/RE		0.001	0.028		0.003	0.158		0.004	0.282		0.000	0.105
Robust Hausman			0.208			0.062			0.000			0.027

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.31. The Excess Bond Premium (version L) and Industrial Production at 3-month horizon

Industrial growth 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-2.305	-2.609	-2.549	1.454	1.399	1.263**	1.622	1.520	1.521***
				(2.272)	(2.669)	(2.367)	(0.963)	(1.088)	(0.570)	(1.031)	(1.149)	(0.290)
Real Interest Rate				-2.642*	-3.173	-3.008	-0.449	-0.895	-0.818	-0.743	-1.014	-0.884
				(1.462)	(1.996)	(2.669)	(0.721)	(0.981)	(1.221)	(0.688)	(0.953)	(1.281)
Predicted Spread_L	-2.319*	-2.244	-2.234***				-3.222***	-4.054**	-3.452***	-3.374**	-3.748*	-3.389***
	(1.341)	(2.109)	(0.419)				(1.220)	(1.983)	(0.482)	(1.311)	(1.972)	(0.660)
EBP_L	-7.994**	-8.202***	-8.083***				-8.555***	-8.950***	-8.737***	-7.875***	-8.335***	-7.950***
	(3.074)	(3.138)	(1.180)				(2.967)	(2.926)	(1.194)	(2.989)	(2.951)	(0.766)
Consumer Confidence										0.223***	0.169*	0.216**
										(0.0516)	(0.0946)	(0.104)
Economic Sentiment										-0.0658	-0.0540	-0.0645
										(0.122)	(0.150)	(0.134)
Observations	660	660	660	661	661	661	660	660	660	660	660	660
R-squared	0.225	0.233	0.225	0.042	0.048	0.042	0.266	0.285	0.265	0.288	0.289	0.288
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.001	0.000		0.004	0.001		0.000	0.000		0.011	0.048
Robust Hausman			0.000			0.551			0.004			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.32. The Excess Bond Premium (version L) and Industrial Production at 12-month horizon

Industrial growth 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.700	0.556	0.508	2.196*	1.978*	1.941***	1.888	1.713*	1.676***
				(1.422)	(1.341)	(1.397)	(1.306)	(1.043)	(0.626)	(1.195)	(0.989)	(0.460)
Real Interest Rate				-1.344	-1.805	-1.775	-0.444	-0.860	-0.851	-0.459	-0.743	-0.736
				(1.105)	(1.300)	(2.142)	(0.803)	(0.852)	(1.523)	(0.807)	(0.877)	(1.602)
Predicted Spread_L	0.356	2.285*	1.421***				-0.916	0.0445	-0.168	-1.593*	-0.431	-0.799
	(0.831)	(1.167)	(0.445)				(0.689)	(1.019)	(0.600)	(0.855)	(1.077)	(0.654)
EBP_L	-2.873*	-2.761*	-2.852***				-3.703**	-3.748***	-3.741***	-4.471**	-4.494***	-4.498***
	(1.733)	(1.583)	(0.533)				(1.618)	(1.378)	(0.476)	(1.749)	(1.307)	(0.656)
Consumer Confidence										0.170***	0.158***	0.150
										(0.0506)	(0.0534)	(0.141)
Economic Sentiment										-0.214*	-0.215**	-0.207
										(0.112)	(0.108)	(0.150)
Observations	652	652	652	653	653	653	652	652	652	652	652	652
R-squared	0.080	0.123	0.072	0.163	0.196	0.162	0.267	0.319	0.262	0.304	0.335	0.298
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.027			0.566			0.075			0.003

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.33. The Excess Bond Premium (version L) and Industrial Production at 24-month horizon

Industrial growth 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.957	1.816*	1.800***	2.469*	2.200*	2.202***	1.584*	1.322	1.312***
				(1.187)	(1.008)	(0.260)	(1.338)	(1.124)	(0.117)	(0.934)	(0.822)	(0.219)
Real Interest Rate				-0.286	-0.546	-0.536	-0.0320	-0.319	-0.306	0.195	0.0377	0.0330
				(0.813)	(0.607)	(1.095)	(0.737)	(0.500)	(0.929)	(0.632)	(0.480)	(0.893)
Predicted Spread_L	0.496	1.693*	0.496				-0.555	0.0357	-0.0886	-1.740**	-1.168	-1.182***
	(1.057)	(0.946)	(0.947)				(0.566)	(0.611)	(0.592)	(0.784)	(0.793)	(0.350)
EBP_L	0.148	0.162	0.148				-0.792	-0.789*	-0.794***	-2.648***	-2.730***	-2.676***
	(0.759)	(0.860)	(0.484)				(0.543)	(0.435)	(0.238)	(0.660)	(0.612)	(0.684)
Consumer Confidence										0.110***	-0.0356	-0.00652
										(0.0399)	(0.0361)	(0.147)
Economic Sentiment										-0.320***	-0.230***	-0.246**
										(0.0849)	(0.0781)	(0.106)
Observations	556	556	556	557	557	557	556	556	556	556	556	556
R-squared	0.005	0.041	0.005	0.261	0.310	0.259	0.276	0.327	0.271	0.392	0.426	0.355
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.647			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.34. The Excess Bond Premium (version L) and Unemployment at 3-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				5.485***	4.759**	5.479	2.124*	0.865	2.124	-0.521	-1.538*	-1.268
				(2.041)	(2.035)	(3.749)	(1.246)	(1.254)	(3.703)	(0.908)	(0.889)	(2.517)
Real Interest Rate				0.757	-0.145	0.749	-1.299	-2.525***	-1.299	0.172	-0.966	-0.628
				(1.243)	(1.343)	(2.233)	(0.806)	(0.931)	(1.819)	(0.673)	(0.787)	(2.202)
Predicted Spread_L	3.251**	4.939*	3.932				1.694	2.329	1.694	-1.204	-2.687	-1.263
	(1.622)	(2.504)	(2.395)				(1.577)	(2.272)	(1.965)	(1.350)	(2.053)	(1.710)
EBP_L	9.652***	10.29***	10.03***				8.786***	9.510***	8.786***	0.882	0.390	1.018
	(1.383)	(1.195)	(1.382)				(1.343)	(1.202)	(2.510)	(1.756)	(1.454)	(2.397)
Consumer Confidence										-0.280***	-0.803***	-0.423***
										(0.0921)	(0.192)	(0.108)
Economic Sentiment										-0.819***	-0.515***	-0.736***
										(0.121)	(0.134)	(0.215)
Observations	660	660	660	661	661	661	660	660	660	660	660	660
R-squared	0.167	0.187	0.166	0.121	0.121	0.121	0.239	0.257	0.239	0.394	0.443	0.388
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.138	0.153	
FE/RE		0.000	0.001		0.044	0.041		0.000	0.000		0.000	0.000
Robust Hausman			0.031			0.210			0.000			0.002

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.35. The Excess Bond Premium (version L) and Unemployment at 12-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				2.645	1.921	2.325	-0.613	-1.440	-0.882	-1.543	-2.344	-2.293
				(3.119)	(3.179)	(4.756)	(1.863)	(1.798)	(3.677)	(1.877)	(1.781)	(3.009)
Real Interest Rate				0.947	0.370	0.629	-1.120	-2.030	-1.434	-0.414	-1.260	-1.185
				(2.223)	(2.332)	(3.813)	(1.279)	(1.332)	(2.614)	(1.355)	(1.520)	(3.227)
Predicted Spread_L	0.769	-1.132	-0.305				0.673	-1.494	0.425	-0.217	-3.698**	-1.892
	(0.932)	(1.291)	(2.025)				(0.944)	(1.163)	(1.742)	(1.573)	(1.592)	(2.021)
EBP_L	9.273***	9.413***	9.452***				9.417***	9.708***	9.570***	6.427**	5.660**	6.261***
	(1.923)	(1.527)	(1.751)				(2.160)	(1.837)	(1.853)	(3.248)	(2.429)	(2.122)
Consumer Confidence										-0.235*	-0.724***	-0.489***
										(0.134)	(0.274)	(0.168)
Economic Sentiment										-0.222	0.0534	-0.0771
										(0.245)	(0.258)	(0.256)
Observations	652	652	652	653	653	653	652	652	652	652	652	652
R-squared	0.257	0.294	0.253	0.027	0.021	0.027	0.267	0.313	0.266	0.319	0.410	0.289
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.001	0.003		0.000	0.000		0.000	0.000
Robust Hausman			0.148			0.656			0.000			0.004

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.36. The Excess Bond Premium (version L) and Unemployment at 24-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.605	0.0257	0.605	-2.165	-2.891	-2.165	-0.985	-1.875	-1.723
				(2.708)	(2.536)	(3.410)	(2.339)	(2.236)	(2.582)	(2.121)	(1.891)	(2.284)
Real Interest Rate				0.349	-0.289	0.349	-1.118	-2.045*	-1.118	-1.321	-2.344*	-2.207
				(2.088)	(1.886)	(2.885)	(1.438)	(1.219)	(2.247)	(1.331)	(1.256)	(2.700)
Predicted Spread_L	0.115	-0.766	-0.575				0.772	-0.117	0.772	2.418	1.210	1.684
	(1.288)	(1.006)	(1.471)				(0.972)	(1.159)	(1.489)	(1.872)	(1.737)	(2.232)
EBP_L	5.243***	5.400***	5.413***				5.972***	6.343***	5.972***	8.369***	8.264***	8.405***
	(1.210)	(1.096)	(1.598)				(1.480)	(1.415)	(1.657)	(2.576)	(2.401)	(2.442)
Consumer Confidence										-0.242*	-0.621***	-0.468***
										(0.126)	(0.164)	(0.117)
Economic Sentiment										0.482**	0.724***	0.621***
										(0.226)	(0.201)	(0.235)
Observations	556	556	556	557	557	557	556	556	556	556	556	556
R-squared	0.159	0.186	0.157	0.002	0.002	0.002	0.173	0.214	0.173	0.246	0.318	0.217
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.286			0.372			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.37. The Excess Bond Premium (version L) and Employment at 1-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.841***	-0.722***	-0.775***	-0.534***	-0.371**	-0.471**	-0.354**	-0.224	-0.354*
				(0.200)	(0.203)	(0.214)	(0.156)	(0.139)	(0.209)	(0.152)	(0.152)	(0.204)
Real Interest Rate				-0.181	-0.0801	-0.108*	-0.0106	0.102	0.0607	-0.197*	-0.0614	-0.197**
				(0.123)	(0.126)	(0.0574)	(0.101)	(0.112)	(0.0668)	(0.101)	(0.105)	(0.0964)
Predicted Spread_L	-0.581***	-0.831***	-0.745***				-0.316**	-0.464***	-0.314*	-0.0499	-0.0448	-0.0499
	(0.127)	(0.140)	(0.153)				(0.144)	(0.127)	(0.175)	(0.169)	(0.153)	(0.214)
EBP_L	-0.837***	-0.914***	-0.894***				-0.656***	-0.749***	-0.686***	0.0587	-0.0404	0.0587
	(0.203)	(0.176)	(0.146)				(0.133)	(0.115)	(0.200)	(0.168)	(0.172)	(0.302)
Consumer Confidence										0.0359**	0.0377	0.0359***
										(0.0160)	(0.0266)	(0.00882)
Economic Sentiment										0.0648***	0.0577***	0.0648***
										(0.0172)	(0.0153)	(0.0238)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.147	0.179	0.145	0.197	0.186	0.196	0.262	0.273	0.261	0.373	0.361	0.373
CD p-value	0.000	0.001		0.000	0.000		0.217	0.301		0.156	0.204	
FE/RE		0.000	0.662		0.030	0.371		0.003	0.234		0.049	0.557
Robust Hausman			0.573			0.221			0.308			0.007

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.38. The Excess Bond Premium (version L) and Employment at 4-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.724***	-0.637**	-0.669*	-0.395**	-0.273**	-0.317	-0.305**	-0.199	-0.244
				(0.258)	(0.270)	(0.347)	(0.149)	(0.130)	(0.262)	(0.150)	(0.140)	(0.250)
Real Interest Rate				-0.259	-0.208	-0.217	-0.0712	-0.00709	-0.0180	-0.195	-0.105	-0.131
				(0.178)	(0.189)	(0.207)	(0.106)	(0.105)	(0.121)	(0.117)	(0.121)	(0.197)
Predicted Spread_L	-0.457***	-0.572***	-0.548***				-0.289**	-0.370***	-0.308**	-0.170	-0.139	-0.128
	(0.112)	(0.0800)	(0.145)				(0.133)	(0.0675)	(0.137)	(0.152)	(0.109)	(0.161)
EBP_L	-0.877***	-0.936***	-0.930***				-0.752***	-0.832***	-0.804***	-0.369*	-0.436***	-0.401**
	(0.116)	(0.0970)	(0.0599)				(0.104)	(0.0904)	(0.108)	(0.188)	(0.136)	(0.187)
Consumer Confidence										0.0396***	0.0507***	0.0477***
										(0.00710)	(0.0138)	(0.0150)
Economic Sentiment										0.0205	0.00924	0.0135
										(0.0141)	(0.00962)	(0.0153)
Observations	212	212	212	212	212	212	212	212	212	212	212	212
R-squared	0.334	0.417	0.333	0.234	0.217	0.234	0.430	0.486	0.428	0.549	0.575	0.542
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.650			0.103			0.138			0.012

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.39. The Excess Bond Premium (version L) and Employment at 8-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.475	-0.444	-0.454	-0.108	-0.0900	-0.0915	-0.143	-0.114	-0.143
				(0.304)	(0.299)	(0.399)	(0.175)	(0.158)	(0.240)	(0.154)	(0.142)	(0.203)
Real Interest Rate				-0.247	-0.220	-0.227	-0.0637	-0.0457	-0.0469	-0.0740	-0.0317	-0.0740
				(0.192)	(0.186)	(0.290)	(0.108)	(0.0976)	(0.199)	(0.110)	(0.105)	(0.189)
Predicted Spread_L	-0.434**	-0.384***	-0.386***				-0.406**	-0.361**	-0.361***	-0.494**	-0.409**	-0.494***
	(0.204)	(0.141)	(0.148)				(0.196)	(0.137)	(0.137)	(0.232)	(0.177)	(0.166)
EBP_L	-0.642***	-0.678***	-0.672***				-0.611***	-0.651***	-0.647***	-0.701***	-0.714***	-0.701***
	(0.0908)	(0.0763)	(0.0802)				(0.109)	(0.0944)	(0.0679)	(0.181)	(0.158)	(0.122)
Consumer Confidence										0.0362***	0.0360***	0.0362***
										(0.00849)	(0.0105)	(0.00766)
Economic Sentiment										-0.0364**	-0.0357**	-0.0364***
										(0.0173)	(0.0157)	(0.0114)
Observations	180	180	180	180	180	180	180	180	180	180	180	180
R-squared	0.342	0.380	0.341	0.097	0.095	0.096	0.347	0.383	0.345	0.448	0.419	0.448
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.006	0.013
Robust Hausman			0.284			0.763			0.713			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.40. The Excess Bond Premium (version L) and Real GDP at 1-quarter horizon

Real GDP growth 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.108	-1.298	-1.108**	0.219	0.122	0.116	0.387	0.280	0.306**
				(0.771)	(0.803)	(0.466)	(0.293)	(0.326)	(0.166)	(0.318)	(0.327)	(0.140)
Real Interest Rate				-0.295	-0.578	-0.295	0.471*	0.216	0.299**	0.237	0.0209	0.0974
				(0.460)	(0.502)	(0.457)	(0.241)	(0.257)	(0.118)	(0.245)	(0.276)	(0.260)
Predicted Spread_L	-1.025***	-1.366***	-1.226***				-0.952***	-1.294***	-1.063***	-0.765***	-0.816**	-0.809***
	(0.335)	(0.411)	(0.303)				(0.304)	(0.367)	(0.221)	(0.268)	(0.352)	(0.202)
EBP_L	-3.178***	-3.271***	-3.240***				-3.213***	-3.285***	-3.228***	-2.466***	-2.451***	-2.454***
	(0.607)	(0.547)	(0.164)				(0.569)	(0.532)	(0.187)	(0.565)	(0.504)	(0.144)
Consumer Confidence										0.0815***	0.0855**	0.0814**
										(0.0151)	(0.0412)	(0.0333)
Economic Sentiment										0.0368	0.0361	0.0382
										(0.0363)	(0.0470)	(0.0567)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.528	0.576	0.527	0.094	0.083	0.094	0.560	0.581	0.556	0.625	0.624	0.623
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.093	0.140		0.000	0.000		0.052	0.051
Robust Hausman			0.420			0.035			0.012			0.243

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.41. The Excess Bond Premium (version L) and Real GDP at 4-quarter horizon

Real GDP growth 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.367	-0.578	-0.491	0.400	0.212	0.238	0.312	0.155	0.174
				(0.659)	(0.629)	(0.589)	(0.399)	(0.352)	(0.310)	(0.365)	(0.329)	(0.249)
Real Interest Rate				-0.186	-0.535	-0.363	0.276	-0.0376	0.0351	0.255	-0.0232	0.0345
				(0.506)	(0.506)	(0.721)	(0.311)	(0.300)	(0.505)	(0.319)	(0.316)	(0.580)
Predicted Spread_L	-0.201	0.0256	-0.112				-0.296*	-0.168	-0.273	-0.536*	-0.258	-0.452*
	(0.152)	(0.228)	(0.178)				(0.173)	(0.278)	(0.196)	(0.283)	(0.432)	(0.271)
EBP_L	-1.978***	-1.975***	-1.988***				-2.090***	-2.066***	-2.073***	-2.286***	-2.162***	-2.227***
	(0.457)	(0.406)	(0.168)				(0.489)	(0.410)	(0.174)	(0.736)	(0.576)	(0.384)
Consumer Confidence										0.0719***	0.0883**	0.0735
										(0.0143)	(0.0349)	(0.0447)
Economic Sentiment										-0.0753	-0.0802	-0.0736
										(0.0513)	(0.0556)	(0.0622)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.324	0.365	0.323	0.009	0.029	0.006	0.332	0.378	0.322	0.386	0.405	0.377
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.434			0.107			0.038			0.041

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.42. The Excess Bond Premium (version L) and Real GDP at 8-quarter horizon

Real GDP growth 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.252	0.0408	0.0794	0.841	0.614	0.640***	0.456	0.263	0.456***
				(0.618)	(0.523)	(0.441)	(0.549)	(0.473)	(0.182)	(0.340)	(0.279)	(0.138)
Real Interest Rate				0.178	-0.156	-0.0753	0.474	0.153	0.185	0.611*	0.345	0.611*
				(0.484)	(0.371)	(0.632)	(0.352)	(0.255)	(0.489)	(0.326)	(0.249)	(0.313)
Predicted Spread_L	0.0917	0.124	0.0747				-0.136	-0.167	-0.193	-0.739***	-0.730*	-0.739***
	(0.175)	(0.275)	(0.122)				(0.160)	(0.239)	(0.228)	(0.276)	(0.396)	(0.216)
EBP_L	-0.959***	-0.932***	-0.945***				-1.217***	-1.150***	-1.165***	-2.084***	-1.981***	-2.084***
	(0.223)	(0.241)	(0.179)				(0.202)	(0.187)	(0.159)	(0.393)	(0.392)	(0.336)
Consumer Confidence										0.0631***	0.0482***	0.0631
										(0.0127)	(0.0160)	(0.0386)
Economic Sentiment										-0.158***	-0.145***	-0.158***
										(0.0515)	(0.0460)	(0.0356)
Observations	185	185	185	185	185	185	185	185	185	185	185	185
R-squared	0.141	0.159	0.141	0.007	0.019	0.0002	0.193	0.211	0.168	0.368	0.346	0.368
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.268			0.062			0.668			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.45. The Excess Bond Premium (version R) and Industrial Production at 3-month horizon

Industrial growth 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-2.305	-2.609	-2.549	1.378	1.315	1.188*	1.566	1.462	1.491***
				(2.272)	(2.669)	(2.367)	(0.962)	(1.095)	(0.608)	(1.034)	(1.155)	(0.290)
Real Interest Rate				-2.642*	-3.173	-3.008	-0.546	-0.990	-0.911	-0.846	-1.114	-0.950
				(1.462)	(1.996)	(2.669)	(0.729)	(1.003)	(1.274)	(0.702)	(0.982)	(1.283)
Predicted Spread_R	-2.284*	-2.137	-2.189***				-3.207***	-3.945**	-3.409***	-3.322**	-3.611*	-3.327***
	(1.350)	(2.069)	(0.429)				(1.231)	(1.953)	(0.494)	(1.320)	(1.941)	(0.656)
EBP_R	-7.867**	-8.069**	-7.958***				-8.436***	-8.816***	-8.618***	-7.695**	-8.136***	-7.751***
	(3.098)	(3.148)	(1.142)				(2.981)	(2.934)	(1.145)	(3.000)	(2.952)	(0.720)
Consumer Confidence										0.221***	0.171*	0.216**
										(0.0518)	(0.0941)	(0.102)
Economic Sentiment										-0.0573	-0.0463	-0.0565
										(0.120)	(0.148)	(0.133)
Observations	660	660	660	661	661	661	660	660	660	660	660	660
R-squared	0.221	0.229	0.221	0.042	0.048	0.042	0.263	0.282	0.262	0.285	0.287	0.285
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.001	0.000		0.004	0.001		0.000	0.000		0.011	0.042
Robust Hausman			0.000			0.551			0.003			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.46. The Excess Bond Premium (version R) and Industrial Production at 12-month horizon

Industrial growth 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.700	0.556	0.508	2.143	1.927*	1.891***	1.851	1.678*	1.642***
				(1.422)	(1.341)	(1.397)	(1.307)	(1.041)	(0.660)	(1.207)	(0.994)	(0.488)
Real Interest Rate				-1.344	-1.805	-1.775	-0.496	-0.905	-0.898	-0.537	-0.809	-0.802
				(1.105)	(1.300)	(2.142)	(0.810)	(0.869)	(1.560)	(0.815)	(0.898)	(1.636)
Predicted Spread_R	0.373	2.273**	1.417***				-0.919	0.0498	-0.168	-1.549*	-0.372	-0.787
	(0.826)	(1.144)	(0.423)				(0.701)	(1.002)	(0.589)	(0.861)	(1.056)	(0.640)
EBP_R	-2.732	-2.643*	-2.725***				-3.581**	-3.637***	-3.628***	-4.258**	-4.296***	-4.301***
	(1.696)	(1.534)	(0.527)				(1.591)	(1.344)	(0.462)	(1.717)	(1.267)	(0.654)
Consumer Confidence										0.170***	0.160***	0.150
										(0.0508)	(0.0545)	(0.138)
Economic Sentiment										-0.204*	-0.206*	-0.198
										(0.110)	(0.107)	(0.152)
Observations	652	652	652	653	653	653	652	652	652	652	652	652
R-squared	0.075	0.119	0.068	0.163	0.196	0.162	0.262	0.314	0.257	0.299	0.330	0.292
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.026			0.566			0.074			0.001

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.47. The Excess Bond Premium (version R) and Industrial Production at 24-month horizon

Industrial growth 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.957	1.816*	1.800***	2.439*	2.177*	2.176***	1.557	1.303	1.296***
				(1.187)	(1.008)	(0.260)	(1.334)	(1.118)	(0.104)	(0.944)	(0.829)	(0.220)
Real Interest Rate				-0.286	-0.546	-0.536	-0.0544	-0.337	-0.325	0.140	-0.00728	-0.0106
				(0.813)	(0.607)	(1.095)	(0.741)	(0.503)	(0.946)	(0.638)	(0.484)	(0.910)
Predicted Spread_R	0.508	1.655*	0.508				-0.550	0.0261	-0.0906	-1.693**	-1.122	-1.155***
	(1.029)	(0.924)	(0.912)				(0.568)	(0.608)	(0.587)	(0.800)	(0.800)	(0.346)
EBP_R	0.218	0.217	0.218				-0.731	-0.736*	-0.739***	-2.518***	-2.610***	-2.557***
	(0.742)	(0.844)	(0.503)				(0.537)	(0.430)	(0.252)	(0.665)	(0.615)	(0.676)
Consumer Confidence										0.110***	-0.0346	-0.00183
										(0.0398)	(0.0370)	(0.145)
Economic Sentiment										-0.313***	-0.224***	-0.244**
										(0.0859)	(0.0794)	(0.106)
Observations	556	556	556	557	557	557	556	556	556	556	556	556
R-squared	0.006	0.041	0.006	0.261	0.310	0.259	0.275	0.326	0.270	0.388	0.422	0.354
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.647			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.48. The Excess Bond Premium (version R) and Unemployment at 3-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				5.485***	4.759**	5.479	2.228*	0.969	2.228	-0.498	-1.529	-1.200
				(2.041)	(2.035)	(3.749)	(1.244)	(1.257)	(3.728)	(1.187)	(1.243)	(2.524)
Real Interest Rate				0.757	-0.145	0.749	-1.197	-2.425**	-1.197	0.206	-0.949	-0.545
				(1.243)	(1.343)	(2.233)	(0.806)	(0.933)	(1.838)	(0.777)	(0.941)	(2.198)
Predicted Spread_R	3.267**	4.835**	3.895				1.649	2.209	1.649	-1.270	-2.692	-1.289
	(1.577)	(2.439)	(2.401)				(1.540)	(2.219)	(2.003)	(1.394)	(2.120)	(1.684)
EBP_R	9.566***	10.19***	9.939***				8.616***	9.336***	8.616***	0.696	0.260	0.851
	(1.326)	(1.151)	(1.433)				(1.324)	(1.198)	(2.542)	(1.590)	(1.272)	(2.392)
Consumer Confidence										-0.280***	-0.803***	-0.405***
										(0.108)	(0.175)	(0.104)
Economic Sentiment										-0.830***	-0.521***	-0.755***
										(0.143)	(0.149)	(0.213)
Observations	660	660	660	661	661	661	660	660	660	660	660	660
R-squared	0.166	0.187	0.166	0.121	0.121	0.121	0.237	0.255	0.237	0.394	0.443	0.389
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.135	0.150	
FE/RE		0.000	0.001		0.044	0.041		0.000	0.000		0.000	0.000
Robust Hausman			0.031			0.210			0.000			0.001

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.49. The Excess Bond Premium (version R) and Unemployment at 12-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				2.645	1.921	2.325	-0.488	-1.329	-0.678	-1.487	-2.305	-2.236
				(3.119)	(3.179)	(4.756)	(1.911)	(1.840)	(3.745)	(1.925)	(1.821)	(3.060)
Real Interest Rate				0.947	0.370	0.629	-1.007	-1.935	-1.229	-0.304	-1.183	-1.081
				(2.223)	(2.332)	(3.813)	(1.318)	(1.364)	(2.653)	(1.384)	(1.545)	(3.280)
Predicted Spread_R	0.801	-1.123	-0.249				0.660	-1.524	0.511	-0.300	-3.731**	-1.862
	(0.928)	(1.278)	(2.017)				(0.940)	(1.154)	(1.761)	(1.568)	(1.592)	(2.014)
EBP_R	9.075***	9.243***	9.275***				9.161***	9.483***	9.274***	6.039*	5.350**	5.942***
	(1.901)	(1.502)	(1.811)				(2.155)	(1.825)	(1.983)	(3.231)	(2.414)	(2.206)
Consumer Confidence										-0.234*	-0.726***	-0.478***
										(0.133)	(0.275)	(0.168)
Economic Sentiment										-0.242	0.0385	-0.101
										(0.246)	(0.258)	(0.259)
Observations	652	652	652	653	653	653	652	652	652	652	652	652
R-squared	0.252	0.290	0.248	0.027	0.021	0.027	0.260	0.308	0.260	0.314	0.407	0.287
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.001	0.003		0.000	0.000		0.000	0.000
Robust Hausman			0.139			0.656			0.000			0.002

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.50. The Excess Bond Premium (version R) and Unemployment at 24-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.605	0.0257	0.605	-2.053	-2.795	-2.053	-0.923	-1.830	-1.665
				(2.708)	(2.536)	(3.410)	(2.361)	(2.248)	(2.639)	(2.190)	(1.946)	(2.326)
Real Interest Rate				0.349	-0.289	0.349	-1.031	-1.966	-1.031	-1.177	-2.220*	-2.065
				(2.088)	(1.886)	(2.885)	(1.474)	(1.249)	(2.288)	(1.376)	(1.295)	(2.768)
Predicted Spread_R	0.142	-0.716	-0.508				0.755	-0.118	0.755	2.289	1.112	1.622
	(1.266)	(1.018)	(1.459)				(0.964)	(1.160)	(1.511)	(1.887)	(1.759)	(2.273)
EBP_R	5.075***	5.253***	5.264***				5.761***	6.148***	5.761***	7.973***	7.908***	8.051***
	(1.211)	(1.088)	(1.612)				(1.480)	(1.402)	(1.717)	(2.632)	(2.432)	(2.592)
Consumer Confidence										-0.241*	-0.623***	-0.459***
										(0.125)	(0.167)	(0.118)
Economic Sentiment										0.460**	0.707***	0.597**
										(0.232)	(0.206)	(0.246)
Observations	556	556	556	557	557	557	556	556	556	556	556	556
R-squared	0.153	0.180	0.151	0.002	0.002	0.002	0.166	0.207	0.166	0.236	0.310	0.209
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.267			0.372			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.51. The Excess Bond Premium (version R) and Employment at 1-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.841***	-0.722***	-0.775***	-0.541***	-0.379***	-0.476**	-0.354**	-0.223	-0.354*
				(0.200)	(0.203)	(0.214)	(0.194)	(0.181)	(0.208)	(0.151)	(0.152)	(0.202)
Real Interest Rate				-0.181	-0.0801	-0.108*	-0.0189	0.0932	0.0537	-0.197*	-0.0610	-0.197**
				(0.123)	(0.126)	(0.0574)	(0.112)	(0.113)	(0.0644)	(0.100)	(0.104)	(0.0926)
Predicted Spread_R	-0.577***	-0.813***	-0.733***				-0.309***	-0.449***	-0.308*	-0.0459	-0.0459	-0.0459
	(0.121)	(0.134)	(0.154)				(0.127)	(0.133)	(0.171)	(0.164)	(0.148)	(0.208)
EBP_R	-0.837***	-0.910***	-0.892***				-0.651***	-0.741***	-0.681***	0.0569	-0.0441	0.0569
	(0.192)	(0.167)	(0.140)				(0.130)	(0.121)	(0.195)	(0.165)	(0.169)	(0.295)
Consumer Confidence										0.0358**	0.0377	0.0358***
										(0.0160)	(0.0266)	(0.00879)
Economic Sentiment										0.0648***	0.0575***	0.0648***
										(0.0171)	(0.0153)	(0.0235)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.149	0.181	0.147	0.197	0.186	0.196	0.262	0.272	0.261	0.373	0.361	0.373
CD p-value	0.000	0.001		0.000	0.000		0.218	0.300		0.154	0.204	
FE/RE		0.000	0.657		0.030	0.371		0.003	0.220		0.048	0.550
Robust Hausman			0.585			0.221			0.295			0.006

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.52. The Excess Bond Premium (version R) and Employment at 4-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.724***	-0.637**	-0.669*	-0.405**	-0.284**	-0.327	-0.310**	-0.204	-0.253
				(0.258)	(0.270)	(0.347)	(0.152)	(0.134)	(0.265)	(0.151)	(0.142)	(0.253)
Real Interest Rate				-0.259	-0.208	-0.217	-0.0817	-0.0178	-0.0281	-0.204*	-0.113	-0.142
				(0.178)	(0.189)	(0.207)	(0.108)	(0.108)	(0.125)	(0.118)	(0.123)	(0.200)
Predicted Spread_R	-0.454***	-0.558***	-0.536***				-0.284**	-0.358***	-0.301**	-0.162	-0.131	-0.125
	(0.110)	(0.0813)	(0.145)				(0.130)	(0.0696)	(0.136)	(0.150)	(0.110)	(0.159)
EBP_R	-0.865***	-0.922***	-0.915***				-0.737***	-0.814***	-0.788***	-0.347*	-0.416***	-0.379**
	(0.113)	(0.0948)	(0.0656)				(0.104)	(0.0906)	(0.111)	(0.186)	(0.135)	(0.184)
Consumer Confidence										0.0395***	0.0509***	0.0469***
										(0.00705)	(0.0140)	(0.0138)
Economic Sentiment										0.0216	0.0101	0.0151
										(0.0140)	(0.00966)	(0.0156)
Observations	212	212	212	212	212	212	212	212	212	212	212	212
R-squared	0.332	0.415	0.331	0.234	0.217	0.234	0.427	0.482	0.425	0.547	0.573	0.541
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.653			0.103			0.136			0.005

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.53. The Excess Bond Premium (version R) and Employment at 8-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.475	-0.444	-0.454	-0.120	-0.101	-0.103	-0.152	-0.121	-0.152
				(0.304)	(0.299)	(0.399)	(0.178)	(0.160)	(0.246)	(0.158)	(0.147)	(0.205)
Real Interest Rate				-0.247	-0.220	-0.227	-0.0751	-0.0559	-0.0572	-0.0899	-0.0454	-0.0899
				(0.192)	(0.186)	(0.290)	(0.111)	(0.101)	(0.204)	(0.114)	(0.108)	(0.193)
Predicted Spread_R	-0.428**	-0.375**	-0.378***				-0.399**	-0.353**	-0.354***	-0.477**	-0.393**	-0.477***
	(0.206)	(0.142)	(0.147)				(0.197)	(0.139)	(0.136)	(0.237)	(0.182)	(0.166)
EBP_R	-0.626***	-0.662***	-0.656***				-0.593***	-0.632***	-0.628***	-0.668***	-0.683***	-0.668***
	(0.0901)	(0.0754)	(0.0840)				(0.108)	(0.0931)	(0.0747)	(0.184)	(0.159)	(0.129)
Consumer Confidence										0.0361***	0.0363***	0.0361***
										(0.00842)	(0.0108)	(0.00769)
Economic Sentiment										-0.0347*	-0.0345**	-0.0347***
										(0.0177)	(0.0160)	(0.0116)
Observations	180	180	180	180	180	180	180	180	180	180	180	180
R-squared	0.335	0.373	0.333	0.097	0.095	0.096	0.340	0.377	0.338	0.440	0.413	0.440
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.005	0.011
Robust Hausman			0.288			0.763			0.737			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.54. The Excess Bond Premium (version R) and Real GDP at 1-quarter horizon

Real GDP growth 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.108	-1.298	-1.108**	0.192	0.0893	0.0883	0.368	0.259	0.285**
				(0.771)	(0.803)	(0.466)	(0.289)	(0.324)	(0.159)	(0.319)	(0.329)	(0.131)
Real Interest Rate				-0.295	-0.578	-0.295	0.436*	0.180	0.265**	0.208	-0.00842	0.0634
				(0.460)	(0.502)	(0.457)	(0.243)	(0.262)	(0.134)	(0.249)	(0.283)	(0.274)
Predicted Spread_R	-1.037***	-1.323***	-1.203***				-0.955***	-1.253***	-1.051***	-0.763***	-0.783**	-0.798***
	(0.320)	(0.394)	(0.316)				(0.291)	(0.351)	(0.232)	(0.257)	(0.339)	(0.210)
EBP_R	-3.157***	-3.237***	-3.210***				-3.176***	-3.240***	-3.190***	-2.425***	-2.405***	-2.412***
	(0.592)	(0.539)	(0.157)				(0.559)	(0.524)	(0.175)	(0.555)	(0.493)	(0.147)
Consumer Confidence										0.0810***	0.0854**	0.0807**
										(0.0151)	(0.0414)	(0.0346)
Economic Sentiment										0.0383	0.0378	0.0400
										(0.0364)	(0.0468)	(0.0582)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.529	0.575	0.528	0.094	0.083	0.094	0.558	0.578	0.554	0.623	0.622	0.621
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.093	0.140		0.000	0.000		0.051	0.051
Robust Hausman			0.482			0.035			0.014			0.269

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.55. The Excess Bond Premium (version R) and Real GDP at 4-quarter horizon

Real GDP growth 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.367	-0.578	-0.491	0.375	0.184	0.212	0.292	0.134	0.152
				(0.659)	(0.629)	(0.589)	(0.404)	(0.355)	(0.325)	(0.373)	(0.336)	(0.261)
Real Interest Rate				-0.186	-0.535	-0.363	0.250	-0.0634	0.0104	0.219	-0.0576	-0.00216
				(0.506)	(0.506)	(0.721)	(0.319)	(0.309)	(0.520)	(0.328)	(0.327)	(0.597)
Predicted Spread_R	-0.218	0.0338	-0.115				-0.306*	-0.157	-0.275	-0.527*	-0.226	-0.431
	(0.149)	(0.225)	(0.185)				(0.172)	(0.273)	(0.198)	(0.280)	(0.421)	(0.279)
EBP_R	-1.935***	-1.929***	-1.942***				-2.038***	-2.014***	-2.021***	-2.198***	-2.076***	-2.141***
	(0.449)	(0.396)	(0.182)				(0.482)	(0.400)	(0.188)	(0.729)	(0.562)	(0.401)
Consumer Confidence										0.0717***	0.0890**	0.0734
										(0.0142)	(0.0359)	(0.0456)
Economic Sentiment										-0.0714	-0.0767	-0.0697
										(0.0510)	(0.0553)	(0.0640)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.316	0.356	0.315	0.009	0.029	0.006	0.324	0.370	0.314	0.377	0.397	0.368
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.386			0.107			0.037			0.036

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5.56. The Excess Bond Premium (version R) and Real GDP at 8-quarter horizon

Real GDP growth 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.252	0.0408	0.0794	0.825	0.595	0.621***	0.439	0.245	0.439***
				(0.618)	(0.523)	(0.441)	(0.550)	(0.471)	(0.193)	(0.350)	(0.288)	(0.142)
Real Interest Rate				0.178	-0.156	-0.0753	0.459	0.135	0.167	0.577*	0.311	0.577*
				(0.484)	(0.371)	(0.632)	(0.358)	(0.260)	(0.500)	(0.334)	(0.256)	(0.328)
Predicted Spread_R	0.0637	0.116	0.0626				-0.153	-0.167	-0.196	-0.729**	-0.696*	-0.729***
	(0.168)	(0.273)	(0.119)				(0.158)	(0.241)	(0.221)	(0.288)	(0.407)	(0.226)
EBP_R	-0.932***	-0.901***	-0.914***				-1.180***	-1.112***	-1.127***	-2.009***	-1.902***	-2.009***
	(0.223)	(0.239)	(0.193)				(0.202)	(0.185)	(0.176)	(0.412)	(0.404)	(0.376)
Consumer Confidence										0.0628***	0.0487***	0.0628
										(0.0126)	(0.0169)	(0.0389)
Economic Sentiment										-0.154***	-0.142***	-0.154***
										(0.0526)	(0.0474)	(0.0374)
Observations	185	185	185	185	185	185	185	185	185	185	185	185
R-squared	0.136	0.153	0.136	0.007	0.020	0.001	0.186	0.205	0.162	0.359	0.336	0.359
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.165			0.062			0.691			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.58. The Excess Bond Premium (version W) and Industrial Production at 3-month horizon

Industrial growth 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-2.305	-2.609	-2.549	1.276	1.384	1.236**	1.338	1.549	1.466***
				(2.272)	(2.669)	(2.367)	(0.964)	(1.070)	(0.593)	(1.052)	(1.133)	(0.292)
Real Interest Rate				-2.642*	-3.173	-3.008	-0.522	-0.726	-0.711	-0.846	-0.836	-0.868
				(1.462)	(1.996)	(2.669)	(0.715)	(0.896)	(1.229)	(0.699)	(0.882)	(1.427)
Predicted Spread_W	-4.092*	-3.383	-3.769***				-4.916**	-4.349*	-4.497***	-4.065*	-4.173**	-4.120***
	(2.239)	(2.416)	(1.280)				(2.105)	(2.218)	(1.179)	(2.083)	(2.108)	(1.235)
EBP_W	-10.56***	-10.94***	-10.74***				-11.19***	-11.71***	-11.49***	-10.27***	-10.97***	-10.82***
	(3.888)	(3.834)	(1.163)				(3.727)	(3.559)	(1.291)	(3.772)	(3.528)	(1.181)
Consumer Confidence										0.181***	0.202**	0.186
										(0.0426)	(0.0864)	(0.161)
Economic Sentiment										-0.0325	-0.0764	-0.0586
										(0.105)	(0.147)	(0.166)
Observations	661	661	661	661	661	661	661	661	661	661	661	661
R-squared	0.244	0.256	0.244	0.042	0.049	0.042	0.283	0.304	0.283	0.298	0.310	0.298
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.004	0.001		0.000	0.000		0.000	0.002
Robust Hausman			0.000			0.551			0.000			0.522

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5.59. The Excess Bond Premium (version W) and Industrial Production at 12-month horizon

Industrial growth 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.700	0.556	0.508	1.981	1.928*	1.836***	1.543	1.628	1.571***
				(1.422)	(1.341)	(1.397)	(1.299)	(1.050)	(0.630)	(1.180)	(0.988)	(0.460)
Real Interest Rate				-1.344	-1.805	-1.775	-0.576	-0.954	-0.945	-0.738	-0.833	-0.854
				(1.105)	(1.300)	(2.142)	(0.825)	(0.853)	(1.495)	(0.836)	(0.887)	(1.584)
Predicted Spread_W	0.519	1.582	1.303*				-0.665	0.262	0.175	-0.349	-0.110	-0.0886
	(1.182)	(1.071)	(0.732)				(0.871)	(0.948)	(0.535)	(0.847)	(0.912)	(0.762)
EBP_W	-3.644*	-3.903*	-3.838***				-4.595**	-4.967***	-4.866***	-5.216**	-5.896***	-5.792***
	(2.162)	(2.112)	(0.457)				(2.017)	(1.722)	(0.527)	(2.090)	(1.569)	(0.707)
Consumer Confidence										0.170***	0.174***	0.170
										(0.0433)	(0.0607)	(0.163)
Economic Sentiment										-0.181*	-0.225**	-0.217
										(0.0961)	(0.106)	(0.149)
Observations	653	653	653	653	653	653	653	653	653	653	653	653
R-squared	0.071	0.091	0.069	0.163	0.196	0.162	0.261	0.317	0.258	0.295	0.336	0.294
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.566			0.000			0.137

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.60. The Excess Bond Premium (version W) and Industrial Production at 24-month horizon

Industrial growth 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				1.957	1.816*	1.800***	2.392*	2.189*	2.173***	1.404	1.266	1.404***
				(1.187)	(1.008)	(0.260)	(1.379)	(1.135)	(0.141)	(1.015)	(0.859)	(0.361)
Real Interest Rate				-0.286	-0.546	-0.536	-0.0605	-0.341	-0.326	0.00609	0.00573	0.00609
				(0.813)	(0.607)	(1.095)	(0.761)	(0.502)	(0.883)	(0.654)	(0.473)	(0.600)
Predicted Spread_W	0.141	1.156	0.141				-0.796	0.122	0.0292	-1.217	-0.755	-1.217
	(1.452)	(1.070)	(1.436)				(1.071)	(0.834)	(0.562)	(1.053)	(0.819)	(0.878)
EBP_W	0.255	0.0487	0.255				-0.946	-1.090*	-1.055***	-2.875***	-3.330***	-2.875***
	(0.950)	(1.131)	(0.598)				(0.710)	(0.561)	(0.303)	(0.812)	(0.700)	(0.592)
Consumer Confidence										0.0995***	-0.0263	0.0995
										(0.0343)	(0.0394)	(0.0865)
Economic Sentiment										-0.273***	-0.222***	-0.273***
										(0.0796)	(0.0734)	(0.0581)
Observations	557	557	557	557	557	557	557	557	557	557	557	557
R-squared	0.001	0.009	0.001	0.261	0.310	0.259	0.274	0.326	0.268	0.368	0.421	0.368
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.647			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.61. The Excess Bond Premium (version W) and Unemployment at 3-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				5.485***	4.759**	5.479	2.839**	1.418	2.839	-0.165	-1.508	-0.165
				(2.041)	(2.035)	(3.749)	(1.247)	(1.337)	(3.487)	(1.190)	(1.255)	(2.347)
Real Interest Rate				0.757	-0.145	0.749	-0.845	-2.210**	-0.845	0.578	-0.778	0.578
				(1.243)	(1.343)	(2.233)	(0.809)	(0.998)	(1.733)	(0.791)	(0.951)	(2.056)
Predicted Spread_W	1.057	1.483	1.398				-0.697	0.143	-0.697	-5.132**	-3.134	-5.132
	(2.736)	(2.896)	(4.165)				(2.640)	(2.871)	(4.404)	(2.751)	(2.298)	(3.514)
EBP_W	11.97***	12.69***	12.41***				10.61***	11.68***	10.61***	0.388	0.910	0.388
	(1.557)	(1.488)	(1.682)				(1.310)	(1.385)	(3.048)	(1.687)	(1.570)	(2.840)
Consumer Confidence										-0.345***	-0.806***	-0.345***
										(0.106)	(0.174)	(0.0704)
Economic Sentiment										-0.811***	-0.490***	-0.811***
										(0.144)	(0.147)	(0.179)
Observations	661	661	661	661	661	661	661	661	661	661	661	661
R-squared	0.149	0.168	0.149	0.121	0.121	0.121	0.228	0.248	0.228	0.402	0.440	0.402
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.247	0.147	
FE/RE		0.000	0.001		0.044	0.041		0.000	0.000		0.000	0.000
Robust Hausman			0.008			0.210			0.001			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.62. The Excess Bond Premium (version W) and Unemployment at 12-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				2.645	1.921	2.325	-0.0813	-1.503	-0.875	-1.003	-2.471	-2.174
				(3.119)	(3.179)	(4.756)	(1.703)	(1.604)	(3.473)	(1.734)	(1.505)	(2.804)
Real Interest Rate				0.947	0.370	0.629	-0.714	-1.769	-1.403	0.123	-1.164	-0.951
				(2.223)	(2.332)	(3.813)	(1.251)	(1.216)	(2.594)	(1.322)	(1.400)	(3.137)
Predicted Spread_W	-2.270	-2.350	-2.318				-2.390	-1.898	-2.130	-4.733**	-3.080*	-3.485
	(1.945)	(2.114)	(2.814)				(1.637)	(1.905)	(3.185)	(2.080)	(1.628)	(2.833)
EBP_W	11.91***	12.60***	12.51***				11.87***	13.06***	12.58***	7.829***	9.011***	8.821***
	(1.967)	(1.721)	(2.056)				(2.089)	(2.029)	(2.075)	(2.906)	(2.608)	(2.368)
Consumer Confidence										-0.314**	-0.739**	-0.582***
										(0.131)	(0.284)	(0.127)
Economic Sentiment										-0.198	0.142	0.0201
										(0.205)	(0.257)	(0.219)
Observations	653	653	653	653	653	653	653	653	653	653	653	653
R-squared	0.260	0.296	0.260	0.027	0.021	0.027	0.267	0.308	0.266	0.336	0.396	0.309
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.001	0.003		0.000	0.000		0.000	0.000
Robust Hausman			0.220			0.656			0.035			0.468

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.63. The Excess Bond Premium (version W) and Unemployment at 24-month horizon

Unemployment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.605	0.0257	0.605	-1.895	-3.051	-1.895	-0.499	-1.891	-0.499
				(2.708)	(2.536)	(3.410)	(2.267)	(2.145)	(2.422)	(2.092)	(1.742)	(2.057)
Real Interest Rate				0.349	-0.289	0.349	-0.913	-1.998*	-0.913	-0.824	-2.384**	-0.824
				(2.088)	(1.886)	(2.885)	(1.412)	(1.093)	(2.171)	(1.323)	(1.106)	(2.315)
Predicted Spread_W	-0.917	-1.039	-1.032				-0.173	0.215	-0.173	-0.0624	1.500	-0.0624
	(1.612)	(1.226)	(2.792)				(1.006)	(1.169)	(3.123)	(1.489)	(1.434)	(3.236)
EBP_W	6.767***	7.294***	7.132***				7.565***	8.517***	7.565***	10.02***	11.20***	10.02***
	(1.441)	(1.546)	(1.904)				(1.680)	(1.713)	(2.107)	(3.012)	(2.771)	(3.178)
Consumer Confidence										-0.264**	-0.648***	-0.264***
										(0.131)	(0.162)	(0.0453)
Economic Sentiment										0.440**	0.768***	0.440***
										(0.210)	(0.180)	(0.149)
Observations	557	557	557	557	557	557	557	557	557	557	557	557
R-squared	0.161	0.195	0.162	0.002	0.002	0.002	0.174	0.224	0.174	0.247	0.343	0.247
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.017			0.372			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.64. The Excess Bond Premium (version W) and Employment at 1-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.841***	-0.722***	-0.775***	-0.600***	-0.457***	-0.600***	-0.377**	-0.253	-0.377**
				(0.200)	(0.203)	(0.214)	(0.186)	(0.179)	(0.223)	(0.142)	(0.180)	(0.185)
Real Interest Rate				-0.181	-0.0801	-0.108*	-0.0413	0.0756	-0.0413	-0.217**	-0.0811	-0.217***
				(0.123)	(0.126)	(0.0574)	(0.113)	(0.111)	(0.067)	(0.0933)	(0.106)	(0.0787)
Predicted Spread_W	-0.566	-0.397	-0.440				-0.322	-0.0445	-0.322	0.116	0.181	0.116
	(0.366)	(0.366)	(0.311)				(0.309)	(0.311)	(0.452)	(0.303)	(0.300)	(0.275)
EBP_W	-1.030***	-1.111***	-1.093***				-0.789***	-0.909***	-0.789***	0.130	-0.0296	0.130
	(0.251)	(0.250)	(0.219)				(0.163)	(0.157)	(0.265)	(0.235)	(0.248)	(0.322)
Consumer Confidence										0.0361**	0.0377	0.0361***
										(0.016)	(0.026)	(0.00699)
Economic Sentiment										0.0681***	0.0594***	0.0681***
										(0.019)	(0.021)	(0.0191)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.118	0.136	0.117	0.197	0.186	0.196	0.256	0.263	0.256	0.373	0.361	0.373
CD p-value	0.000	0.000		0.000	0.000		0.146	0.222		0.119	0.150	
FE/RE		0.001	0.606		0.030	0.371		0.004	0.143		0.046	0.495
Robust Hausman			0.491			0.221			0.006			0.012

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.65. The Excess Bond Premium (version W) and Employment at 4-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.724***	-0.637**	-0.669*	-0.457***	-0.335***	-0.399	-0.361***	-0.234*	-0.361
				(0.258)	(0.270)	(0.347)	(0.149)	(0.122)	(0.255)	(0.132)	(0.125)	(0.240)
Real Interest Rate				-0.259	-0.208	-0.217	-0.104	-0.0291	-0.0542	-0.243**	-0.126	-0.243
				(0.178)	(0.189)	(0.207)	(0.110)	(0.101)	(0.117)	(0.108)	(0.115)	(0.181)
Predicted Spread_W	-0.419*	-0.286	-0.301				-0.246	-0.0473	-0.126	0.176	0.107	0.176
	(0.238)	(0.182)	(0.237)				(0.264)	(0.159)	(0.273)	(0.280)	(0.178)	(0.274)
EBP_W	-1.093***	-1.174***	-1.167***				-0.924***	-1.045***	-0.986***	-0.408*	-0.560***	-0.408**
	(0.156)	(0.121)	(0.0995)				(0.144)	(0.108)	(0.157)	(0.214)	(0.162)	(0.206)
Consumer Confidence										0.0413***	0.0517***	0.0413***
										(0.00862)	(0.0140)	(0.00529)
Economic Sentiment										0.0242*	0.00924	0.0242*
										(0.0128)	(0.00968)	(0.0134)
Observations	212	212	212	212	212	212	212	212	212	212	212	212
R-squared	0.298	0.387	0.297	0.234	0.217	0.234	0.419	0.484	0.416	0.547	0.581	0.547
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.456			0.103			0.000			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.66. The Excess Bond Premium (version W) and Employment at 8-quarter horizon

Employment	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.475	-0.444	-0.454	-0.182	-0.124	-0.136	-0.214	-0.135	-0.214
				(0.304)	(0.299)	(0.399)	(0.185)	(0.146)	(0.234)	(0.153)	(0.138)	(0.193)
Real Interest Rate				-0.247	-0.220	-0.227	-0.104	-0.0529	-0.0615	-0.149	-0.0420	-0.149
				(0.192)	(0.186)	(0.290)	(0.112)	(0.0940)	(0.187)	(0.110)	(0.102)	(0.192)
Predicted Spread_W	-0.297	-0.157	-0.150				-0.233	-0.105	-0.100	-0.0198	-0.148	-0.0198
	(0.277)	(0.163)	(0.286)				(0.279)	(0.201)	(0.262)	(0.329)	(0.210)	(0.296)
EBP_W	-0.815***	-0.869***	-0.868***				-0.753***	-0.826***	-0.818***	-0.782***	-0.875***	-0.782***
	(0.131)	(0.108)	(0.106)				(0.154)	(0.122)	(0.109)	(0.229)	(0.190)	(0.140)
Consumer Confidence										0.0365***	0.0384***	0.0365***
										(0.00972)	(0.0107)	(0.00944)
Economic Sentiment										-0.0266	-0.0342**	-0.0266***
										(0.0167)	(0.0145)	(0.00845)
Observations	180	180	180	180	180	180	180	180	180	180	180	180
R-squared	0.302	0.378	0.299	0.097	0.095	0.096	0.314	0.385	0.309	0.405	0.423	0.405
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.454			0.763			0.096			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.67. The Excess Bond Premium (version W) and Real GDP at 1-quarter horizon

Real GDP growth 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-1.108	-1.298	-1.108**	-0.0225	-0.0839	-0.114	0.154	0.158	0.154
				(0.771)	(0.803)	(0.466)	(0.298)	(0.319)	(0.192)	(0.333)	(0.333)	(0.180)
Real Interest Rate				-0.295	-0.578	-0.295	0.326	0.135	0.156	0.0509	-0.0623	0.0509
				(0.460)	(0.502)	(0.457)	(0.257)	(0.273)	(0.150)	(0.283)	(0.298)	(0.230)
Predicted Spread_W	-0.467	-0.500	-0.477				-0.451	-0.406	-0.368	0.354	-0.154	0.354
	(0.637)	(0.836)	(0.572)				(0.668)	(0.818)	(0.597)	(0.670)	(0.758)	(0.508)
EBP_W	-4.035***	-4.124***	-4.107***				-3.976***	-4.068***	-4.030***	-2.922***	-2.966***	-2.922***
	(0.709)	(0.608)	(0.270)				(0.650)	(0.600)	(0.261)	(0.572)	(0.514)	(0.264)
Consumer Confidence										0.0881***	0.0942**	0.0881***
										(0.0163)	(0.0406)	(0.0230)
Economic Sentiment										0.0461	0.0385	0.0461
										(0.0381)	(0.0466)	(0.0442)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.504	0.553	0.504	0.094	0.083	0.094	0.536	0.562	0.533	0.613	0.616	0.614
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.093	0.140		0.000	0.000		0.024	0.132
Robust Hausman			0.521			0.035			0.100			0.021

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.68. The Excess Bond Premium (version W) and Real GDP at 4-quarter horizon

Real GDP growth 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				-0.367	-0.578	-0.491	0.263	0.0807	0.0734	0.0698	0.0184	0.0698
				(0.659)	(0.629)	(0.589)	(0.399)	(0.356)	(0.321)	(0.364)	(0.329)	(0.178)
Real Interest Rate				-0.186	-0.535	-0.363	0.170	-0.150	-0.113	0.0525	-0.128	0.0525
				(0.506)	(0.506)	(0.721)	(0.342)	(0.338)	(0.510)	(0.364)	(0.360)	(0.431)
Predicted Spread_W	0.553	0.832	0.777				0.449	0.736	0.702	0.984	0.635	0.984
	(0.564)	(0.684)	(0.684)				(0.595)	(0.684)	(0.683)	(0.677)	(0.710)	(0.775)
EBP_W	-2.532***	-2.612***	-2.595***				-2.614***	-2.670***	-2.641***	-2.761***	-2.811***	-2.761***
	(0.554)	(0.503)	(0.177)				(0.595)	(0.494)	(0.166)	(0.846)	(0.660)	(0.278)
Consumer Confidence										0.0875***	0.0937**	0.0875***
										(0.0138)	(0.0380)	(0.0285)
Economic Sentiment										-0.0748	-0.0857	-0.0748*
										(0.0461)	(0.0536)	(0.0389)
Observations	217	217	217	217	217	217	217	217	217	217	217	217
R-squared	0.317	0.365	0.316	0.009	0.029	0.006	0.320	0.381	0.307	0.394	0.412	0.394
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.785			0.107			0.003			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.69. The Excess Bond Premium (version W) and Real GDP at 8-quarter horizon

Real GDP growth 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Term Spread				0.252	0.0408	0.0794	0.780	0.563	0.584***	0.281	0.188	0.281
				(0.618)	(0.523)	(0.441)	(0.549)	(0.470)	(0.175)	(0.357)	(0.298)	(0.179)
Real Interest Rate				0.178	-0.156	-0.0753	0.423	0.107	0.156	0.441	0.297	0.441
				(0.484)	(0.371)	(0.632)	(0.368)	(0.274)	(0.449)	(0.353)	(0.265)	(0.309)
Predicted Spread_W	0.370	0.509	0.504				0.0841	0.227	0.249	0.230	-0.197	0.230
	(0.639)	(0.823)	(0.751)				(0.600)	(0.752)	(0.662)	(0.753)	(0.753)	(0.620)
EBP_W	-1.208***	-1.235***	-1.234***				-1.492***	-1.471***	-1.473***	-2.429***	-2.427***	-2.429***
	(0.298)	(0.296)	(0.234)				(0.263)	(0.242)	(0.163)	(0.480)	(0.424)	(0.360)
Consumer Confidence										0.0689***	0.0540***	0.0689*
										(0.0107)	(0.0173)	(0.0388)
Economic Sentiment										-0.145***	-0.143***	-0.145***
										(0.0479)	(0.0418)	(0.0376)
Observations	185	185	185	185	185	185	185	185	185	185	185	185
R-squared	0.131	0.159	0.131	0.007	0.019	0.001	0.178	0.215	0.159	0.350	0.349	0.350
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.939			0.062			0.045			0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.70. The EBP by country and Industrial Production 3-m

Industrial Prod 3-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	2.235**	1.941*	2.235***	2.257**	2.013*	2.257***
	(1.020)	(1.021)	(0.331)	(1.063)	(1.077)	(0.130)
Real Interest Rate	-0.00158	-0.582	-0.00158	-0.171	-0.619	-0.171
	(0.777)	(0.854)	(0.896)	(0.744)	(0.809)	(1.011)
Predicted Spread	-2.963***	-3.835**	-2.963***	-3.308***	-3.493*	-3.308**
	(0.933)	(1.786)	(1.104)	(1.119)	(1.813)	(1.353)
EBP*AT	-9.084***	-10.05***	-9.084***	-8.591***	-9.040***	-8.591***
	(2.460)	(3.430)	(2.840)	(2.541)	(3.392)	(3.218)
EBP*BE	-21.09**	-20.95**	-21.09***	-20.72**	-21.16**	-20.72***
	(8.229)	(9.135)	(1.194)	(8.873)	(9.584)	(2.274)
EBP*DE	-10.56**	-10.29**	-10.56***	-9.989**	-9.679*	-9.989***
	(4.871)	(4.823)	(0.548)	(5.017)	(5.138)	(0.899)
EBP*FR	-6.795**	-8.403***	-6.795***	-7.792**	-8.157***	-7.792***
	(3.264)	(2.972)	(0.515)	(3.343)	(3.129)	(1.279)
EBP*UK	-5.610***	-5.178***	-5.610***	-5.015**	-4.492*	-5.015***
	(1.777)	(1.782)	(0.640)	(2.342)	(2.380)	(1.022)
EBP*IT	-11.57**	-12.55***	-11.57***	-12.99***	-13.46***	-12.99***
	(4.820)	(4.307)	(0.590)	(4.895)	(4.350)	(1.260)
EBP*NL	-6.869***	-6.600***	-6.869***	-5.855***	-6.314***	-5.855***
	(1.439)	(1.224)	(0.306)	(1.942)	(1.379)	(0.762)
Consumer Confidence				0.258***	0.293***	0.258**
				(0.0655)	(0.0822)	(0.103)
Economic Sentiment				-0.162	-0.183	-0.162
				(0.136)	(0.155)	(0.137)
Observations	646	646	646	646	646	646
R-squared	0.317	0.333	0.317	0.341	0.342	0.341
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.008	0.012
Robust Hausman			0.000			0.000
F-test	0.000	0.001	0.000	0.011	0.000	0.000
F-test (ex UK)	0.000	0.003	0.000	0.006	0.000	0.000
F-test (FR, DE, NL)	0.380	0.638	0.000	0.523	0.649	0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.71. The EBP by country and Industrial Production 12-m

Industrial Prod 12-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	2.512*	2.106**	2.512***	2.151*	1.855*	2.151***
	(1.337)	(1.051)	(0.289)	(1.204)	(0.963)	(0.112)
Real Interest Rate	-0.279	-0.774	-0.279	-0.179	-0.592	-0.179
	(0.835)	(0.818)	(1.067)	(0.830)	(0.817)	(1.121)
Predicted Spread	-1.881***	-0.738	-1.881***	-2.641***	-1.121	-2.641**
	(0.627)	(1.282)	(0.712)	(0.909)	(1.376)	(1.033)
EBP*AT	-8.241***	-6.973***	-8.241***	-8.924***	-7.258***	-8.924***
	(2.325)	(2.501)	(1.803)	(2.747)	(2.490)	(2.658)
EBP*BE	-7.961**	-6.615*	-7.961***	-10.39***	-9.149***	-10.39***
	(3.962)	(3.493)	(0.932)	(3.790)	(3.457)	(1.255)
EBP*DE	-3.251*	-3.215***	-3.251***	-3.868**	-3.626***	-3.868***
	(1.928)	(1.198)	(0.477)	(1.940)	(1.191)	(0.482)
EBP*FR	-2.685	-3.610**	-2.685***	-4.617**	-4.452***	-4.617***
	(1.819)	(1.672)	(0.445)	(1.980)	(1.698)	(1.083)
EBP*UK	-3.128*	-2.397	-3.128***	-4.208**	-3.249*	-4.208***
	(1.589)	(1.677)	(0.668)	(1.799)	(1.866)	(0.802)
EBP*IT	-4.168*	-5.457**	-4.168***	-6.531**	-7.317***	-6.531***
	(2.310)	(2.444)	(0.424)	(2.604)	(2.494)	(0.802)
EBP*NL	-3.016**	-2.783**	-3.016***	-3.138**	-3.344***	-3.138***
	(1.280)	(1.087)	(0.295)	(1.414)	(0.987)	(0.703)
Consumer Confidence				0.184***	0.223***	0.184**
				(0.0689)	(0.0609)	(0.0906)
Economic Sentiment				-0.278**	-0.281**	-0.278**
				(0.116)	(0.118)	(0.108)
Observations	639	639	639	639	639	639
R-squared	0.306	0.339	0.306	0.352	0.364	0.352
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000
F-test	0.000	0.200	0.000	0.000	0.004	0.000
F-test (ex UK)	0.000	0.352	0.000	0.001	0.052	0.000
F-test (FR, DE, NL)	0.955	0.431	0.000	0.435	0.394	0.034

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.72. The EBP by country and Industrial Production 24-m

Industrial Prod 24-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	2.392*	2.140*	2.392***	1.447*	1.198*	1.447***
	(1.313)	(1.100)	(0.474)	(0.839)	(0.714)	(0.407)
Real Interest Rate	-0.0549	-0.327	-0.0549	0.246	0.0850	0.246
	(0.703)	(0.477)	(0.568)	(0.582)	(0.450)	(0.515)
Predicted Spread	-1.015***	-0.451	-1.015	-2.198***	-1.552*	-2.198***
	(0.378)	(0.689)	(0.755)	(0.579)	(0.876)	(0.695)
EBP*AT	-3.792***	-2.618*	-3.792**	-4.931***	-3.738**	-4.931***
	(1.062)	(1.453)	(1.495)	(1.048)	(1.489)	(1.483)
EBP*BE	-1.844	-0.258	-1.844	-6.414**	-4.714***	-6.414***
	(2.671)	(1.147)	(1.199)	(3.115)	(1.003)	(1.043)
EBP*DE	0.392	0.443	0.392	-0.934	-1.093	-0.934*
	(1.209)	(0.822)	(0.586)	(1.555)	(0.909)	(0.503)
EBP*FR	-0.310	-1.121*	-0.310	-2.935***	-3.078***	-2.935***
	(0.900)	(0.585)	(0.326)	(0.780)	(0.798)	(0.413)
EBP*UK	-1.269*	-0.877	-1.269***	-3.732***	-3.686***	-3.732***
	(0.752)	(0.993)	(0.465)	(0.948)	(1.006)	(0.551)
EBP*IT	-0.194	-1.255	-0.194	-3.117***	-3.396***	-3.117***
	(1.635)	(1.028)	(0.553)	(0.922)	(1.156)	(0.611)
EBP*NL	-0.976**	-0.825***	-0.976***	-2.054***	-2.296***	-2.054***
	(0.406)	(0.287)	(0.235)	(0.758)	(0.507)	(0.445)
Consumer Confidence				0.119**	-0.0176	0.119
				(0.0467)	(0.0304)	(0.0926)
Economic Sentiment				-0.367***	-0.272***	-0.367***
				(0.0876)	(0.0754)	(0.0502)
Observations	555	555	555	555	555	555
R-squared	0.299	0.339	0.299	0.436	0.450	0.436
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000
F-test	0.000	0.020	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.030	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.076	0.237	0.000	0.197	0.073	0.009

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.73. The EBP by country and Unemployment Growth 3-m

Unemployment 3-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	2.173	1.012	2.173	-0.363	-1.527	-0.363
	(1.349)	(1.318)	(3.930)	(0.964)	(0.940)	(2.825)
Real Interest Rate	-1.188	-2.442**	-1.188	0.318	-0.970	0.318
	(0.855)	(0.980)	(1.881)	(0.738)	(0.817)	(2.404)
Predicted Spread	3.244*	4.767**	3.244	0.363	-0.909	0.363
	(1.843)	(1.931)	(3.227)	(1.769)	(1.612)	(2.526)
EBP*AT	14.67**	16.63***	14.67**	7.527	5.960	7.527
	(6.103)	(5.512)	(7.128)	(6.277)	(5.171)	(5.233)
EBP*BE	10.14**	12.26***	10.14***	-7.590	-4.344	-7.590
	(4.527)	(4.370)	(3.473)	(5.457)	(5.298)	(6.506)
EBP*DE	5.414**	4.664***	5.414***	-1.927	-3.527*	-1.927
	(2.721)	(1.658)	(1.918)	(2.583)	(1.880)	(2.585)
EBP*FR	7.675***	9.464***	7.675***	0.945	1.316	0.945
	(2.379)	(2.006)	(1.922)	(2.289)	(2.143)	(3.371)
EBP*UK	10.96***	12.29***	10.96***	0.580	0.378	0.580
	(2.740)	(2.274)	(1.369)	(3.165)	(2.486)	(2.405)
EBP*IT	8.306***	8.170***	8.306***	1.298	2.396	1.298
	(2.495)	(2.195)	(2.310)	(3.182)	(2.243)	(3.869)
EBP*NL	6.754**	6.997**	6.754***	0.232	0.566	0.232
	(3.079)	(3.179)	(1.512)	(2.200)	(2.008)	(2.243)
Consumer Confidence				-0.298***	-0.841***	-0.298***
				(0.104)	(0.199)	(0.0872)
Economic Sentiment				-0.859***	-0.506***	-0.859***
				(0.135)	(0.150)	(0.239)
Observations	646	646	646	646	646	646
R-squared	0.246	0.275	0.246	0.402	0.455	0.402
CD p-value	0.000	0.000		0.030	0.068	
FE/RE		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000
F-test	0.179	0.000	0.000	0.079	0.000	0.000
F-test (ex UK)	0.275	0.003	0.000	0.074	0.001	0.000
F-test (FR, DE, NL)	0.871	0.175	0.339	0.624	0.001	0.027

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.74. The EBP by country and Unemployment Growth 12-m

Unemployment 12-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-1.113	-1.674	-1.113	-2.031	-2.785	-2.031
	(1.840)	(1.783)	(3.786)	(1.810)	(1.792)	(3.010)
Real Interest Rate	-1.491	-2.294*	-1.491	-0.816	-1.615	-0.816
	(1.240)	(1.235)	(2.547)	(1.338)	(1.383)	(2.995)
Predicted Spread	1.609	-0.883	1.609	0.669	-3.818*	0.669
	(1.516)	(1.681)	(2.505)	(2.126)	(2.172)	(2.664)
EBP*AT	13.45**	11.55***	13.45**	10.81	5.561	10.81**
	(5.886)	(4.202)	(5.623)	(7.403)	(4.583)	(5.470)
EBP*BE	15.69***	16.82***	15.69***	8.890***	10.54**	8.890
	(2.273)	(2.554)	(2.782)	(3.189)	(4.059)	(6.770)
EBP*DE	5.064	4.737***	5.064***	2.149	0.409	2.149
	(4.557)	(1.516)	(1.441)	(4.653)	(1.641)	(2.701)
EBP*FR	6.831***	7.712***	6.831***	4.695	4.001	4.695
	(2.600)	(2.589)	(1.942)	(3.292)	(2.729)	(3.872)
EBP*UK	7.620**	7.688**	7.620***	3.505	1.683	3.505
	(3.542)	(3.309)	(1.033)	(4.095)	(3.164)	(2.873)
EBP*IT	9.866***	10.57***	9.866***	7.801**	9.992***	7.801*
	(2.925)	(2.515)	(1.917)	(3.952)	(2.730)	(4.152)
EBP*NL	15.02***	15.31***	15.02***	12.16***	12.21***	12.16***
	(3.484)	(3.299)	(1.544)	(3.364)	(2.495)	(2.601)
Consumer Confidence				-0.215	-0.887***	-0.215**
				(0.144)	(0.264)	(0.0920)
Economic Sentiment				-0.254	0.146	-0.254
				(0.233)	(0.254)	(0.291)
Observations	639	639	639	639	639	639
R-squared	0.314	0.358	0.314	0.361	0.474	0.361
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.024	0.025	0.000	0.111	0.000	0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.75. The EBP by country and Unemployment Growth 24-m

Unemployment 24-m	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-2.489	-3.095	-2.489	-1.488	-2.369	-1.488
	(2.234)	(2.273)	(2.801)	(1.860)	(1.816)	(2.392)
Real Interest Rate	-1.388	-2.256*	-1.388	-1.648	-2.691**	-1.648
	(1.367)	(1.207)	(2.327)	(1.298)	(1.170)	(2.472)
Predicted Spread	0.628	-1.068	0.628	2.037*	-0.385	2.037
	(0.628)	(1.277)	(1.591)	(1.139)	(1.794)	(2.256)
EBP*AT	5.611***	2.375	5.611**	7.070***	2.164	7.070**
	(2.096)	(2.663)	(2.690)	(2.395)	(2.897)	(3.385)
EBP*BE	8.419***	8.786***	8.419***	13.25***	14.72***	13.25**
	(3.064)	(2.643)	(2.671)	(4.557)	(4.596)	(5.830)
EBP*DE	3.322	3.018*	3.322***	4.538	3.422	4.538**
	(4.842)	(1.782)	(0.855)	(5.544)	(2.368)	(1.877)
EBP*FR	4.126**	5.051***	4.126**	7.352***	6.911***	7.352**
	(1.957)	(1.893)	(1.686)	(2.579)	(2.320)	(3.221)
EBP*UK	3.731	4.230**	3.731***	6.099**	5.696**	6.099***
	(2.571)	(1.760)	(0.815)	(2.687)	(2.198)	(2.258)
EBP*IT	5.914***	6.781***	5.914***	9.697***	12.00***	9.697***
	(2.043)	(1.840)	(1.439)	(3.206)	(2.190)	(3.196)
EBP*NL	12.45***	12.71***	12.45***	13.23***	13.84***	13.23***
	(1.916)	(1.770)	(1.310)	(2.008)	(1.987)	(2.172)
Consumer Confidence				-0.239**	-0.765***	-0.239***
				(0.118)	(0.141)	(0.0572)
Economic Sentiment				0.467**	0.824***	0.467**
				(0.198)	(0.183)	(0.217)
Observations	555	555	555	555	555	555
R-squared	0.241	0.285	0.241	0.304	0.413	0.304
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.000	0.000	0.000	0.001	0.000	0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.76. The EBP by country and Employment Growth 1-q

Employment 1-q	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-0.403**	-0.335*	-0.403*	-0.273	-0.207	-0.273
	(0.175)	(0.181)	(0.212)	(0.180)	(0.189)	(0.172)
Real Interest Rate	0.0249	0.113	0.0249	-0.141	-0.0381	-0.141
	(0.102)	(0.111)	(0.0675)	(0.105)	(0.110)	(0.0919)
Predicted Spread	-0.364**	-0.518**	-0.364*	-0.183	-0.113	-0.183
	(0.151)	(0.214)	(0.197)	(0.173)	(0.238)	(0.161)
EBP*AT	-0.786*	-0.937**	-0.786*	-0.368	-0.250	-0.368
	(0.407)	(0.384)	(0.424)	(0.367)	(0.451)	(0.246)
EBP*BE	-2.416***	-2.205***	-2.416***	-0.990	-0.904	-0.990*
	(0.830)	(0.812)	(0.205)	(0.897)	(0.843)	(0.545)
EBP*DE	-0.844***	-0.791***	-0.844***	-0.310	-0.274	-0.310
	(0.271)	(0.216)	(0.127)	(0.281)	(0.216)	(0.212)
EBP*FR	-0.329	-0.480***	-0.329***	0.173	0.153	0.173
	(0.221)	(0.155)	(0.101)	(0.193)	(0.187)	(0.252)
EBP*UK	-0.812***	-0.924***	-0.812***	-0.0767	-0.145	-0.0767
	(0.155)	(0.130)	(0.111)	(0.216)	(0.233)	(0.242)
EBP*IT	-0.825***	-0.886***	-0.825***	-0.292	-0.375	-0.292
	(0.216)	(0.194)	(0.129)	(0.256)	(0.263)	(0.303)
EBP*NL	-0.194	-0.165	-0.194***	0.367	0.319	0.367**
	(0.551)	(0.566)	(0.0704)	(0.512)	(0.484)	(0.160)
Consumer Confidence				0.0350**	0.0455	0.0350***
				(0.0165)	(0.0295)	(0.00709)
Economic Sentiment				0.0529***	0.0446*	0.0529*
				(0.0203)	(0.0232)	(0.0277)
Observations	213	213	213	213	213	213
R-squared	0.293	0.304	0.293	0.376	0.376	0.376
CD p-value	0.602	0.807		0.093	0.081	
FE/RE		0.129	0.612		0.378	0.988
Robust Hausman			0.000			0.000
F-test	0.167	0.108	0.000	0.148	0.015	0.000
F-test (ex UK)	0.125	0.109	0.000	0.092	0.012	0.000
F-test (FR, DE, NL)	0.265	0.375	0.000	0.200	0.074	0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.77. The EBP by country and Employment Growth 4-q

Employment 4-q	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-0.297**	-0.264**	-0.297	-0.228*	-0.188	-0.228
	(0.128)	(0.127)	(0.275)	(0.131)	(0.141)	(0.239)
Real Interest Rate	-0.0416	-0.000620	-0.0416	-0.150	-0.0923	-0.150
	(0.0915)	(0.102)	(0.125)	(0.109)	(0.118)	(0.189)
Predicted Spread	-0.403***	-0.481***	-0.403**	-0.328**	-0.224	-0.328**
	(0.119)	(0.142)	(0.185)	(0.130)	(0.183)	(0.163)
EBP*AT	-1.121***	-1.203***	-1.121***	-0.927***	-0.741**	-0.927***
	(0.339)	(0.303)	(0.380)	(0.274)	(0.348)	(0.238)
EBP*BE	-1.437***	-1.200***	-1.437***	-0.663	-0.578	-0.663
	(0.368)	(0.366)	(0.234)	(0.468)	(0.520)	(0.583)
EBP*DE	-0.658*	-0.615***	-0.658***	-0.329	-0.268	-0.329
	(0.331)	(0.200)	(0.122)	(0.332)	(0.161)	(0.227)
EBP*FR	-0.448**	-0.608***	-0.448***	-0.241	-0.235	-0.241
	(0.202)	(0.129)	(0.123)	(0.211)	(0.174)	(0.284)
EBP*UK	-0.796***	-0.849***	-0.796***	-0.356	-0.354*	-0.356
	(0.156)	(0.159)	(0.0819)	(0.222)	(0.203)	(0.236)
EBP*IT	-0.868***	-0.977***	-0.868***	-0.658**	-0.787***	-0.658**
	(0.215)	(0.193)	(0.138)	(0.256)	(0.231)	(0.327)
EBP*NL	-0.821**	-0.812**	-0.821***	-0.446	-0.518***	-0.446**
	(0.330)	(0.331)	(0.0915)	(0.313)	(0.191)	(0.190)
Consumer Confidence				0.0380***	0.0591***	0.0380***
				(0.0108)	(0.0141)	(0.00657)
Economic Sentiment				0.0163	0.00191	0.0163
				(0.0147)	(0.0129)	(0.0257)
Observations	208	208	208	208	208	208
R-squared	0.472	0.504	0.472	0.574	0.596	0.574
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.442	0.830	0.000	0.810	0.521	0.060

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.78. The EBP by country and Employment Growth 8-q

Employment 8-q	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	-0.0987	-0.0835	-0.0987	-0.113	-0.0859	-0.113
	(0.172)	(0.161)	(0.260)	(0.148)	(0.142)	(0.219)
Real Interest Rate	-0.0590	-0.0396	-0.0590	-0.0571	-0.0174	-0.0571
	(0.106)	(0.0968)	(0.180)	(0.109)	(0.0994)	(0.193)
Predicted Spread	-0.376**	-0.404***	-0.376**	-0.456***	-0.423***	-0.456***
	(0.160)	(0.128)	(0.154)	(0.154)	(0.157)	(0.141)
EBP*AT	-0.723***	-1.087***	-0.723***	-0.967***	-1.043***	-0.967***
	(0.252)	(0.346)	(0.164)	(0.234)	(0.324)	(0.115)
EBP*BE	-0.907***	-0.741***	-0.907***	-1.153***	-1.101***	-1.153**
	(0.247)	(0.206)	(0.312)	(0.336)	(0.311)	(0.508)
EBP*DE	-0.489	-0.433***	-0.489***	-0.489	-0.430**	-0.489***
	(0.327)	(0.145)	(0.0925)	(0.362)	(0.167)	(0.164)
EBP*FR	-0.348*	-0.510***	-0.348***	-0.574***	-0.582***	-0.574***
	(0.206)	(0.105)	(0.125)	(0.205)	(0.167)	(0.213)
EBP*UK	-0.538***	-0.562***	-0.538***	-0.536**	-0.563***	-0.536***
	(0.132)	(0.102)	(0.0646)	(0.220)	(0.177)	(0.151)
EBP*IT	-0.582**	-0.723***	-0.582***	-0.855***	-0.945***	-0.855***
	(0.248)	(0.147)	(0.132)	(0.202)	(0.198)	(0.231)
EBP*NL	-0.927***	-0.900***	-0.927***	-0.886***	-0.946***	-0.886***
	(0.255)	(0.229)	(0.0963)	(0.319)	(0.226)	(0.164)
Consumer Confidence				0.0378***	0.0453***	0.0378***
				(0.00923)	(0.0102)	(0.00860)
Economic Sentiment				-0.0370*	-0.0425**	-0.0370**
				(0.0188)	(0.0174)	(0.0161)
Observations	180	180	180	180	180	180
R-squared	0.373	0.406	0.373	0.471	0.456	0.471
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.002	0.002
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.000	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.004	0.089	0.000	0.469	0.079	0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.79. The EBP by country and Real GDP Growth 1-q

Real GDP 1-q	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	0.303	0.174	0.303	0.437	0.324	0.437**
	(0.346)	(0.329)	(0.220)	(0.352)	(0.327)	(0.198)
Real Interest Rate	0.493*	0.238	0.493***	0.280	0.0595	0.280
	(0.265)	(0.257)	(0.0816)	(0.257)	(0.264)	(0.184)
Predicted Spread	-1.005***	-1.526***	-1.005*	-0.871**	-1.013**	-0.871
	(0.335)	(0.516)	(0.548)	(0.336)	(0.503)	(0.573)
EBP*AT	-3.439***	-4.151***	-3.439***	-2.949**	-3.213***	-2.949**
	(1.090)	(1.205)	(1.238)	(1.218)	(1.171)	(1.285)
EBP*BE	-4.939***	-5.234***	-4.939***	-3.390**	-3.895**	-3.390***
	(1.541)	(1.459)	(0.566)	(1.639)	(1.566)	(0.819)
EBP*DE	-3.321***	-3.265***	-3.321***	-2.640***	-2.582***	-2.640***
	(0.694)	(0.700)	(0.218)	(0.723)	(0.767)	(0.247)
EBP*FR	-2.465***	-2.711***	-2.465***	-2.075***	-1.951***	-2.075***
	(0.472)	(0.274)	(0.184)	(0.482)	(0.410)	(0.354)
EBP*UK	-3.150***	-3.016***	-3.150***	-2.262***	-2.033***	-2.262***
	(0.610)	(0.704)	(0.185)	(0.701)	(0.748)	(0.193)
EBP*IT	-3.168***	-3.313***	-3.168***	-2.756***	-2.862***	-2.756***
	(0.944)	(0.547)	(0.271)	(0.712)	(0.624)	(0.407)
EBP*NL	-3.060***	-2.933***	-3.060***	-2.293***	-2.340***	-2.293***
	(0.450)	(0.561)	(0.114)	(0.481)	(0.356)	(0.161)
Consumer Confidence				0.0809***	0.0999**	0.0809**
				(0.0171)	(0.0471)	(0.0317)
Economic Sentiment				0.0301	0.0193	0.0301
				(0.0419)	(0.0530)	(0.0534)
Observations	213	213	213	213	213	213
R-squared	0.578	0.600	0.578	0.634	0.640	0.634
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.010	0.009
Robust Hausman			0.000			0.000
F-test	0.001	0.591	0.000	0.836	0.246	0.000
F-test (ex UK)	0.001	0.499	0.000	0.737	0.262	0.000
F-test (FR, DE, NL)	0.095	0.4667	0.000	0.660	0.382	0.124

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.80. The EBP by country and Real GDP Growth 4-q

Real GDP 4-q	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	0.443	0.237	0.443**	0.345	0.185	0.345**
	(0.426)	(0.355)	(0.210)	(0.378)	(0.322)	(0.147)
Real Interest Rate	0.297	-0.0150	0.297	0.324	0.0413	0.324
	(0.316)	(0.301)	(0.375)	(0.318)	(0.299)	(0.415)
Predicted Spread	-0.563***	-0.477	-0.563	-0.814**	-0.533	-0.814
	(0.196)	(0.329)	(0.429)	(0.353)	(0.493)	(0.542)
EBP*AT	-3.044***	-2.976***	-3.044***	-3.215***	-2.883***	-3.215***
	(0.763)	(0.666)	(0.944)	(1.102)	(0.777)	(1.227)
EBP*BE	-3.047***	-3.108***	-3.047***	-3.908**	-4.149***	-3.908***
	(0.840)	(0.797)	(0.357)	(1.550)	(1.537)	(0.670)
EBP*DE	-1.487***	-1.523***	-1.487***	-1.589***	-1.516***	-1.589***
	(0.454)	(0.365)	(0.155)	(0.577)	(0.450)	(0.184)
EBP*FR	-1.674***	-1.832***	-1.674***	-2.320***	-2.038***	-2.320***
	(0.445)	(0.418)	(0.166)	(0.773)	(0.634)	(0.417)
EBP*UK	-2.228***	-1.919***	-2.228***	-2.476***	-2.037**	-2.476***
	(0.657)	(0.663)	(0.249)	(0.846)	(0.836)	(0.225)
EBP*IT	-1.826**	-2.111***	-1.826***	-2.517***	-2.729***	-2.517***
	(0.745)	(0.504)	(0.162)	(0.880)	(0.785)	(0.389)
EBP*NL	-2.302***	-2.174***	-2.302***	-2.291***	-2.300***	-2.291***
	(0.443)	(0.385)	(0.0978)	(0.668)	(0.479)	(0.215)
Consumer Confidence				0.0736***	0.111***	0.0736**
				(0.0193)	(0.0397)	(0.0340)
Economic Sentiment				-0.0927	-0.110	-0.0927*
				(0.0586)	(0.0680)	(0.0499)
Observations	213	213	213	213	213	213
R-squared	0.355	0.392	0.355	0.413	0.433	0.413
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000
F-test	0.000	0.001	0.000	0.589	0.001	0.000
F-test (ex UK)	0.000	0.023	0.000	0.465	0.006	0.000
F-test (FR, DE, NL)	0.032	0.279	0.000	0.497	0.191	0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 5.81. The EBP by country and Real GDP Growth 8-q

Real GDP 8-q	Panel 1			Panel 2		
	OLS1	FE1	RE1	OLS2	FE2	RE2
Term Spread	0.782	0.606	0.782***	0.370	0.241	0.370**
	(0.565)	(0.469)	(0.166)	(0.305)	(0.246)	(0.176)
Real Interest Rate	0.457	0.163	0.457	0.666**	0.433*	0.666**
	(0.358)	(0.255)	(0.320)	(0.303)	(0.224)	(0.268)
Predicted Spread	-0.261*	-0.284	-0.261	-0.866***	-0.785**	-0.866***
	(0.136)	(0.261)	(0.205)	(0.238)	(0.389)	(0.221)
EBP*AT	-1.661***	-1.424**	-1.661***	-2.148***	-1.740***	-2.148***
	(0.418)	(0.572)	(0.284)	(0.448)	(0.568)	(0.461)
EBP*BE	-1.636***	-1.550***	-1.636***	-4.414***	-4.381***	-4.414***
	(0.523)	(0.501)	(0.377)	(0.650)	(0.657)	(0.348)
EBP*DE	-0.424	-0.461	-0.424**	-1.030**	-1.046**	-1.030***
	(0.361)	(0.349)	(0.173)	(0.483)	(0.469)	(0.164)
EBP*FR	-1.069***	-1.213***	-1.069***	-2.488***	-2.238***	-2.488***
	(0.245)	(0.268)	(0.148)	(0.484)	(0.397)	(0.216)
EBP*UK	-1.538***	-1.238***	-1.538***	-2.689***	-2.404***	-2.689***
	(0.352)	(0.436)	(0.234)	(0.480)	(0.567)	(0.165)
EBP*IT	-0.761	-1.040***	-0.761***	-2.239***	-2.384***	-2.239***
	(0.718)	(0.301)	(0.146)	(0.401)	(0.372)	(0.232)
EBP*NL	-1.583***	-1.469***	-1.583***	-2.194***	-2.218***	-2.194***
	(0.273)	(0.168)	(0.0934)	(0.494)	(0.290)	(0.137)
Consumer Confidence				0.0663***	0.0672***	0.0663*
				(0.0139)	(0.0152)	(0.0379)
Economic Sentiment				-0.187***	-0.184***	-0.187***
				(0.0510)	(0.0457)	(0.0273)
Observations	185	185	185	185	185	185
R-squared	0.225	0.232	0.225	0.438	0.414	0.438
CD p-value	0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000
F-test	0.000	0.000	0.000	0.000	0.000	0.000
F-test (ex UK)	0.000	0.016	0.000	0.000	0.000	0.000
F-test (FR, DE, NL)	0.000	0.011	0.000	0.000	0.028	0.000

Note: Sample period: January 1996 – August 2010. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Appendix for Chapter 6

A. Data description

Table 6.1. Data by country and transformation

Variable	AT	BE	DE	FR	IT	NL	SP	UK	Transf	Source
Prod. Manufacturing Non-Durable Consumer Goods IPB	✓	✓	✓	✓				✓	5	OECD
Prod. Manufacturing Durable Consumer Goods IPB SA 2005Y	✓	✓	✓	✓				✓	5	OECD
Prod. Manufacturing Total Investment Goods IPB SA 2005Y	✓	✓	✓	✓	✓		✓	✓	5	OECD
Prod. Manufacturing Total Intermediate Goods IPB SA 2005Y	✓	✓	✓	✓	✓		✓	✓	5	OECD
Prod. Total Construction IPB SA 2005Y	✓	✓	✓	✓		✓	✓		5	OECD
Sales Retail Trade Total Retail Trade Value IPB SA 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
Sales Retail Trade Total Retail Trade Volume IPB SA 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
Sales Retail Trade Car Registration Passenger Cars ML SA number	✓	✓				✓	✓	✓	5	OECD
Construction Permits Issued Residential Buildings SA		✓	✓	✓		✓	✓		5	OECD
CPI Goods Food Excl. Restaurants IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
CPI OECD Groups Total Energy IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
CPI All Items Total IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
CPI OECD Groups All Non-Food Non-Energy Items IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
CPI Services Imputed Rent Repairs & Maintenance Total IPB	✓	✓	✓	✓	✓	✓	✓	X	5	OECD
CPI Total Services less Housing IPB 2005Y	✓	✓		✓	✓		✓	✓	5	OECD
Int. Rates Immediate Call Money Total bank Rate Stck % p.a.	✓	✓	✓	✓	✓	✓	✓	✓	1	OECD
Share Prices All Shares Broad Total IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
CPI Based Real Effective Exchange Rate Index	✓	✓	✓	✓	✓	✓	✓	✓	5	IMF
Nominal Effective Exchange Rate Broad Index	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
Real Effective Exchange Rate Broad Index	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
Nominal Effective Exchange Rate Narrow Index	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD

Real Effective Exchange Rate Narrow Index	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
USD Exchange Rate End of Period USD: Nat Curr Stck	EZ	EZ	EZ	EZ	EZ	EZ	EZ	✓	5	OECD
BOP Current Account Balance Total Nat Cur			✓	✓	✓		✓		2	OECD
BOP Net Finan Acct. Incl. Change in Official Rsrv Nat Cur		✓	✓	✓			✓		2	OECD
BOP Net Errors & Omissions Total Nat Cur		✓	✓	✓	✓		✓		2	OECD
Intl. Trade Net Trade Value Total NatCur ML SA	✓	✓	✓	✓	✓	✓	✓	✓	2	OECD
Intl. Trade Net Trade Value Total ML SA (USD)	✓	✓	✓	✓	✓	✓	✓	✓	2	OECD
Intl. Trade Total Imports Value ML SA (USD)	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
Intl. Trade Total Exports Value ML SA (USD)	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
PPI Type of Goods Total Consumer Goods IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
PPI Economic Activities Total Energy IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
PPI Economic Activities Total Manufacturing IPB 2005Y	✓	✓	✓	X	✓	✓	✓	X	5	OECD
PPI Economic Activities Total Industrial Activities IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	X	5	OECD
PPI Econ Activities Total Manuf of Food Products IPB 2005Y	✓	✓	✓	X	✓	✓		X	5	OECD
PPI Econ Activitiy Totl Mining&Quarrying Activity IPB 2005Y	✓	✓	✓	X	✓	✓	✓	X	5	OECD
PPI Type of Goods Total Investment Goods IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
PPI Type of Goods Total Intermediate Goods IPB 2005Y	✓	✓	✓	✓	✓	✓	✓	✓	5	OECD
Monetary Aggr. & Comp. Narrow Money M1 StckSA	EZ	EZ	EZ	EZ	EZ	EZ	EZ	✓	5	OECD
UK/ECB Money Supply M2 Level SA	EZ	EZ	EZ	EZ	EZ	EZ	EZ	✓	5	OECD
Monetary Aggr. & Comp. Broad Money M3 StckSA	EZ	EZ	EZ	EZ	EZ	EZ	EZ	✓	5	OECD
VIX	U	U	U	U	U	U	U	U	4	CBOE
LIBOR-OIS	EZ	EZ	EZ	EZ	EZ	EZ	EZ	✓	1	BBG
Europe Banks Investment Grade 5Y CDS Rate	EZ	EZ	EZ	EZ	EZ	EZ	EZ	EZ	1	BBG
MFI loans to hholds AOS	✓	✓	✓	✓	✓	✓	✓	✓	5	ECB
MFI loans & deposits to non-fin corp	✓	✓	✓	✓	✓	✓	✓	✓	5	ECB
MFI loans & deposits to hholds credit for cons	✓	✓	✓	✓	✓	✓	✓	✓	5	ECB
ECB Hhold & NPO Int Rate: New Loans for Consumption<1yr	✓	✓	✓	✓	X		X	X	1	ECB

ECB Hhold & NPO Int Rate: New Loans for Consumption1-5yr	✓	X	✓	✓	✓		✓	X	1	ECB
ECB Hhold & NPO Int Rate: New Loans for Consumption>5yr	✓	X	✓	✓	✓		✓	X	1	ECB
HICP All Items Index NSA	✓	✓	✓	✓	✓	✓	✓	✓	5	Eurostat
New Orders Manufacturing Industries Working on Orders	✓	✓	X	✓	✓	✓	✓	✓	5	Eurostat
New Orders Construction SA Index	✓	✓	✓	✓				X	5	Eurostat
Wilshire 5000 Index	U	U	U	U	U	U	U	U	5	BBG
EuroStoxx 50 Net Return Euro	U	U	U	U	U	U	U	U	5	BBG
S&P 500	U	U	U	U	U	U	U	U	5	BBG
Inter-continental Exchange Brent Crude Oil Wghtd Ave Price Monthly	U	U	U	U	U	U	U	U	5	BBG
Baltic Dry Index	U	U	U	U	U	U	U	U	5	BBG
JPMorgan Effective Exchange Rate Index Euro	EZ	EZ	EZ	EZ	EZ	EZ	EZ	✓	5	JPMorgan
Gold Price (Euros)	U	U	U	U	U	U	U	U	5	BBG
Bloomberg European Commodity Price Index	U	U	U	U	U	U	U	U	5	BBG
S&P Dividend Yield	U	U	U	U	U	U	U	U	1	BBG
LIBOR 3-months	EZ	EZ	EZ	EZ	EZ	EZ	EZ	✓	1	BBG
TED Spread		✓	✓	✓	✓	✓	✓	✓	1	BBG
Generic Government Bond Rate 10 yr	✓	✓	✓	✓	✓	✓	✓	✓	1	BBG
Composite Leading Indicator (CLI)	✓	✓	✓	✓	✓	✓	✓	✓	2	OECD
Term Spread		✓	✓	✓	✓	✓	✓	✓	1	BBG
Nominal Interest Rate	✓	✓	✓	✓	✓	✓	✓	✓	1	ECB/BOE
EC Consumer Confidence	✓	✓	✓	✓	✓	✓	✓	✓	2	EC
EC Economic Sentiment	✓	✓	✓	✓	✓	✓	✓	✓	2	EC
Services PMI Markit Survey Ticker			✓	✓	X			✓	5	PMI
Manufacturing PMI Markit Survey Ticker			✓	✓	X			✓	5	PMI

Notes: Transformations: 1=level; 2=first difference; 4=log; 5=first difference of log; 6=second difference of log.

✓=data available at individual country level; EZ= data available at Euro-zone level; X=variable excluded as too short a series; U=universal data for all countries; Blanks stand for no data available.

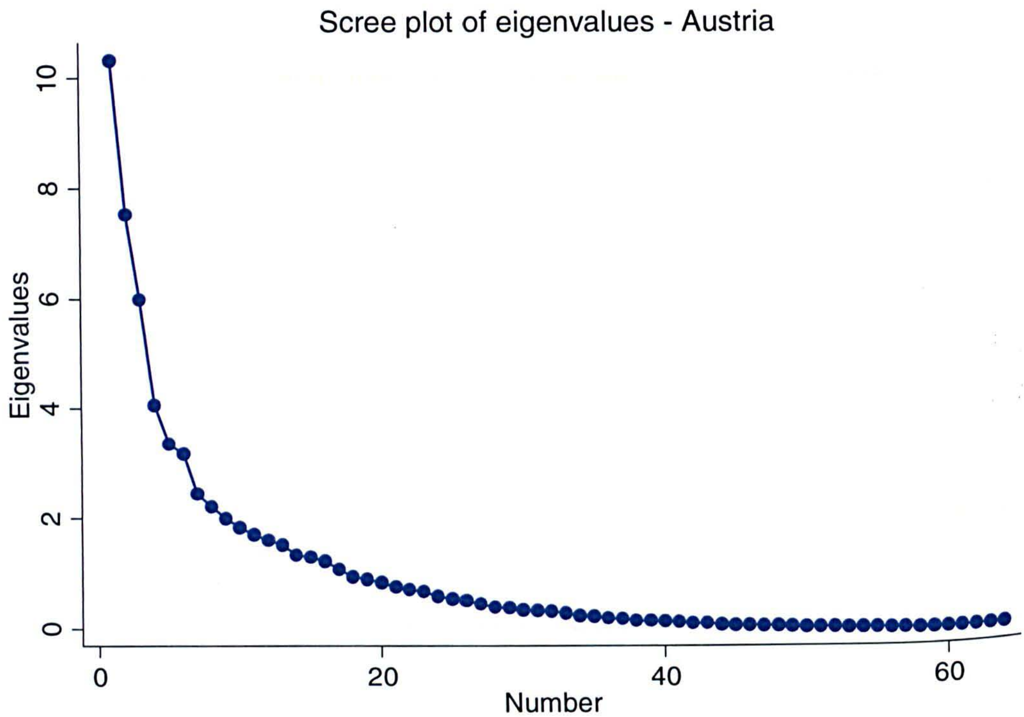
Table 6.2. Start date of factors and credit spread series by country

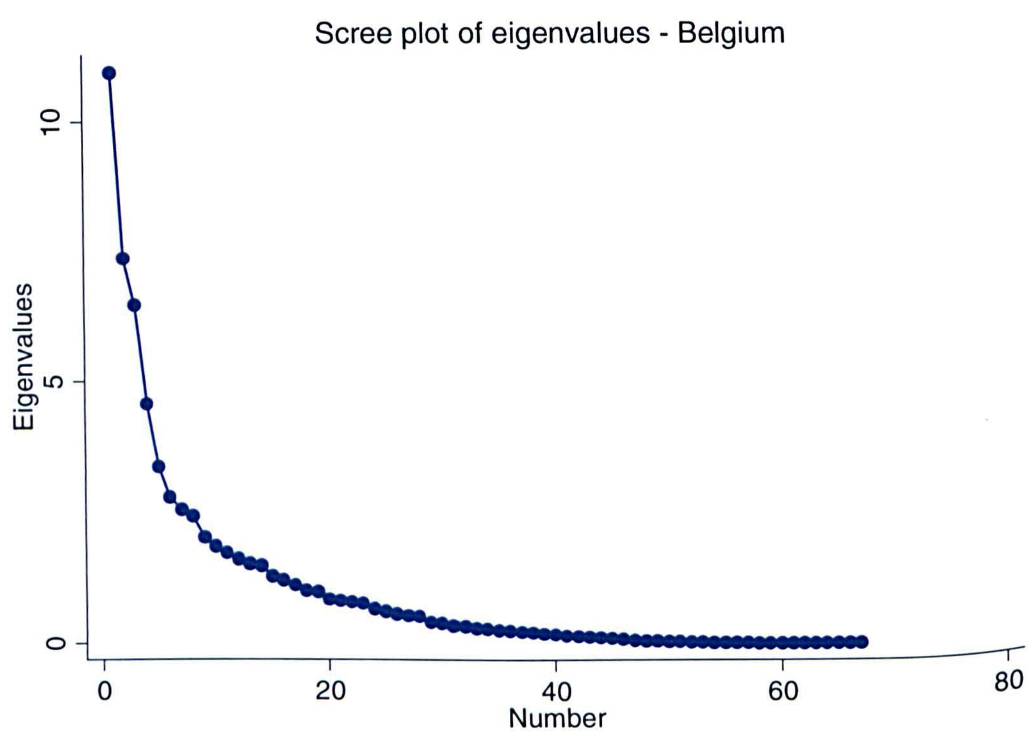
Country	Factors start date	Credit Spread start date
AT	Feb-03	Jun-05
BE	May-03	Jun-03
DE	Feb-03	Jan-03
FR	Jan-03	Oct-01
IT	Jan-03	Jul-02
NL	Feb-03	Oct-03
SP	Feb-03	Feb-04
UK	Sept-01	Jul-94

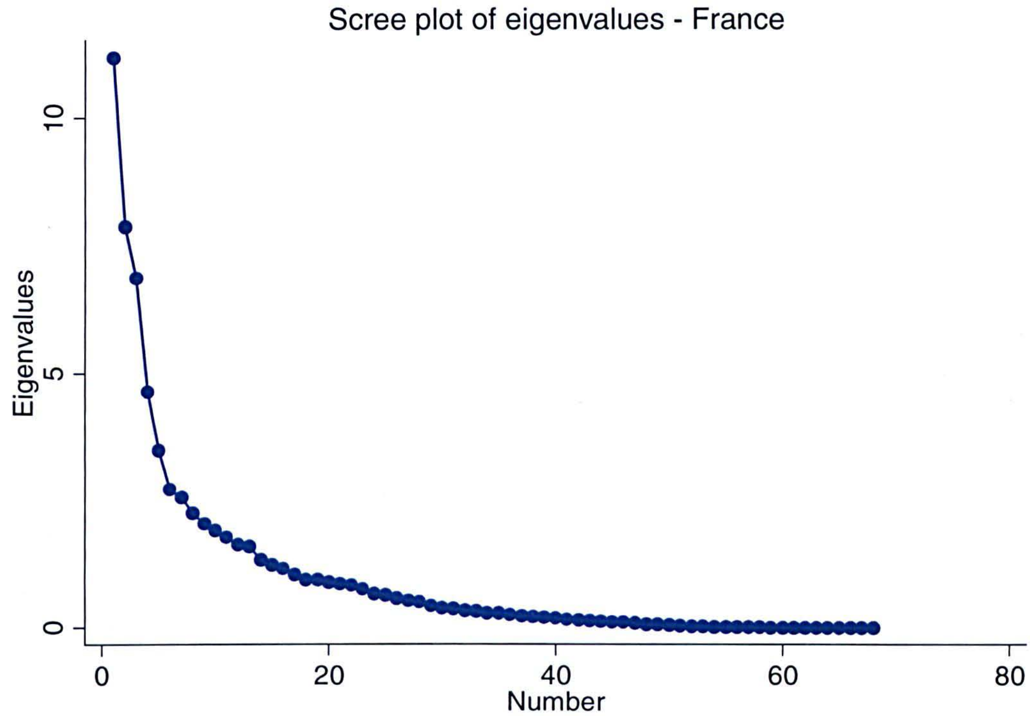
Table 6.3. Number of factors selected by the AIC and BIC criteria

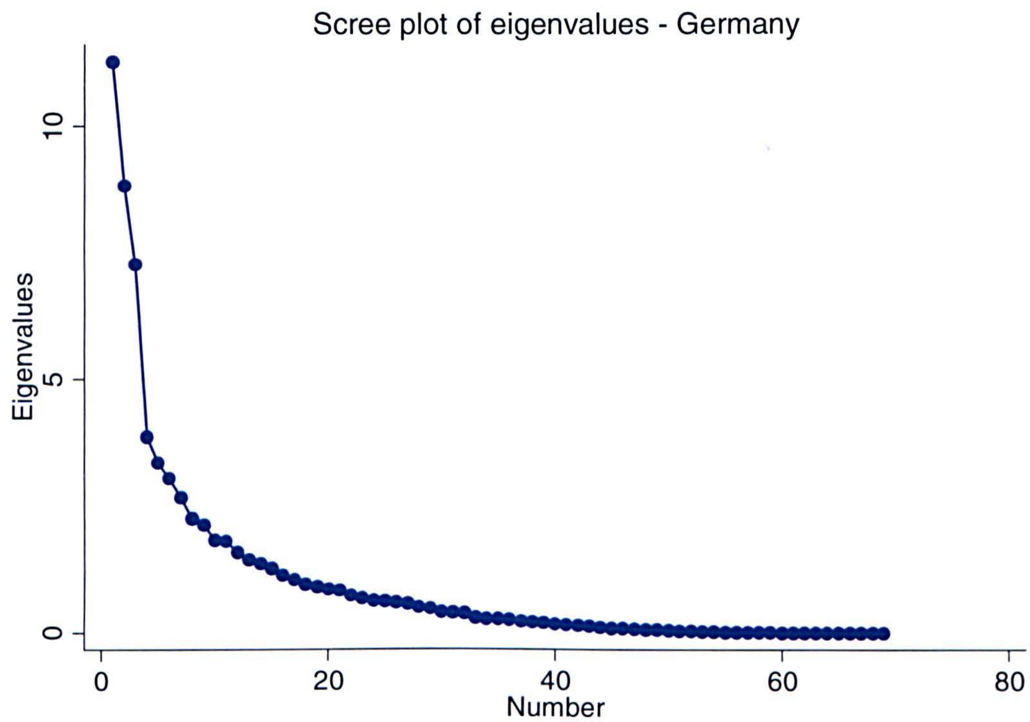
Country	AIC	BIC	# AIC; # BIC
AT	3809.4	6146.2	29; 9
BE	4299.0	6703.9	48, 10
DE	4510.7	7261.8	42; 14
FR	4164.0	6796.7	30; 12
IT	3503.9	6094.2	32; 9
NL	3082.0	5228.0	33; 12
SP	3990.5	6920.6	38; 14
UK	2922.6	4974.6	21; 11

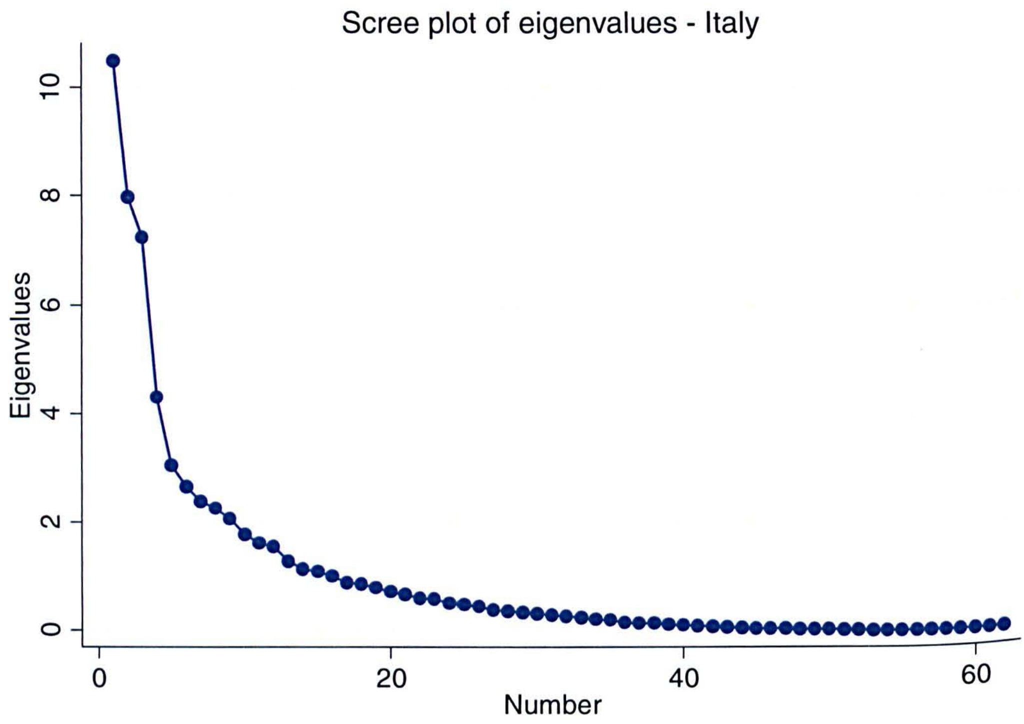
B. Scree plots by country

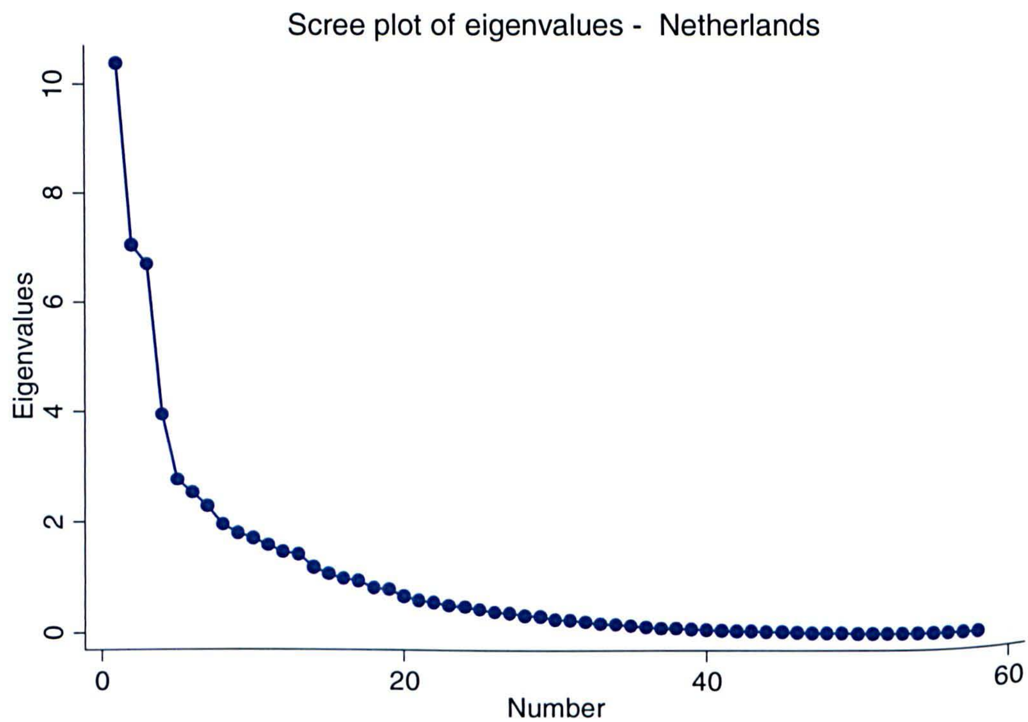


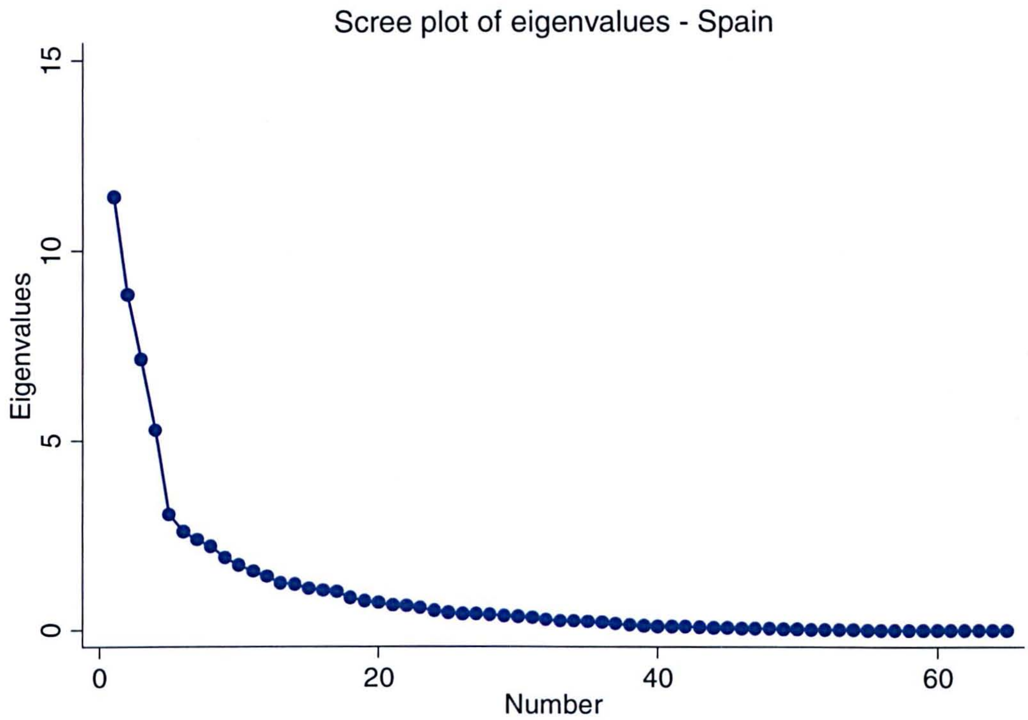



Scree plot of eigenvalues - France
Eigenvalues
0
5
10
0
20
40
60
80
Number


Scree plot of eigenvalues - Germany
Eigenvalues
0
5
10
0
20
40
60
80
Number


Scree plot of eigenvalues - Italy
Eigenvalues
0
2
4
6
8
10
0
20
40
60
Number


Scree plot of eigenvalues - Netherlands
Eigenvalues
0
2
4
6
8
10
0
20
40
60
Number


Scree plot of eigenvalues - Spain
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15
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20
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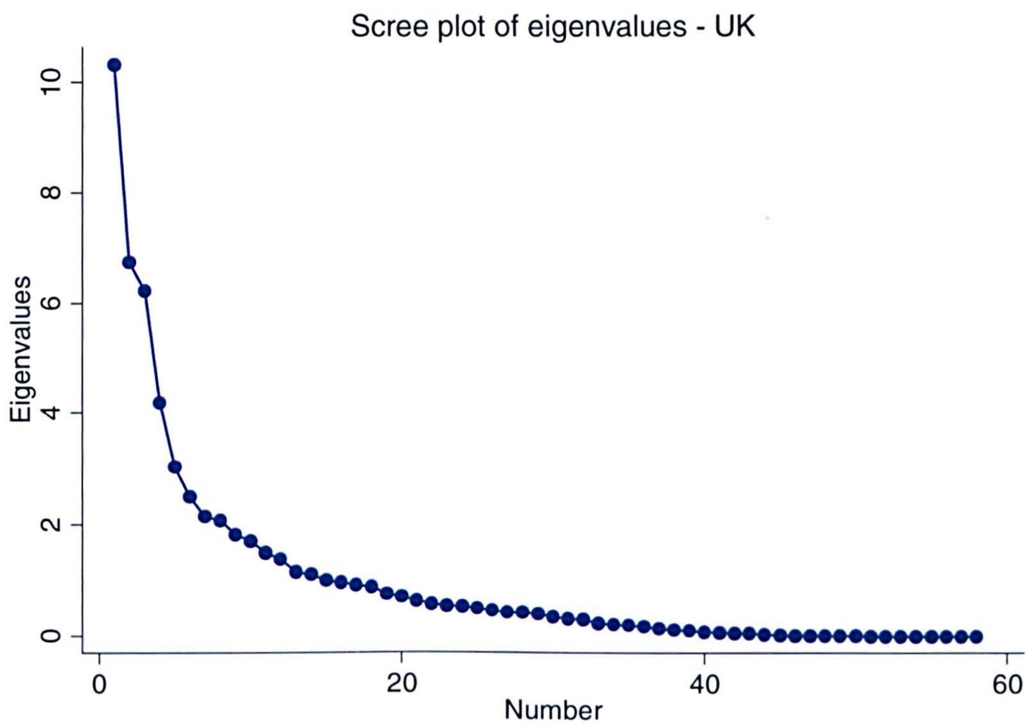
60
Number


Scree plot of eigenvalues - UK
Eigenvalues
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10
0
20
40
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Number

C. Tables of Eigenvalues by country

AT	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.32446	2.79281	0.1613	0.1613	1.370812
Factor2	7.53164	1.55151	0.1177	0.279	1.259442
Factor3	5.98014	1.91318	0.0934	0.3724	1.47042
Factor4	4.06696	0.71014	0.0635	0.436	1.211555
Factor5	3.35681	0.17673	0.0525	0.4884	1.055571
Factor6	3.18009	0.72898	0.0497	0.5381	1.297408
Factor7	2.45111	0.23712	0.0383	0.5764	1.107101
Factor8	2.21399	0.21668	0.0346	0.611	1.108486
Factor9	1.99731	0.15649	0.0312	0.6422	1.085011
Factor10	1.84082	0.13419	0.0288	0.671	1.078629
Factor11	1.70663	0.09904	0.0267	0.6977	1.061608
Factor12	1.60759	0.09048	0.0251	0.7228	1.05964
Factor13	1.51711	0.18587	0.0237	0.7465	1.13963
Factor14	1.33123	0.03446	0.0208	0.7673	1.026566
Factor15	1.29678	0.07323	0.0203	0.7875	1.05985
Factor16	1.22355	0.14168	0.0191	0.8067	1.130958
Factor17	1.08187	0.13301	0.0169	0.8236	

BE	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.96814	3.59546	0.1637	0.1637	1.487673
Factor2	7.37268	0.88797	0.11	0.2737	1.136933
Factor3	6.48471	1.91342	0.0968	0.3705	1.418573
Factor4	4.57129	1.1933	0.0682	0.4388	1.353261
Factor5	3.37798	0.59324	0.0504	0.4892	1.213032
Factor6	2.78474	0.22966	0.0416	0.5307	1.089879
Factor7	2.55509	0.13012	0.0381	0.5689	1.053658
Factor8	2.42497	0.40446	0.0362	0.6051	1.200177
Factor9	2.02051	0.16499	0.0302	0.6352	1.088918
Factor10	1.85552	0.12745	0.0277	0.6629	1.073753
Factor11	1.72807	0.11193	0.0258	0.6887	1.069258
Factor12	1.61614	0.08559	0.0241	0.7128	1.055921
Factor13	1.53055	0.03547	0.0228	0.7357	1.023724
Factor14	1.49508	0.20637	0.0223	0.758	1.160137
Factor15	1.28871	0.06854	0.0192	0.7772	1.056173
Factor16	1.22017	0.10219	0.0182	0.7954	1.091406
Factor17	1.11798	0.09284	0.0167	0.8121	1.090563
Factor18	1.02514	0.0312	0.0153	0.8274	

DE	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	11.27494	2.44866	0.1634	0.1634	1.277428
Factor2	8.82628	1.57586	0.1279	0.2913	1.217347
Factor3	7.25042	3.38516	0.1051	0.3964	1.875796
Factor4	3.86525	0.52088	0.056	0.4524	1.155748
Factor5	3.34437	0.30336	0.0485	0.5009	1.099756
Factor6	3.04101	0.36866	0.0441	0.545	1.137953
Factor7	2.67235	0.39732	0.0387	0.5837	1.174644
Factor8	2.27503	0.1298	0.033	0.6167	1.060506
Factor9	2.14523	0.28658	0.0311	0.6478	1.154187
Factor10	1.85865	0.03217	0.0269	0.6747	1.017613
Factor11	1.82648	0.21495	0.0265	0.7012	1.133383
Factor12	1.61153	0.15545	0.0234	0.7245	1.106752
Factor13	1.45609	0.07852	0.0211	0.7456	1.056999
Factor14	1.37757	0.08323	0.02	0.7656	1.064303
Factor15	1.29434	0.14006	0.0188	0.7843	1.12134
Factor16	1.15428	0.09283	0.0167	0.8011	1.087456
Factor17	1.06145	0.08903	0.0154	0.8165	

FR	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	11.18909	3.30056	0.1645	0.1645	1.4184
Factor2	7.88853	1.00402	0.116	0.2806	1.145838
Factor3	6.88451	2.24407	0.1012	0.3818	1.483593
Factor4	4.64043	1.13435	0.0682	0.45	1.323538
Factor5	3.50608	0.7816	0.0516	0.5016	1.286876
Factor6	2.72449	0.14601	0.0401	0.5417	1.05663
Factor7	2.57847	0.31949	0.0379	0.5796	1.141426
Factor8	2.25899	0.222	0.0332	0.6128	1.108984
Factor9	2.03699	0.11618	0.03	0.6428	1.06049
Factor10	1.9208	0.14898	0.0282	0.671	1.084077
Factor11	1.77183	0.13328	0.0261	0.6971	1.081347
Factor12	1.63854	0.0343	0.0241	0.7212	1.021374
Factor13	1.60425	0.27755	0.0236	0.7447	1.209212
Factor14	1.32669	0.10122	0.0195	0.7643	1.082597
Factor15	1.22547	0.07473	0.018	0.7823	1.064941
Factor16	1.15074	0.11392	0.0169	0.7992	1.109864
Factor17	1.03683	0.09306	0.0152	0.8145	

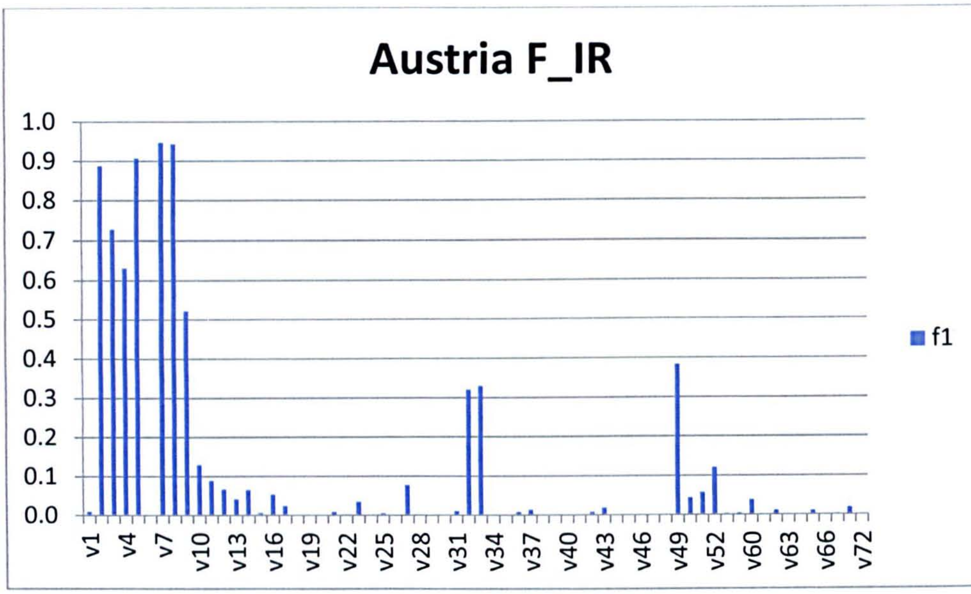
IT	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.48879	2.51746	0.1692	0.1692	1.315816
Factor2	7.97132	0.7343	0.1286	0.2977	1.101464
Factor3	7.23702	2.92669	0.1167	0.4145	1.678994
Factor4	4.31033	1.24724	0.0695	0.484	1.407184
Factor5	3.06309	0.4037	0.0494	0.5334	1.151802
Factor6	2.65939	0.26856	0.0429	0.5763	1.112329
Factor7	2.39083	0.12978	0.0386	0.6149	1.057398
Factor8	2.26105	0.19081	0.0365	0.6513	1.092168
Factor9	2.07024	0.29769	0.0334	0.6847	1.167944
Factor10	1.77255	0.17191	0.0286	0.7133	1.107401
Factor11	1.60064	0.04933	0.0258	0.7391	1.031799
Factor12	1.55131	0.27847	0.025	0.7641	1.218778
Factor13	1.27284	0.14274	0.0205	0.7847	1.126307
Factor14	1.1301	0.04979	0.0182	0.8029	1.046089
Factor15	1.08031	0.081	0.0174	0.8203	

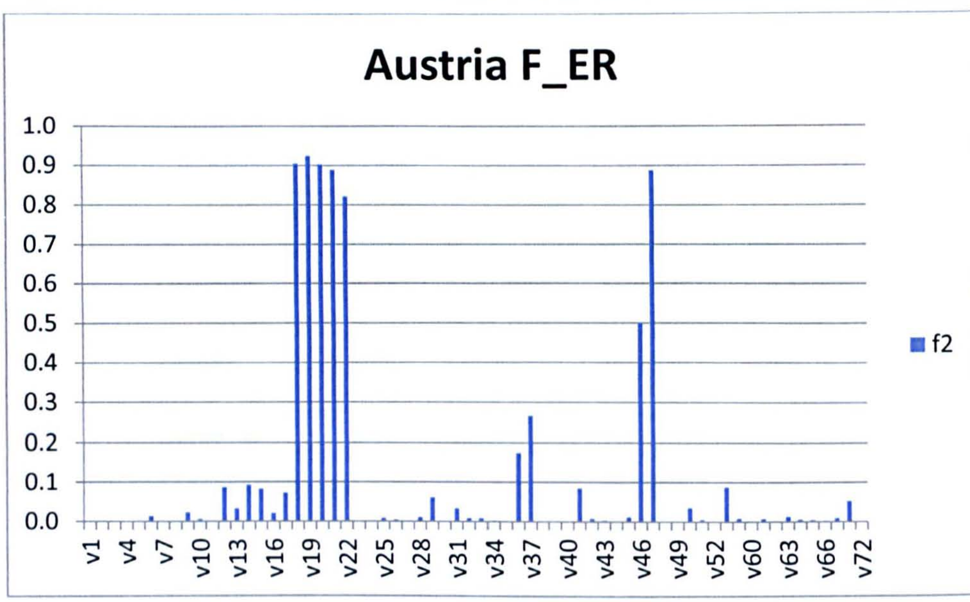
NL	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.3952	3.33178	0.1792	0.1792	1.471697
Factor2	7.06341	0.34971	0.1218	0.301	1.052089
Factor3	6.7137	2.76745	0.1158	0.4168	1.701282
Factor4	3.94626	1.17837	0.068	0.4848	1.425729
Factor5	2.76789	0.23025	0.0477	0.5325	1.090734
Factor6	2.53764	0.24658	0.0438	0.5763	1.107632
Factor7	2.29105	0.33084	0.0395	0.6158	1.168772
Factor8	1.96022	0.15836	0.0338	0.6496	1.087893
Factor9	1.80185	0.0882	0.0311	0.6806	1.051469
Factor10	1.71365	0.13545	0.0295	0.7102	1.085826
Factor11	1.5782	0.11999	0.0272	0.7374	1.082278
Factor12	1.45822	0.0458	0.0251	0.7625	1.032427
Factor13	1.41242	0.23783	0.0244	0.7869	1.202479
Factor14	1.17459	0.11953	0.0203	0.8071	1.113292
Factor15	1.05506	0.0774	0.0182	0.8253	

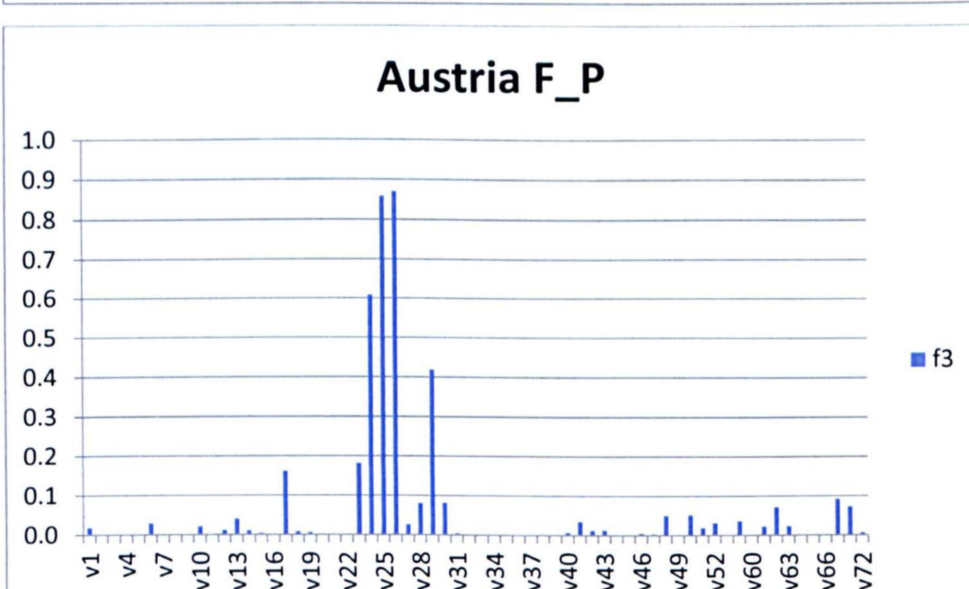
SP	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	11.39836	2.54015	0.1754	0.1754	1.286757
Factor2	8.85821	1.70187	0.1363	0.3116	1.237813
Factor3	7.15634	1.85668	0.1101	0.4217	1.350337
Factor4	5.29967	2.23672	0.0815	0.5033	1.730256
Factor5	3.06294	0.46237	0.0471	0.5504	1.177791
Factor6	2.60058	0.21809	0.04	0.5904	1.091543
Factor7	2.38248	0.17906	0.0367	0.6271	1.081265
Factor8	2.20342	0.29639	0.0339	0.661	1.15542
Factor9	1.90703	0.18186	0.0293	0.6903	1.105416
Factor10	1.72517	0.18521	0.0265	0.7168	1.120269
Factor11	1.53996	0.11974	0.0237	0.7405	1.084311
Factor12	1.42022	0.1723	0.0218	0.7624	1.13807
Factor13	1.24792	0.04603	0.0192	0.7816	1.038298
Factor14	1.20189	0.11226	0.0185	0.8001	1.103026
Factor15	1.08963	0.05235	0.0168	0.8168	1.050479
Factor16	1.03727	0.03163	0.016	0.8328	1.031453
Factor17	1.00564	0.15537	0.0155	0.8483	

UK	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.32251	3.57544	0.178	0.178	1.529925
Factor2	6.74707	0.52346	0.1163	0.2943	1.084107
Factor3	6.22362	2.04594	0.1073	0.4016	1.489735
Factor4	4.17767	1.13997	0.072	0.4736	1.375274
Factor5	3.0377	0.54732	0.0524	0.526	1.219774
Factor6	2.49038	0.35181	0.0429	0.5689	1.164507
Factor7	2.13857	0.06145	0.0369	0.6058	1.029584
Factor8	2.07712	0.26396	0.0358	0.6416	1.14558
Factor9	1.81316	0.11357	0.0313	0.6729	1.066816
Factor10	1.6996	0.21508	0.0293	0.7022	1.144882
Factor11	1.48452	0.1155	0.0256	0.7278	1.084367
Factor12	1.36902	0.21866	0.0236	0.7514	1.19008
Factor13	1.15036	0.05269	0.0198	0.7712	1.048002
Factor14	1.09767	0.10573	0.0189	0.7902	

D. Graphs of squared factor loadings of each variable by country







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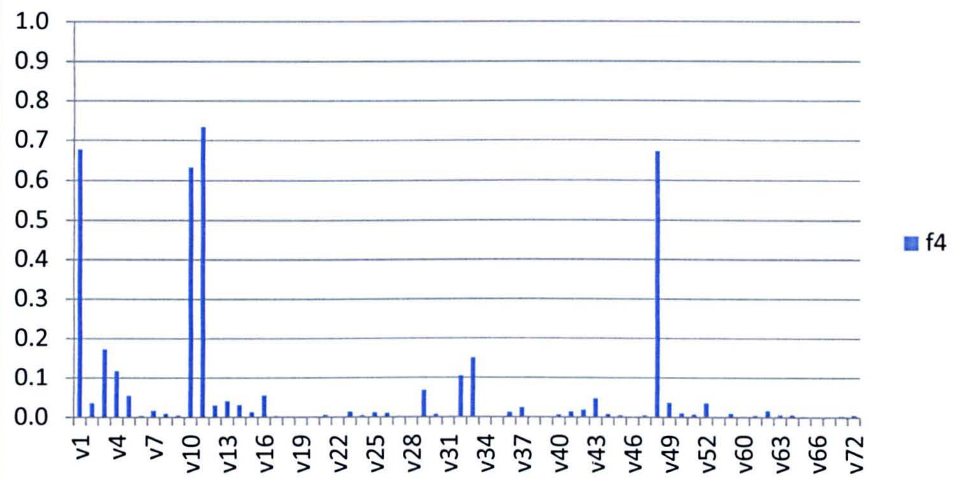

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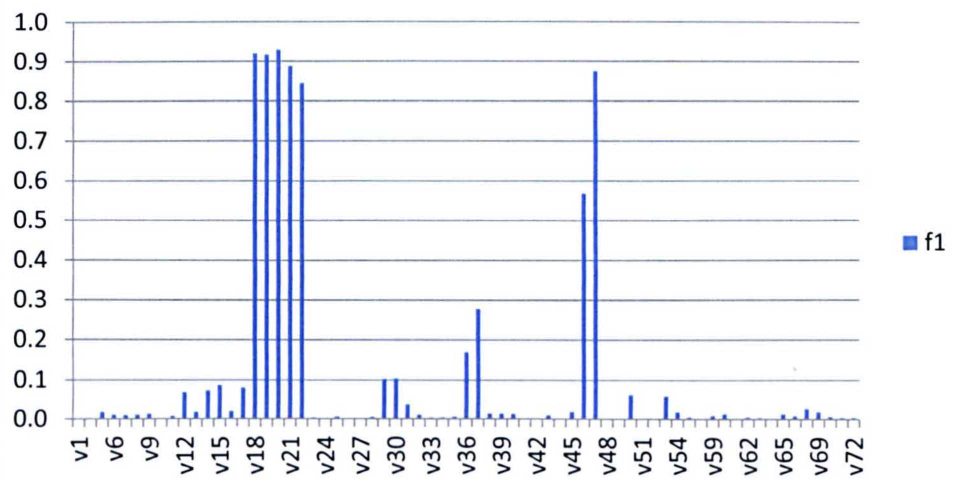

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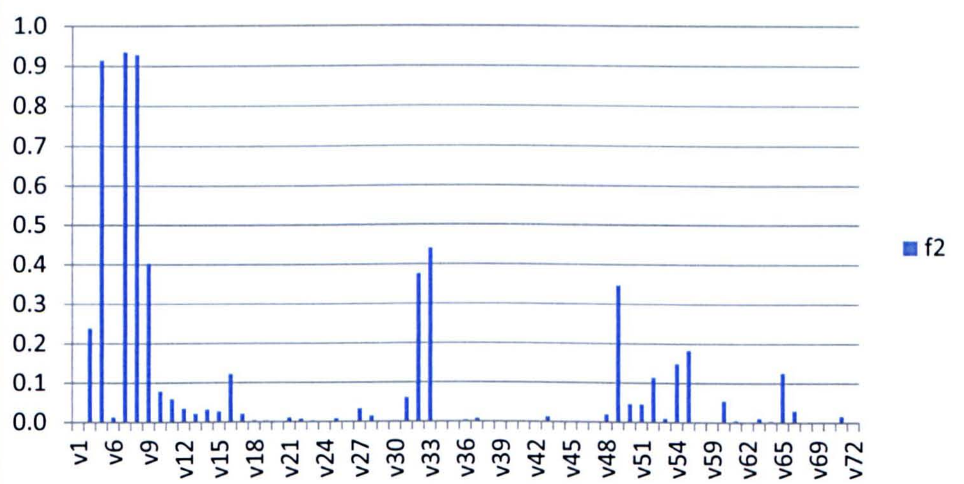

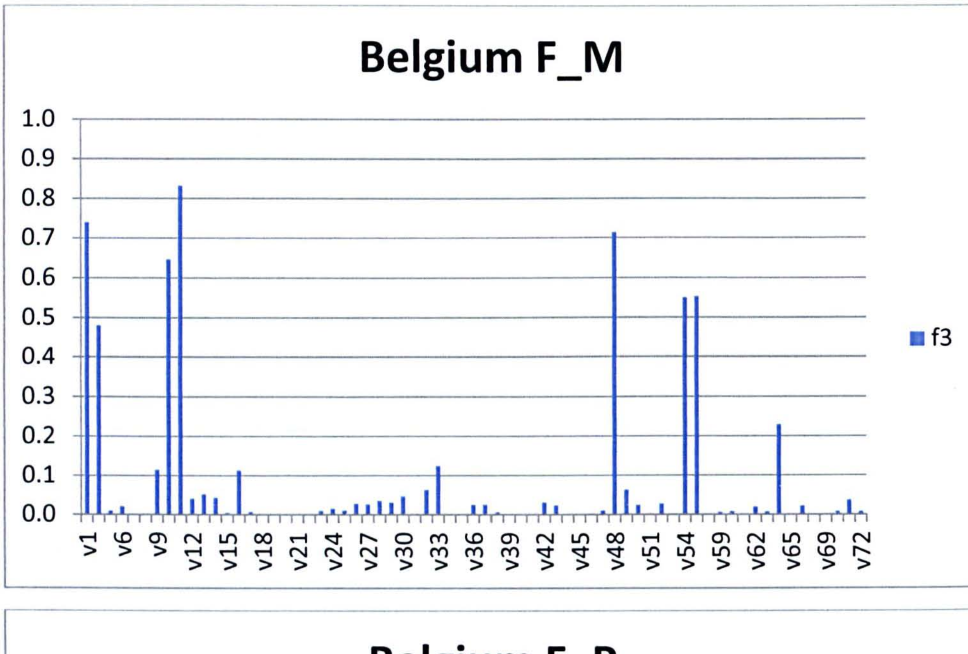
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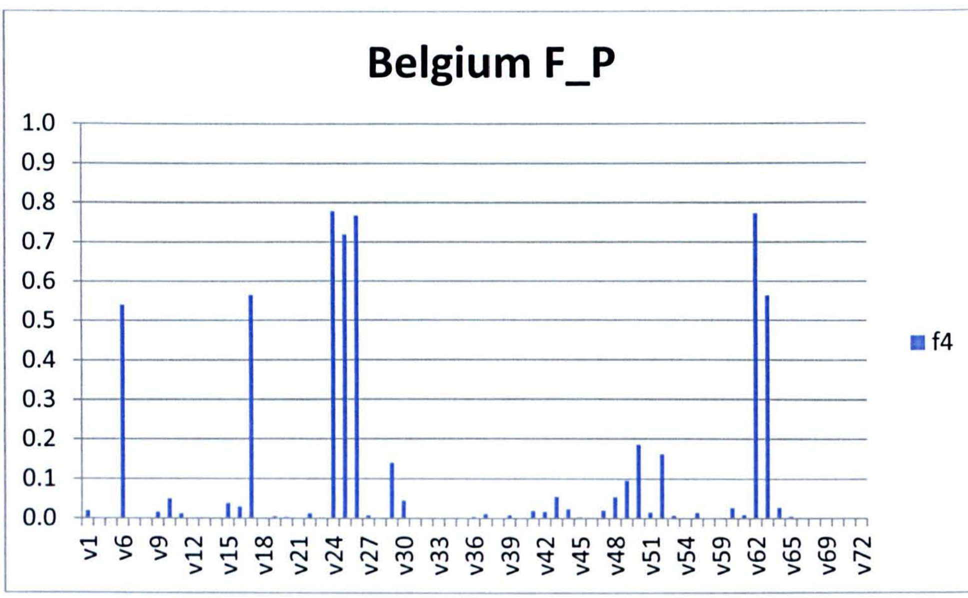
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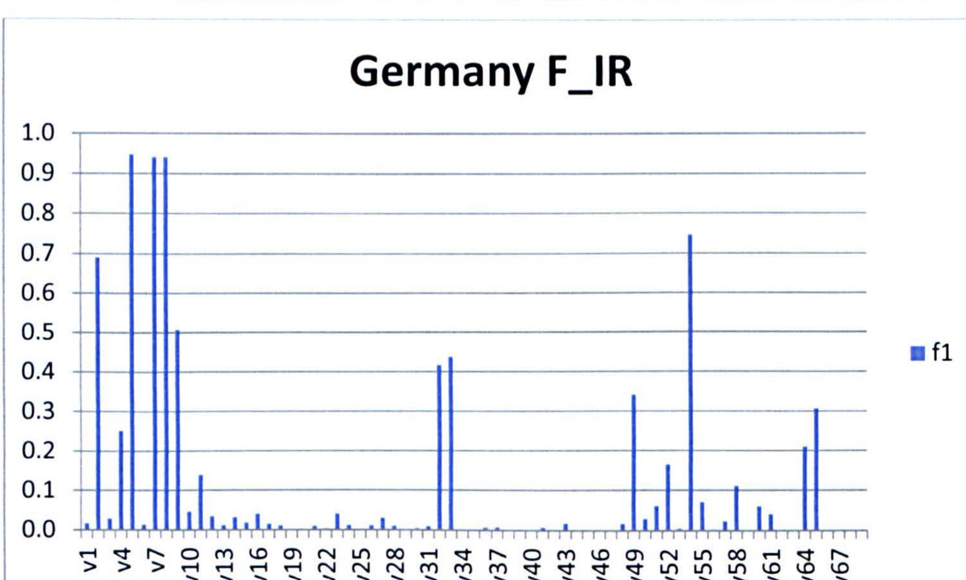
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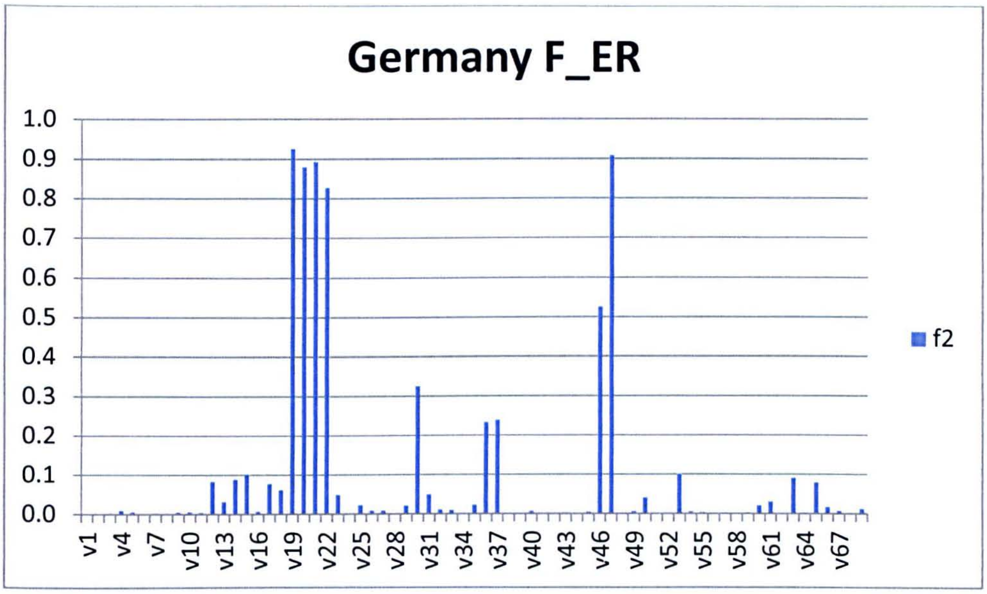
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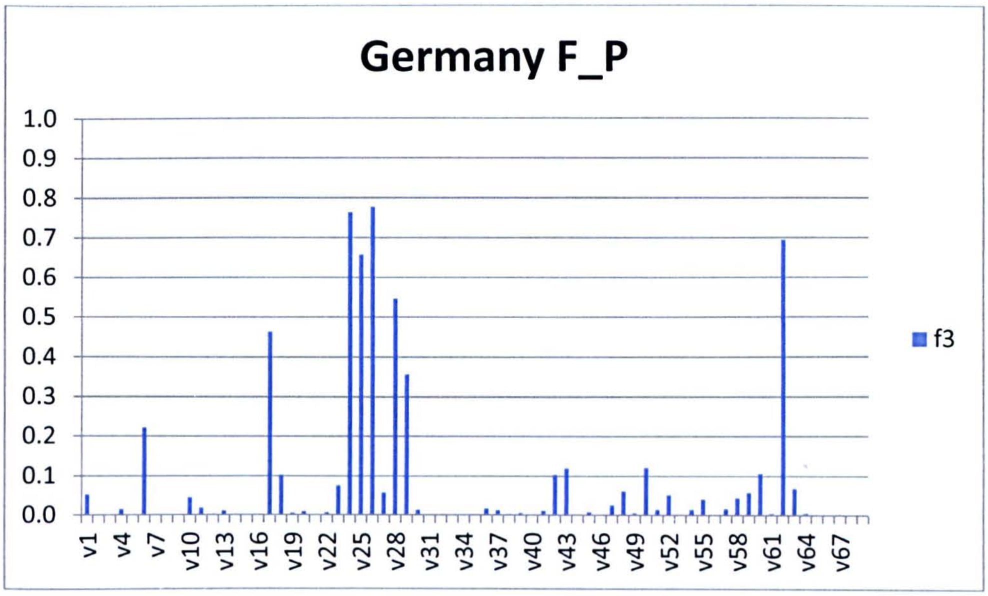
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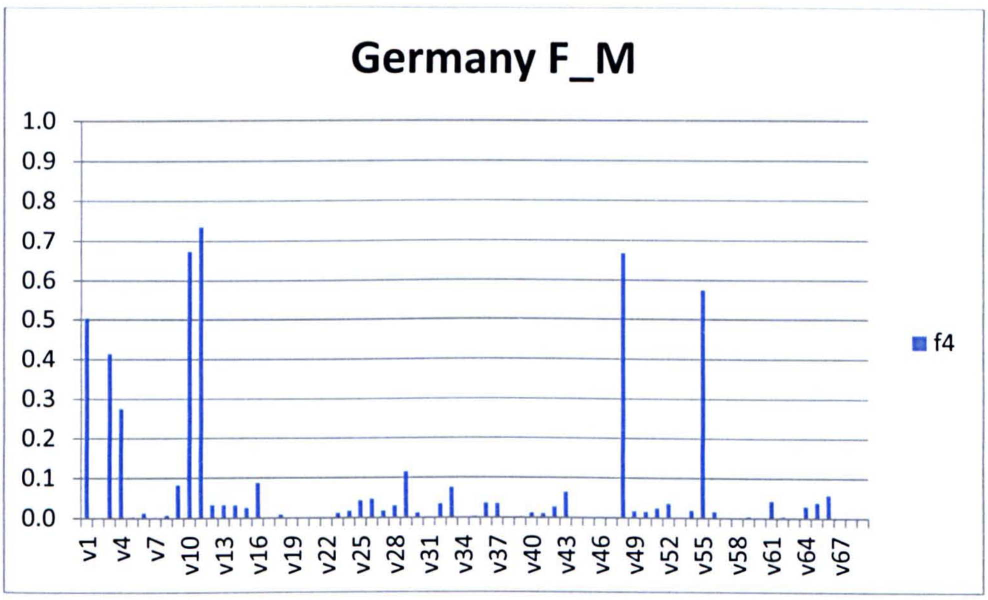
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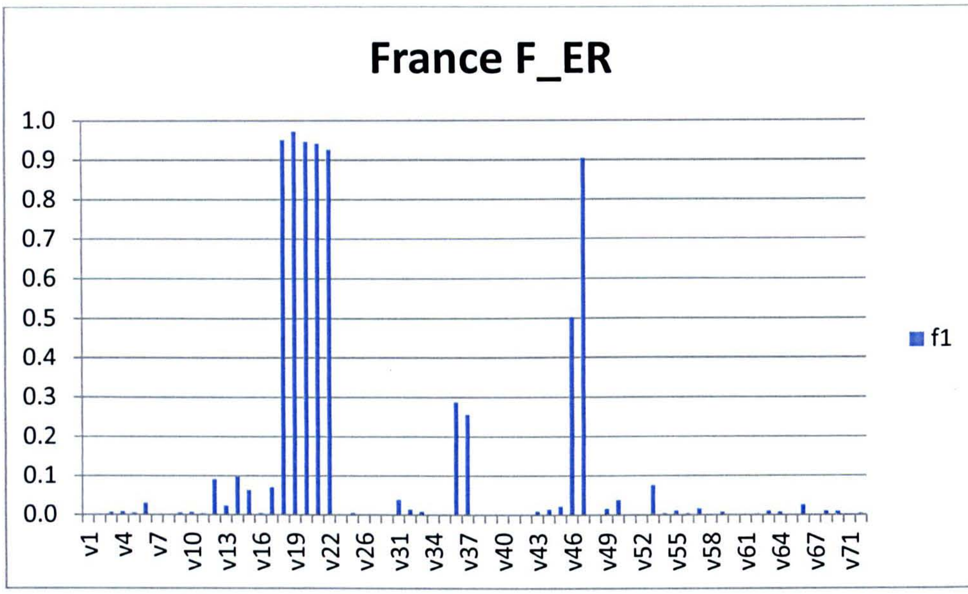
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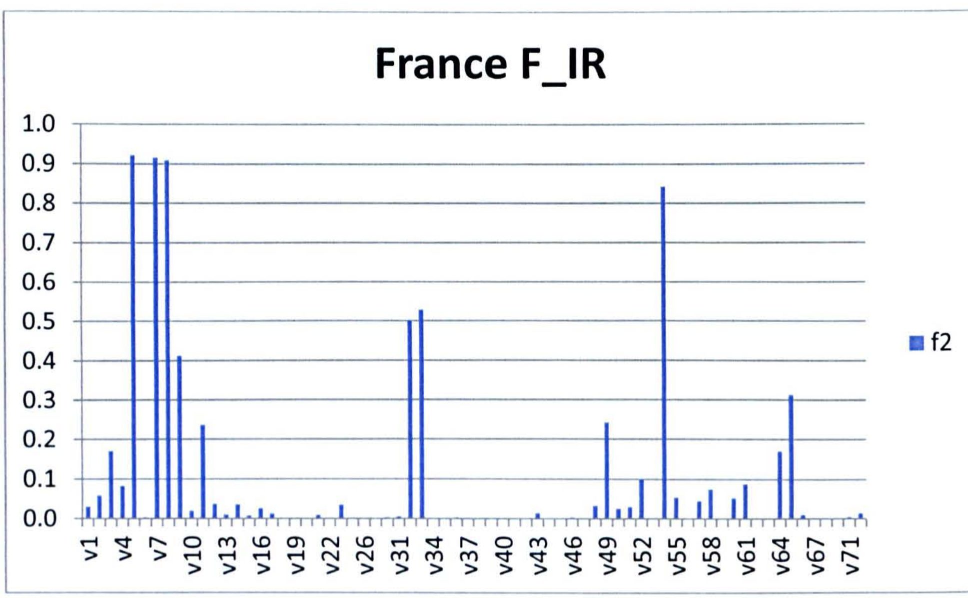
f1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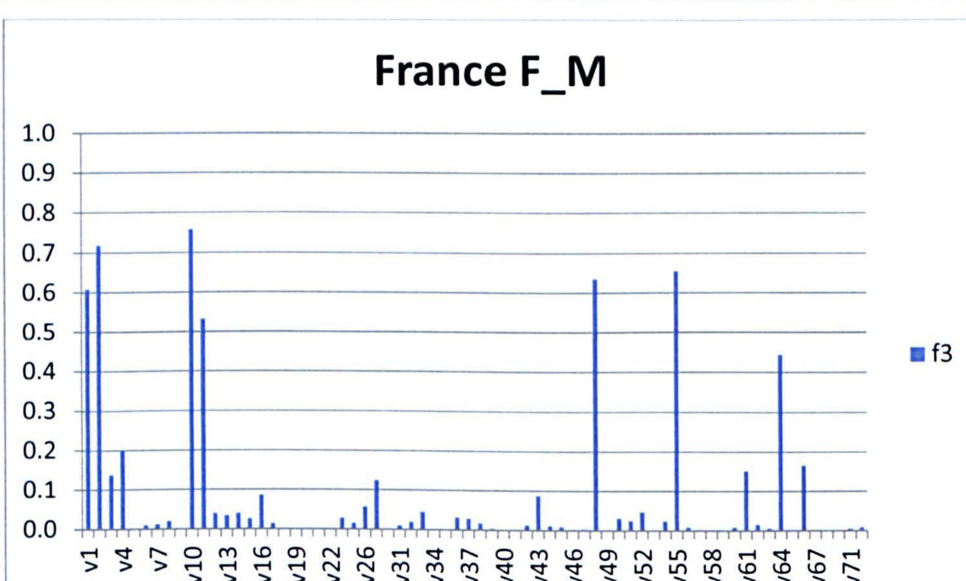
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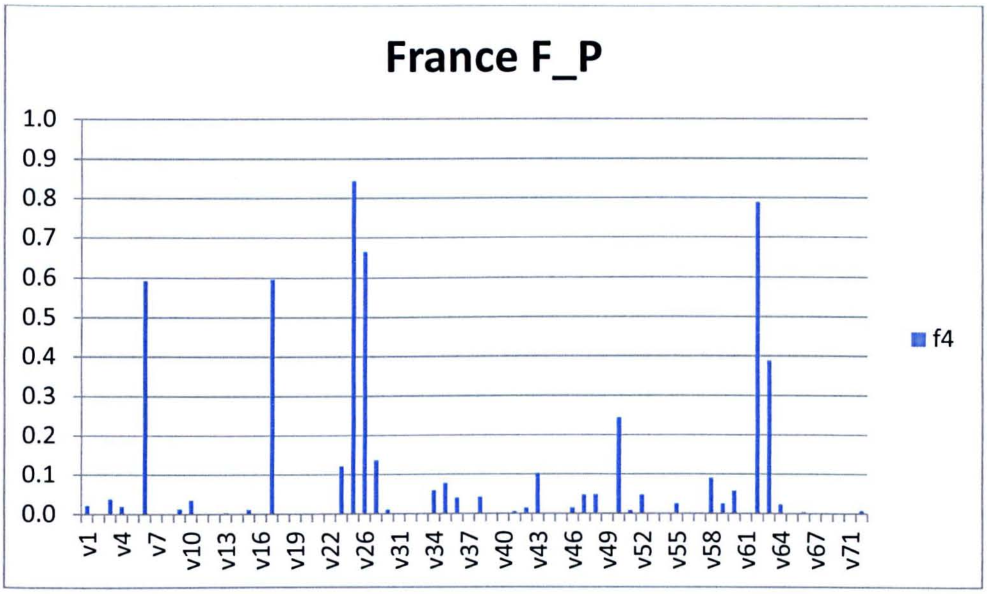
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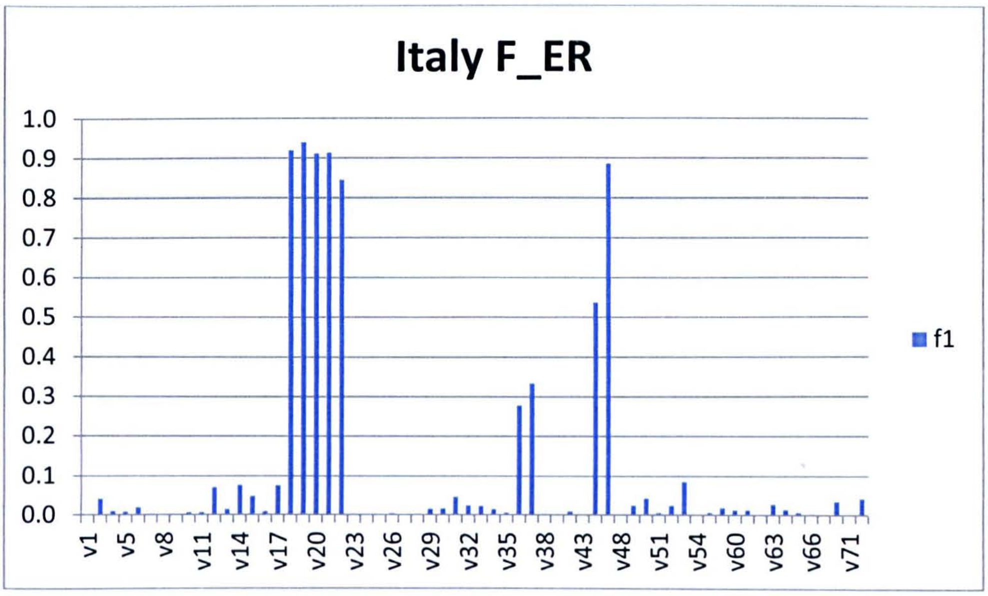
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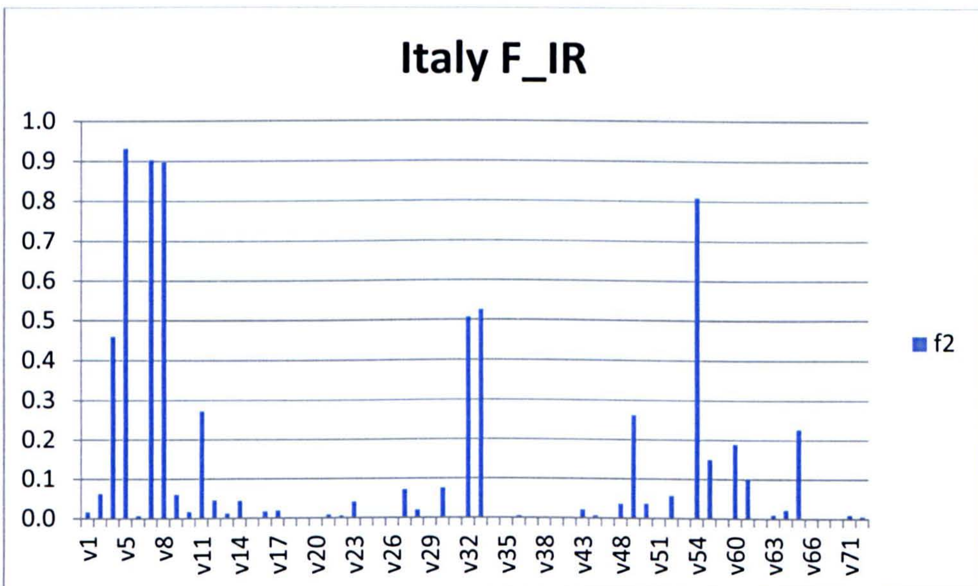
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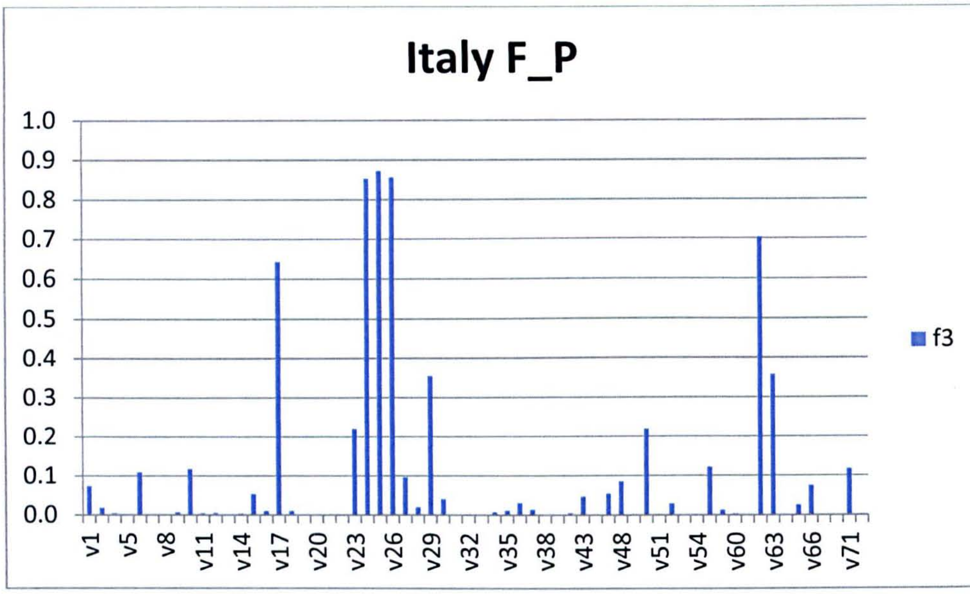
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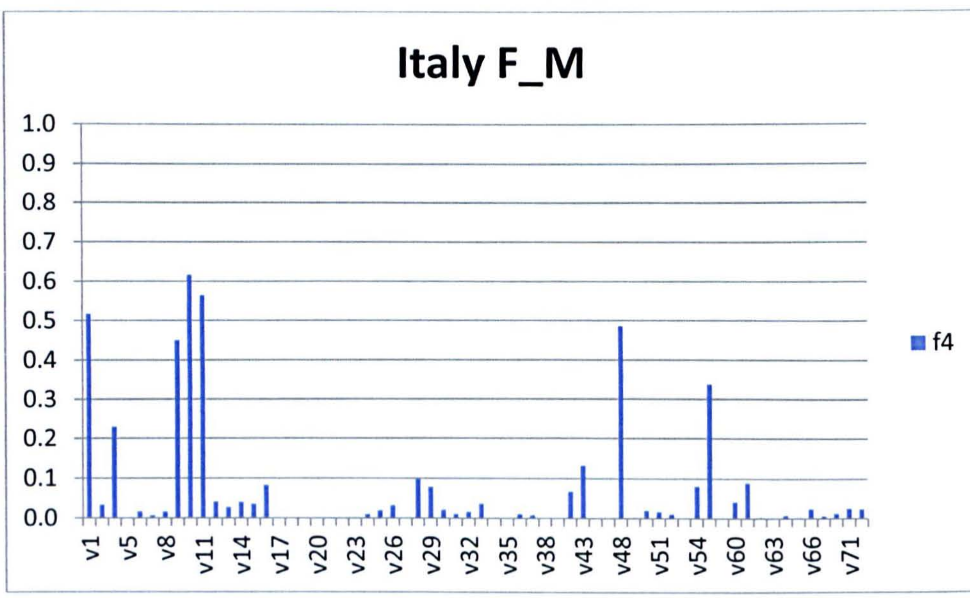
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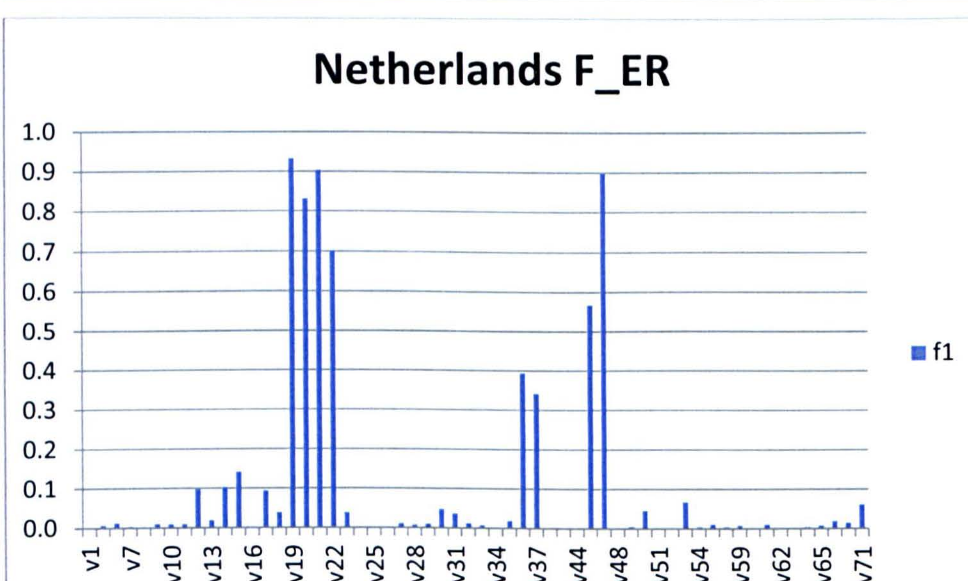
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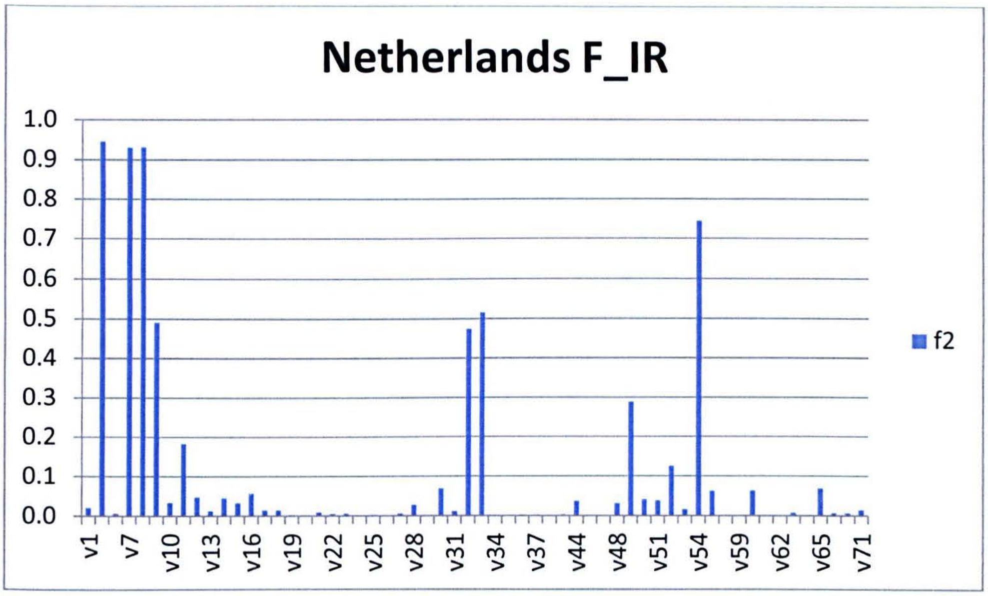
f1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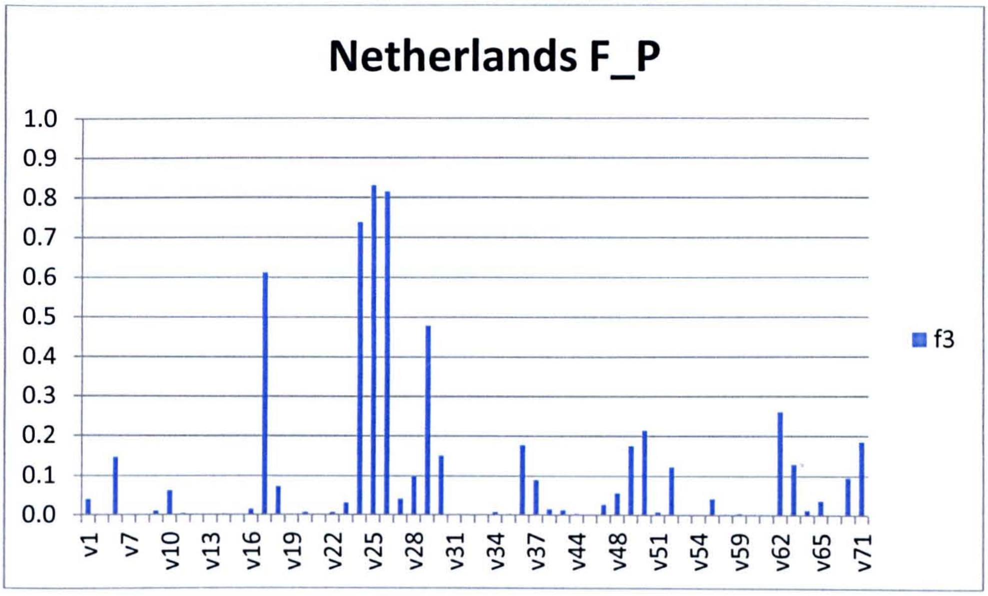
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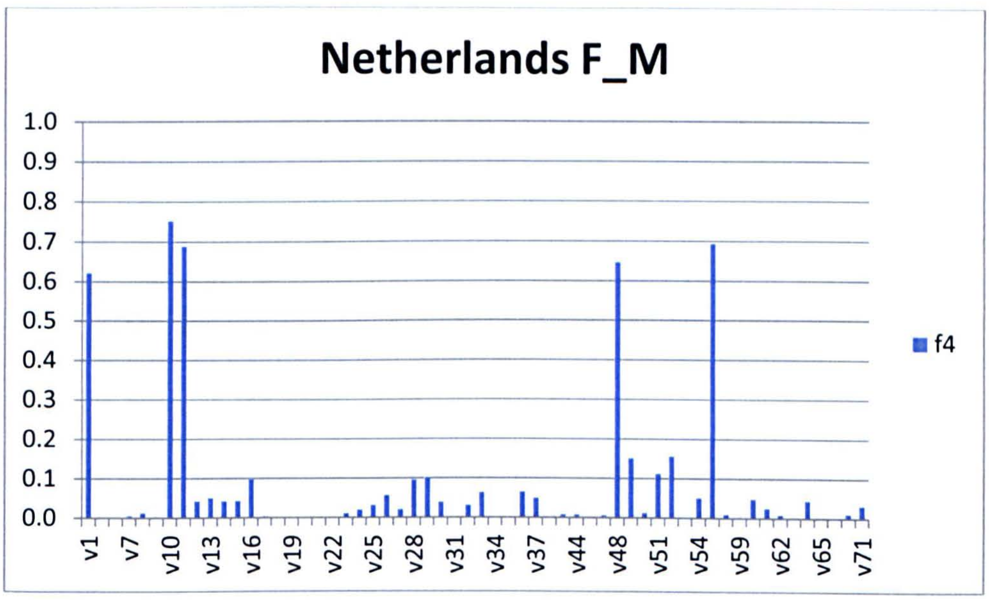
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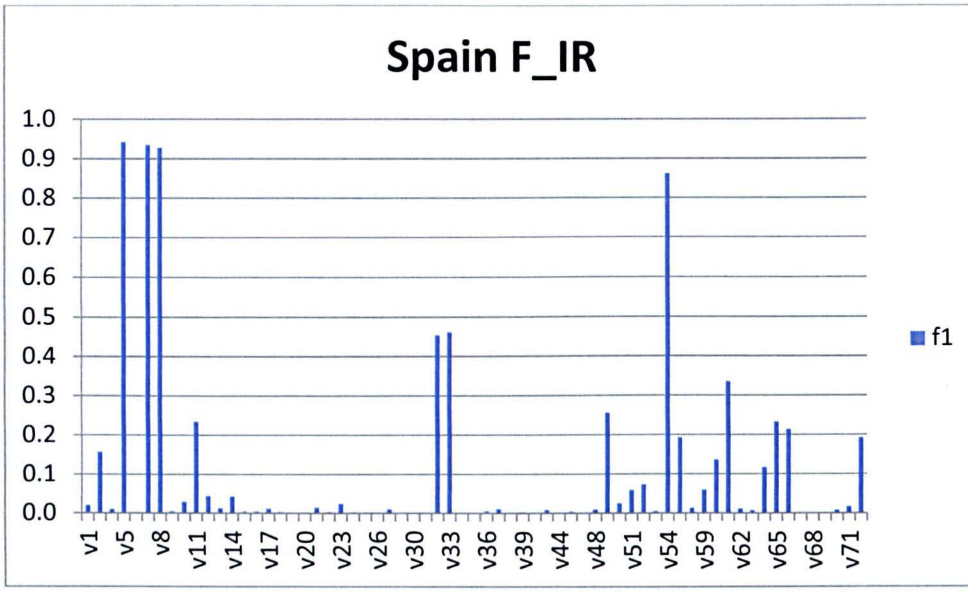
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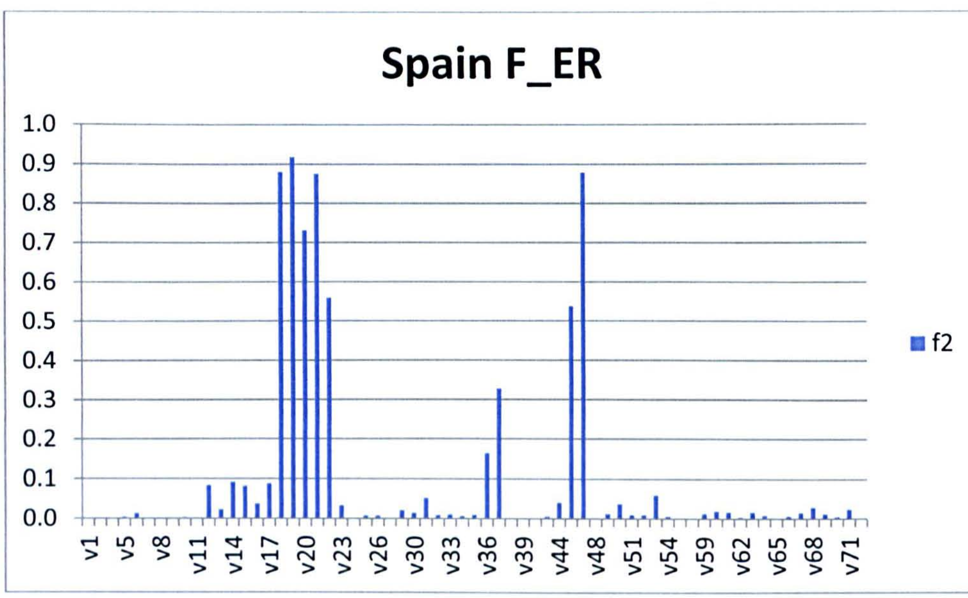
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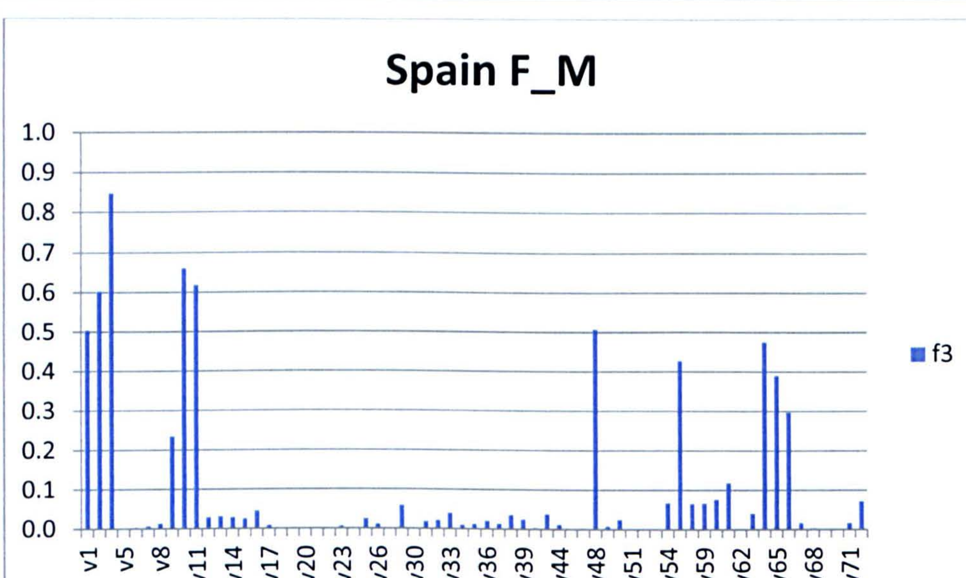
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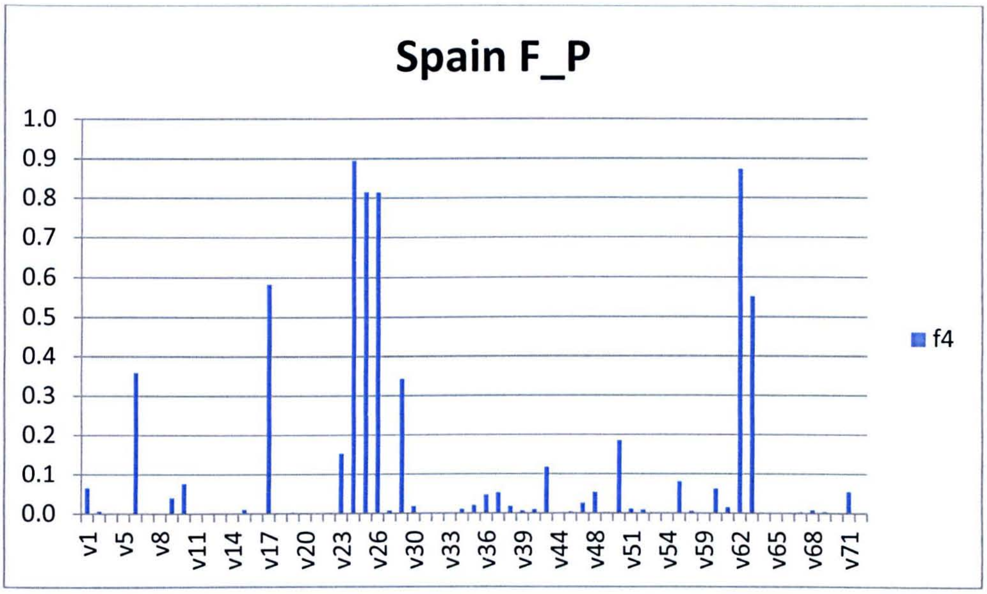
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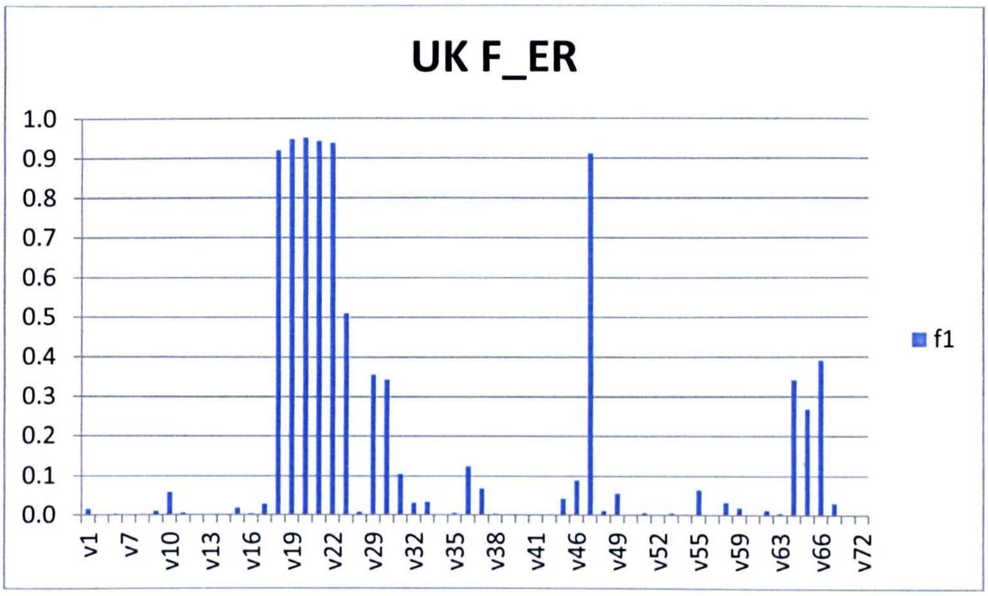
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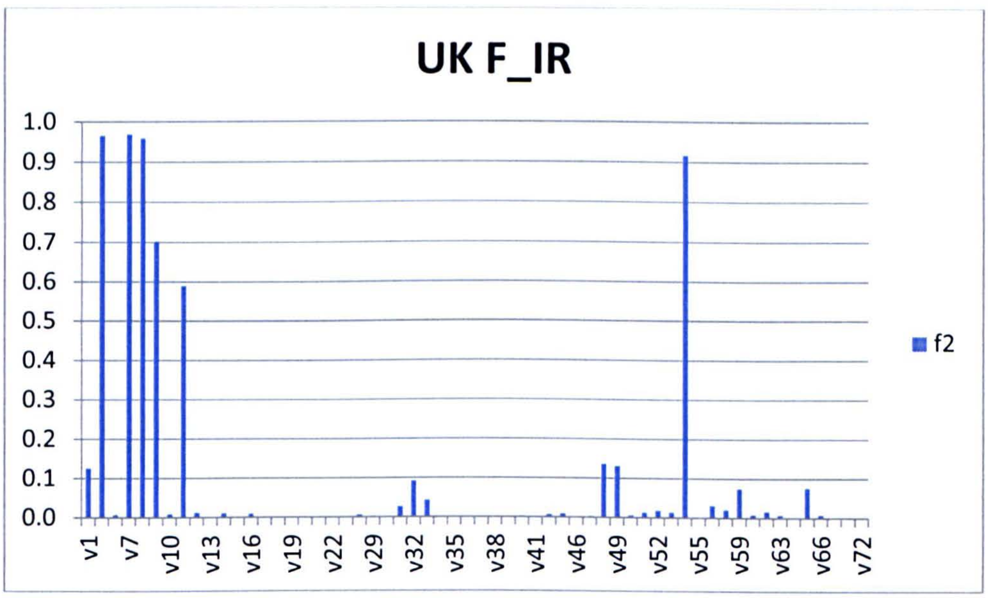
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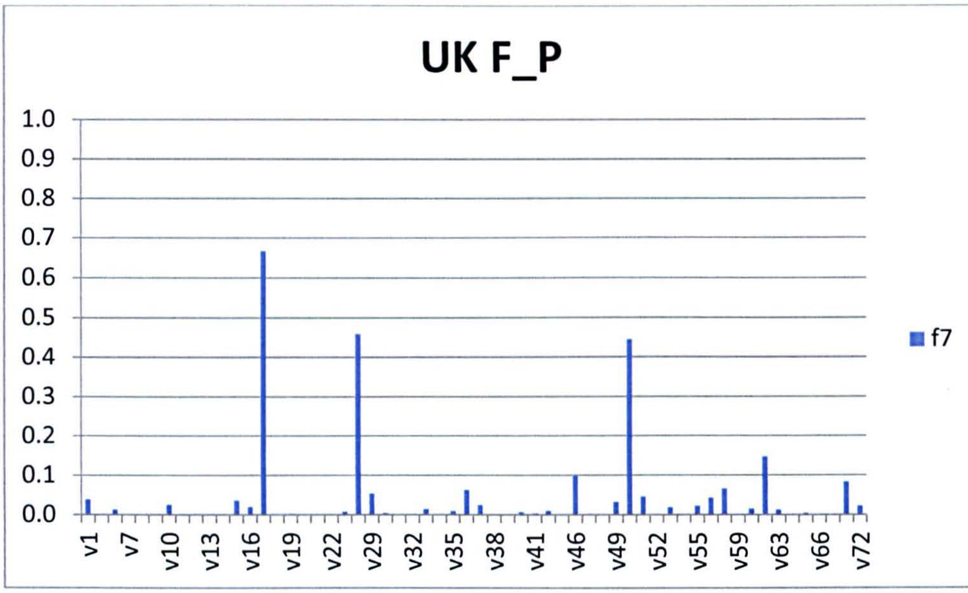
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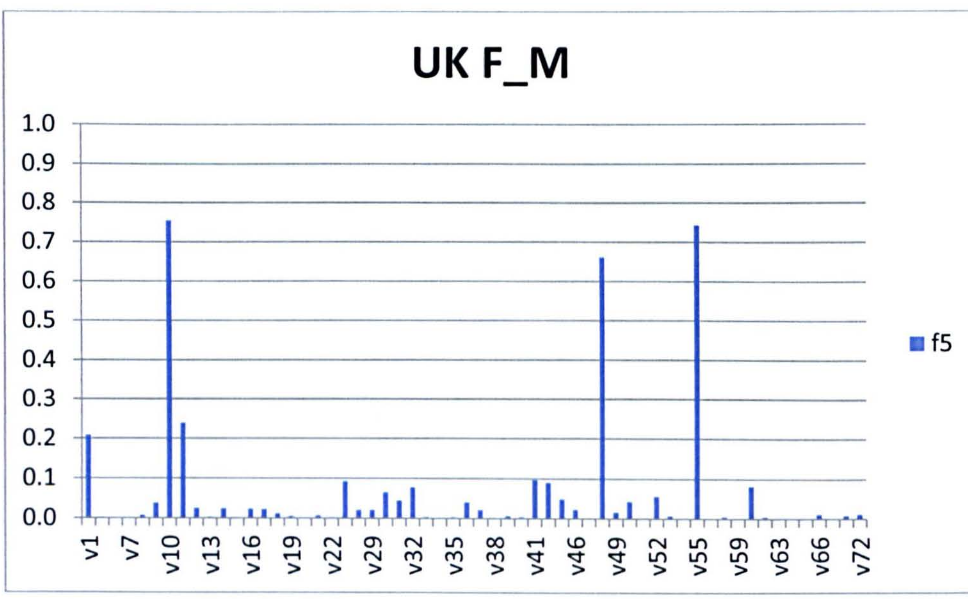
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v22
v29
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v41
v46
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v52
v55
v59
v63
v66
v72
f5

List of Variables by number

Number	Variable name	Number	Variable name	Number	Variable name
v1	VIX	v25	PPI_manuf	v49	CLI
v2	ECB 1yr	v26	PPI_indust	v50	BBGECPI
v3	ECB 1-5yr	v27	PPI_foodprod	v51	Cons Conf
v4	ECB 5yr	v28	PPI_mining	v52	Econ Sent
v5	Call money rate	v29	PPI_intermgoods	v53	Gold price
v6	HICP	v30	PPI_investgoods	v54	Term spread
v7	Nominal int rate	v31	M1	v55	Ted_spread
v8	LIBOR 3m	v32	M2	v56	Constr_permits
v9	Govt yld 10yr	v33	M3	v57	PMI_services
v10	LIBOR-OIS	v34	Net trade_natcur	v58	PMI_manuf
v11	CDS 5y	v35	Net trade_$	v59	CPI_exfoodenrg
v12	Wilshire	v36	Imports	v60	CPI_exrest
v13	Eurostoxx	v37	Exports	v61	CPI_repairs
v14	S&P500	v38	Retail trade_value	v62	CPI_energy
v15	Baltic Dry	v39	Retail trade_vol	v63	CPI_all
v16	Share Price Index	v40	Prod_nondur	v64	MFI_hholdloans
v17	Brent Crude Oil Pr	v41	Prod_dur	v65	MFI_loansnonfincorp
v18	CPI_REER	v42	Prod_invest	v66	MFI_loanscredit4cons
v19	NEER_B	v43	Prod_interm	v67	BOP_CA Balance
v20	REER_B	v44	Prod_constr	v68	BOP_Net FA
v21	NEER_N	v45	Neworders_constr	v69	BOP_Errors&ommission
v22	REER_N	v46	USD_ER	v70	Passenger_carsreg
v23	PPI_consgoods	v47	JPM_EERI	v71	Neworders_manuf
v24	PPI_energy	v48	S&P_divyld	v72	CPI_servexhousing

E. Predictive Regressions Results

Table 6.4. The Credit Spread Index and Industrial Production Growth at 3-month horizon

Ind prod 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	-4.020***	-5.568***	-4.020***	-4.368***	-5.776***	-4.368***	-4.417***	-5.838***	-4.989***	-4.969**	-6.502***	-5.232***
	(1.328)	(1.583)	(1.497)	(1.451)	(1.716)	(1.590)	(1.465)	(1.734)	(1.323)	(1.898)	(2.202)	(1.588)
IR	-4.933***	-5.389***	-4.933***	-4.498***	-4.893***	-4.498***	-4.519***	-4.917***	-4.679***	-4.674***	-5.103***	-4.747***
	(1.353)	(1.368)	(0.360)	(1.206)	(1.231)	(0.459)	(1.210)	(1.237)	(0.444)	(1.340)	(1.369)	(0.438)
ER	0.438	0.443	0.438	0.536	0.512	0.536	0.537	0.512	0.528	0.538	0.508	0.533
	(1.161)	(1.108)	(0.446)	(1.003)	(0.963)	(0.335)	(0.997)	(0.956)	(0.330)	(1.055)	(1.000)	(0.338)
MR	0.0455	-0.262	0.0455	0.154	-0.263	0.154	0.132	-0.290	-0.0375	-0.0905	-0.543	-0.168
	(0.629)	(0.573)	(1.341)	(0.589)	(0.604)	(1.105)	(0.580)	(0.596)	(0.936)	(0.598)	(0.629)	(0.927)
P	3.543**	3.243***	3.543***	2.885**	2.633**	2.885***	2.862**	2.608**	2.761***	2.807**	2.528**	2.760***
	(1.426)	(1.211)	(0.612)	(1.179)	(1.008)	(0.725)	(1.203)	(1.027)	(0.704)	(1.301)	(1.092)	(0.728)
SPI	3.030***	2.840**	3.030***	2.636***	2.448**	2.636***	2.623**	2.433**	2.547***			
	(1.095)	(1.084)	(0.439)	(0.981)	(0.984)	(0.442)	(1.001)	(1.003)	(0.443)			
NT	1.285***	1.206***	1.285***	0.946**	0.899**	0.946**						
	(0.430)	(0.416)	(0.473)	(0.376)	(0.362)	(0.400)						
RT	0.709	0.703	0.709**	0.603	0.591	0.603***						
	(0.536)	(0.489)	(0.320)	(0.417)	(0.382)	(0.232)						
CPI exfe	-0.101	-0.225	-0.101									
	(0.583)	(0.558)	(0.416)									
M1	0.453	0.459	0.453**									
	(0.626)	(0.622)	(0.222)									
Observations	512	512	512	728	728	728	728	728	728	728	728	728
R-squared	0.379	0.424	0.379	0.376	0.417	0.375	0.366	0.409	0.365	0.317	0.365	0.317
CD p-value	0.00	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.5. The Credit Spread Index and Industrial Production Growth at 12-month horizon

Ind prod 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	-1.910	-2.948**	-1.910*	-2.029*	-2.922**	-2.029*	-2.026*	-2.919**	-2.026*	-2.375*	-3.328**	-2.375**
	(1.156)	(1.262)	(1.117)	(1.217)	(1.341)	(1.142)	(1.213)	(1.333)	(1.144)	(1.385)	(1.473)	(1.194)
IR	-5.665***	-5.874***	-5.665***	-5.294***	-5.482***	-5.294***	-5.294***	-5.482***	-5.294***	-5.357***	-5.568***	-5.357***
	(1.370)	(1.349)	(0.500)	(1.300)	(1.313)	(0.501)	(1.298)	(1.311)	(0.502)	(1.364)	(1.360)	(0.494)
ER	-0.458	-0.451	-0.458***	-0.213	-0.222	-0.213	-0.210	-0.218	-0.210	-0.167	-0.180	-0.167
	(0.342)	(0.327)	(0.135)	(0.283)	(0.289)	(0.217)	(0.279)	(0.285)	(0.216)	(0.329)	(0.332)	(0.207)
MR	0.385	0.128	0.385	0.491	0.190	0.491	0.492	0.192	0.492	0.363	0.0434	0.363
	(0.384)	(0.284)	(0.970)	(0.309)	(0.326)	(0.821)	(0.304)	(0.320)	(0.821)	(0.298)	(0.332)	(0.760)
P	-0.972	-1.213	-0.972***	-0.909	-1.108	-0.909***	-0.910	-1.108	-0.910***	-0.988	-1.195	-0.988***
	(0.866)	(0.855)	(0.320)	(0.812)	(0.800)	(0.268)	(0.812)	(0.799)	(0.267)	(0.842)	(0.809)	(0.290)
SPI	1.731***	1.568***	1.731***	1.540***	1.396***	1.540***	1.536***	1.392***	1.536***			
	(0.351)	(0.389)	(0.148)	(0.333)	(0.370)	(0.191)	(0.334)	(0.371)	(0.190)			
NT	0.381*	0.319*	0.381***	0.269*	0.235	0.269***						
	(0.195)	(0.182)	(0.104)	(0.161)	(0.145)	(0.101)						
RT	-0.127	-0.167	-0.127	-0.129	-0.155	-0.129						
	(0.201)	(0.206)	(0.251)	(0.171)	(0.183)	(0.186)						
CPI exfe	-0.459*	-0.545***	-0.459									
	(0.247)	(0.184)	(0.289)									
M1	0.907**	0.966**	0.907***									
	(0.443)	(0.411)	(0.343)									
Observations	476	476	476	674	674	674	674	674	674	674	674	674
R-squared	0.529	0.592	0.529	0.514	0.568	0.514	0.512	0.566	0.512	0.473	0.532	0.473
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.6. The Credit Spread Index and Industrial Production Growth at 24-month horizon

Ind prod 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	0.179	-0.0619	0.179	-0.0293	-0.179	-0.0293	-0.0281	-0.177	-0.171	-0.0937	-0.243	-0.234
	(0.269)	(0.328)	(0.372)	(0.336)	(0.350)	(0.442)	(0.334)	(0.348)	(0.518)	(0.329)	(0.352)	(0.504)
IR	-5.656***	-5.547***	-5.656***	-5.196***	-5.154***	-5.196***	-5.198***	-5.155***	-5.155***	-5.212***	-5.172***	-5.171***
	(0.686)	(0.613)	(0.590)	(0.732)	(0.648)	(0.546)	(0.725)	(0.642)	(0.576)	(0.682)	(0.606)	(0.572)
ER	-0.842***	-0.837***	-0.842***	-0.518***	-0.527***	-0.518**	-0.522***	-0.531***	-0.530**	-0.526***	-0.534***	-0.534**
	(0.136)	(0.158)	(0.119)	(0.0765)	(0.0939)	(0.247)	(0.0771)	(0.0936)	(0.245)	(0.0814)	(0.0917)	(0.245)
MR	0.216***	0.175**	0.216	0.359*	0.327***	0.359	0.360*	0.329***	0.331	0.341*	0.309**	0.311
	(0.0808)	(0.0686)	(0.332)	(0.200)	(0.124)	(0.310)	(0.199)	(0.123)	(0.401)	(0.200)	(0.131)	(0.393)
P	0.0341	-0.0145	0.0341	0.0104	-0.0214	0.0104	0.0112	-0.0208	-0.0197	-0.00805	-0.0387	-0.0372
	(0.136)	(0.139)	(0.121)	(0.101)	(0.107)	(0.0986)	(0.0966)	(0.103)	(0.0857)	(0.0963)	(0.104)	(0.0809)
SPI	0.274*	0.215*	0.274***	0.268**	0.227**	0.268***	0.266**	0.225**	0.226***			
	(0.143)	(0.125)	(0.0844)	(0.123)	(0.108)	(0.0699)	(0.122)	(0.108)	(0.0697)			
NT	0.130	0.0914	0.130*	0.112	0.0949	0.112**						
	(0.175)	(0.156)	(0.0743)	(0.0978)	(0.0896)	(0.0508)						
RT	-0.00968	-0.0275	-0.00968	-0.0366	-0.0473	-0.0366						
	(0.0685)	(0.0593)	(0.119)	(0.0731)	(0.0619)	(0.0972)						
CPI exfe	-0.0859	-0.135	-0.0859									
	(0.214)	(0.167)	(0.187)									
M1	0.0746	0.184	0.0746									
	(0.124)	(0.118)	(0.0931)									
Observations	405	405	405	579	579	579	579	579	579	579	579	579
R-squared	0.654	0.732	0.654	0.627	0.699	0.627	0.627	0.699	0.626	0.624	0.697	0.624
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.795			0.730

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6.7. The Credit Spread Index and Unemployment Rate at 3-month horizon

Unempl 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	5.504***	8.501***	5.504*	5.953***	8.512***	5.953**	6.028***	8.596***	7.555***	6.222***	8.753***	7.112***
	(1.851)	(1.492)	(2.909)	(1.734)	(1.420)	(2.912)	(1.725)	(1.398)	(2.320)	(1.771)	(1.378)	(2.532)
IR	0.575	1.426	0.575	0.444	1.135	0.444	0.467	1.161	0.876	0.521	1.204	0.757
	(1.735)	(1.526)	(2.998)	(1.497)	(1.344)	(2.144)	(1.495)	(1.339)	(2.289)	(1.492)	(1.331)	(2.255)
ER	0.511	0.576	0.511	-0.0819	0.0101	-0.0819	-0.0704	0.0223	-0.0124	-0.0711	0.0228	-0.0351
	(1.108)	(1.008)	(1.228)	(0.805)	(0.753)	(0.980)	(0.820)	(0.767)	(0.952)	(0.809)	(0.756)	(0.959)
MR	-1.696*	-1.014	-1.696	-2.194**	-1.390	-2.194	-2.162**	-1.355	-1.679	-2.083**	-1.294	-1.803
	(0.986)	(1.072)	(3.356)	(0.890)	(1.018)	(2.668)	(0.881)	(1.010)	(2.266)	(0.864)	(0.987)	(2.345)
P	-1.880	-1.372	-1.880	-1.547	-1.124	-1.547	-1.505	-1.081	-1.258	-1.484	-1.061	-1.340
	(1.519)	(1.220)	(1.254)	(1.365)	(1.152)	(1.127)	(1.373)	(1.156)	(0.965)	(1.399)	(1.164)	(1.019)
SPI	-0.840	-0.473	-0.840	-0.940	-0.594	-0.940	-0.924	-0.577	-0.716			
	(1.013)	(0.856)	(0.935)	(0.828)	(0.749)	(0.707)	(0.849)	(0.773)	(0.646)			
NT	-0.805	-0.670	-0.805	-0.395	-0.323	-0.395						
	(0.570)	(0.484)	(0.684)	(0.415)	(0.362)	(0.555)						
RT	-1.407**	-1.392***	-1.407**	-1.243**	-1.215**	-1.243***						
	(0.565)	(0.520)	(0.588)	(0.504)	(0.475)	(0.442)						
CPI exfe	0.973	1.218	0.973									
	(0.851)	(0.812)	(0.593)									
M1	0.765	0.750	0.765									
	(1.008)	(0.856)	(0.660)									
Observations	512	512	512	727	727	727	727	727	727	727	727	727
R-squared	0.125	0.180	0.125	0.162	0.210	0.162	0.157	0.205	0.157	0.154	0.204	0.154
CD p-value	0.000	0.009		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.142			0.011

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.8. The Credit Spread Index and Unemployment Rate at 12-month horizon

Unempl 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	5.281**	8.016***	5.281	5.578***	7.854***	5.578	5.602***	7.876***	5.602	5.917***	8.179***	7.896***
	(2.036)	(1.393)	(3.690)	(2.015)	(1.364)	(3.450)	(2.011)	(1.358)	(3.443)	(2.176)	(1.477)	(2.629)
IR	4.660**	5.256***	4.660	4.535**	5.036***	4.535**	4.547**	5.045***	4.547**	4.595**	5.102***	5.030**
	(2.278)	(1.923)	(2.941)	(2.123)	(1.906)	(2.174)	(2.122)	(1.903)	(2.172)	(2.153)	(1.930)	(2.301)
ER	0.848	0.925	0.848	0.102	0.186	0.102	0.109	0.192	0.109	0.0709	0.165	0.156
	(0.719)	(0.706)	(0.594)	(0.670)	(0.620)	(0.724)	(0.671)	(0.622)	(0.721)	(0.685)	(0.634)	(0.734)
MR	-1.701*	-1.056	-1.701	-2.065***	-1.305*	-2.065	-2.054***	-1.295*	-2.054	-1.936***	-1.184*	-1.277
	(0.861)	(0.803)	(3.487)	(0.734)	(0.696)	(2.784)	(0.732)	(0.696)	(2.764)	(0.694)	(0.681)	(2.170)
P	0.260	0.807	0.260	0.781	1.221	0.781	0.796	1.232	0.796	0.862	1.294	1.241
	(1.239)	(0.989)	(0.979)	(1.174)	(0.991)	(0.882)	(1.163)	(0.982)	(0.876)	(1.208)	(1.002)	(0.797)
SPI	-1.473***	-1.069**	-1.473*	-1.397***	-1.038**	-1.397**	-1.391***	-1.034**	-1.391**			
	(0.483)	(0.436)	(0.761)	(0.420)	(0.417)	(0.690)	(0.412)	(0.412)	(0.687)			
NT	-0.383	-0.242	-0.383	-0.119	-0.0442	-0.119						
	(0.353)	(0.256)	(0.275)	(0.375)	(0.303)	(0.270)						
RT	-0.482	-0.353	-0.482	-0.426*	-0.328	-0.426						
	(0.364)	(0.259)	(0.444)	(0.251)	(0.225)	(0.330)						
CPI exfe	0.669	0.876**	0.669									
	(0.469)	(0.371)	(0.585)									
M1	-1.311**	-1.462***	-1.311***									
	(0.587)	(0.544)	(0.416)									
Observations	477	477	477	674	674	674	674	674	674	674	674	674
R-squared	0.184	0.263	0.184	0.215	0.281	0.215	0.214	0.280	0.214	0.207	0.275	0.207
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.828

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.9. The Credit Spread Index and Unemployment Rate at 24-month horizon

Unempl 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	3.790***	5.317***	3.790	3.890***	5.006***	3.890*	3.896***	5.011***	4.870***	3.942***	4.994***	4.754***
	(0.671)	(0.845)	(2.566)	(0.834)	(0.755)	(2.178)	(0.828)	(0.750)	(1.681)	(0.842)	(0.754)	(1.654)
IR	8.091***	8.203***	8.091**	7.713***	7.858***	7.713**	7.711***	7.855***	7.818***	7.721***	7.851***	7.791***
	(1.303)	(0.877)	(3.860)	(1.225)	(0.903)	(3.047)	(1.228)	(0.910)	(3.000)	(1.208)	(0.917)	(2.973)
ER	1.512***	1.648***	1.512***	0.820***	0.975***	0.820	0.813***	0.965***	0.952	0.816***	0.965***	0.941
	(0.259)	(0.309)	(0.583)	(0.290)	(0.247)	(0.722)	(0.278)	(0.238)	(0.769)	(0.287)	(0.237)	(0.762)
MR	-1.052*	-0.709	-1.052	-1.323**	-0.921**	-1.323	-1.320**	-0.917**	-0.965	-1.306**	-0.922**	-1.005
	(0.560)	(0.504)	(2.051)	(0.522)	(0.370)	(1.688)	(0.517)	(0.364)	(1.487)	(0.514)	(0.366)	(1.522)
P	0.749	0.937**	0.749	0.892*	1.018**	0.892**	0.893*	1.019**	1.001***	0.906*	1.014**	0.987***
	(0.470)	(0.432)	(0.573)	(0.458)	(0.415)	(0.379)	(0.459)	(0.417)	(0.303)	(0.463)	(0.420)	(0.298)
SPI	-0.216	0.0933	-0.216	-0.178	0.0656	-0.178	-0.183	0.0586	0.0308			
	(0.231)	(0.211)	(0.414)	(0.211)	(0.211)	(0.341)	(0.211)	(0.210)	(0.338)			
NT	0.258	0.433**	0.258	0.165	0.258	0.165						
	(0.399)	(0.208)	(0.299)	(0.298)	(0.182)	(0.225)						
RT	-0.203	-0.156	-0.203	-0.168	-0.148	-0.168						
	(0.286)	(0.178)	(0.314)	(0.197)	(0.137)	(0.231)						
CPI exfe	0.118	0.261	0.118									
	(0.504)	(0.296)	(0.612)									
M1	-0.975***	-1.128***	-0.975***									
	(0.279)	(0.294)	(0.293)									
Observations	406	406	406	579	579	579	579	579	579	579	579	579
R-squared	0.265	0.374	0.265	0.281	0.373	0.281	0.281	0.373	0.281	0.281	0.373	0.281
CD p-value	0.182	0.412		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.10. The Credit Spread Index and Employment Growth at 1-quarter horizon

Employment 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	-0.742***	-1.046***	-0.742	-0.735***	-0.983***	-0.735*	-0.728***	-0.976***	-0.891**	-0.740***	-0.986***	-0.859**
	(0.233)	(0.211)	(0.483)	(0.191)	(0.161)	(0.411)	(0.204)	(0.172)	(0.365)	(0.216)	(0.180)	(0.378)
IR	0.673***	0.549***	0.673***	0.535***	0.443***	0.535***	0.539***	0.448***	0.480***	0.512***	0.432**	0.474***
	(0.197)	(0.193)	(0.225)	(0.151)	(0.151)	(0.176)	(0.153)	(0.155)	(0.174)	(0.166)	(0.160)	(0.175)
ER	-0.308	-0.250	-0.308***	-0.220**	-0.202**	-0.220**	-0.214**	-0.196**	-0.204**	-0.220**	-0.199**	-0.212**
	(0.190)	(0.167)	(0.119)	(0.105)	(0.0973)	(0.0869)	(0.0972)	(0.0893)	(0.0820)	(0.0955)	(0.0881)	(0.0825)
MR	0.358**	0.295**	0.358	0.267**	0.196*	0.267	0.267**	0.197*	0.222	0.256*	0.189	0.225
	(0.159)	(0.138)	(0.491)	(0.131)	(0.114)	(0.373)	(0.132)	(0.116)	(0.337)	(0.136)	(0.120)	(0.337)
P	0.212	0.176	0.212	0.151	0.108	0.151	0.158	0.114	0.129	0.149	0.109	0.129
	(0.212)	(0.197)	(0.238)	(0.150)	(0.134)	(0.181)	(0.139)	(0.121)	(0.154)	(0.145)	(0.123)	(0.153)
SPI	0.173	0.128	0.173	0.107	0.0570	0.107	0.106	0.0567	0.0737			
	(0.252)	(0.220)	(0.235)	(0.166)	(0.153)	(0.135)	(0.166)	(0.152)	(0.121)			
NT	-0.0435	-0.0627	-0.0435	-0.0232	-0.0222	-0.0232						
	(0.164)	(0.165)	(0.113)	(0.126)	(0.127)	(0.0870)						
RT	-0.0794	-0.0573	-0.0794	-0.0343	-0.0341	-0.0343						
	(0.198)	(0.192)	(0.249)	(0.144)	(0.135)	(0.176)						
CPI exfe	0.380*	0.308*	0.380**									
	(0.188)	(0.181)	(0.152)									
M1	-0.0196	-0.0495	-0.0196									
	(0.100)	(0.107)	(0.0694)									
Observations	170	170	170	241	241	241	241	241	241	241	241	241
R-squared	0.309	0.343	0.309	0.284	0.320	0.284	0.284	0.319	0.284	0.282	0.319	0.282
CD p-value	0.826	0.652		0.348	0.523		0.324	0.494		0.266	0.462	
FE/RE		0.044	0.349		0.012	0.127		0.011	0.126		0.010	0.111
Robust Hausman			0.006			0.001			0.476			0.127

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.11. The Credit Spread Index and Employment Growth at 4-quarter horizon

Employment 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	-0.813***	-1.122***	-0.813*	-0.768***	-0.999***	-0.768**	-0.773***	-1.008***	-0.859**	-0.836***	-1.084***	-0.873**
	(0.263)	(0.234)	(0.471)	(0.212)	(0.170)	(0.370)	(0.219)	(0.176)	(0.365)	(0.285)	(0.248)	(0.391)
IR	0.274	0.153	0.274	0.197	0.117	0.197	0.194	0.113	0.166	0.0883	0.0167	0.0792
	(0.179)	(0.170)	(0.207)	(0.135)	(0.131)	(0.165)	(0.144)	(0.140)	(0.174)	(0.205)	(0.207)	(0.168)
ER	-0.200	-0.134	-0.200***	-0.128*	-0.111	-0.128*	-0.133**	-0.116	-0.129**	-0.139*	-0.119	-0.138**
	(0.136)	(0.141)	(0.0580)	(0.0717)	(0.0816)	(0.0700)	(0.0644)	(0.0722)	(0.0643)	(0.0761)	(0.0795)	(0.0683)
MR	0.399***	0.329***	0.399	0.333***	0.260***	0.333	0.334***	0.258***	0.306	0.287**	0.211**	0.276
	(0.127)	(0.0871)	(0.457)	(0.106)	(0.0775)	(0.355)	(0.104)	(0.0757)	(0.331)	(0.121)	(0.0904)	(0.329)
P	-0.0651	-0.111	-0.0651	-0.0678	-0.119	-0.0678	-0.0736	-0.125	-0.0939	-0.119	-0.168	-0.128
	(0.141)	(0.133)	(0.118)	(0.125)	(0.110)	(0.0960)	(0.116)	(0.0996)	(0.0870)	(0.145)	(0.124)	(0.0993)
SPI	0.667**	0.569**	0.667***	0.465**	0.389**	0.465***	0.466**	0.393**	0.437***			
	(0.249)	(0.213)	(0.120)	(0.171)	(0.163)	(0.161)	(0.176)	(0.167)	(0.157)			
NT	0.0324	-0.0175	0.0324	0.0295	0.0127	0.0295						
	(0.116)	(0.104)	(0.0393)	(0.0981)	(0.0912)	(0.0337)						
RT	-0.0171	0.0166	-0.0171	0.0265	0.0400	0.0265						
	(0.177)	(0.146)	(0.216)	(0.130)	(0.104)	(0.159)						
CPI exfe	0.182	0.0790	0.182									
	(0.112)	(0.103)	(0.135)									
M1	0.0759	0.0591	0.0759									
	(0.0605)	(0.0602)	(0.0590)									
Observations	156	156	156	221	221	221	221	221	221	221	221	221
R-squared	0.375	0.433	0.375	0.358	0.413	0.358	0.358	0.412	0.358	0.318	0.383	0.318
CD p-value	0.233	0.693		0.616	0.587		0.585	0.556		0.000	0.001	
FE/RE		0.001	0.007		0.000	0.001		0.000	0.001		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.12. The Credit Spread Index and Employment Growth at 8-quarter horizon

Employment 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	-0.677***	-0.871***	-0.677*	-0.701***	-0.829***	-0.701***	-0.699***	-0.831***	-0.791***	-0.737***	-0.868***	-0.797***
	(0.133)	(0.147)	(0.347)	(0.0821)	(0.0897)	(0.265)	(0.0782)	(0.0851)	(0.259)	(0.0945)	(0.0983)	(0.265)
IR	-0.530***	-0.601***	-0.530	-0.490***	-0.544***	-0.490*	-0.494***	-0.546***	-0.529*	-0.532***	-0.579***	-0.551*
	(0.181)	(0.146)	(0.335)	(0.157)	(0.127)	(0.284)	(0.149)	(0.124)	(0.297)	(0.125)	(0.116)	(0.298)
ER	-0.303***	-0.247***	-0.303**	-0.182***	-0.174***	-0.182	-0.191***	-0.179***	-0.184*	-0.185***	-0.175***	-0.182*
	(0.0836)	(0.0826)	(0.119)	(0.0433)	(0.0408)	(0.112)	(0.0307)	(0.0316)	(0.107)	(0.0367)	(0.0330)	(0.109)
MR	0.317***	0.279***	0.317	0.252**	0.213***	0.252	0.259***	0.215***	0.229	0.233**	0.192***	0.215
	(0.110)	(0.0572)	(0.293)	(0.0957)	(0.0521)	(0.240)	(0.0916)	(0.0509)	(0.231)	(0.0933)	(0.0470)	(0.228)
P	-0.147**	-0.182**	-0.147	-0.116	-0.148**	-0.116	-0.124**	-0.154***	-0.145**	-0.158**	-0.182***	-0.170***
	(0.0604)	(0.0656)	(0.104)	(0.0688)	(0.0691)	(0.0707)	(0.0542)	(0.0559)	(0.0585)	(0.0668)	(0.0616)	(0.0626)
SPI	0.433***	0.334***	0.433***	0.241***	0.186***	0.241*	0.237***	0.185***	0.199*			
	(0.0858)	(0.0988)	(0.160)	(0.0538)	(0.0639)	(0.125)	(0.0558)	(0.0632)	(0.118)			
NT	0.0948	0.00836	0.0948	0.0598	0.0209	0.0598						
	(0.0992)	(0.0814)	(0.0784)	(0.0715)	(0.0616)	(0.0429)						
RT	0.0979	0.0926	0.0979	0.0297	0.0260	0.0297						
	(0.211)	(0.146)	(0.214)	(0.141)	(0.0919)	(0.127)						
CPI exfe	0.330**	0.226***	0.330									
	(0.159)	(0.0767)	(0.258)									
M1	0.0459	0.0534	0.0459									
	(0.0521)	(0.0605)	(0.0665)									
Observations	132	132	132	189	189	189	189	189	189	189	189	189
R-squared	0.433	0.487	0.433	0.381	0.435	0.381	0.379	0.434	0.379	0.365	0.425	0.365
CD p-value	0.062	0.093		0.008	0.005		0.006	0.005		0.002	0.002	
FE/RE		0.001	0.001		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.13. The Credit Spread Index and Real GDP Growth at 1-quarter horizon

Real GDP 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	-1.667***	-2.363***	-1.667***	-1.814***	-2.475***	-1.814***	-1.821***	-2.486***	-2.273***	-1.900***	-2.579***	-2.175***
	(0.548)	(0.504)	(0.516)	(0.593)	(0.519)	(0.540)	(0.590)	(0.516)	(0.455)	(0.663)	(0.587)	(0.525)
IR	-0.274	-0.559	-0.274	-0.310	-0.549*	-0.310*	-0.305	-0.546*	-0.469**	-0.470	-0.692*	-0.560***
	(0.378)	(0.373)	(0.266)	(0.300)	(0.290)	(0.177)	(0.296)	(0.290)	(0.198)	(0.439)	(0.400)	(0.173)
ER	-0.533	-0.414	-0.533***	-0.219	-0.129	-0.219	-0.221	-0.132	-0.158	-0.259	-0.163	-0.218
	(0.378)	(0.319)	(0.105)	(0.227)	(0.206)	(0.234)	(0.219)	(0.199)	(0.193)	(0.212)	(0.193)	(0.204)
MR	0.157	0.0262	0.157	0.279	0.0734	0.279	0.272	0.0655	0.130	0.191	-0.00839	0.109
	(0.217)	(0.136)	(0.435)	(0.222)	(0.138)	(0.392)	(0.219)	(0.135)	(0.298)	(0.230)	(0.145)	(0.323)
P	0.672**	0.561**	0.672***	0.470*	0.351	0.470**	0.471	0.351	0.390*	0.409	0.291	0.361*
	(0.257)	(0.224)	(0.148)	(0.273)	(0.227)	(0.190)	(0.286)	(0.235)	(0.201)	(0.339)	(0.278)	(0.209)
SPI	0.863	0.725	0.863***	0.681	0.566	0.681***	0.685	0.572	0.609***			
	(0.538)	(0.458)	(0.146)	(0.450)	(0.385)	(0.162)	(0.451)	(0.385)	(0.142)			
NT	-0.125	-0.170	-0.125	-0.0918	-0.0857	-0.0918						
	(0.161)	(0.136)	(0.131)	(0.126)	(0.112)	(0.0779)						
RT	-0.219	-0.171	-0.219	0.0329	0.0450	0.0329						
	(0.199)	(0.171)	(0.143)	(0.167)	(0.142)	(0.225)						
CPI exfe	0.136	-0.0375	0.136									
	(0.128)	(0.188)	(0.117)									
M1	-0.000836	-0.0976	-0.000836									
	(0.111)	(0.0999)	(0.125)									
Observations	172	172	172	244	244	244	244	244	244	244	244	244
R-squared	0.475	0.577	0.475	0.450	0.550	0.450	0.449	0.549	0.449	0.415	0.526	0.415
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.002			0.000

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.14. The Credit Spread Index and Real GDP Growth at 4-quarter horizon

Real GDP 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	-1.059***	-1.577***	-1.059**	-1.158***	-1.679***	-1.158**	-1.188***	-1.713***	-1.188**	-1.319**	-1.872***	-1.319**
	(0.358)	(0.277)	(0.510)	(0.391)	(0.291)	(0.508)	(0.399)	(0.300)	(0.513)	(0.536)	(0.446)	(0.538)
IR	-0.851**	-1.054***	-0.851***	-0.842***	-1.025***	-0.842***	-0.861**	-1.046***	-0.861***	-1.022**	-1.201***	-1.022***
	(0.314)	(0.302)	(0.239)	(0.307)	(0.290)	(0.161)	(0.324)	(0.306)	(0.154)	(0.463)	(0.427)	(0.144)
ER	-0.454**	-0.344**	-0.454***	-0.158*	-0.0676	-0.158	-0.182*	-0.0911	-0.182	-0.176	-0.0829	-0.176
	(0.168)	(0.154)	(0.0939)	(0.0886)	(0.101)	(0.239)	(0.0970)	(0.106)	(0.217)	(0.110)	(0.109)	(0.198)
MR	0.212	0.0867	0.212	0.378	0.195**	0.378	0.372	0.188*	0.372	0.279	0.0940	0.279
	(0.234)	(0.0998)	(0.427)	(0.231)	(0.0948)	(0.407)	(0.233)	(0.0947)	(0.396)	(0.242)	(0.0978)	(0.385)
P	-0.0252	-0.118	-0.0252	-0.0811	-0.182	-0.0811	-0.103	-0.205	-0.103	-0.189	-0.290	-0.189
	(0.184)	(0.191)	(0.114)	(0.231)	(0.222)	(0.122)	(0.250)	(0.236)	(0.140)	(0.335)	(0.309)	(0.157)
SPI	1.163***	1.016**	1.163***	0.838**	0.722**	0.838***	0.848**	0.731**	0.848***			
	(0.412)	(0.375)	(0.188)	(0.378)	(0.340)	(0.298)	(0.379)	(0.340)	(0.288)			
NT	-0.000157	-0.0327	-0.000157	0.0409	0.0441	0.0409						
	(0.167)	(0.148)	(0.124)	(0.115)	(0.0973)	(0.0792)						
RT	-0.0552	-0.0254	-0.0552	0.155	0.157	0.155						
	(0.175)	(0.124)	(0.123)	(0.172)	(0.140)	(0.212)						
CPI exfe	-0.0358	-0.194*	-0.0358									
	(0.177)	(0.101)	(0.119)									
M1	0.230	0.165	0.230***									
	(0.156)	(0.136)	(0.0600)									
Observations	160	160	160	226	226	226	226	226	226	226	226	226
R-squared	0.528	0.615	0.528	0.475	0.566	0.475	0.471	0.562	0.471	0.399	0.508	0.399
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.15. The Credit Spread Index and Real GDP Growth at 8-quarter horizon

Real GDP 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Credit Spread	-0.583***	-0.899***	-0.583**	-0.734***	-1.075***	-0.734**	-0.719***	-1.062***	-1.002***	-0.744***	-1.077***	-0.988***
	(0.0832)	(0.160)	(0.296)	(0.172)	(0.135)	(0.286)	(0.172)	(0.117)	(0.320)	(0.174)	(0.131)	(0.304)
IR	-1.466***	-1.603***	-1.466***	-1.442***	-1.569***	-1.442***	-1.441***	-1.567***	-1.543***	-1.461***	-1.577***	-1.543***
	(0.212)	(0.189)	(0.115)	(0.260)	(0.229)	(0.0873)	(0.262)	(0.230)	(0.108)	(0.242)	(0.213)	(0.109)
ER	-0.444***	-0.364***	-0.444***	-0.217***	-0.134***	-0.217	-0.209***	-0.127***	-0.139	-0.206***	-0.125***	-0.144
	(0.0968)	(0.0926)	(0.0233)	(0.0598)	(0.0478)	(0.186)	(0.0535)	(0.0427)	(0.178)	(0.0573)	(0.0417)	(0.175)
MR	0.134	0.0336	0.134	0.249	0.113***	0.249	0.254	0.115***	0.138	0.238	0.107**	0.140
	(0.247)	(0.0473)	(0.237)	(0.236)	(0.0403)	(0.225)	(0.235)	(0.0381)	(0.195)	(0.228)	(0.0480)	(0.198)
P	-0.151**	-0.209**	-0.151**	-0.159*	-0.212*	-0.159**	-0.148*	-0.201*	-0.192**	-0.170**	-0.212**	-0.201***
	(0.0661)	(0.0782)	(0.0691)	(0.0907)	(0.112)	(0.0663)	(0.0863)	(0.104)	(0.0760)	(0.0811)	(0.0935)	(0.0612)
SPI	0.298**	0.179	0.298***	0.147	0.0683	0.147	0.143	0.0664	0.0805			
	(0.108)	(0.138)	(0.0620)	(0.171)	(0.159)	(0.134)	(0.169)	(0.156)	(0.129)			
NT	-0.0288	-0.0769	-0.0288	-0.000892	-0.0141	-0.000892						
	(0.114)	(0.0881)	(0.0494)	(0.0818)	(0.0694)	(0.0483)						
RT	-0.153*	-0.118	-0.153	-0.0715	-0.0611	-0.0715						
	(0.0823)	(0.0844)	(0.137)	(0.116)	(0.108)	(0.113)						
CPI exfe	0.159	0.0489	0.159									
	(0.115)	(0.0615)	(0.144)									
M1	0.174*	0.137*	0.174***									
	(0.0908)	(0.0793)	(0.0450)									
Observations	136	136	136	194	194	194	194	194	194	194	194	194
R-squared	0.617	0.713	0.617	0.544	0.639	0.544	0.543	0.638	0.543	0.539	0.638	0.539
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panel 1 has 6 country groups while Panels 2-4 have 8 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.18. The Excess Bond Premium and Industrial Production at 3-month horizon

Ind prod 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	-2.947***	-3.451**	-2.947***	-3.132***	-3.793**	-3.132***	-3.126***	-3.800**	-3.126***	-3.430***	-4.141**	-3.430***
	(0.954)	(1.483)	(0.312)	(1.013)	(1.578)	(0.316)	(1.010)	(1.591)	(0.316)	(1.234)	(1.903)	(0.319)
EBP	-7.029***	-7.161***	-7.029***	-7.126***	-7.448***	-7.126***	-7.141***	-7.463***	-7.141***	-8.004***	-8.340***	-8.004***
	(1.954)	(2.036)	(0.765)	(1.865)	(1.972)	(0.724)	(1.879)	(1.986)	(0.702)	(2.325)	(2.439)	(0.578)
IR	-4.928***	-4.976***	-4.928***	-4.675***	-4.729***	-4.675***	-4.676***	-4.732***	-4.676***	-4.708***	-4.771***	-4.708***
	(1.207)	(1.259)	(0.659)	(1.039)	(1.095)	(0.505)	(1.042)	(1.099)	(0.504)	(1.133)	(1.198)	(0.521)
ER	0.361	0.368	0.361	0.424	0.423	0.424	0.425	0.424	0.425	0.544	0.540	0.544*
	(1.037)	(1.051)	(0.417)	(0.867)	(0.870)	(0.294)	(0.853)	(0.856)	(0.290)	(0.906)	(0.906)	(0.312)
MR	-0.705	-0.667	-0.705	-0.717	-0.703	-0.717**	-0.715	-0.701	-0.715**	-0.956	-0.947	-0.956***
	(0.667)	(0.602)	(0.448)	(0.675)	(0.670)	(0.321)	(0.667)	(0.660)	(0.317)	(0.691)	(0.688)	(0.222)
P	3.179***	3.086***	3.179***	2.778***	2.627***	2.778***	2.754***	2.603***	2.754***	2.581***	2.425***	2.581***
	(1.160)	(1.140)	(0.686)	(0.885)	(0.869)	(0.692)	(0.910)	(0.891)	(0.681)	(0.933)	(0.912)	(0.679)
SPI	2.906**	2.900**	2.906***	2.414**	2.399**	2.414***	2.398**	2.383**	2.398***			
	(1.140)	(1.160)	(0.472)	(0.980)	(1.009)	(0.504)	(1.003)	(1.029)	(0.502)			
NT	1.318***	1.281***	1.318***	1.007***	0.987**	1.007***						
	(0.488)	(0.482)	(0.448)	(0.378)	(0.378)	(0.372)						
RT	0.676	0.645	0.676**	0.542	0.512	0.542**						
	(0.601)	(0.582)	(0.336)	(0.444)	(0.425)	(0.238)						
CPI exfe	0.220	0.162	0.220									
	(0.667)	(0.664)	(0.416)									
M1	0.197	0.292	0.197									
	(0.598)	(0.583)	(0.261)									
Observations	370	370	370	567	567	567	567	567	567	567	567	567
R-squared	0.474	0.475	0.474	0.474	0.482	0.474	0.465	0.474	0.465	0.426	0.434	0.426
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.027	0.035		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.19. The Excess Bond Premium and Industrial Production at 12-month horizon

Ind prod 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	-1.328**	-0.808	-1.328***	-1.299	-0.765	-1.299**	-1.289	-0.747	-1.289**	-1.437	-0.924	-1.437***
	(0.668)	(1.136)	(0.316)	(0.814)	(1.159)	(0.519)	(0.814)	(1.155)	(0.526)	(0.871)	(1.255)	(0.497)
EBP	-3.639**	-3.617**	-3.639***	-3.618**	-3.694**	-3.618***	-3.608**	-3.682**	-3.608***	-4.058***	-4.144***	-4.058***
	(1.519)	(1.457)	(0.469)	(1.441)	(1.413)	(0.619)	(1.438)	(1.410)	(0.625)	(1.527)	(1.510)	(0.519)
IR	-5.705***	-5.535***	-5.705***	-5.256***	-5.098***	-5.256***	-5.253***	-5.094***	-5.253***	-5.290***	-5.137***	-5.290***
	(1.154)	(1.255)	(0.709)	(1.066)	(1.155)	(0.576)	(1.067)	(1.155)	(0.576)	(1.108)	(1.198)	(0.578)
ER	-0.482	-0.495*	-0.482***	-0.239	-0.248	-0.239	-0.234	-0.243	-0.234	-0.174	-0.183	-0.174
	(0.303)	(0.267)	(0.152)	(0.259)	(0.252)	(0.192)	(0.256)	(0.249)	(0.189)	(0.285)	(0.286)	(0.154)
MR	-0.305	-0.317	-0.305	-0.253	-0.259	-0.253	-0.249	-0.256	-0.249	-0.372	-0.383	-0.372
	(0.414)	(0.301)	(0.484)	(0.415)	(0.375)	(0.384)	(0.410)	(0.370)	(0.388)	(0.428)	(0.391)	(0.300)
P	-1.498*	-1.490	-1.498***	-1.271	-1.305	-1.271***	-1.265	-1.298	-1.265***	-1.357*	-1.393*	-1.357***
	(0.866)	(0.904)	(0.156)	(0.811)	(0.831)	(0.152)	(0.814)	(0.834)	(0.153)	(0.811)	(0.835)	(0.166)
SPI	1.439***	1.432***	1.439***	1.241***	1.242***	1.241***	1.234***	1.235***	1.234***			
	(0.418)	(0.391)	(0.224)	(0.387)	(0.382)	(0.217)	(0.389)	(0.383)	(0.217)			
NT	0.368	0.335	0.368***	0.235	0.221	0.235**						
	(0.263)	(0.246)	(0.1000)	(0.173)	(0.170)	(0.102)						
RT	-0.283	-0.289	-0.283	-0.273	-0.276	-0.273						
	(0.268)	(0.268)	(0.322)	(0.220)	(0.214)	(0.196)						
CPI exfe	-0.554**	-0.580***	-0.554									
	(0.235)	(0.219)	(0.394)									
M1	1.054**	1.078***	1.054**									
	(0.421)	(0.394)	(0.497)									
Observations	366	366	366	561	561	561	561	561	561	561	561	561
R-squared	0.610	0.631	0.610	0.577	0.604	0.577	0.575	0.602	0.575	0.549	0.575	0.549
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.20. The Excess Bond Premium and Industrial Production at 24-month horizon

Ind prod 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	-0.0940	0.00105	-0.0940	-0.106	0.137	-0.106	-0.101	0.144	-0.101	-0.136	0.100	-0.136
	(0.263)	(0.152)	(0.417)	(0.476)	(0.323)	(0.595)	(0.479)	(0.327)	(0.596)	(0.481)	(0.326)	(0.581)
EBP	0.423	0.355	0.423*	-0.0963	-0.198	-0.0963	-0.0923	-0.193	-0.0923	-0.191	-0.299	-0.191
	(0.399)	(0.452)	(0.224)	(0.299)	(0.411)	(0.606)	(0.300)	(0.413)	(0.604)	(0.282)	(0.404)	(0.567)
IR	-5.300***	-5.199***	-5.300***	-4.852***	-4.775***	-4.852***	-4.856***	-4.777***	-4.856***	-4.873***	-4.798***	-4.873***
	(0.552)	(0.532)	(0.678)	(0.664)	(0.620)	(0.580)	(0.658)	(0.613)	(0.581)	(0.615)	(0.571)	(0.581)
ER	-0.824***	-0.815***	-0.824***	-0.440***	-0.456***	-0.440	-0.445***	-0.459***	-0.445	-0.444***	-0.458***	-0.444
	(0.138)	(0.158)	(0.179)	(0.0686)	(0.0788)	(0.271)	(0.0690)	(0.0780)	(0.272)	(0.0735)	(0.0789)	(0.270)
MR	-0.150	-0.0374	-0.150	0.129	0.220	0.129	0.131	0.222	0.131	0.107	0.195	0.107
	(0.169)	(0.148)	(0.376)	(0.152)	(0.176)	(0.319)	(0.150)	(0.176)	(0.320)	(0.152)	(0.183)	(0.305)
P	0.0364	0.0234	0.0364	-0.0441	-0.0641	-0.0441	-0.0414	-0.0618	-0.0414	-0.0645	-0.0869	-0.0645
	(0.132)	(0.142)	(0.125)	(0.103)	(0.110)	(0.131)	(0.0970)	(0.106)	(0.133)	(0.0913)	(0.108)	(0.121)
SPI	0.343***	0.356***	0.343***	0.271**	0.287***	0.271***	0.268**	0.283***	0.268***			
	(0.125)	(0.104)	(0.0739)	(0.116)	(0.0885)	(0.0951)	(0.115)	(0.0874)	(0.0943)			
NT	0.141	0.102	0.141	0.121	0.106	0.121**						
	(0.216)	(0.216)	(0.0876)	(0.111)	(0.109)	(0.0500)						
RT	-0.0314	-0.0602	-0.0314	-0.0456	-0.0718	-0.0456						
	(0.0966)	(0.0935)	(0.171)	(0.0739)	(0.0622)	(0.117)						
CPI exfe	-0.178	-0.227	-0.178									
	(0.172)	(0.169)	(0.187)									
M1	0.0437	0.157	0.0437									
	(0.110)	(0.125)	(0.129)									
Observations	307	307	307	478	478	478	478	478	478	478	478	478
R-squared	0.662	0.729	0.662	0.618	0.689	0.618	0.618	0.688	0.618	0.615	0.685	0.615
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.21. The Excess Bond Premium and Unemployment Rate at 3-month horizon

Unempl 3-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	2.406	2.557	2.406	2.699*	3.300	2.699*	2.725*	3.362	2.725*	2.676*	3.299	2.676*
	(1.635)	(2.557)	(1.816)	(1.401)	(2.257)	(1.499)	(1.405)	(2.262)	(1.486)	(1.408)	(2.222)	(1.487)
EBP	8.824***	9.216***	8.824***	9.358***	9.870***	9.358***	9.396***	9.915***	9.396***	9.257***	9.753***	9.257***
	(1.615)	(1.482)	(1.634)	(1.370)	(1.296)	(1.561)	(1.359)	(1.275)	(1.541)	(1.365)	(1.243)	(1.561)
IR	-3.170**	-3.152**	-3.170	-2.228*	-2.207*	-2.228	-2.215*	-2.188*	-2.215	-2.220*	-2.196*	-2.220
	(1.458)	(1.223)	(2.865)	(1.264)	(1.150)	(2.115)	(1.275)	(1.156)	(2.107)	(1.287)	(1.168)	(2.106)
ER	1.378	1.437	1.378	0.477	0.458	0.477	0.493	0.473	0.493	0.512	0.495	0.512
	(0.985)	(0.968)	(0.878)	(0.689)	(0.682)	(0.777)	(0.700)	(0.691)	(0.765)	(0.708)	(0.699)	(0.786)
MR	0.766	1.042	0.766	-0.0588	0.0501	-0.0588	-0.0514	0.0567	-0.0514	-0.0903	0.0110	-0.0903
	(1.190)	(1.208)	(1.946)	(0.997)	(0.941)	(1.497)	(0.991)	(0.935)	(1.485)	(0.949)	(0.900)	(1.516)
P	0.00115	0.0851	0.00115	-0.0730	0.138	-0.0730	-0.0411	0.174	-0.0411	-0.0692	0.141	-0.0692
	(1.152)	(1.074)	(1.133)	(1.078)	(1.026)	(1.004)	(1.059)	(1.004)	(0.985)	(1.060)	(0.997)	(0.968)
SPI	0.767	0.837	0.767	0.398	0.452	0.398	0.387	0.441	0.387			
	(0.977)	(0.927)	(0.846)	(0.763)	(0.758)	(0.557)	(0.798)	(0.793)	(0.561)			
NT	-0.242	-0.233	-0.242	0.0617	0.0619	0.0617						
	(0.511)	(0.494)	(0.747)	(0.344)	(0.318)	(0.518)						
RT	-1.426**	-1.419**	-1.426*	-1.196*	-1.173*	-1.196**						
	(0.687)	(0.651)	(0.734)	(0.632)	(0.603)	(0.491)						
CPI exfe	1.651*	1.701*	1.651*									
	(0.925)	(0.866)	(0.971)									
M1	0.845	0.858	0.845*									
	(0.670)	(0.570)	(0.434)									
Observations	370	370	370	567	567	567	567	567	567	567	567	567
R-squared	0.178	0.189	0.178	0.205	0.218	0.205	0.200	0.213	0.200	0.199	0.213	0.199
CD p-value	0.102	0.131		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.020	0.007		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.005			0.000			0.000			0.001

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.22. The Excess Bond Premium and Unemployment Rate at 12-month horizon

Unempl 12-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	1.316**	-1.046	1.316	1.805*	0.0236	1.805	1.810*	0.0375	1.810	1.854*	0.0827	1.854
	(0.657)	(1.250)	(1.700)	(0.980)	(1.169)	(1.406)	(0.976)	(1.164)	(1.402)	(0.976)	(1.152)	(1.377)
EBP	10.57***	10.60***	10.57***	9.807***	9.987***	9.807***	9.816***	9.999***	9.816***	9.953***	10.12***	9.953***
	(1.851)	(1.310)	(2.803)	(1.823)	(1.435)	(1.568)	(1.812)	(1.425)	(1.569)	(1.772)	(1.389)	(1.454)
IR	1.517	1.019	1.517	2.433*	2.023	2.433	2.437*	2.029	2.437	2.446*	2.038	2.446
	(1.379)	(1.218)	(2.024)	(1.401)	(1.342)	(1.618)	(1.397)	(1.339)	(1.612)	(1.393)	(1.338)	(1.618)
ER	0.514	0.639	0.514	-0.0529	-0.0213	-0.0529	-0.0496	-0.0179	-0.0496	-0.0681	-0.0338	-0.0681
	(0.830)	(0.812)	(0.487)	(0.791)	(0.708)	(0.544)	(0.791)	(0.708)	(0.540)	(0.778)	(0.698)	(0.548)
MR	0.575	1.019	0.575	0.323	0.553	0.323	0.325	0.555	0.325	0.363	0.588	0.363
	(0.778)	(0.938)	(2.073)	(0.585)	(0.577)	(1.324)	(0.585)	(0.577)	(1.317)	(0.598)	(0.592)	(1.304)
P	1.083	0.919	1.083***	1.358	1.359	1.358**	1.364	1.368	1.364**	1.391	1.391	1.391**
	(0.791)	(0.722)	(0.369)	(0.967)	(0.894)	(0.566)	(0.953)	(0.879)	(0.562)	(0.946)	(0.874)	(0.556)
SPI	-0.219	-0.129	-0.219	-0.376	-0.326	-0.376	-0.377	-0.327	-0.377			
	(0.569)	(0.524)	(0.605)	(0.470)	(0.475)	(0.357)	(0.471)	(0.478)	(0.358)			
NT	-0.193	-0.198	-0.193	0.0170	-0.00515	0.0170						
	(0.214)	(0.179)	(0.225)	(0.277)	(0.260)	(0.220)						
RT	-0.305	-0.374	-0.305	-0.234	-0.263	-0.234						
	(0.349)	(0.341)	(0.479)	(0.316)	(0.292)	(0.327)						
CPI exfe	0.912*	0.885*	0.912									
	(0.515)	(0.454)	(0.573)									
M1	-1.115**	-0.927**	-1.115***									
	(0.477)	(0.446)	(0.354)									
Observations	367	367	367	561	561	561	561	561	561	561	561	561
R-squared	0.336	0.386	0.336	0.322	0.359	0.322	0.321	0.359	0.321	0.320	0.358	0.320
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.23. The Excess Bond Premium and Unemployment Rate at 24-month horizon

Unempl 24-m	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	0.301	0.543	0.301	1.083	0.752	1.083	1.086	0.760	1.086	1.075	0.738	1.075
	(0.557)	(1.063)	(1.863)	(0.920)	(1.034)	(1.486)	(0.921)	(1.034)	(1.482)	(0.919)	(1.033)	(1.466)
EBP	6.660***	6.874***	6.660***	5.705***	6.184***	5.705***	5.708***	6.189***	5.708***	5.676***	6.136***	5.676***
	(1.309)	(1.345)	(2.425)	(0.990)	(0.926)	(1.289)	(0.989)	(0.926)	(1.288)	(0.967)	(0.903)	(1.227)
IR	4.079***	4.003***	4.079***	4.724***	4.564***	4.724***	4.723***	4.563***	4.723***	4.717***	4.554***	4.717***
	(0.921)	(1.054)	(1.263)	(0.900)	(0.989)	(1.272)	(0.900)	(0.990)	(1.271)	(0.906)	(0.992)	(1.261)
ER	0.943***	0.957***	0.943***	0.394	0.442	0.394	0.394	0.441	0.394	0.394	0.442	0.394
	(0.290)	(0.279)	(0.201)	(0.475)	(0.307)	(0.466)	(0.464)	(0.301)	(0.465)	(0.460)	(0.297)	(0.465)
MR	-0.130	0.140	-0.130	-0.160	0.00256	-0.160	-0.159	0.00355	-0.159	-0.167	-0.00951	-0.167
	(0.715)	(0.681)	(1.751)	(0.550)	(0.617)	(1.093)	(0.548)	(0.615)	(1.091)	(0.550)	(0.617)	(1.104)
P	1.392***	1.453***	1.392*	1.288*	1.428***	1.288***	1.288**	1.429***	1.288***	1.281*	1.416***	1.281***
	(0.478)	(0.471)	(0.762)	(0.651)	(0.465)	(0.305)	(0.647)	(0.462)	(0.302)	(0.648)	(0.463)	(0.290)
SPI	0.0898	0.0982	0.0898	0.0881	0.142	0.0881	0.0856	0.139	0.0856			
	(0.249)	(0.264)	(0.382)	(0.187)	(0.234)	(0.201)	(0.187)	(0.234)	(0.202)			
NT	0.0936	0.144	0.0936	0.0340	0.0453	0.0340						
	(0.245)	(0.203)	(0.311)	(0.188)	(0.131)	(0.217)						
RT	-0.182	-0.159	-0.182	-0.129	-0.127	-0.129						
	(0.138)	(0.155)	(0.352)	(0.176)	(0.156)	(0.249)						
CPI exfe	0.520	0.610*	0.520									
	(0.349)	(0.344)	(0.497)									
M1	-0.767***	-0.770***	-0.767									
	(0.224)	(0.191)	(0.528)									
Observations	308	308	308	478	478	478	478	478	478	478	478	478
R-squared	0.388	0.415	0.388	0.347	0.407	0.347	0.346	0.407	0.346	0.346	0.407	0.346
CD p-value	0.182	0.215		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.24. The Excess Bond Premium and Employment Growth at 1-quarter horizon

Employment 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	-0.501***	-0.419**	-0.501***	-0.522***	-0.516***	-0.522***	-0.494***	-0.479***	-0.494***	-0.486***	-0.475***	-0.486***
	(0.135)	(0.204)	(0.171)	(0.135)	(0.156)	(0.191)	(0.140)	(0.152)	(0.178)	(0.139)	(0.150)	(0.174)
EBP	-0.740***	-0.723***	-0.740**	-0.876***	-0.885***	-0.876***	-0.862***	-0.870***	-0.862***	-0.836***	-0.846***	-0.836***
	(0.180)	(0.179)	(0.331)	(0.107)	(0.106)	(0.252)	(0.115)	(0.113)	(0.252)	(0.127)	(0.118)	(0.237)
IR	0.628***	0.663***	0.628**	0.527***	0.553***	0.527***	0.546***	0.572***	0.546***	0.563***	0.587***	0.563***
	(0.158)	(0.156)	(0.251)	(0.128)	(0.130)	(0.194)	(0.126)	(0.130)	(0.191)	(0.116)	(0.118)	(0.188)
ER	-0.282*	-0.285*	-0.282	-0.158*	-0.172**	-0.158	-0.135*	-0.152**	-0.135*	-0.137*	-0.154**	-0.137*
	(0.143)	(0.140)	(0.227)	(0.0782)	(0.0724)	(0.107)	(0.0721)	(0.0683)	(0.0807)	(0.0729)	(0.0685)	(0.0823)
MR	-0.250*	-0.242*	-0.250*	-0.190**	-0.172**	-0.190	-0.185**	-0.168*	-0.185	-0.173*	-0.156*	-0.173
	(0.128)	(0.120)	(0.144)	(0.0811)	(0.0804)	(0.132)	(0.0898)	(0.0896)	(0.132)	(0.0907)	(0.0916)	(0.126)
P	-0.0155	-0.0223	-0.0155	-0.0610	-0.0715	-0.0610	-0.0342	-0.0485	-0.0342	-0.0221	-0.0371	-0.0221
	(0.0951)	(0.0966)	(0.310)	(0.0814)	(0.0801)	(0.191)	(0.0818)	(0.0809)	(0.175)	(0.0827)	(0.0807)	(0.167)
SPI	-0.0799	-0.0873	-0.0799	-0.0842	-0.0785	-0.0842	-0.0816	-0.0770	-0.0816			
	(0.192)	(0.171)	(0.160)	(0.128)	(0.123)	(0.102)	(0.125)	(0.121)	(0.0982)			
NT	-0.0669	-0.0761	-0.0669	-0.0556	-0.0427	-0.0556						
	(0.136)	(0.135)	(0.134)	(0.0897)	(0.0879)	(0.0872)						
RT	-0.291**	-0.255*	-0.291	-0.147	-0.129	-0.147						
	(0.130)	(0.134)	(0.239)	(0.110)	(0.101)	(0.157)						
CPI exfe	0.240	0.235	0.240*									
	(0.193)	(0.202)	(0.137)									
M1	0.0306	0.0507	0.0306									
	(0.0804)	(0.0884)	(0.110)									
Observations	124	124	124	189	189	189	189	189	189	189	189	189
R-squared	0.317	0.315	0.317	0.300	0.310	0.300	0.293	0.305	0.293	0.292	0.304	0.292
CD p-value	0.146	0.152		0.713	0.710		0.536	0.545		0.494	0.506	
FE/RE		0.517	0.748		0.171	0.451		0.145	0.379		0.141	0.381
Robust Hausman			0.000			0.000			0.001			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.25. The Excess Bond Premium and Employment Growth at 4-quarter horizon

Employment 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	-0.476***	-0.536***	-0.476***	-0.460***	-0.472***	-0.460***	-0.445***	-0.453***	-0.445***	-0.467***	-0.464***	-0.467***
	(0.105)	(0.127)	(0.147)	(0.114)	(0.0848)	(0.172)	(0.116)	(0.0893)	(0.172)	(0.124)	(0.104)	(0.164)
EBP	-0.875***	-0.903***	-0.875***	-0.887***	-0.911***	-0.887***	-0.877***	-0.900***	-0.877***	-0.958***	-0.977***	-0.958***
	(0.120)	(0.123)	(0.158)	(0.122)	(0.117)	(0.170)	(0.128)	(0.120)	(0.169)	(0.185)	(0.174)	(0.145)
IR	0.351***	0.346***	0.351	0.259***	0.272***	0.259	0.265***	0.278***	0.265	0.200**	0.217*	0.200
	(0.0828)	(0.0890)	(0.251)	(0.0671)	(0.0712)	(0.190)	(0.0647)	(0.0721)	(0.195)	(0.0974)	(0.114)	(0.180)
ER	-0.117	-0.107	-0.117	-0.0586	-0.0745	-0.0586	-0.0487	-0.0686	-0.0487	-0.0476	-0.0688	-0.0476
	(0.0991)	(0.0988)	(0.0721)	(0.0651)	(0.0633)	(0.0606)	(0.0609)	(0.0612)	(0.0482)	(0.0695)	(0.0685)	(0.0441)
MR	-0.101	-0.102	-0.101	-0.0483	-0.0401	-0.0483	-0.0424	-0.0342	-0.0424	-0.0813	-0.0726	-0.0813
	(0.109)	(0.0926)	(0.149)	(0.0694)	(0.0671)	(0.135)	(0.0733)	(0.0725)	(0.136)	(0.0879)	(0.0858)	(0.120)
P	-0.185***	-0.197***	-0.185	-0.178***	-0.191***	-0.178*	-0.167***	-0.184***	-0.167**	-0.205**	-0.221**	-0.205***
	(0.0414)	(0.0443)	(0.152)	(0.0576)	(0.0632)	(0.0932)	(0.0576)	(0.0607)	(0.0814)	(0.0831)	(0.0829)	(0.0784)
SPI	0.397***	0.395***	0.397***	0.267**	0.260**	0.267**	0.261**	0.254**	0.261**			
	(0.113)	(0.115)	(0.0622)	(0.105)	(0.111)	(0.114)	(0.105)	(0.111)	(0.106)			
NT	0.0196	0.0146	0.0196	-0.00184	0.00984	-0.00184						
	(0.0824)	(0.0730)	(0.0338)	(0.0654)	(0.0533)	(0.0328)						
RT	-0.205***	-0.178**	-0.205*	-0.0837	-0.0625	-0.0837						
	(0.0651)	(0.0683)	(0.115)	(0.0772)	(0.0671)	(0.107)						
CPI exfe	0.0140	-0.0437	0.0140									
	(0.0827)	(0.0928)	(0.0745)									
M1	0.0882*	0.106*	0.0882*									
	(0.0487)	(0.0576)	(0.0485)									
Observations	120	120	120	184	184	184	184	184	184	184	184	184
R-squared	0.529	0.558	0.529	0.496	0.542	0.496	0.492	0.539	0.492	0.462	0.508	0.462
CD p-value	0.722	0.710		0.021	0.026		0.014	0.018		0.000	0.000	
FE/RE		0.001	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.26. The Excess Bond Premium and Employment Growth at 8-quarter horizon

Employment 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	-0.365***	-0.430***	-0.365**	-0.477***	-0.426***	-0.477***	-0.473***	-0.418***	-0.473**	-0.478***	-0.418***	-0.478**
	(0.100)	(0.0961)	(0.163)	(0.154)	(0.101)	(0.179)	(0.155)	(0.0997)	(0.184)	(0.162)	(0.109)	(0.187)
EBP	-0.687***	-0.745***	-0.687***	-0.698***	-0.751***	-0.698***	-0.679***	-0.731***	-0.679***	-0.706***	-0.755***	-0.706***
	(0.122)	(0.107)	(0.146)	(0.124)	(0.0725)	(0.147)	(0.128)	(0.0685)	(0.142)	(0.127)	(0.0697)	(0.113)
IR	-0.255**	-0.259**	-0.255	-0.234**	-0.238**	-0.234	-0.228**	-0.230**	-0.228	-0.245**	-0.244**	-0.245*
	(0.0989)	(0.118)	(0.227)	(0.102)	(0.103)	(0.144)	(0.100)	(0.107)	(0.148)	(0.0940)	(0.103)	(0.137)
ER	-0.163***	-0.147***	-0.163**	-0.0715	-0.102**	-0.0715	-0.0642	-0.0955**	-0.0642	-0.0606	-0.0926**	-0.0606
	(0.0417)	(0.0369)	(0.0735)	(0.0545)	(0.0392)	(0.0850)	(0.0450)	(0.0358)	(0.0789)	(0.0471)	(0.0380)	(0.0738)
MR	-0.0239	-0.0318	-0.0239	-0.00948	-0.00576	-0.00948	0.00236	0.00569	0.00236	-0.0122	-0.00828	-0.0122
	(0.114)	(0.0438)	(0.134)	(0.0775)	(0.0377)	(0.129)	(0.0801)	(0.0454)	(0.136)	(0.0749)	(0.0481)	(0.121)
P	-0.219***	-0.242***	-0.219***	-0.193***	-0.210***	-0.193***	-0.182**	-0.201***	-0.182***	-0.199***	-0.216***	-0.199***
	(0.0669)	(0.0541)	(0.0773)	(0.0638)	(0.0517)	(0.0597)	(0.0692)	(0.0558)	(0.0433)	(0.0683)	(0.0545)	(0.0380)
SPI	0.136**	0.131**	0.136	0.0886*	0.0820	0.0886	0.0883	0.0806	0.0883			
	(0.0593)	(0.0615)	(0.123)	(0.0522)	(0.0550)	(0.117)	(0.0604)	(0.0603)	(0.118)			
NT	0.0257	0.00343	0.0257	0.0370	0.0412	0.0370						
	(0.0585)	(0.0472)	(0.0786)	(0.0505)	(0.0371)	(0.0486)						
RT	-0.135*	-0.122*	-0.135	-0.0827	-0.0760	-0.0827						
	(0.0723)	(0.0664)	(0.108)	(0.0735)	(0.0579)	(0.0853)						
CPI exfe	0.0418	-0.0248	0.0418									
	(0.0618)	(0.0651)	(0.0436)									
M1	0.115**	0.129***	0.115***									
	(0.0472)	(0.0346)	(0.0414)									
Observations	100	100	100	156	156	156	156	156	156	156	156	156
R-squared	0.505	0.559	0.505	0.460	0.532	0.460	0.451	0.522	0.451	0.446	0.517	0.446
CD p-value	0.003	0.004		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6.27. The Excess Bond Premium and Real GDP Growth at 1-quarter horizon

Real GDP 1-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	-1.223***	-1.573***	-1.223***	-1.169***	-1.561***	-1.169***	-1.179***	-1.585***	-1.179***	-1.208***	-1.601***	-1.208***
	(0.316)	(0.415)	(0.204)	(0.318)	(0.368)	(0.230)	(0.319)	(0.364)	(0.235)	(0.328)	(0.369)	(0.227)
EBP	-2.967***	-3.070***	-2.967***	-3.162***	-3.310***	-3.162***	-3.181***	-3.327***	-3.181***	-3.277***	-3.423***	-3.277***
	(0.471)	(0.490)	(0.172)	(0.515)	(0.481)	(0.270)	(0.514)	(0.472)	(0.282)	(0.586)	(0.551)	(0.255)
IR	-0.353	-0.436	-0.353	-0.381	-0.463	-0.381*	-0.385	-0.473	-0.385*	-0.446	-0.534*	-0.446**
	(0.392)	(0.379)	(0.339)	(0.313)	(0.296)	(0.227)	(0.312)	(0.295)	(0.229)	(0.330)	(0.313)	(0.226)
ER	-0.330	-0.299	-0.330***	-0.134	-0.0722	-0.134	-0.138	-0.0802	-0.138	-0.131	-0.0736	-0.131
	(0.306)	(0.310)	(0.111)	(0.202)	(0.193)	(0.129)	(0.194)	(0.184)	(0.103)	(0.197)	(0.185)	(0.0903)
MR	-0.170	-0.174	-0.170	-0.0859	-0.120	-0.0859	-0.101	-0.130	-0.101	-0.147	-0.178	-0.147
	(0.176)	(0.146)	(0.221)	(0.171)	(0.139)	(0.201)	(0.167)	(0.132)	(0.179)	(0.187)	(0.148)	(0.170)
P	0.410	0.365	0.410***	0.165	0.142	0.165	0.165	0.134	0.165	0.121	0.0889	0.121
	(0.242)	(0.253)	(0.126)	(0.210)	(0.229)	(0.176)	(0.212)	(0.229)	(0.193)	(0.254)	(0.270)	(0.193)
SPI	0.401	0.416	0.401**	0.287	0.300	0.287**	0.298	0.306	0.298**			
	(0.475)	(0.478)	(0.161)	(0.374)	(0.341)	(0.128)	(0.374)	(0.342)	(0.130)			
NT	-0.102	-0.0847	-0.102	-0.0918	-0.0379	-0.0918						
	(0.0874)	(0.0740)	(0.178)	(0.0827)	(0.0774)	(0.118)						
RT	-0.147	-0.130	-0.147	0.0705	0.0827	0.0705						
	(0.180)	(0.171)	(0.135)	(0.158)	(0.161)	(0.237)						
CPI exfe	0.0658	-0.0868	0.0658									
	(0.170)	(0.175)	(0.0858)									
M1	0.00855	0.00632	0.00855									
	(0.129)	(0.114)	(0.176)									
Observations	124	124	124	189	189	189	189	189	189	189	189	189
R-squared	0.635	0.650	0.635	0.629	0.657	0.629	0.628	0.656	0.628	0.623	0.650	0.623
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.041	0.138		0.002	0.000		0.001	0.000		0.002	0.000
Robust Hausman			0.000			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.28. The Excess Bond Premium and Real GDP Growth at 4-quarter horizon

Real GDP 4-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	-0.640***	-0.724***	-0.640***	-0.494***	-0.523**	-0.494*	-0.529***	-0.582**	-0.529**	-0.582***	-0.610*	-0.582***
	(0.171)	(0.243)	(0.185)	(0.169)	(0.248)	(0.254)	(0.177)	(0.271)	(0.231)	(0.207)	(0.304)	(0.209)
EBP	-1.873***	-1.926***	-1.873***	-2.122***	-2.187***	-2.122***	-2.131***	-2.199***	-2.131***	-2.302***	-2.362***	-2.302***
	(0.227)	(0.252)	(0.268)	(0.279)	(0.261)	(0.323)	(0.289)	(0.270)	(0.337)	(0.415)	(0.392)	(0.256)
IR	-1.022***	-1.038***	-1.022***	-0.909***	-0.915***	-0.909***	-0.934***	-0.950***	-0.934***	-1.043***	-1.053***	-1.043***
	(0.233)	(0.251)	(0.282)	(0.223)	(0.223)	(0.178)	(0.248)	(0.254)	(0.185)	(0.316)	(0.319)	(0.187)
ER	-0.354***	-0.337***	-0.354***	-0.0890	-0.0478	-0.0890	-0.119	-0.0866	-0.119	-0.106	-0.0754	-0.106
	(0.118)	(0.114)	(0.121)	(0.0890)	(0.0938)	(0.171)	(0.0967)	(0.0998)	(0.157)	(0.0928)	(0.0952)	(0.129)
MR	-0.159	-0.165**	-0.159	0.00658	-0.0297	0.00658	0.00903	-0.0255	0.00903	-0.0727	-0.107	-0.0727
	(0.156)	(0.0723)	(0.225)	(0.149)	(0.0779)	(0.222)	(0.153)	(0.0836)	(0.212)	(0.163)	(0.0843)	(0.183)
P	-0.354*	-0.394*	-0.354***	-0.372	-0.379	-0.372***	-0.409	-0.427	-0.409***	-0.487	-0.503	-0.487***
	(0.206)	(0.219)	(0.0493)	(0.233)	(0.245)	(0.0502)	(0.258)	(0.269)	(0.0780)	(0.319)	(0.330)	(0.0599)
SPI	0.834**	0.805**	0.834***	0.540*	0.531*	0.540**	0.530*	0.518*	0.530*			
	(0.326)	(0.325)	(0.236)	(0.305)	(0.272)	(0.275)	(0.304)	(0.275)	(0.275)			
NT	0.0697	0.0773	0.0697	0.129	0.167**	0.129**						
	(0.132)	(0.120)	(0.113)	(0.0939)	(0.0692)	(0.0627)						
RT	-0.0763	-0.0248	-0.0763	0.165	0.207	0.165						
	(0.151)	(0.151)	(0.152)	(0.166)	(0.183)	(0.234)						
CPI exfe	-0.141	-0.229*	-0.141									
	(0.142)	(0.122)	(0.163)									
M1	0.300**	0.305**	0.300***									
	(0.140)	(0.126)	(0.0600)									
Observations	124	124	124	189	189	189	189	189	189	189	189	189
R-squared	0.672	0.702	0.672	0.615	0.647	0.615	0.609	0.637	0.609	0.581	0.609	0.581
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

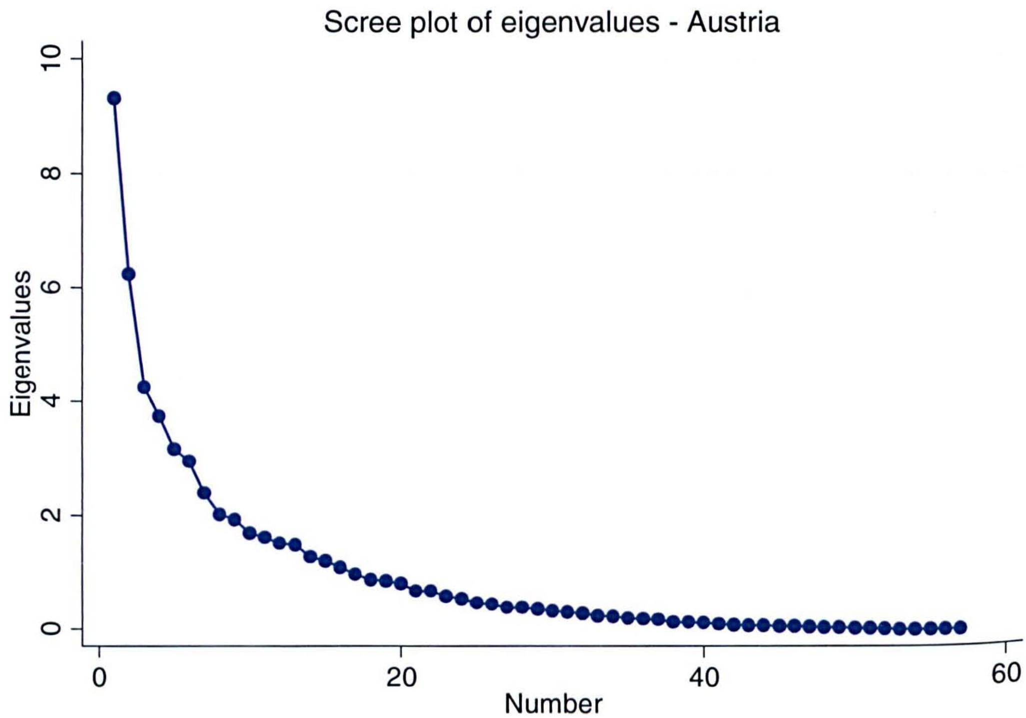
Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

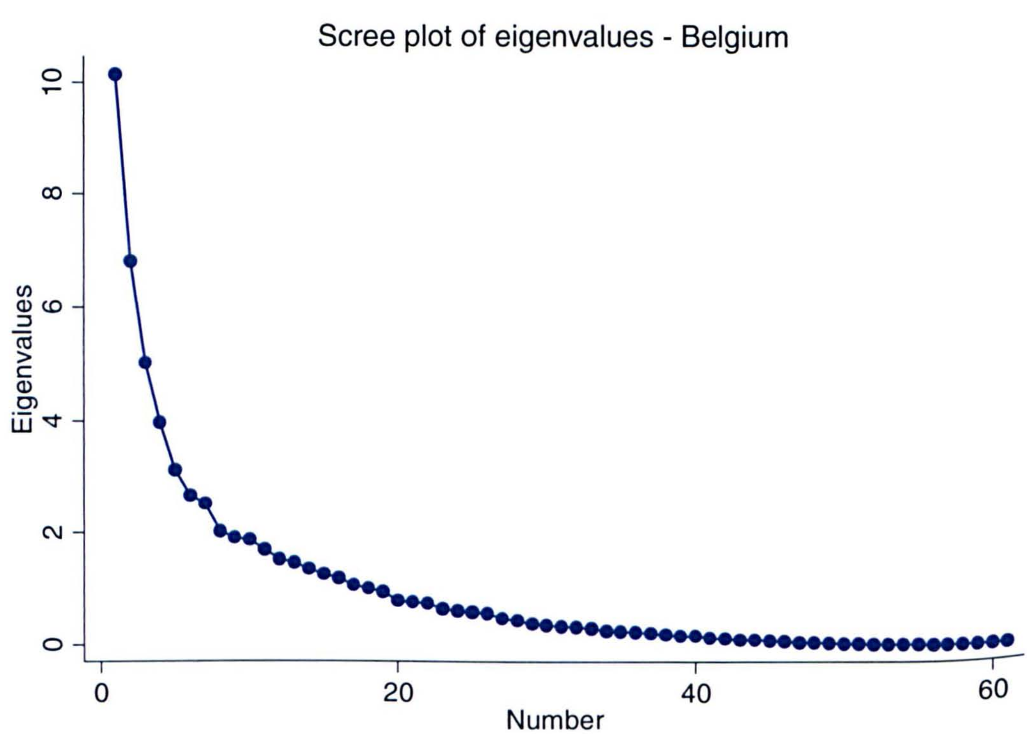
Table 6.29. The Excess Bond Premium and Real GDP Growth at 8-quarter horizon

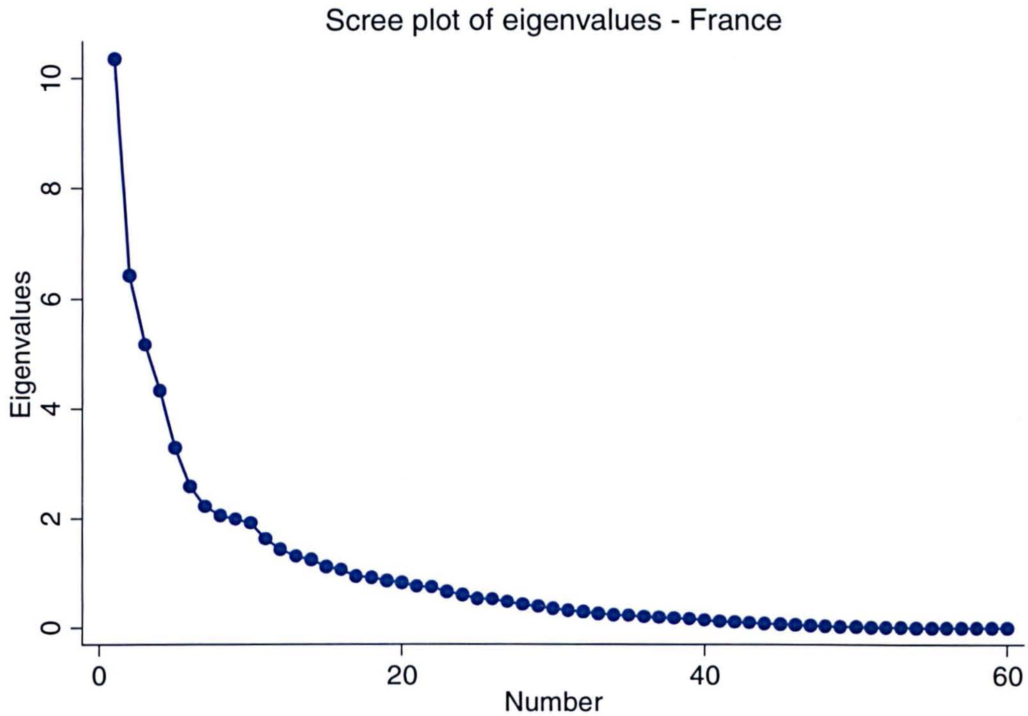
Real GDP 8-q	Panel 1			Panel 2			Panel 3			Panel 4		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3	OLS4	FE4	RE4
Predicted Spread	-0.308**	-0.419***	-0.308*	-0.218	-0.378**	-0.218	-0.198	-0.362***	-0.198	-0.193	-0.359***	-0.193
	(0.124)	(0.102)	(0.186)	(0.149)	(0.150)	(0.209)	(0.142)	(0.122)	(0.194)	(0.134)	(0.124)	(0.180)
EBP	-0.783***	-0.846***	-0.783***	-1.167***	-1.220***	-1.167***	-1.147***	-1.205***	-1.147***	-1.135***	-1.193***	-1.135***
	(0.0885)	(0.156)	(0.244)	(0.0811)	(0.115)	(0.334)	(0.0939)	(0.0965)	(0.322)	(0.0785)	(0.129)	(0.283)
IR	-1.496***	-1.535***	-1.496***	-1.407***	-1.448***	-1.407***	-1.404***	-1.446***	-1.404***	-1.398***	-1.440***	-1.398***
	(0.206)	(0.223)	(0.232)	(0.265)	(0.275)	(0.173)	(0.261)	(0.268)	(0.174)	(0.256)	(0.264)	(0.184)
ER	-0.403***	-0.380***	-0.403***	-0.152*	-0.114*	-0.152	-0.147**	-0.116**	-0.147	-0.149**	-0.117**	-0.149
	(0.0657)	(0.0716)	(0.108)	(0.0750)	(0.0654)	(0.181)	(0.0638)	(0.0559)	(0.158)	(0.0560)	(0.0518)	(0.153)
MR	-0.110	-0.105*	-0.110	0.0235	0.0170	0.0235	0.0376	0.0283	0.0376	0.0435	0.0350	0.0435
	(0.215)	(0.0555)	(0.183)	(0.171)	(0.0451)	(0.146)	(0.177)	(0.0506)	(0.148)	(0.157)	(0.0658)	(0.148)
P	-0.264***	-0.291***	-0.264***	-0.274***	-0.275**	-0.274***	-0.263**	-0.272**	-0.263***	-0.256***	-0.265***	-0.256***
	(0.0839)	(0.0642)	(0.0740)	(0.0989)	(0.111)	(0.0861)	(0.0970)	(0.102)	(0.0904)	(0.0639)	(0.0774)	(0.0640)
SPI	0.0724	0.0433	0.0724	-0.0340	-0.0345	-0.0340	-0.0367	-0.0384	-0.0367			
	(0.155)	(0.135)	(0.147)	(0.203)	(0.180)	(0.153)	(0.207)	(0.183)	(0.155)			
NT	-0.0439	-0.0707	-0.0439	0.0502	0.0517	0.0502						
	(0.118)	(0.0995)	(0.0622)	(0.0900)	(0.0790)	(0.0744)						
RT	-0.234**	-0.171*	-0.234*	-0.0860	-0.0440	-0.0860						
	(0.100)	(0.0964)	(0.122)	(0.147)	(0.146)	(0.131)						
CPI exfe	0.0541	-0.0262	0.0541									
	(0.0957)	(0.0673)	(0.0844)									
M1	0.214**	0.223***	0.214***									
	(0.0975)	(0.0760)	(0.0625)									
Observations	104	104	104	161	161	161	161	161	161	161	161	161
R-squared	0.653	0.726	0.653	0.587	0.638	0.587	0.585	0.637	0.585	0.584	0.637	0.584
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000			0.000

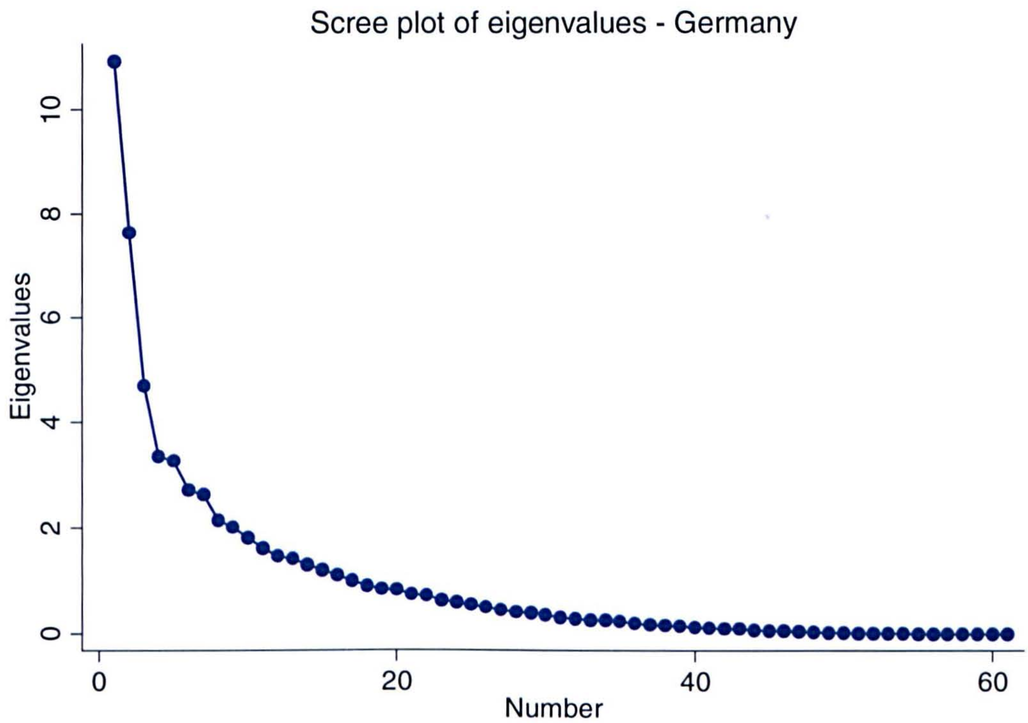
Note: Sample period: Sept 2001 – Aug 2010. Panel 1 has 5 country groups while Panels 2-4 have 7 countries. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

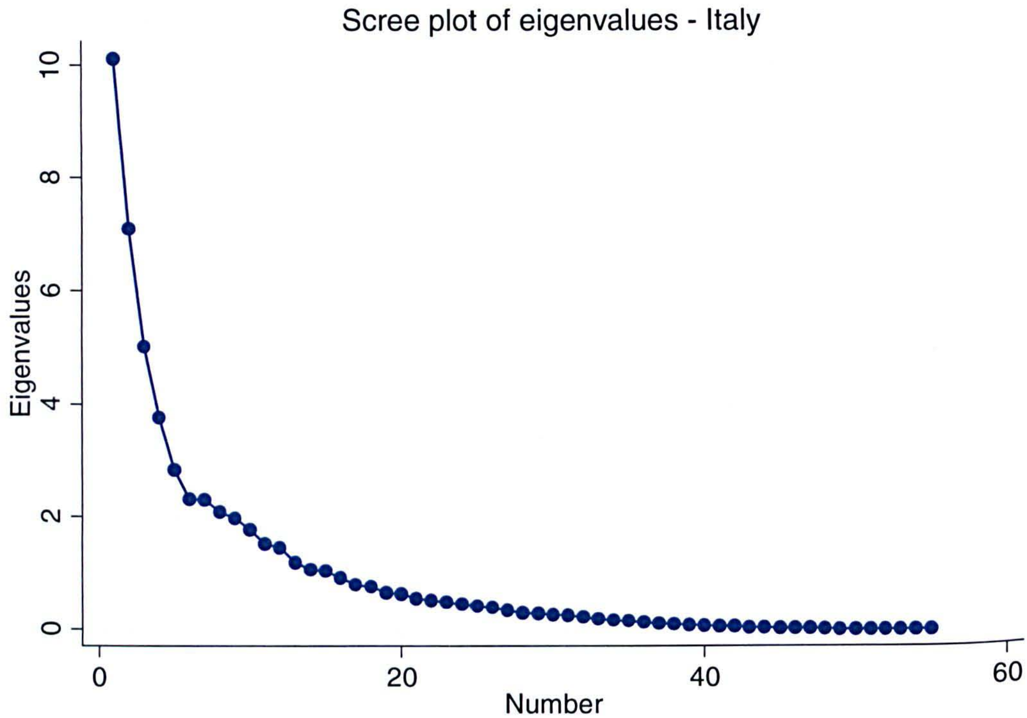
F. Scree plots by country (excluding interest rates)

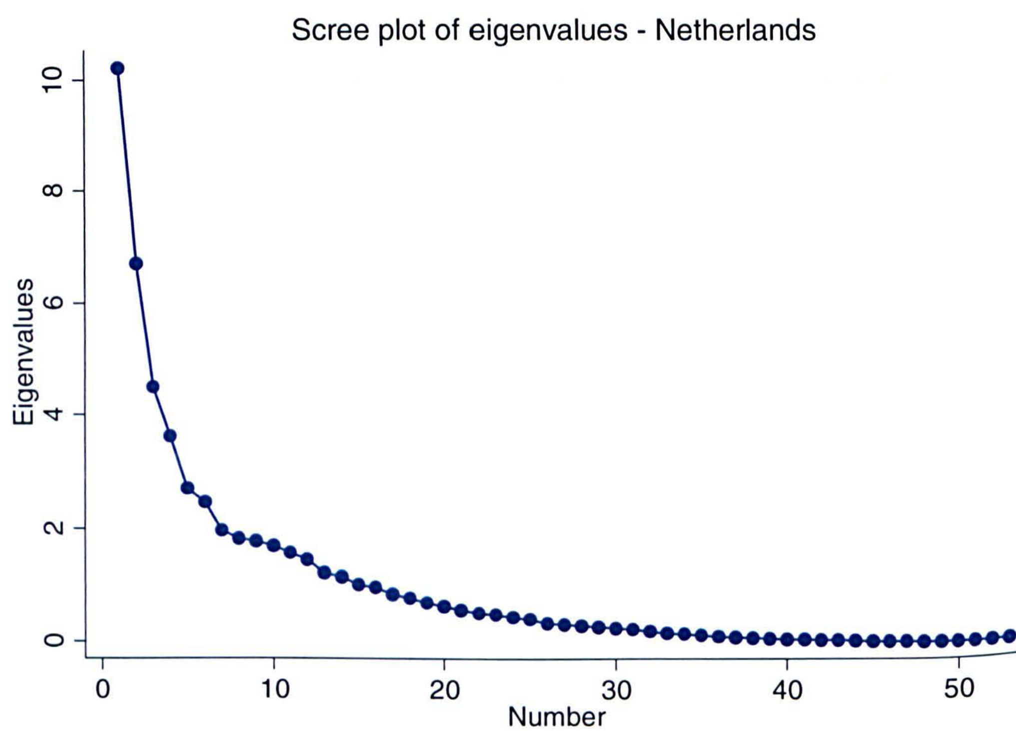




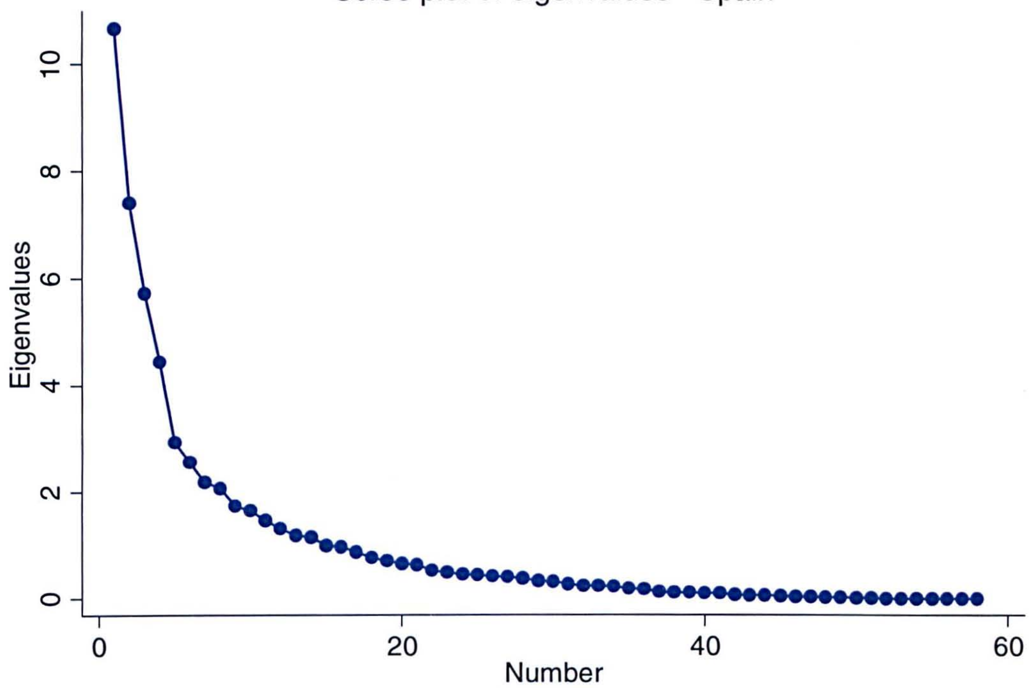

Scree plot of eigenvalues - France
Eigenvalues
0
2
4
6
8
10
0
20
40
60
Number


Scree plot of eigenvalues - Germany
Eigenvalues
0
2
4
6
8
10
0
20
40
60
Number

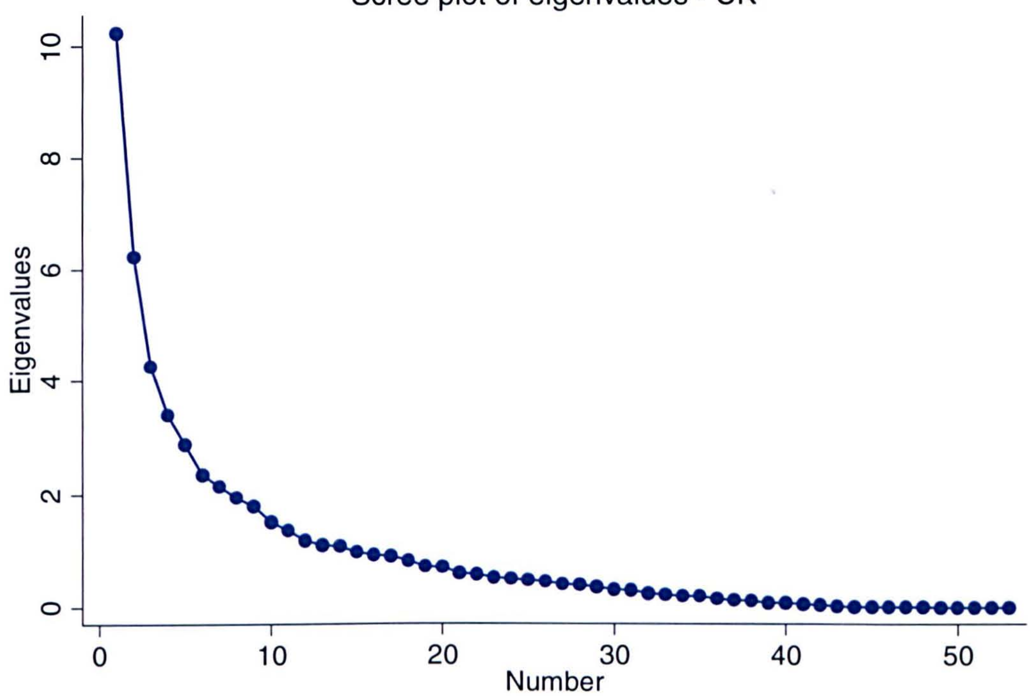

Scree plot of eigenvalues - Italy
Eigenvalues
0
2
4
6
8
10
0
20
40
60
Number


Scree plot of eigenvalues - Netherlands
Eigenvalues
0
2
4
6
8
10
0
10
20
30
40
50
Number

Scree plot of eigenvalues - Spain



Scree plot of eigenvalues - UK



G. *Tables of Eigenvalues by country (excluding interest rates)*

AT	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	9.3123	3.0600	0.1634	0.1634	1.4894
Factor2	6.2523	1.9910	0.1097	0.2731	1.4672
Factor3	4.2614	0.5102	0.0748	0.3478	1.1360
Factor4	3.7512	0.5766	0.0658	0.4136	1.1816
Factor5	3.1746	0.2112	0.0557	0.4693	1.0713
Factor6	2.9634	0.5601	0.0520	0.5213	1.2331
Factor7	2.4033	0.3720	0.0422	0.5635	1.1831
Factor8	2.0313	0.0867	0.0356	0.5991	1.0446
Factor9	1.9446	0.2418	0.0341	0.6332	1.1420
Factor10	1.7029	0.0825	0.0299	0.6631	1.0509
Factor11	1.6204	0.1007	0.0284	0.6915	1.0662
Factor12	1.5197	0.0232	0.0267	0.7182	1.0155
Factor13	1.4966	0.2106	0.0263	0.7445	1.1637
Factor14	1.2860	0.0709	0.0226	0.7670	1.0584
Factor15	1.2151	0.1115	0.0213	0.7883	1.1010
Factor16	1.1036	0.1300	0.0194	0.8077	

BE	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.1505	3.3416	0.1664	0.1664	1.4908
Factor2	6.8089	1.7875	0.1116	0.2780	1.3560
Factor3	5.0213	1.0477	0.0823	0.3603	1.2637
Factor4	3.9736	0.8585	0.0651	0.4255	1.2756
Factor5	3.1151	0.4564	0.0511	0.4765	1.1717
Factor6	2.6586	0.1486	0.0436	0.5201	1.0592
Factor7	2.5101	0.4979	0.0411	0.5613	1.2475
Factor8	2.0121	0.1173	0.0330	0.5943	1.0619
Factor9	1.8948	0.0336	0.0311	0.6253	1.0181
Factor10	1.8612	0.1717	0.0305	0.6558	1.1016
Factor11	1.6895	0.1721	0.0277	0.6835	1.1134
Factor12	1.5174	0.0563	0.0249	0.7084	1.0385
Factor13	1.4611	0.1100	0.0240	0.7324	1.0814
Factor14	1.3510	0.0998	0.0221	0.7545	1.0797
Factor15	1.2513	0.0638	0.0205	0.7750	1.0537
Factor16	1.1875	0.1322	0.0195	0.7945	1.1253
Factor17	1.0553	0.0548	0.0173	0.8118	1.0548
Factor18	1.0005	0.0584	0.0164	0.8282	

DE	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.9163	3.2733	0.1790	0.1790	1.4283
Factor2	7.6430	2.9478	0.1253	0.3042	1.6278
Factor3	4.6952	1.3414	0.0770	0.3812	1.4000
Factor4	3.3538	0.0871	0.0550	0.4362	1.0266
Factor5	3.2668	0.5499	0.0536	0.4898	1.2024
Factor6	2.7169	0.0876	0.0445	0.5343	1.0333
Factor7	2.6293	0.4889	0.0431	0.5774	1.2284
Factor8	2.1403	0.1316	0.0351	0.6125	1.0655
Factor9	2.0088	0.1973	0.0329	0.6454	1.1089
Factor10	1.8115	0.2007	0.0297	0.6751	1.1246
Factor11	1.6108	0.1478	0.0264	0.7015	1.1010
Factor12	1.4630	0.0559	0.0240	0.7255	1.0397
Factor13	1.4072	0.1097	0.0231	0.7486	1.0846
Factor14	1.2975	0.1013	0.0213	0.7698	1.0847
Factor15	1.1961	0.0947	0.0196	0.7894	1.0859
Factor16	1.1015	0.1002	0.0181	0.8075	1.1000
Factor17	1.0013	0.1033	0.0164	0.8239	

FR	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.3549	3.9141	0.1726	0.1726	1.6077
Factor2	6.4408	1.2616	0.1073	0.2799	1.2436
Factor3	5.1791	0.8338	0.0863	0.3662	1.1919
Factor4	4.3454	1.0459	0.0724	0.4387	1.3170
Factor5	3.2995	0.7005	0.0550	0.4937	1.2695
Factor6	2.5989	0.3758	0.0433	0.5370	1.1690
Factor7	2.2232	0.1726	0.0371	0.5740	1.0842
Factor8	2.0506	0.0702	0.0342	0.6082	1.0354
Factor9	1.9804	0.0639	0.0330	0.6412	1.0333
Factor10	1.9165	0.2910	0.0319	0.6732	1.1791
Factor11	1.6254	0.1946	0.0271	0.7002	1.1360
Factor12	1.4309	0.1322	0.0238	0.7241	1.1018
Factor13	1.2987	0.0551	0.0216	0.7457	1.0443
Factor14	1.2435	0.1337	0.0207	0.7665	1.1205
Factor15	1.1098	0.0479	0.0185	0.7850	1.0451
Factor16	1.0619	0.1233	0.0177	0.8027	

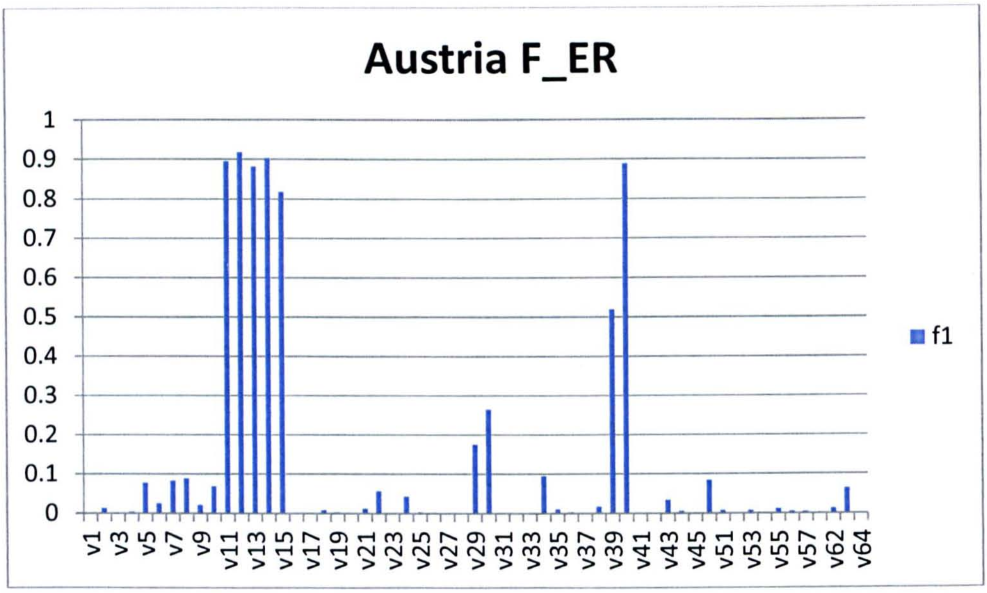
IT	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.1212	3.0244	0.1840	0.1840	1.4262
Factor2	7.0969	2.0772	0.1290	0.3131	1.4138
Factor3	5.0196	1.2515	0.0913	0.4043	1.3321
Factor4	3.7681	0.9284	0.0685	0.4728	1.3270
Factor5	2.8397	0.5186	0.0516	0.5245	1.2234
Factor6	2.3211	0.0187	0.0422	0.5667	1.0081
Factor7	2.3024	0.2102	0.0419	0.6085	1.1005
Factor8	2.0922	0.1173	0.0380	0.6466	1.0594
Factor9	1.9749	0.2128	0.0359	0.6825	1.1208
Factor10	1.7620	0.2417	0.0320	0.7145	1.1590
Factor11	1.5203	0.0721	0.0276	0.7422	1.0498
Factor12	1.4482	0.2715	0.0263	0.7685	1.2307
Factor13	1.1767	0.1176	0.0214	0.7899	1.1110
Factor14	1.0591	0.0219	0.0193	0.8091	1.0212
Factor15	1.0372	0.1208	0.0189	0.8280	

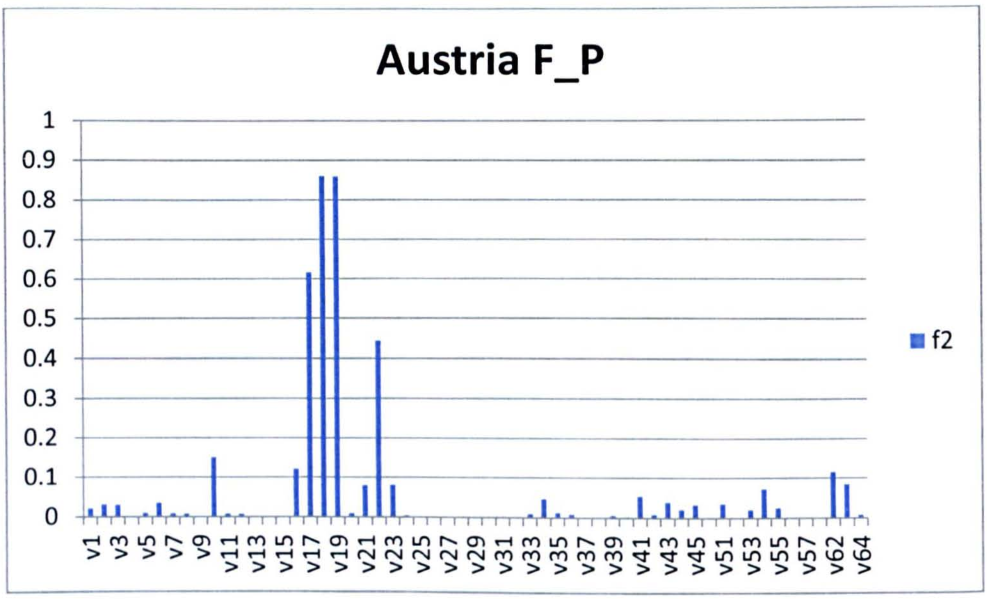
NL	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.2263	3.5047	0.1929	0.1929	1.5214
Factor2	6.7216	2.2245	0.1268	0.3198	1.4946
Factor3	4.4972	0.8782	0.0849	0.4046	1.2427
Factor4	3.6190	0.9156	0.0683	0.4729	1.3387
Factor5	2.7034	0.2399	0.0510	0.5239	1.0974
Factor6	2.4635	0.5044	0.0465	0.5704	1.2575
Factor7	1.9591	0.1423	0.0370	0.6074	1.0783
Factor8	1.8168	0.0455	0.0343	0.6416	1.0257
Factor9	1.7713	0.0809	0.0334	0.6751	1.0478
Factor10	1.6905	0.1248	0.0319	0.7070	1.0797
Factor11	1.5657	0.1179	0.0295	0.7365	1.0814
Factor12	1.4478	0.2255	0.0273	0.7638	1.1845
Factor13	1.2222	0.0706	0.0231	0.7869	1.0613
Factor14	1.1517	0.1376	0.0217	0.8086	1.1357
Factor15	1.0141	0.0564	0.0191	0.8277	

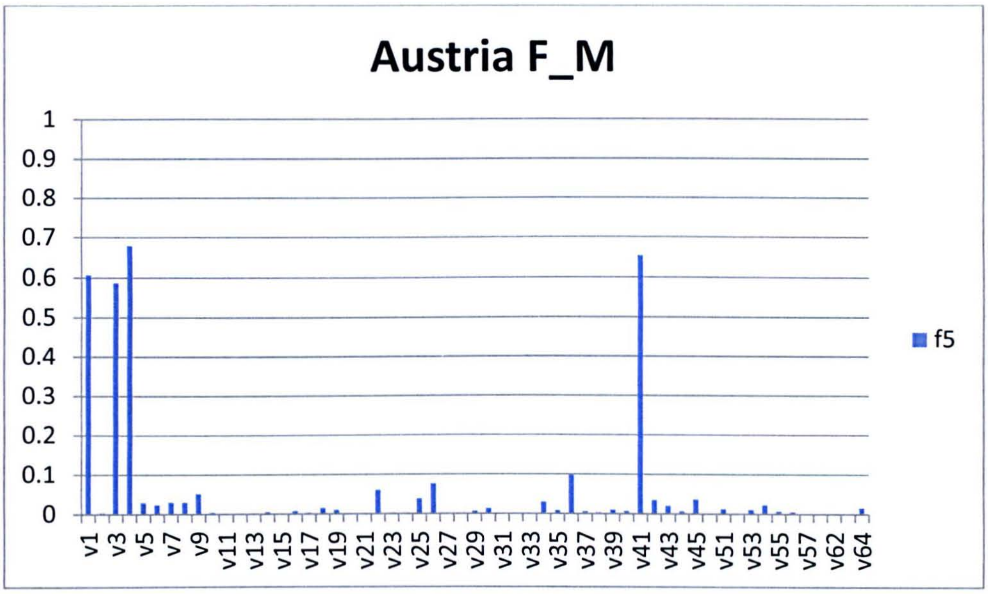
SP	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.6687	3.2532	0.1839	0.1839	1.4387
Factor2	7.4155	1.6793	0.1279	0.3118	1.2927
Factor3	5.7363	1.2801	0.0989	0.4107	1.2873
Factor4	4.4562	1.5192	0.0768	0.4875	1.5172
Factor5	2.9370	0.3721	0.0506	0.5382	1.1451
Factor6	2.5649	0.3695	0.0442	0.5824	1.1683
Factor7	2.1954	0.1295	0.0379	0.6202	1.0627
Factor8	2.0659	0.3397	0.0356	0.6559	1.1968
Factor9	1.7262	0.0830	0.0298	0.6856	1.0505
Factor10	1.6432	0.1831	0.0283	0.7140	1.1254
Factor11	1.4600	0.1595	0.0252	0.7391	1.1226
Factor12	1.3006	0.1155	0.0224	0.7615	1.0975
Factor13	1.1851	0.0410	0.0204	0.7820	1.0358
Factor14	1.1441	0.1478	0.0197	0.8017	

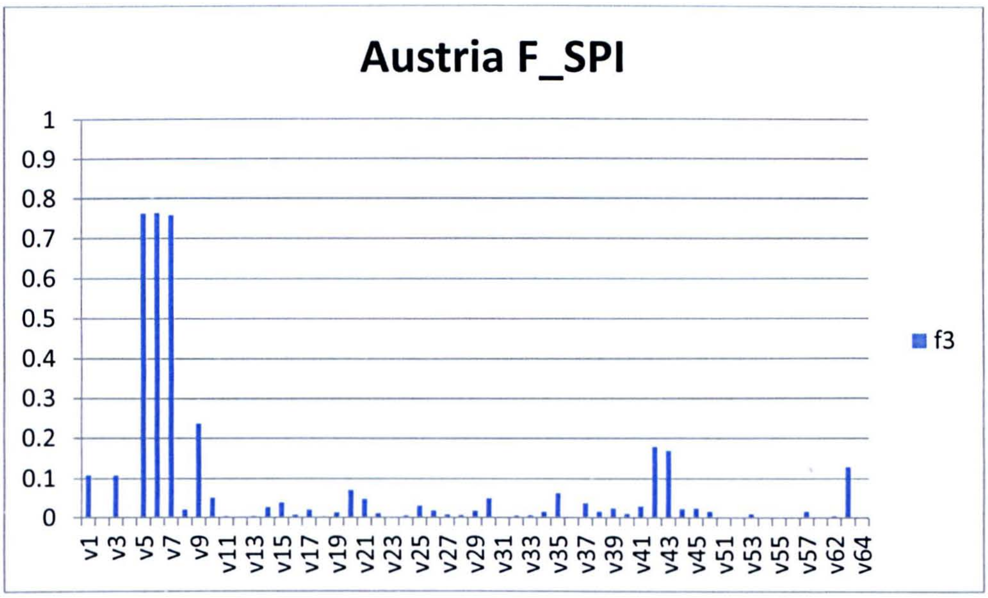
UK	Eigenvalue	Difference	Proportion	Cumulative	Criteria
Factor1	10.2368	4.0136	0.1931	0.1931	1.6449
Factor2	6.2232	1.9698	0.1174	0.3106	1.4631
Factor3	4.2535	0.8458	0.0803	0.3908	1.2482
Factor4	3.4076	0.5227	0.0643	0.4551	1.1812
Factor5	2.8849	0.5360	0.0544	0.5095	1.2282
Factor6	2.3490	0.2092	0.0443	0.5539	1.0978
Factor7	2.1397	0.2015	0.0404	0.5942	1.1040
Factor8	1.9382	0.1517	0.0366	0.6308	1.0849
Factor9	1.7866	0.2809	0.0337	0.6645	1.1866
Factor10	1.5056	0.1528	0.0284	0.6929	1.1129
Factor11	1.3529	0.1700	0.0255	0.7185	1.1437
Factor12	1.1829	0.0809	0.0223	0.7408	1.0734
Factor13	1.1019	0.0194	0.0208	0.7616	1.0179
Factor14	1.0825	0.1059	0.0204	0.7820	

H. Graphs of squared factor loadings of each variable by country (excluding interest rates)






Austria F_M
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
v1 v3 v5 v7 v9 v11 v13 v15 v17 v19 v21 v23 v25 v27 v29 v31 v33 v35 v37 v39 v41 v43 v45 v51 v53 v55 v57 v62 v64
f5


Austria F_SPI
1
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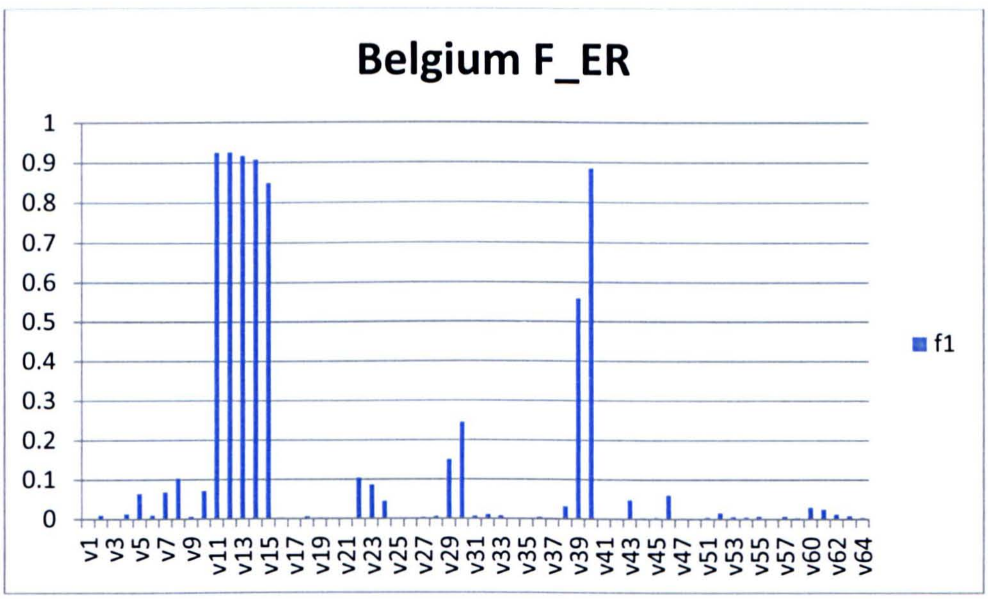
0.6
0.5
0.4
0.3
0.2
0.1
0
v1 v3 v5 v7 v9 v11 v13 v15 v17 v19 v21 v23 v25 v27 v29 v31 v33 v35 v37 v39 v41 v43 v45 v51 v53 v55 v57 v62 v64
f3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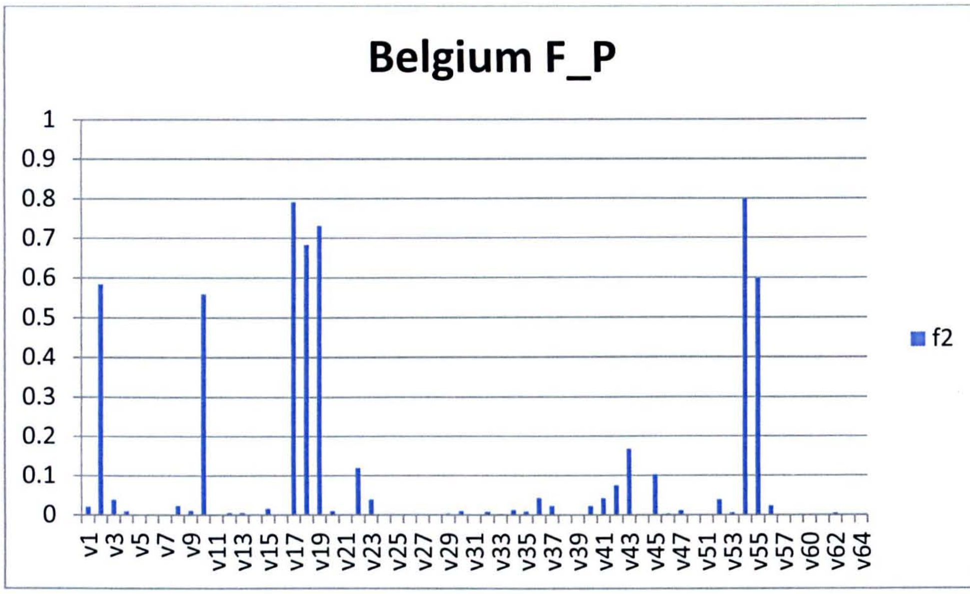
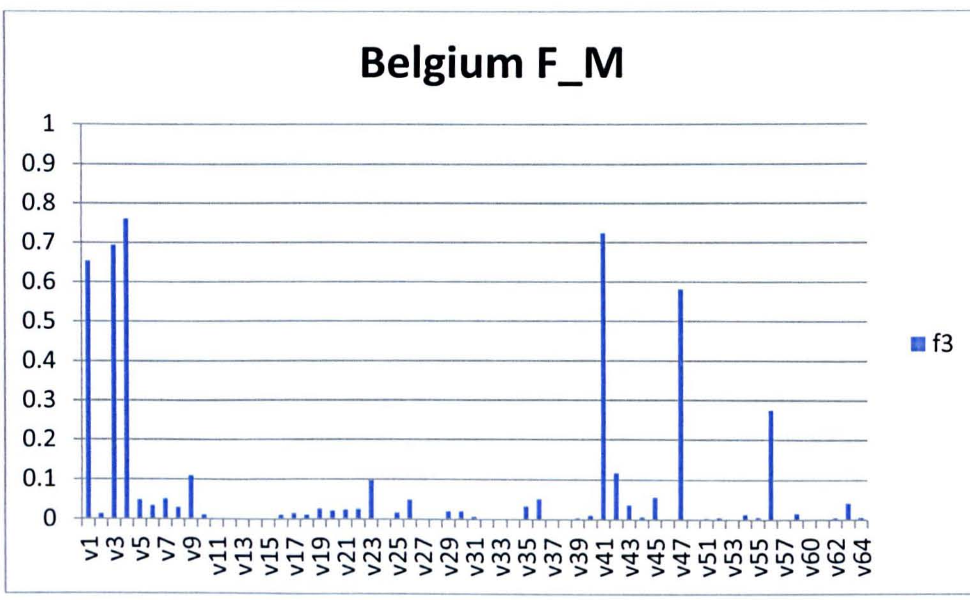
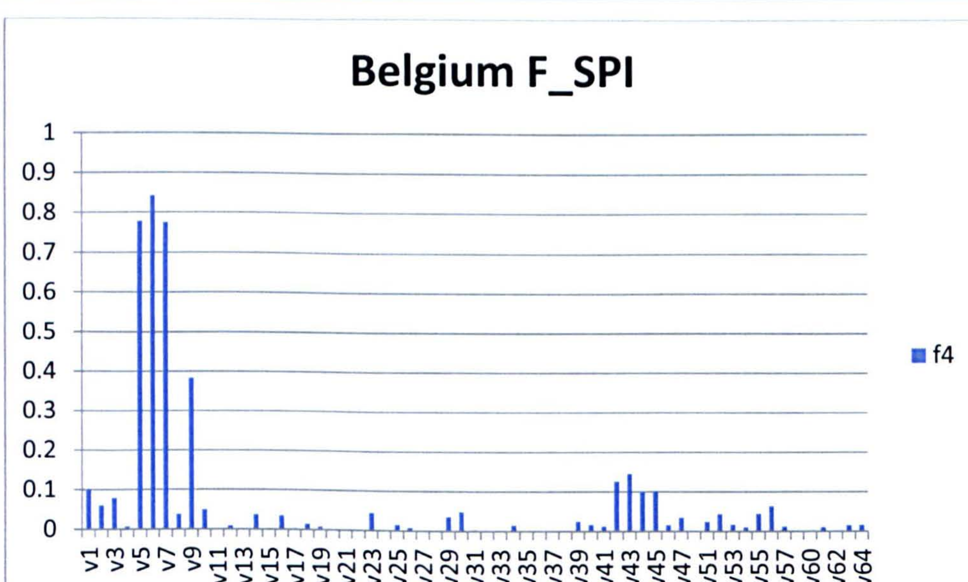
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
v1 v3 v5 v7 v9 v11 v13 v15 v17 v19 v21 v23 v25 v27 v29 v31 v33 v35 v37 v39 v41 v43 v45 v47 v51 v53 v55 v57 v60 v62 v64
f1



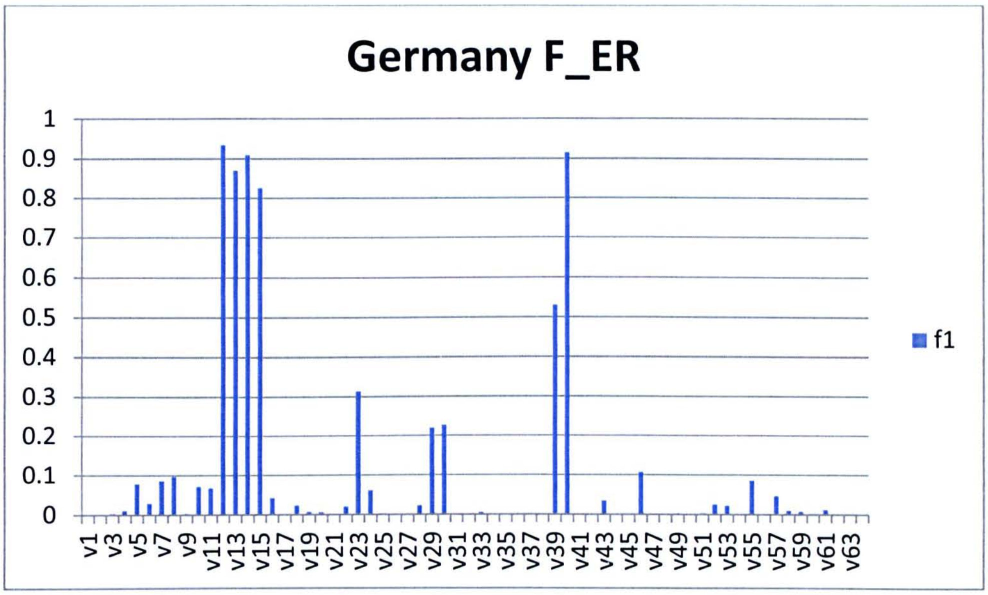
Belgium F_P
f2



Belgium F_M
f3



Belgium F_SPI
f4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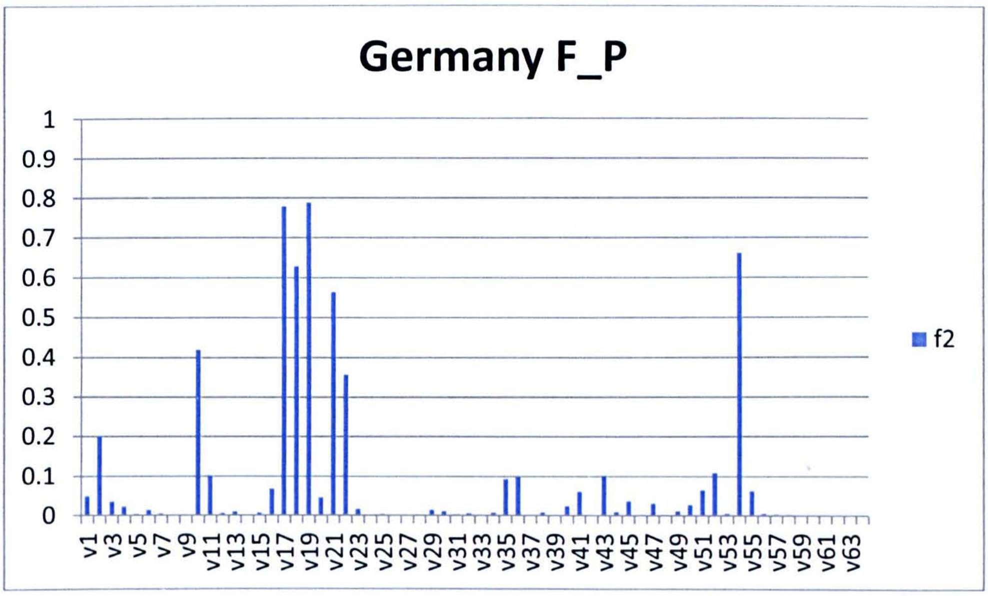
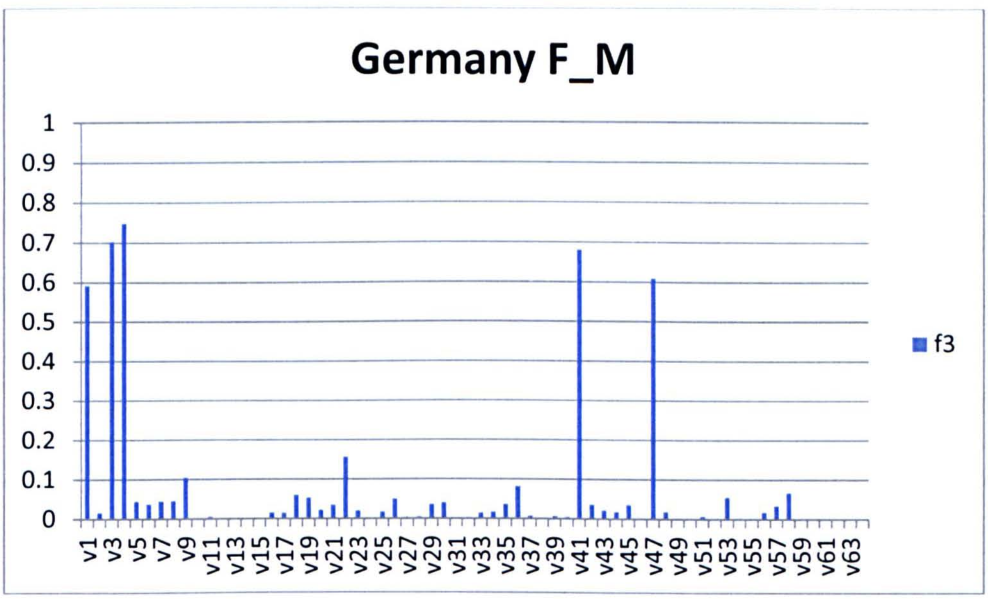
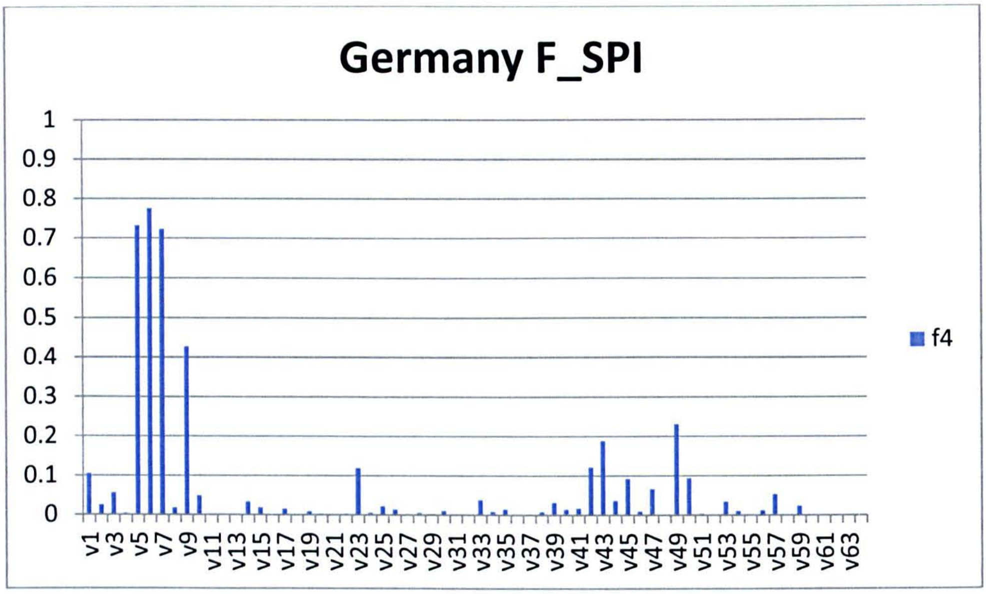
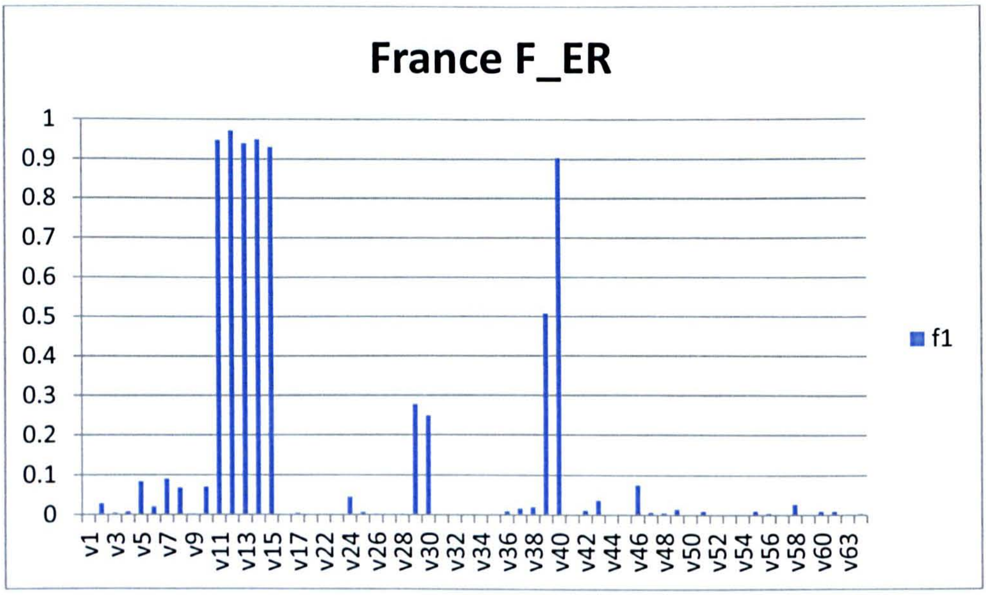
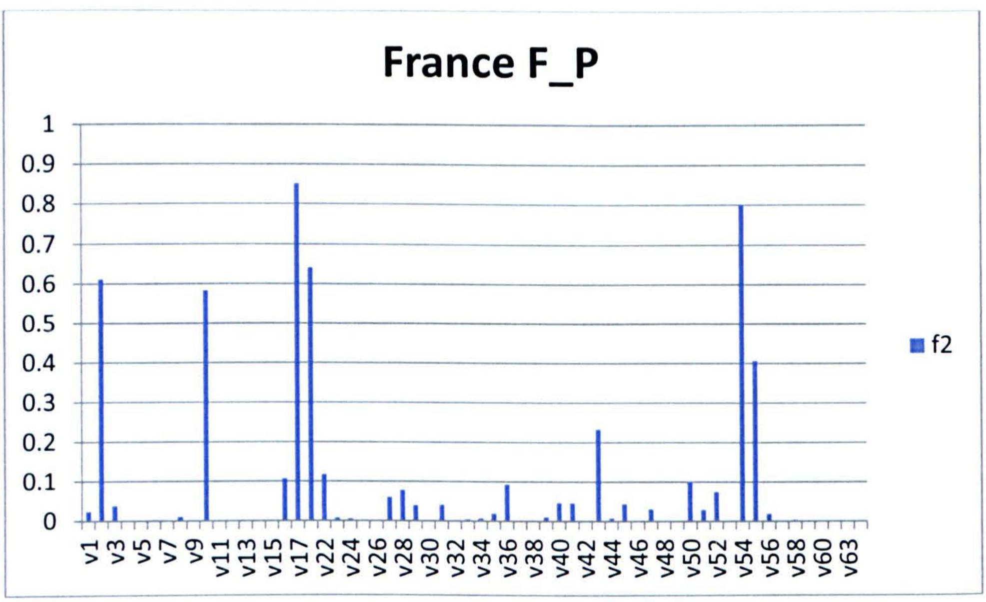
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
v1 v3 v5 v7 v9 v11 v13 v15 v17 v19 v21 v23 v25 v27 v29 v31 v33 v35 v37 v39 v41 v43 v45 v47 v49 v51 v53 v55 v57 v59 v61 v63
f1

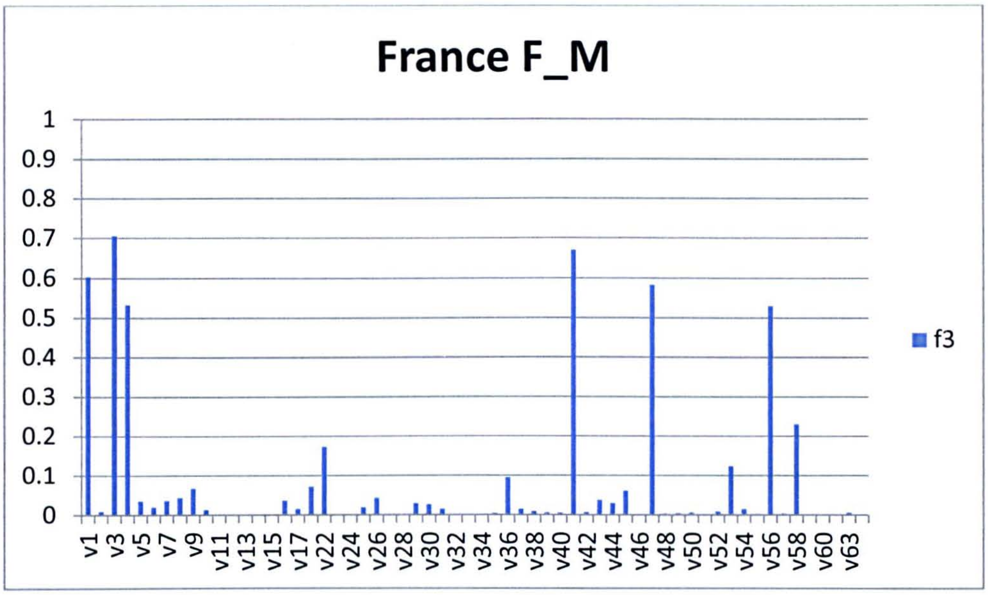

Germany F_P
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
v1 v3 v5 v7 v9 v11 v13 v15 v17 v19 v21 v23 v25 v27 v29 v31 v33 v35 v37 v39 v41 v43 v45 v47 v49 v51 v53 v55 v57 v59 v61 v63
f2


Germany F_M
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
v1 v3 v5 v7 v9 v11 v13 v15 v17 v19 v21 v23 v25 v27 v29 v31 v33 v35 v37 v39 v41 v43 v45 v47 v49 v51 v53 v55 v57 v59 v61 v63
f3


Germany F_SPI
f4


France F_ER
f1


France F_P
f2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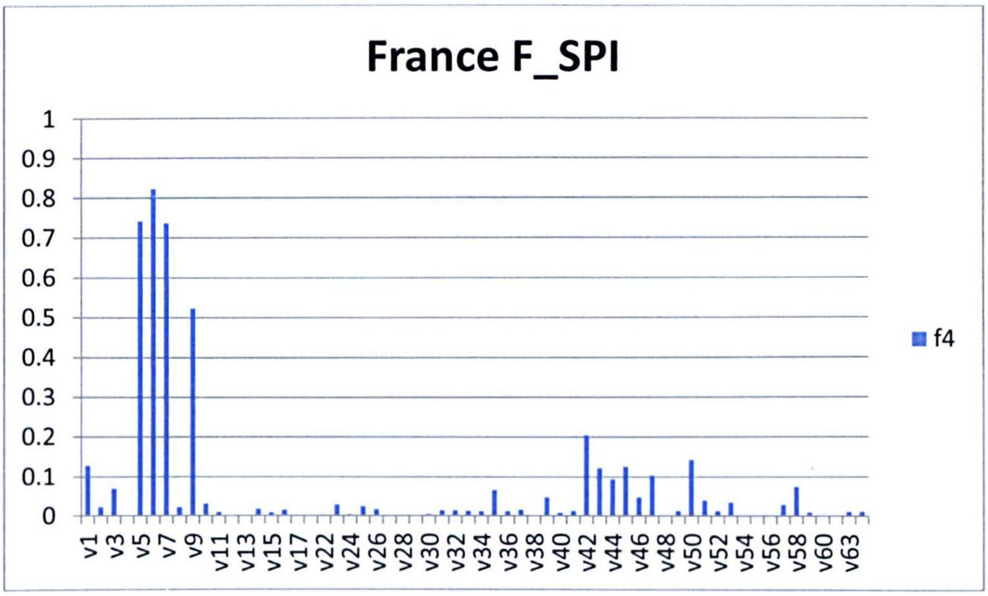
f3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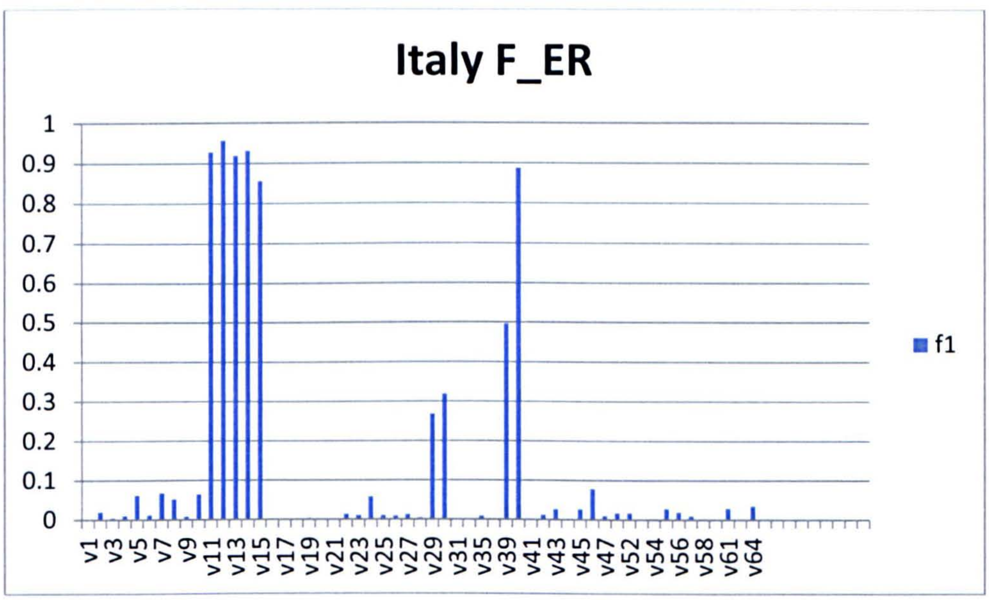
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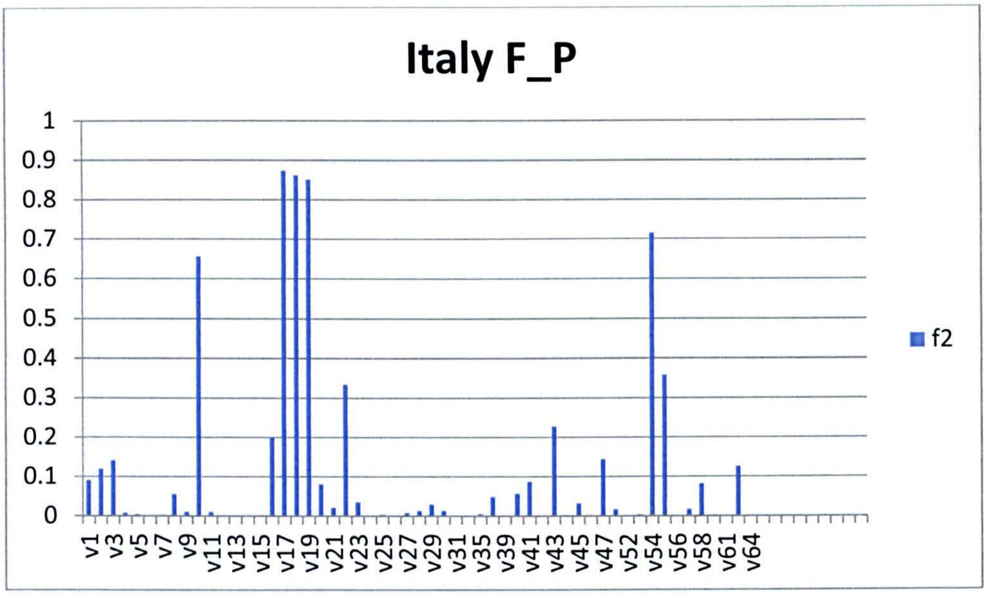
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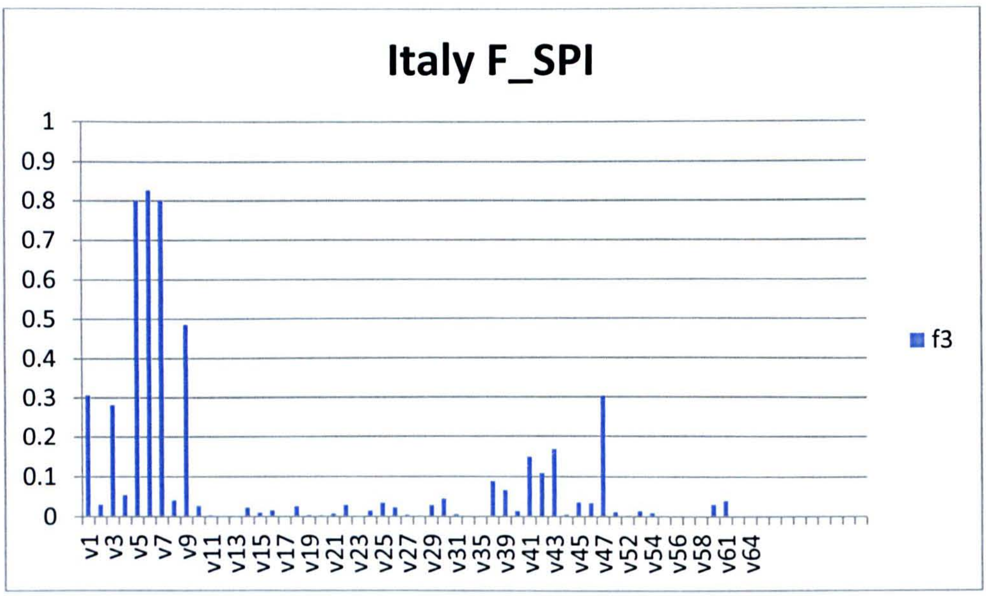
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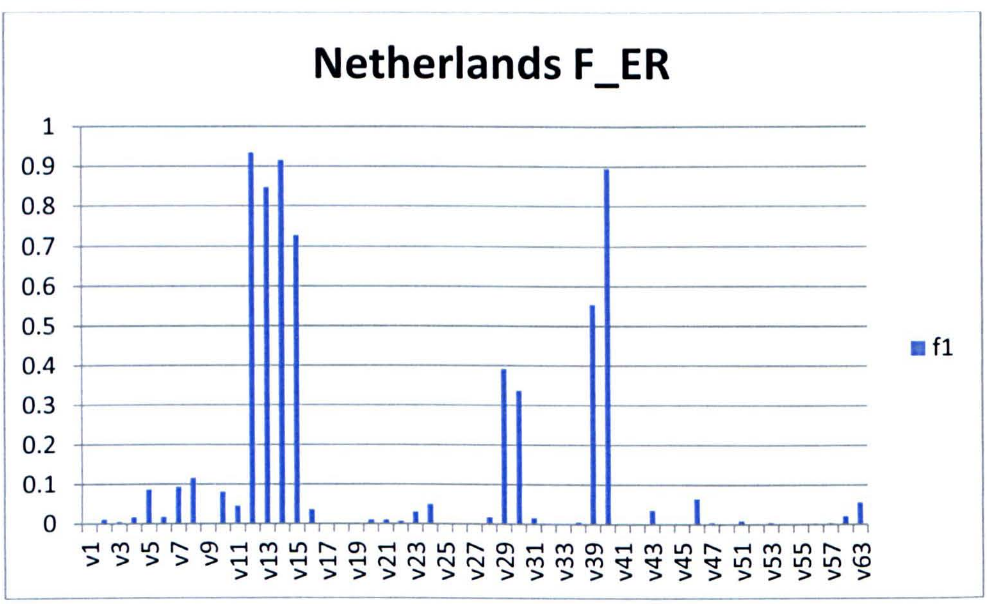
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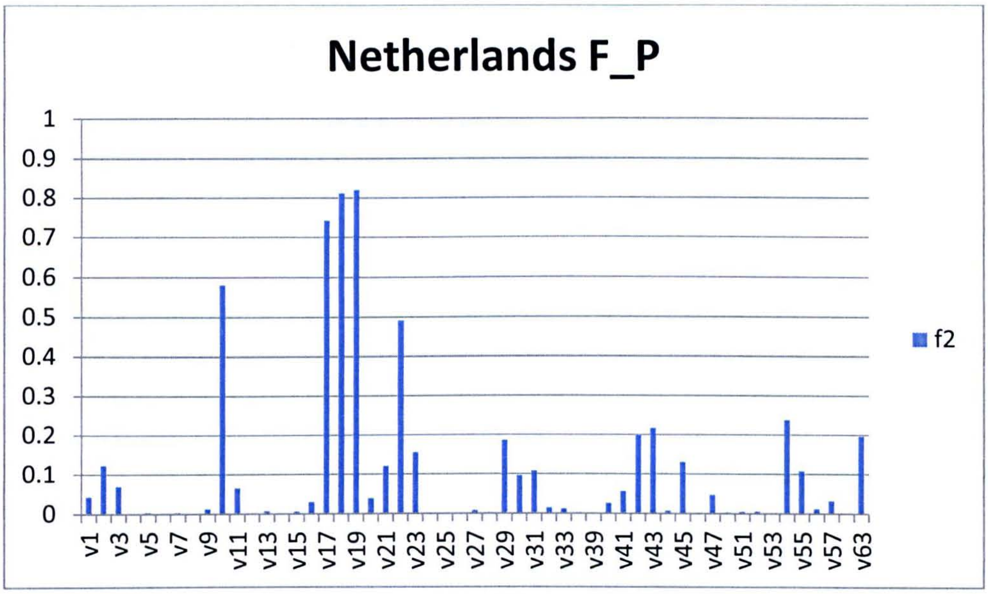
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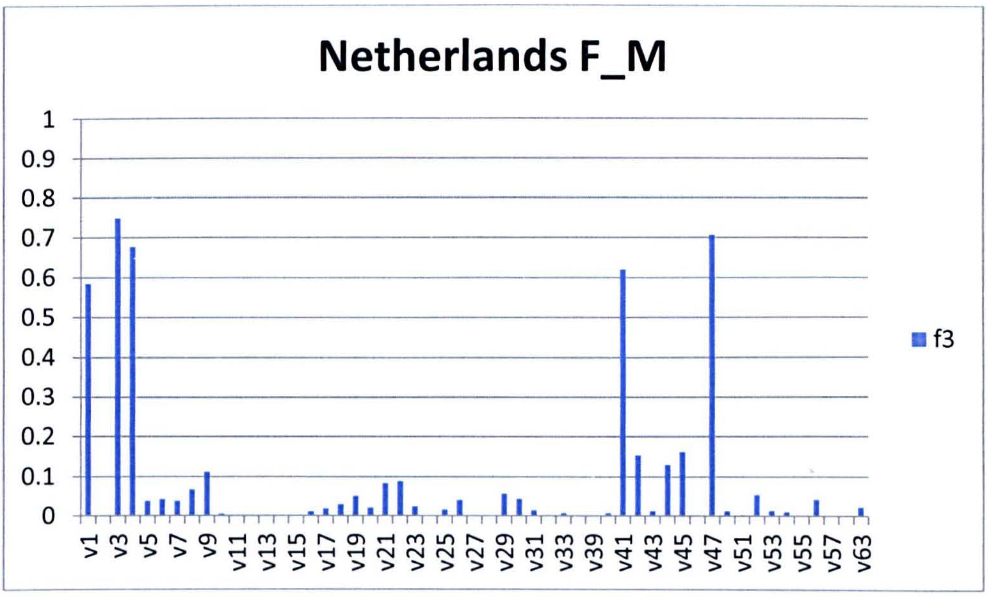
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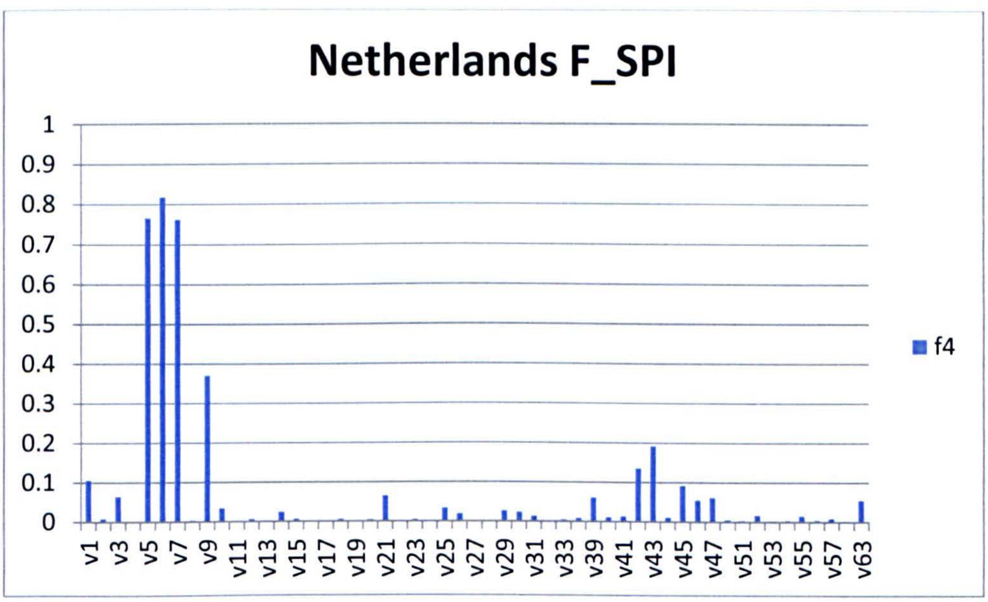
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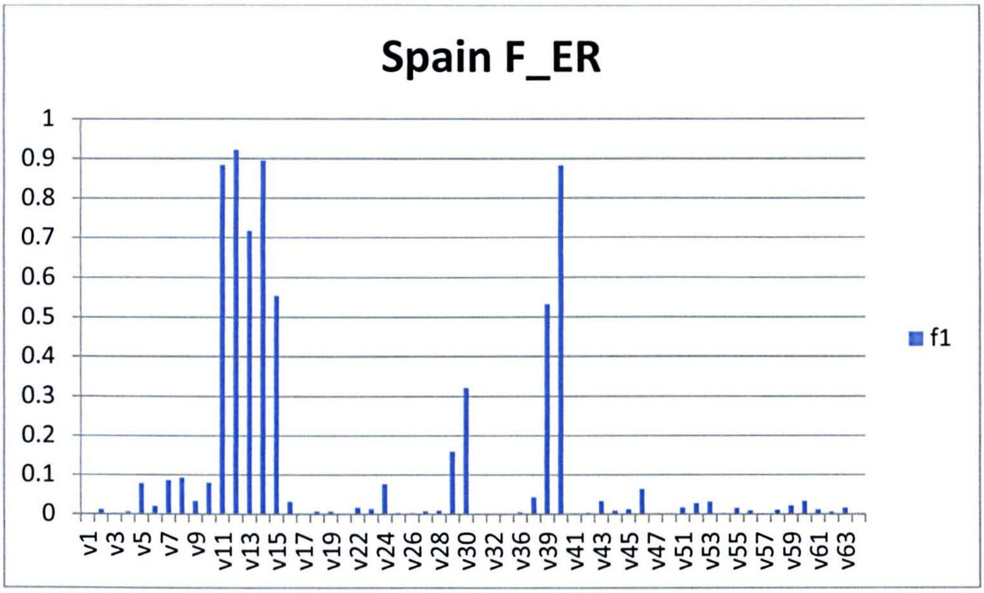
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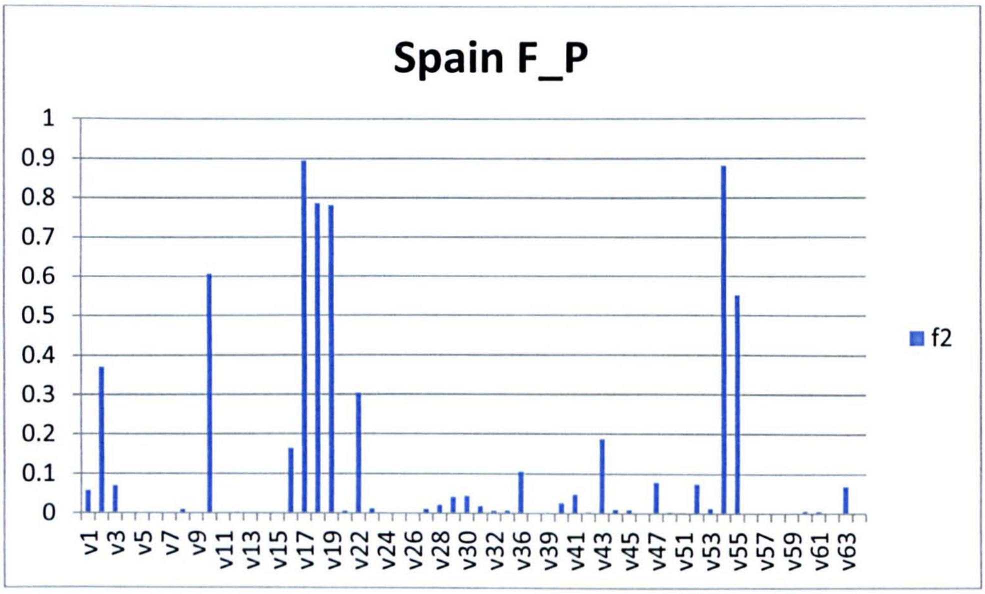
f1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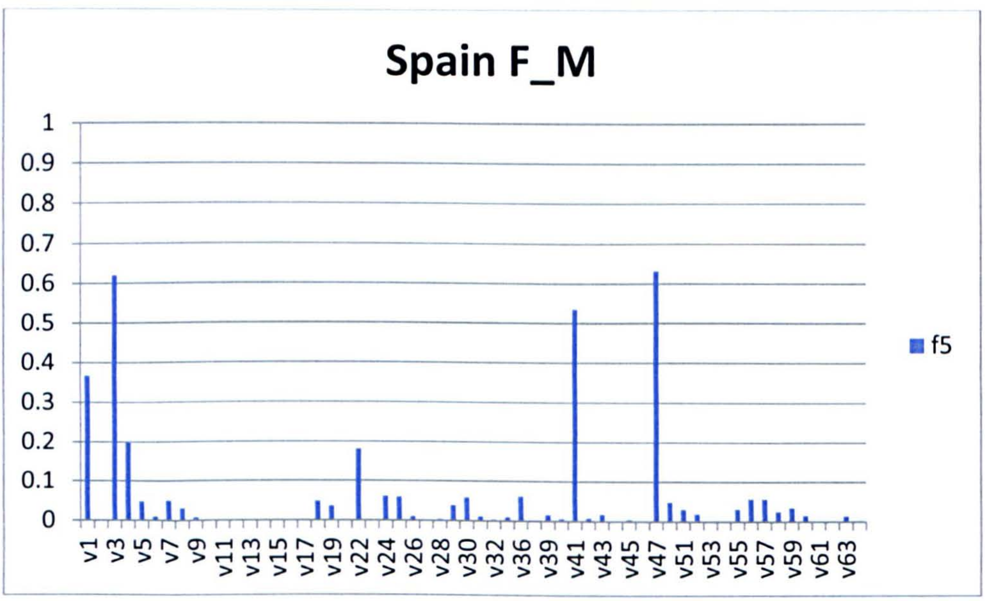
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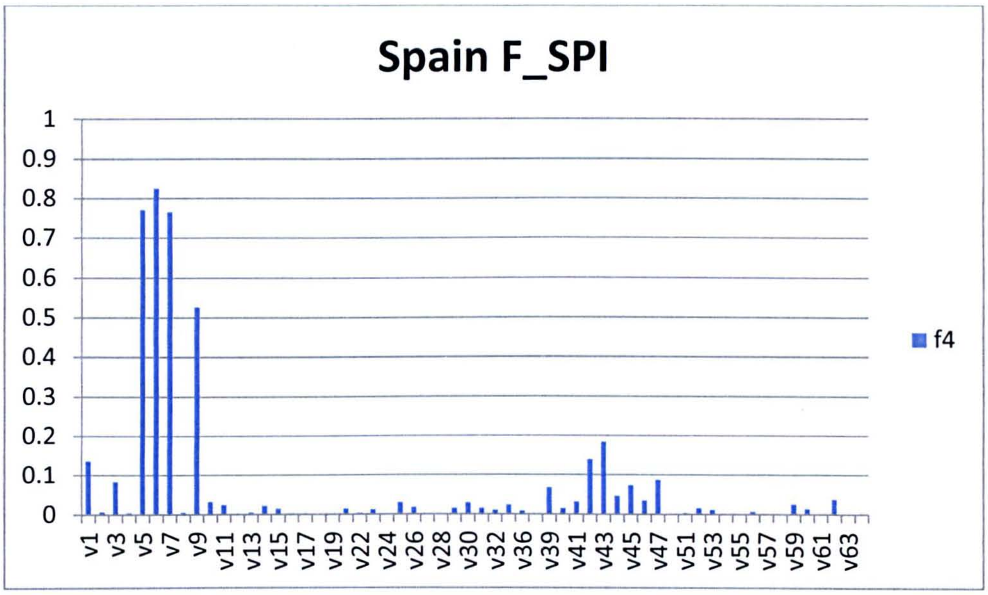
f5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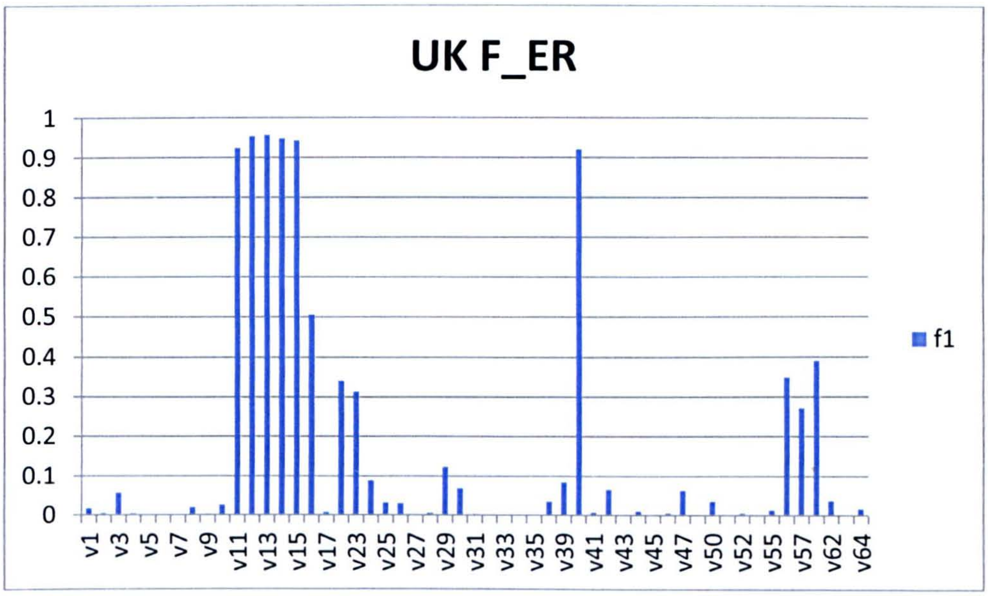
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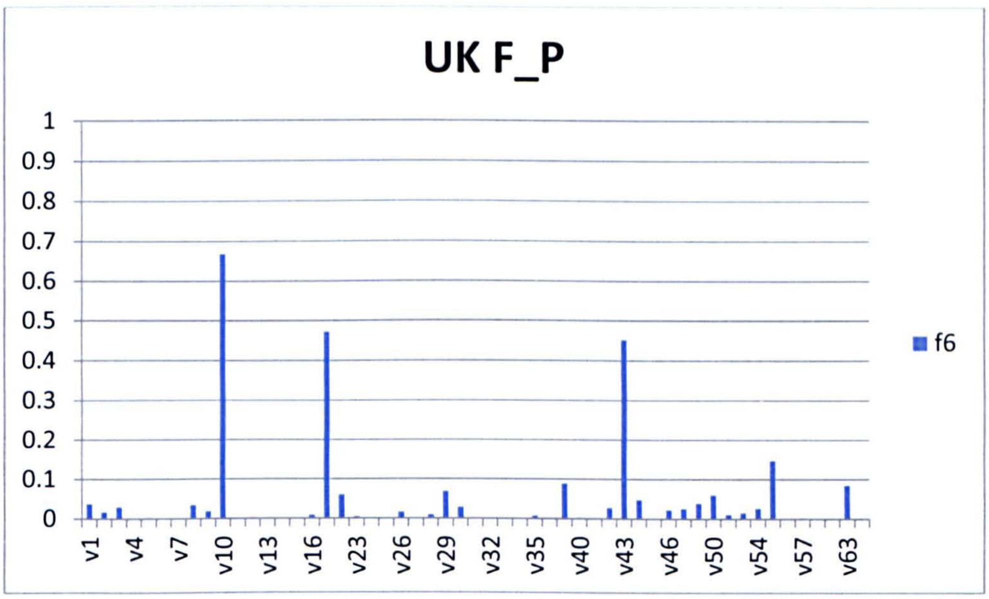
UK F_P
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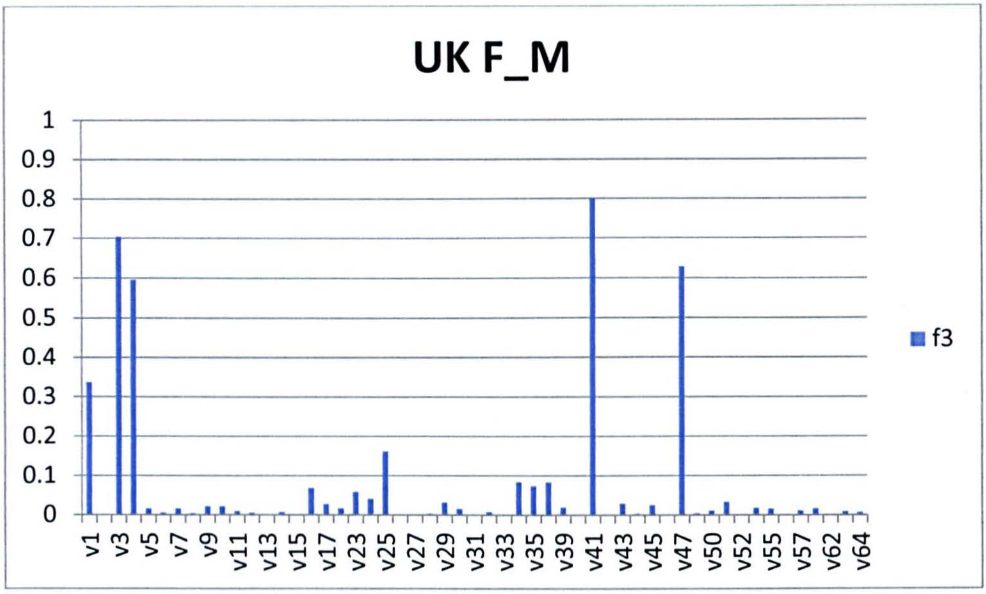
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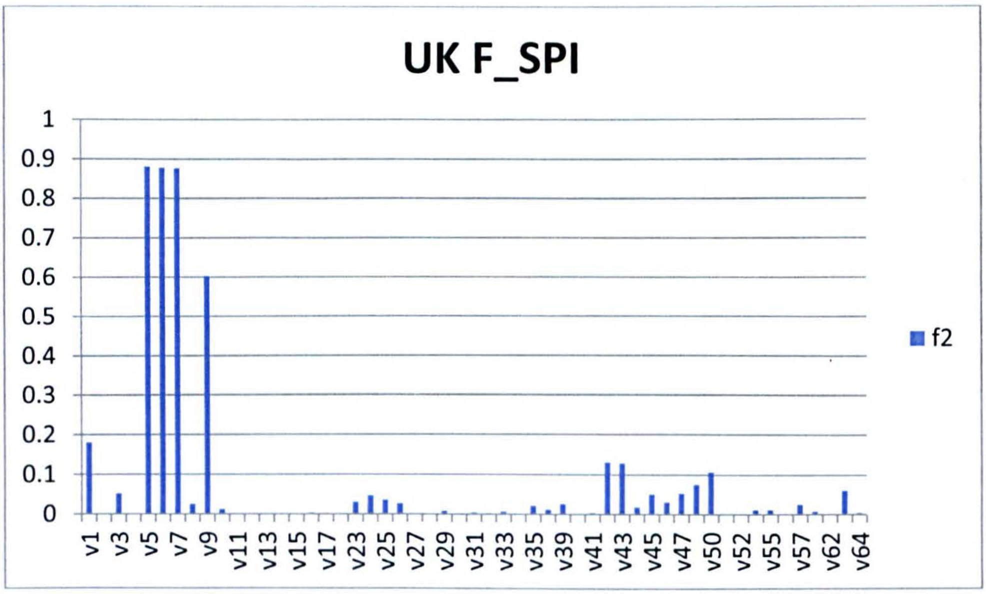
f3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v1 v3 v5 v7 v9 v11 v13 v15 v17 v23 v25 v27 v29 v31 v33 v35 v39 v41 v43 v45 v47 v50 v52 v55 v57 v62 v64
f2

List of Variables by number (excluding interest rates)

Number	Variable name	Number	Variable name	Number	Variable name
v1	VIX	v23	PPI_investgoods	v45	Econ Sent
v2	HICP	v24	M1	v46	Gold price
v3	LIBOR-OIS	v25	M2	v47	Ted_spread
v4	CDS 5y	v26	M3	v48	Constr_permits
v5	Wilshire	v27	Net trade_natcur	v49	PMI_services
v6	Eurostoxx	v28	Net trade_$	v50	PMI_manuf
v7	S&P500	v29	Imports	v51	CPI_exfoodenrg
v8	Baltic Dry	v30	Exports	v52	CPI_exrest
v9	Share Price Index	v31	Retail trade_value	v53	CPI_repairs
v10	Brent Crude Oil Pr	v32	Retail trade_vol	v54	CPI_energy
v11	CPI_REER	v33	Prod_nondur	v55	CPI_all
v12	NEER_B	v34	Prod_dur	v56	MFI_hholdloans
v13	REER_B	v35	Prod_invest	v57	MFI_loansnonfincorp
v14	NEER_N	v36	Prod_interm	v58	MFI_loanscredit4cons
v15	REER_N	v37	Prod_constr	v59	BOP_CA Balance
v16	PPI_consgoods	v38	Neworders_constr	v60	BOP_Net FA
v17	PPI_energy	v39	USD_ER	v61	BOP_Errors&ommission
v18	PPI_manuf	v40	JPM_EERI	v62	Passenger_carsreg
v19	PPI_indust	v41	S&P_divyld	v63	Neworders_manuf
v20	PPI_foodprod	v42	CLI	v64	CPI_servexhousing
v21	PPI_mining	v43	BBGECPI		
v22	PPI_intermgoods	v44	Cons Conf		

Table 6.30. Number of factors selected by the AIC and BIC criteria

Country	AIC	BIC	# AIC; BIC
AT	2953.5	5014.7	24; 11
BE	3549.6	5437.1	24; 10
DE	3565.7	5716.8	23; 13
FR	3230.5	5123.1	26; 10
IT	2776.3	4783.0	28; 12
NL	2661.7	4447.0	27; 14
SP	3223.8	5578.0	28; 12
UK	2461.7	4208.6	17; 12

I. *Predictive Regression Results (excluding interest rates)*

Table 6.32. The Credit Spread Index and Industrial Production at 3-month horizon

Ind Prod 3-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	-0.665	-2.053*	-0.665	-3.422***	-5.155***	-3.422*	-4.670***	-6.459***	-5.640***
	(0.820)	(1.169)	(1.610)	(0.801)	(0.919)	(1.920)	(1.631)	(1.916)	(0.889)
L	-4.489***	-4.402***	-4.489***	-2.897***	-3.284***	-2.897**	-4.595***	-4.602***	-4.680***
	(1.332)	(1.285)	(1.275)	(1.051)	(1.138)	(1.162)	(1.216)	(1.537)	(1.421)
S	-1.989**	-2.420***	-1.989***	-1.934***	-2.669***	-1.934***	-2.317***	-3.186***	-2.825***
	(0.771)	(0.755)	(0.461)	(0.538)	(0.595)	(0.344)	(0.597)	(0.671)	(0.548)
C	-0.543	-0.378	-0.543*	-0.144	-0.00809	-0.144	-0.322	-0.135	-0.218
	(0.334)	(0.339)	(0.314)	(0.261)	(0.249)	(0.230)	(0.387)	(0.348)	(0.352)
ER	1.166	1.198	1.166***	0.962	0.971	0.962***	0.739	0.753	0.751*
	(1.124)	(1.119)	(0.199)	(1.090)	(1.063)	(0.229)	(1.238)	(1.158)	(0.386)
P	4.033***	3.755***	4.033***	3.007**	2.704**	3.007***	3.129**	2.778**	2.939***
	(1.201)	(1.173)	(0.478)	(1.244)	(1.098)	(0.822)	(1.516)	(1.252)	(0.639)
MR	3.199***	3.011**	3.199***	2.688**	2.368**	2.688***			
	(1.064)	(1.152)	(0.309)	(1.121)	(1.142)	(0.515)			
SPI	4.111**	3.389**	4.111***	1.351	0.769	1.351			
	(1.605)	(1.695)	(1.355)	(1.272)	(1.195)	(1.539)			
NT	1.387***	1.324***	1.387***						
	(0.452)	(0.440)	(0.512)						
M23	-0.361	-0.452	-0.361						
	(0.770)	(0.765)	(0.780)						
Observations	517	517	517	634	634	634	727	727	727
R-squared	0.424	0.444	0.424	0.347	0.384	0.347	0.282	0.338	0.282
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.33. The Credit Spread Index and Industrial Production at 12-month horizon

Ind Prod 12-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	0.150	-0.823	0.150	-1.873**	-3.505***	-1.873	-2.692**	-4.056***	-3.508***
	(0.639)	(0.776)	(1.518)	(0.797)	(1.011)	(1.177)	(1.283)	(1.451)	(0.577)
L	-5.139***	-5.442***	-5.139***	-3.211***	-5.163***	-3.211***	-4.895***	-6.179***	-5.792***
	(1.001)	(1.002)	(1.359)	(0.865)	(1.068)	(1.227)	(1.008)	(1.359)	(1.416)
S	-3.370***	-3.624***	-3.370***	-2.841***	-3.578***	-2.841***	-3.182***	-3.972***	-3.687***
	(0.960)	(0.985)	(0.860)	(0.749)	(0.908)	(0.602)	(0.810)	(0.969)	(0.697)
C	-0.320	-0.269	-0.320	0.189	0.0894	0.189	0.0755	0.0420	0.0464
	(0.398)	(0.479)	(0.520)	(0.365)	(0.413)	(0.367)	(0.470)	(0.483)	(0.479)
ER	0.193	0.216	0.193*	-0.0211	0.0511	-0.0211	-0.0169	0.0474	0.0259
	(0.320)	(0.334)	(0.111)	(0.480)	(0.448)	(0.0776)	(0.567)	(0.471)	(0.149)
P	-0.633	-0.863	-0.633*	-0.877	-1.158	-0.877***	-0.865	-1.122	-1.020***
	(0.672)	(0.714)	(0.340)	(0.813)	(0.729)	(0.179)	(0.948)	(0.787)	(0.232)
MR	1.671***	1.513***	1.671***	1.468***	1.065**	1.468***			
	(0.385)	(0.410)	(0.270)	(0.330)	(0.415)	(0.338)			
SPI	3.196***	2.596***	3.196**	0.987	0.187	0.987			
	(1.122)	(0.842)	(1.272)	(0.841)	(0.653)	(1.055)			
NT	0.353	0.308	0.353**						
	(0.233)	(0.202)	(0.167)						
M23	0.397	0.401	0.397						
	(0.663)	(0.560)	(0.570)						
Observations	481	481	481	589	589	589	673	673	673
R-squared	0.558	0.606	0.558	0.445	0.540	0.445	0.392	0.521	0.392
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.34. The Credit Spread Index and Industrial Production at 24-month horizon

Ind Prod 24-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	0.208	-0.188	0.208	-0.949***	-2.199***	-0.949*	-0.680**	-1.395***	-1.383***
	(0.803)	(0.353)	(1.446)	(0.187)	(0.255)	(0.548)	(0.261)	(0.251)	(0.473)
L	-5.342***	-5.904***	-5.342***	-2.449***	-5.299***	-2.449*	-3.217***	-4.952***	-4.929***
	(0.911)	(0.963)	(0.737)	(0.929)	(1.208)	(1.412)	(0.948)	(1.446)	(1.180)
S	-2.921***	-3.111***	-2.921***	-2.300***	-3.208***	-2.300***	-2.407***	-3.201***	-3.189***
	(0.377)	(0.596)	(0.620)	(0.353)	(0.611)	(0.497)	(0.358)	(0.647)	(0.500)
C	-0.967***	-0.966***	-0.967**	-0.508***	-0.791***	-0.508*	-0.532**	-0.696***	-0.694**
	(0.133)	(0.189)	(0.384)	(0.179)	(0.164)	(0.282)	(0.230)	(0.128)	(0.346)
ER	-0.252	-0.243	-0.252***	-0.128	-0.0691	-0.128	-0.174	-0.127	-0.127
	(0.179)	(0.251)	(0.0754)	(0.185)	(0.141)	(0.109)	(0.191)	(0.110)	(0.127)
P	0.344	0.290	0.344	-0.133	-0.210	-0.133	-0.0403	-0.0781	-0.0774
	(0.301)	(0.177)	(0.354)	(0.244)	(0.135)	(0.139)	(0.219)	(0.165)	(0.152)
MR	0.272**	0.173	0.272	0.351**	-0.0746	0.351**			
	(0.115)	(0.153)	(0.201)	(0.156)	(0.225)	(0.152)			
SPI	0.966	0.631*	0.966	-0.129	-0.928***	-0.129			
	(0.758)	(0.329)	(1.283)	(0.306)	(0.227)	(0.560)			
NT	0.181	0.135	0.181***						
	(0.126)	(0.0931)	(0.0598)						
M23	-0.385***	-0.332*	-0.385						
	(0.110)	(0.198)	(0.365)						
Observations	410	410	410	506	506	506	578	578	578
R-squared	0.614	0.725	0.614	0.460	0.663	0.460	0.448	0.658	0.448
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.906

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6.35. The Credit Spread Index and Unemployment Rate at 3-month horizon

Unempl 3-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	-3.158*	-0.426	-3.158	4.839**	8.428***	4.839	6.171***	8.717***	8.185***
	(1.888)	(2.522)	(2.281)	(2.197)	(1.863)	(4.285)	(1.745)	(1.403)	(3.092)
L	10.41***	9.097***	10.41***	8.827***	7.451***	8.827***	8.614***	7.323***	7.574***
	(1.928)	(2.028)	(3.124)	(1.614)	(2.106)	(3.018)	(1.518)	(1.923)	(2.832)
S	0.381	1.103	0.381	0.572	1.742*	0.572	1.031	1.963**	1.778
	(1.114)	(1.075)	(2.022)	(0.858)	(1.012)	(1.289)	(0.851)	(0.950)	(1.551)
C	-0.0896	-0.520	-0.0896	-0.770	-1.136**	-0.770*	-0.790	-1.204**	-1.131**
	(0.601)	(0.648)	(0.855)	(0.543)	(0.546)	(0.445)	(0.506)	(0.516)	(0.475)
ER	-0.785	-0.741	-0.785	-0.648	-0.554	-0.648	-0.168	-0.0751	-0.0910
	(0.861)	(0.858)	(1.292)	(0.797)	(0.744)	(0.892)	(0.801)	(0.730)	(0.928)
P	-4.246***	-3.718***	-4.246***	-2.061	-1.430	-2.061	-1.507	-1.053	-1.151
	(1.241)	(1.271)	(1.015)	(1.491)	(1.287)	(1.451)	(1.360)	(1.114)	(0.908)
MR	-1.473**	-1.161	-1.473	-0.739	-0.235	-0.739			
	(0.687)	(0.903)	(1.137)	(0.860)	(0.888)	(1.157)			
SPI	-8.061***	-6.578***	-8.061**	-1.042	0.00258	-1.042			
	(1.691)	(2.286)	(3.863)	(1.151)	(1.171)	(3.455)			
NT	-0.728	-0.626	-0.728						
	(0.505)	(0.474)	(0.785)						
M23	-3.502***	-3.272***	-3.502						
	(1.120)	(1.167)	(2.482)						
Observations	517	517	517	633	633	633	726	726	726
R-squared	0.300	0.298	0.300	0.214	0.248	0.214	0.209	0.247	0.209
CD p-value	0.005	0.006		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.360

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models.

*** p<0.01, ** p<0.05, * p<0.1

Table 6.36. The Credit Spread Index and Unemployment Rate at 12-month horizon

Unempl 12-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	-4.168***	-1.960	-4.168	3.800*	7.718***	3.800	6.108***	8.625***	6.108**
	(1.262)	(2.526)	(2.716)	(2.175)	(2.294)	(3.935)	(2.133)	(1.784)	(2.724)
L	12.90***	12.42***	12.90***	10.42***	12.02***	10.42***	11.68***	12.80***	11.68***
	(2.514)	(2.631)	(3.852)	(2.162)	(2.741)	(3.452)	(2.026)	(2.057)	(3.370)
S	3.141**	3.618***	3.141	2.873**	4.282***	2.873**	3.323***	4.557***	3.323***
	(1.335)	(1.313)	(2.366)	(1.288)	(1.495)	(1.405)	(1.202)	(1.270)	(1.189)
C	0.492	0.201	0.492	-0.849	-0.883	-0.849	-0.533	-0.701	-0.533
	(0.696)	(0.826)	(1.138)	(0.744)	(0.814)	(0.947)	(0.760)	(0.804)	(0.973)
ER	-0.592	-0.487	-0.592	-0.276	-0.271	-0.276	-0.135	-0.126	-0.135
	(0.553)	(0.625)	(0.764)	(0.743)	(0.725)	(0.618)	(0.688)	(0.659)	(0.604)
P	-1.721**	-1.234	-1.721**	0.299	0.963	0.299	0.519	0.938	0.519
	(0.803)	(1.147)	(0.803)	(1.177)	(1.000)	(1.190)	(1.231)	(0.892)	(0.814)
MR	-2.194***	-1.883***	-2.194***	-1.439***	-0.683	-1.439			
	(0.499)	(0.581)	(0.709)	(0.502)	(0.671)	(1.140)			
SPI	-9.658***	-8.177***	-9.658***	-2.278***	-0.574	-2.278			
	(1.206)	(1.619)	(3.733)	(0.755)	(0.858)	(3.127)			
NT	-0.470	-0.401	-0.470						
	(0.382)	(0.317)	(0.401)						
M23	-3.908***	-3.868***	-3.908						
	(1.471)	(1.200)	(2.565)						
Observations	482	482	482	589	589	589	673	673	673
R-squared	0.393	0.416	0.393	0.273	0.343	0.273	0.274	0.363	0.274
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models.

*** p<0.01, ** p<0.05, * p<0.1

Table 6.37. The Credit Spread Index and Unemployment Rate at 24-month horizon

Unempl 24-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	-4.214***	0.435	-4.214	2.860***	6.984***	2.860	4.369***	6.191***	5.817***
	(1.441)	(1.539)	(3.332)	(0.790)	(0.806)	(2.581)	(0.703)	(0.777)	(2.198)
L	13.34***	14.52***	13.34***	9.338***	14.32***	9.338***	10.14***	13.18***	12.66***
	(0.859)	(1.630)	(3.286)	(2.220)	(2.196)	(3.385)	(2.370)	(2.255)	(2.567)
S	4.715***	5.493***	4.715*	3.872***	6.062***	3.872***	4.168***	5.885***	5.553***
	(0.494)	(1.056)	(2.494)	(0.757)	(1.311)	(1.271)	(0.791)	(1.310)	(1.755)
C	1.326***	1.148**	1.326	0.150	0.557	0.150	0.430	0.479	0.484
	(0.359)	(0.518)	(1.438)	(0.645)	(0.554)	(1.017)	(0.608)	(0.456)	(1.033)
ER	0.391	0.397	0.391	0.187	0.205	0.187	0.269	0.311	0.306
	(0.389)	(0.585)	(0.316)	(0.259)	(0.272)	(0.644)	(0.274)	(0.254)	(0.566)
P	-1.468***	-0.666	-1.468	0.560	0.904**	0.560	0.680	0.719*	0.703
	(0.408)	(0.475)	(0.985)	(0.665)	(0.441)	(0.811)	(0.613)	(0.428)	(0.534)
MR	-0.775***	-0.147	-0.775**	-0.291	0.753	-0.291			
	(0.249)	(0.511)	(0.352)	(0.327)	(0.574)	(0.607)			
SPI	-7.686***	-4.127***	-7.686**	-1.488	0.912	-1.488			
	(1.559)	(0.747)	(3.830)	(0.898)	(0.551)	(2.285)			
NT	-0.0737	0.131	-0.0737						
	(0.324)	(0.173)	(0.207)						
M23	-2.261***	-1.893***	-2.261						
	(0.707)	(0.455)	(1.455)						
Observations	411	411	411	506	506	506	578	578	578
R-squared	0.352	0.440	0.352	0.252	0.413	0.252	0.273	0.439	0.273
CD p-value	0.021	0.178		0.001	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.38. The Credit Spread Index and Employment at 1-quarter horizon

Empl 1-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	-0.221	-0.469	-0.221	-0.771***	-0.983***	-0.771	-0.810***	-1.007***	-0.950**
	(0.244)	(0.345)	(0.550)	(0.211)	(0.174)	(0.546)	(0.158)	(0.136)	(0.466)
L	-0.289	-0.344	-0.289	-0.543**	-0.454	-0.543	-0.545**	-0.408	-0.436
	(0.385)	(0.418)	(0.490)	(0.252)	(0.333)	(0.337)	(0.239)	(0.251)	(0.342)
S	0.364**	0.259*	0.364**	0.293***	0.243**	0.293**	0.294***	0.239**	0.258**
	(0.149)	(0.142)	(0.158)	(0.101)	(0.105)	(0.123)	(0.0964)	(0.0941)	(0.105)
C	0.00758	0.0316	0.00758	0.00725	0.0278	0.00725	0.0136	0.0393	0.0321
	(0.100)	(0.0853)	(0.131)	(0.0891)	(0.0752)	(0.0822)	(0.0824)	(0.0662)	(0.0690)
ER	-0.201	-0.157	-0.201	-0.177**	-0.178**	-0.177**	-0.182**	-0.175**	-0.179**
	(0.128)	(0.133)	(0.151)	(0.0785)	(0.0801)	(0.0778)	(0.0707)	(0.0693)	(0.0712)
P	0.291	0.277	0.291	0.160	0.133	0.160	0.160	0.130	0.138
	(0.192)	(0.192)	(0.320)	(0.170)	(0.147)	(0.209)	(0.148)	(0.124)	(0.153)
MR	-0.0262	-0.0405	-0.0262	-0.0666	-0.0728	-0.0666			
	(0.159)	(0.155)	(0.136)	(0.119)	(0.145)	(0.144)			
SPI	0.528**	0.402	0.528	0.114	0.0603	0.114			
	(0.203)	(0.255)	(0.441)	(0.149)	(0.127)	(0.285)			
NT	-0.0675	-0.0567	-0.0675						
	(0.152)	(0.142)	(0.163)						
M23	0.282	0.304	0.282						
	(0.174)	(0.228)	(0.440)						
Observations	172	172	172	210	210	210	241	241	241
R-squared	0.329	0.342	0.329	0.296	0.324	0.296	0.304	0.333	0.304
CD p-value	0.772	0.788		0.773	0.935		0.414	0.706	
FE/RE		0.257	0.994		0.045	0.378		0.025	0.315
Robust Hausman			0.000			0.000			0.711

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6.39. The Credit Spread Index and Employment at 4-quarter horizon

Empl 4-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	-0.185	-0.458	-0.185	-0.786***	-1.055***	-0.786	-0.929***	-1.195***	-0.929**
	(0.236)	(0.300)	(0.481)	(0.217)	(0.188)	(0.487)	(0.227)	(0.201)	(0.436)
L	-0.276	-0.341	-0.276	-0.563***	-0.650***	-0.563*	-0.903***	-0.938***	-0.903**
	(0.203)	(0.219)	(0.440)	(0.133)	(0.194)	(0.341)	(0.247)	(0.258)	(0.366)
S	0.0276	-0.0895	0.0276	0.0806	-0.0169	0.0806	0.0192	-0.101	0.0192
	(0.0894)	(0.109)	(0.267)	(0.0674)	(0.0840)	(0.0981)	(0.0724)	(0.100)	(0.0721)
C	0.0131	0.0232	0.0131	0.0305	0.0389	0.0305	-0.00862	0.00989	-0.00862
	(0.0532)	(0.0539)	(0.128)	(0.0538)	(0.0437)	(0.0794)	(0.0796)	(0.0627)	(0.0766)
ER	-0.0138	0.0253	-0.0138	-0.0424	-0.0355	-0.0424	-0.0869	-0.0361	-0.0869**
	(0.119)	(0.141)	(0.153)	(0.0705)	(0.0706)	(0.0486)	(0.0793)	(0.0723)	(0.0406)
P	0.0393	0.00103	0.0393	-0.0709	-0.110	-0.0709	-0.0794	-0.111	-0.0794
	(0.144)	(0.138)	(0.181)	(0.119)	(0.0914)	(0.0972)	(0.141)	(0.104)	(0.0926)
MR	0.405***	0.335**	0.405***	0.349**	0.288	0.349**			
	(0.147)	(0.160)	(0.0844)	(0.154)	(0.173)	(0.164)			
SPI	0.732***	0.574***	0.732*	0.247**	0.143	0.247			
	(0.135)	(0.168)	(0.400)	(0.105)	(0.107)	(0.245)			
NT	0.0570	0.0397	0.0570						
	(0.0982)	(0.0833)	(0.0893)						
M23	0.451***	0.521**	0.451						
	(0.154)	(0.193)	(0.498)						
Observations	158	158	158	193	193	193	221	221	221
R-squared	0.424	0.456	0.424	0.372	0.415	0.372	0.355	0.417	0.355
CD p-value	0.112	0.094		0.960	0.860		0.000	0.001	
FE/RE		0.026	0.106		0.003	0.063		0.000	0.001
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6.40. The Credit Spread Index and Employment at 8-quarter horizon

Empl 8-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	-0.142	-0.310	-0.142	-0.764***	-1.030***	-0.764**	-0.843***	-1.047***	-1.023***
	(0.195)	(0.288)	(0.474)	(0.108)	(0.110)	(0.371)	(0.0991)	(0.100)	(0.385)
L	-0.975***	-1.076***	-0.975**	-0.786***	-1.244***	-0.786***	-0.990***	-1.256***	-1.224***
	(0.146)	(0.182)	(0.380)	(0.181)	(0.218)	(0.247)	(0.225)	(0.153)	(0.376)
S	-0.274*	-0.551***	-0.274	-0.109	-0.438**	-0.109	-0.141	-0.454***	-0.416*
	(0.150)	(0.177)	(0.351)	(0.131)	(0.198)	(0.125)	(0.111)	(0.158)	(0.227)
C	-0.174***	-0.110	-0.174	-0.126	-0.0877	-0.126	-0.132	-0.0717	-0.0805
	(0.0595)	(0.0737)	(0.128)	(0.0747)	(0.0753)	(0.122)	(0.0916)	(0.0758)	(0.0884)
ER	-0.0691	0.0140	-0.0691	-0.0740	-0.0206	-0.0740	-0.109*	-0.0349	-0.0426
	(0.126)	(0.113)	(0.0661)	(0.0563)	(0.0463)	(0.103)	(0.0545)	(0.0316)	(0.0602)
P	-0.0155	0.00564	-0.0155	-0.148***	-0.136***	-0.148**	-0.159**	-0.129***	-0.133**
	(0.0522)	(0.0833)	(0.121)	(0.0523)	(0.0396)	(0.0625)	(0.0590)	(0.0412)	(0.0528)
MR	0.0925	-0.0318	0.0925	0.154*	0.0175	0.154			
	(0.0886)	(0.0928)	(0.0873)	(0.0841)	(0.0979)	(0.124)			
SPI	0.674***	0.573***	0.674*	0.190	0.0603	0.190			
	(0.163)	(0.161)	(0.388)	(0.113)	(0.112)	(0.162)			
NT	0.0509	0.0247	0.0509						
	(0.0832)	(0.0598)	(0.0874)						
M23	0.319***	0.479***	0.319						
	(0.108)	(0.145)	(0.341)						
Observations	134	134	134	165	165	165	189	189	189
R-squared	0.449	0.501	0.449	0.385	0.451	0.385	0.372	0.465	0.372
CD p-value	0.006	0.054		0.058	0.774		0.000	0.038	
FE/RE		0.001	0.002		0.000	0.002		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models.
*** p<0.01, ** p<0.05, * p<0.1

Table 6.41. The Credit Spread Index and Real GDP at 1-quarter horizon

Real GDP 1-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	-0.405	-1.008***	-0.405	-1.695***	-2.388***	-1.695**	-1.851***	-2.514***	-2.336***
	(0.290)	(0.346)	(0.411)	(0.520)	(0.451)	(0.842)	(0.564)	(0.517)	(0.406)
L	-0.557	-0.732	-0.557	-0.177	-0.465	-0.177	-0.793	-0.819	-0.819**
	(0.548)	(0.490)	(0.415)	(0.529)	(0.555)	(0.333)	(0.564)	(0.589)	(0.408)
S	0.0259	-0.105	0.0259	-0.0774	-0.346**	-0.0774	-0.190	-0.490**	-0.412***
	(0.258)	(0.204)	(0.113)	(0.165)	(0.159)	(0.109)	(0.220)	(0.221)	(0.0643)
C	0.0242	0.0603	0.0242	0.131	0.156	0.131***	0.0443	0.0995	0.0837
	(0.124)	(0.118)	(0.0710)	(0.109)	(0.0928)	(0.0417)	(0.138)	(0.108)	(0.0967)
ER	-0.321	-0.271	-0.321**	-0.114	-0.0464	-0.114	-0.251	-0.131	-0.160
	(0.233)	(0.229)	(0.154)	(0.214)	(0.203)	(0.173)	(0.247)	(0.241)	(0.181)
P	0.792***	0.702***	0.792***	0.567**	0.469**	0.567***	0.553	0.450*	0.477***
	(0.166)	(0.157)	(0.159)	(0.268)	(0.200)	(0.196)	(0.335)	(0.251)	(0.122)
MR	0.682*	0.656*	0.682***	0.696	0.586	0.696***			
	(0.388)	(0.364)	(0.0819)	(0.456)	(0.424)	(0.160)			
SPI	1.468***	1.142***	1.468***	0.310*	0.0618	0.310			
	(0.313)	(0.349)	(0.276)	(0.155)	(0.165)	(0.612)			
NT	-0.0741	-0.0733	-0.0741						
	(0.102)	(0.107)	(0.161)						
M23	0.0145	-0.0943	0.0145						
	(0.224)	(0.238)	(0.186)						
Observations	173	173	173	212	212	212	244	244	244
R-squared	0.614	0.641	0.614	0.480	0.558	0.480	0.422	0.533	0.422
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.025	0.457		0.000	0.000		0.000	0.000
Robust Hausman			0.001			0.000			0.001

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.42. The Credit Spread Index and Real GDP at 4-quarter horizon

Real GDP 4-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	0.154	-0.0259	0.154	-1.114***	-1.830***	-1.114*	-1.348***	-1.975***	-1.348***
	(0.187)	(0.194)	(0.360)	(0.409)	(0.394)	(0.652)	(0.489)	(0.447)	(0.394)
L	-1.133**	-1.321***	-1.133***	-0.822**	-1.717***	-0.822**	-1.587***	-2.138***	-1.587**
	(0.428)	(0.423)	(0.309)	(0.386)	(0.370)	(0.348)	(0.521)	(0.477)	(0.665)
S	-0.514***	-0.574***	-0.514***	-0.361*	-0.711***	-0.361***	-0.514*	-0.882***	-0.514***
	(0.110)	(0.102)	(0.0842)	(0.201)	(0.243)	(0.0962)	(0.254)	(0.283)	(0.0940)
C	-0.133	-0.136	-0.133*	0.0546	0.0234	0.0546	-0.0402	-0.0298	-0.0402
	(0.0826)	(0.0914)	(0.0761)	(0.0936)	(0.101)	(0.104)	(0.158)	(0.140)	(0.151)
ER	-0.130	-0.0916	-0.130	-0.0669	0.0728	-0.0669	-0.139	0.0663	-0.139
	(0.132)	(0.133)	(0.104)	(0.130)	(0.113)	(0.140)	(0.156)	(0.141)	(0.111)
P	0.183	0.160	0.183	-0.0586	-0.135	-0.0586	-0.0951	-0.152	-0.0951
	(0.165)	(0.154)	(0.140)	(0.254)	(0.201)	(0.134)	(0.311)	(0.231)	(0.111)
MR	0.809***	0.758***	0.809***	0.823*	0.591	0.823***			
	(0.246)	(0.248)	(0.172)	(0.427)	(0.392)	(0.282)			
SPI	1.487***	1.391***	1.487***	0.327***	0.0108	0.327			
	(0.153)	(0.155)	(0.255)	(0.117)	(0.139)	(0.497)			
NT	0.0390	0.0514	0.0390						
	(0.0881)	(0.0869)	(0.0841)						
M23	0.488***	0.476**	0.488**						
	(0.162)	(0.192)	(0.220)						
Observations	161	161	161	197	197	197	226	226	226
R-squared	0.718	0.734	0.718	0.453	0.562	0.453	0.367	0.544	0.367
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.085	0.337		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.43. The Credit Spread Index and Real GDP at 8-quarter horizon

Real GDP 8-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Credit Spread	0.0262	-0.123	0.0262	-0.915***	-1.604***	-0.915**	-0.849***	-1.344***	-1.265***
	(0.177)	(0.261)	(0.371)	(0.115)	(0.147)	(0.355)	(0.144)	(0.131)	(0.287)
L	-1.916***	-2.105***	-1.916***	-0.854	-2.094***	-0.854	-1.230**	-1.883***	-1.788***
	(0.349)	(0.343)	(0.279)	(0.527)	(0.552)	(0.558)	(0.558)	(0.501)	(0.445)
S	-0.817***	-0.881***	-0.817***	-0.573***	-1.054***	-0.573***	-0.589***	-1.018***	-0.952***
	(0.123)	(0.170)	(0.150)	(0.204)	(0.287)	(0.0827)	(0.187)	(0.263)	(0.129)
C	-0.334***	-0.335***	-0.334***	-0.132	-0.219***	-0.132	-0.163	-0.186**	-0.185
	(0.0673)	(0.0786)	(0.103)	(0.109)	(0.0786)	(0.115)	(0.125)	(0.0697)	(0.135)
ER	-0.156	-0.132	-0.156***	-0.0719	0.0747	-0.0719	-0.0983	0.0854	0.0591
	(0.125)	(0.129)	(0.0480)	(0.0729)	(0.0748)	(0.0950)	(0.0807)	(0.0527)	(0.123)
P	0.109**	0.0960	0.109	-0.0833	-0.128*	-0.0833	-0.0693	-0.0820	-0.0799*
	(0.0500)	(0.0740)	(0.0919)	(0.109)	(0.0694)	(0.0514)	(0.106)	(0.0643)	(0.0447)
MR	-0.00218	-0.0398	-0.00218	0.186	-0.107	0.186**			
	(0.144)	(0.149)	(0.0738)	(0.216)	(0.218)	(0.0897)			
SPI	0.859***	0.782***	0.859***	0.0446	-0.288**	0.0446			
	(0.187)	(0.130)	(0.293)	(0.0981)	(0.139)	(0.276)			
NT	-0.0348	-0.0222	-0.0348						
	(0.0873)	(0.0710)	(0.107)						
M23	0.159	0.125	0.159						
	(0.128)	(0.139)	(0.164)						
Observations	137	137	137	169	169	169	194	194	194
R-squared	0.742	0.771	0.742	0.403	0.618	0.403	0.368	0.631	0.368
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.006	0.004		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – May 2011. Panels 1-3 have 6, 7 and 8 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6.45. The Excess Bond Premium and Industrial Production at 3-month horizon

Ind Prod 3-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-1.774**	-2.270	-1.774**	-2.660***	-3.705***	-2.660***	-3.187***	-4.167***	-3.187***
	(0.809)	(1.489)	(0.797)	(0.502)	(0.918)	(0.411)	(0.833)	(1.579)	(0.464)
EBP	-3.430**	-4.140*	-3.430**	-6.194***	-6.996***	-6.194***	-7.817***	-8.330***	-7.817***
	(1.711)	(2.161)	(1.532)	(1.151)	(1.255)	(1.165)	(2.253)	(2.280)	(0.835)
L	-3.283**	-3.656**	-3.283***	-2.101*	-3.428**	-2.101**	-3.452***	-4.516**	-3.452***
	(1.468)	(1.504)	(0.692)	(1.118)	(1.335)	(0.923)	(1.269)	(1.745)	(1.324)
S	-1.933**	-1.972***	-1.933***	-1.899***	-2.271***	-1.899***	-2.066***	-2.579***	-2.066***
	(0.752)	(0.708)	(0.279)	(0.485)	(0.487)	(0.341)	(0.515)	(0.485)	(0.460)
C	-0.232	-0.287	-0.232	-0.294	-0.379	-0.294	-0.576	-0.590	-0.576*
	(0.356)	(0.355)	(0.375)	(0.348)	(0.354)	(0.274)	(0.501)	(0.471)	(0.348)
ER	1.019	1.068	1.019***	0.931	0.973	0.931***	0.811	0.835	0.811**
	(1.144)	(1.147)	(0.111)	(0.990)	(0.963)	(0.240)	(1.126)	(1.069)	(0.376)
P	3.867***	3.641***	3.867***	2.727***	2.511***	2.727***	2.596**	2.425**	2.596***
	(1.147)	(1.186)	(0.591)	(0.961)	(0.904)	(0.829)	(1.043)	(0.963)	(0.607)
MR	3.128***	3.066**	3.128***	2.352**	2.200**	2.352***			
	(1.172)	(1.237)	(0.233)	(1.090)	(1.086)	(0.510)			
SPI	2.372	2.090	2.372***	0.836	0.486	0.836			
	(1.479)	(1.702)	(0.680)	(1.146)	(1.063)	(0.572)			
NT	1.377***	1.361***	1.377***						
	(0.504)	(0.498)	(0.489)						
M23	-1.546**	-1.472*	-1.546***						
	(0.765)	(0.776)	(0.211)						
Observations	377	377	377	486	486	486	568	568	568
R-squared	0.466	0.471	0.466	0.421	0.435	0.421	0.383	0.405	0.383
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.016	0.011		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.46. The Excess Bond Premium and Industrial Production at 12-month horizon

Ind Prod 12-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-0.941*	0.284	-0.941	-1.450***	-1.239	-1.450***	-1.691***	-1.605	-1.691**
	(0.536)	(0.838)	(0.993)	(0.315)	(1.141)	(0.468)	(0.628)	(1.592)	(0.686)
EBP	-0.658	-0.410	-0.658	-3.228***	-3.792***	-3.228***	-4.064***	-4.397***	-4.064***
	(0.993)	(0.698)	(1.032)	(0.914)	(0.972)	(0.769)	(1.509)	(1.353)	(0.483)
L	-4.381***	-4.441***	-4.381***	-2.743***	-4.515***	-2.743***	-4.027***	-5.416***	-4.027**
	(0.985)	(1.011)	(1.083)	(0.693)	(0.891)	(1.047)	(0.740)	(1.221)	(1.596)
S	-3.670***	-3.423***	-3.670***	-2.864***	-3.126***	-2.864***	-3.098***	-3.507***	-3.098***
	(0.895)	(0.947)	(0.822)	(0.540)	(0.747)	(0.690)	(0.574)	(0.816)	(0.776)
C	-0.0353	-0.151	-0.0353	0.148	-0.0565	0.148	0.0162	-0.108	0.0162
	(0.490)	(0.489)	(0.673)	(0.390)	(0.440)	(0.436)	(0.497)	(0.506)	(0.473)
ER	0.0983	0.0916	0.0983	0.00643	0.0637	0.00643	0.0194	0.0630	0.0194
	(0.373)	(0.349)	(0.128)	(0.460)	(0.409)	(0.0852)	(0.512)	(0.431)	(0.109)
P	-0.892	-0.821	-0.892**	-1.148	-1.251	-1.148***	-1.197	-1.284	-1.197***
	(0.680)	(0.666)	(0.355)	(0.791)	(0.758)	(0.260)	(0.909)	(0.825)	(0.293)
MR	1.516***	1.528***	1.516***	1.127***	0.917**	1.127***			
	(0.387)	(0.362)	(0.0884)	(0.381)	(0.408)	(0.219)			
SPI	2.281**	2.567**	2.281***	0.472	0.160	0.472			
	(0.914)	(0.979)	(0.771)	(0.704)	(0.602)	(0.478)			
NT	0.243	0.248	0.243						
	(0.245)	(0.225)	(0.179)						
M23	-0.228	-0.125	-0.228						
	(0.571)	(0.586)	(0.308)						
Observations	373	373	373	481	481	481	562	562	562
R-squared	0.601	0.630	0.601	0.513	0.571	0.513	0.473	0.552	0.473
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.47. The Excess Bond Premium and Industrial Production at 24-month horizon

Ind Prod 24-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-0.664	0.0493	-0.664	-0.865***	-1.399***	-0.865*	-0.396*	-0.671	-0.396
	(0.400)	(0.373)	(1.256)	(0.197)	(0.443)	(0.487)	(0.223)	(0.542)	(0.599)
EBP	0.457	0.627	0.457	-1.088***	-1.941***	-1.088**	-0.858***	-1.240***	-0.858*
	(0.896)	(0.659)	(1.148)	(0.160)	(0.141)	(0.505)	(0.305)	(0.152)	(0.458)
L	-4.484***	-4.760***	-4.484***	-2.246**	-4.589***	-2.246**	-2.781***	-4.278***	-2.781*
	(1.016)	(0.883)	(0.727)	(0.884)	(1.117)	(1.037)	(0.792)	(1.449)	(1.556)
S	-2.857***	-2.754***	-2.857***	-2.224***	-2.825***	-2.224***	-2.304***	-2.869***	-2.304***
	(0.519)	(0.527)	(0.588)	(0.311)	(0.593)	(0.500)	(0.346)	(0.675)	(0.620)
C	-0.679***	-0.754***	-0.679**	-0.448**	-0.757***	-0.448**	-0.484**	-0.660***	-0.484*
	(0.165)	(0.187)	(0.313)	(0.175)	(0.189)	(0.201)	(0.235)	(0.149)	(0.288)
ER	-0.224	-0.232	-0.224***	-0.0410	-0.0243	-0.0410	-0.0902	-0.0675	-0.0902
	(0.180)	(0.193)	(0.0771)	(0.146)	(0.0983)	(0.124)	(0.152)	(0.0924)	(0.137)
P	0.299	0.341	0.299	-0.180	-0.264*	-0.180	-0.105	-0.135	-0.105
	(0.258)	(0.237)	(0.385)	(0.238)	(0.156)	(0.136)	(0.229)	(0.188)	(0.157)
MR	0.368***	0.388***	0.368*	0.256	-0.0400	0.256*			
	(0.117)	(0.0786)	(0.218)	(0.161)	(0.178)	(0.138)			
SPI	0.423	0.724	0.423	-0.505**	-0.939***	-0.505			
	(0.587)	(0.518)	(1.059)	(0.250)	(0.177)	(0.319)			
NT	0.172	0.155	0.172**						
	(0.146)	(0.140)	(0.0695)						
M23	-0.695***	-0.580***	-0.695***						
	(0.198)	(0.175)	(0.207)						
Observations	314	314	314	410	410	410	479	479	479
R-squared	0.663	0.730	0.663	0.523	0.655	0.523	0.479	0.641	0.479
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6.48. The Excess Bond Premium and Unemployment Rate at 3-month horizon

Unempl 3-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-1.910	-1.829	-1.910	2.003	2.941	2.003	1.992	2.883	1.992
	(1.850)	(3.440)	(1.551)	(1.741)	(2.526)	(1.957)	(1.364)	(2.023)	(1.596)
EBP	1.766	2.698	1.766	8.172***	8.729***	8.172***	7.573***	8.065***	7.573***
	(2.332)	(2.907)	(2.082)	(1.827)	(1.919)	(2.748)	(1.372)	(1.317)	(2.418)
L	8.552***	8.407***	8.552**	9.083***	7.672***	9.083***	7.997***	6.862***	7.997***
	(2.670)	(2.582)	(3.742)	(1.815)	(2.546)	(3.214)	(1.492)	(2.036)	(2.904)
S	-2.245	-2.304**	-2.245*	-0.859	-0.933	-0.859	-0.572	-0.702	-0.572
	(1.360)	(1.133)	(1.190)	(0.918)	(0.916)	(1.423)	(0.901)	(0.796)	(1.235)
C	-0.588	-0.543	-0.588	-0.415	-0.511	-0.415	-0.563	-0.655	-0.563
	(0.894)	(0.891)	(0.537)	(0.787)	(0.770)	(0.635)	(0.698)	(0.660)	(0.579)
ER	0.414	0.430	0.414	-0.241	-0.189	-0.241	0.330	0.372	0.330
	(0.905)	(0.899)	(1.039)	(0.718)	(0.712)	(0.768)	(0.676)	(0.664)	(0.872)
P	-2.634**	-2.404*	-2.634***	-0.627	-0.412	-0.627	-0.219	-0.0316	-0.219
	(1.283)	(1.316)	(0.787)	(1.034)	(1.032)	(1.110)	(0.897)	(0.879)	(1.022)
MR	-0.161	-0.0361	-0.161	0.747	0.709	0.747			
	(0.907)	(0.996)	(0.803)	(0.799)	(0.798)	(0.788)			
SPI	-2.950*	-2.507	-2.950*	0.916	0.912	0.916			
	(1.696)	(2.208)	(1.757)	(1.037)	(1.114)	(1.279)			
NT	0.155	0.164	0.155						
	(0.436)	(0.432)	(0.461)						
M23	-0.798	-0.825	-0.798						
	(1.020)	(1.032)	(1.039)						
Observations	377	377	377	486	486	486	568	568	568
R-squared	0.324	0.321	0.324	0.274	0.271	0.274	0.266	0.267	0.266
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.167	0.449		0.013	0.022		0.006	0.004
Robust Hausman			0.000			0.000			0.013

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.49. The Excess Bond Premium and Unemployment Rate at 12-month horizon

Unempl 12-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-1.706	-5.588***	-1.706	0.493	-1.438	0.493	1.262	-0.160	1.262
	(1.538)	(1.886)	(1.582)	(1.335)	(2.004)	(1.336)	(0.911)	(1.400)	(1.203)
EBP	4.163	3.176	4.163*	7.880***	7.979***	7.880***	8.366***	8.605***	8.366***
	(2.867)	(2.381)	(2.282)	(2.355)	(2.313)	(1.892)	(1.657)	(1.400)	(1.688)
L	12.06***	11.11***	12.06***	11.16***	10.95***	11.16***	10.94***	11.21***	10.94***
	(2.492)	(2.253)	(3.084)	(1.769)	(2.279)	(3.120)	(1.419)	(1.411)	(2.663)
S	0.655	-0.0798	0.655	1.645*	1.427	1.645	2.043**	1.950**	2.043*
	(1.077)	(0.878)	(0.897)	(0.916)	(0.943)	(1.411)	(0.828)	(0.748)	(1.149)
C	0.0504	0.234	0.0504	-0.451	-0.308	-0.451	-0.349	-0.198	-0.349
	(0.862)	(0.889)	(0.785)	(0.881)	(0.961)	(0.991)	(0.803)	(0.894)	(0.929)
ER	-0.145	0.00901	-0.145	-0.579	-0.532	-0.579	-0.366	-0.349	-0.366
	(0.762)	(0.690)	(0.774)	(0.718)	(0.694)	(0.651)	(0.627)	(0.601)	(0.597)
P	-0.645	-1.014	-0.645	0.731	0.679	0.731	0.820	0.818	0.820
	(0.885)	(0.954)	(0.639)	(0.810)	(0.850)	(0.867)	(0.674)	(0.659)	(0.645)
MR	-0.930	-0.945	-0.930	-0.219	-0.143	-0.219			
	(0.703)	(0.651)	(0.645)	(0.654)	(0.671)	(0.712)			
SPI	-2.766**	-3.497**	-2.766***	-0.405	-0.451	-0.405			
	(1.283)	(1.410)	(0.811)	(0.904)	(1.032)	(1.047)			
NT	0.0882	0.0429	0.0882						
	(0.226)	(0.205)	(0.141)						
M23	-0.657	-0.758	-0.657						
	(1.086)	(1.083)	(0.707)						
Observations	374	374	374	481	481	481	562	562	562
R-squared	0.514	0.561	0.514	0.471	0.479	0.471	0.475	0.483	0.475
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.50. The Excess Bond Premium and Unemployment Rate at 24-month horizon

Unempl 24-m	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-1.911**	-1.740	-1.911	-0.167	0.353	-0.167	0.426	1.145	0.426
	(0.919)	(1.073)	(1.644)	(0.444)	(1.057)	(1.081)	(0.498)	(0.897)	(1.166)
EBP	1.582	2.740	1.582	5.271***	6.040***	5.271***	5.363***	5.938***	5.363***
	(2.056)	(1.673)	(1.844)	(0.998)	(1.068)	(1.680)	(0.582)	(0.584)	(1.616)
L	11.24***	11.32***	11.24***	11.31***	11.85***	11.31***	10.87***	11.39***	10.87***
	(1.175)	(1.156)	(1.913)	(1.821)	(1.362)	(2.072)	(1.855)	(1.407)	(2.056)
S	2.170***	2.126***	2.170**	2.778***	3.040***	2.778**	3.175***	3.568***	3.175***
	(0.367)	(0.538)	(1.035)	(0.763)	(0.946)	(1.150)	(0.839)	(1.101)	(1.003)
C	0.484	0.555	0.484	0.172	0.260	0.172	0.260	0.274	0.260
	(0.706)	(0.683)	(0.734)	(0.765)	(0.711)	(0.856)	(0.643)	(0.585)	(0.796)
ER	0.264	0.294	0.264	-0.147	-0.108	-0.147	-0.0169	0.00576	-0.0169
	(0.354)	(0.351)	(0.197)	(0.196)	(0.202)	(0.428)	(0.174)	(0.190)	(0.382)
P	-0.174	0.112	-0.174	0.864	1.023*	0.864*	0.843*	0.979**	0.843*
	(0.644)	(0.600)	(0.476)	(0.551)	(0.535)	(0.502)	(0.495)	(0.453)	(0.447)
MR	-0.399	-0.258	-0.399	0.490	0.615	0.490			
	(0.315)	(0.302)	(0.404)	(0.340)	(0.419)	(0.611)			
SPI	-2.649**	-2.138**	-2.649*	-0.206	0.00568	-0.206			
	(1.293)	(1.063)	(1.527)	(0.392)	(0.571)	(1.037)			
NT	0.102	0.139	0.102						
	(0.140)	(0.117)	(0.221)						
M23	-0.420*	-0.442	-0.420						
	(0.249)	(0.283)	(0.488)						
Observations	315	315	315	410	410	410	479	479	479
R-squared	0.559	0.598	0.559	0.565	0.559	0.565	0.556	0.553	0.556
CD p-value	0.012	0.006		0.000	0.000		0.000	0.000	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.51. The Excess Bond Premium and Employment at 1-quarter horizon

Empl 1-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-0.0907	0.00550	-0.0907	-0.455***	-0.352*	-0.455*	-0.394***	-0.389***	-0.394*
	(0.162)	(0.208)	(0.176)	(0.137)	(0.185)	(0.237)	(0.134)	(0.138)	(0.203)
EBP	-0.213	-0.200	-0.213	-0.746***	-0.656***	-0.746***	-0.664***	-0.656***	-0.664**
	(0.259)	(0.314)	(0.440)	(0.139)	(0.148)	(0.285)	(0.124)	(0.0925)	(0.281)
L	0.406	0.392	0.406	-0.241	0.0967	-0.241	-0.179	0.0879	-0.179
	(0.410)	(0.464)	(0.405)	(0.315)	(0.462)	(0.357)	(0.259)	(0.309)	(0.228)
S	0.526***	0.523***	0.526***	0.218***	0.323***	0.218*	0.260***	0.331***	0.260***
	(0.118)	(0.129)	(0.112)	(0.0799)	(0.104)	(0.121)	(0.0738)	(0.0755)	(0.0995)
C	0.188*	0.174*	0.188***	0.0636	0.0812	0.0636	0.0639	0.0745	0.0639
	(0.0990)	(0.0945)	(0.0541)	(0.0698)	(0.0751)	(0.0983)	(0.0641)	(0.0622)	(0.0817)
ER	-0.423***	-0.403***	-0.423**	-0.181***	-0.229***	-0.181	-0.138***	-0.187***	-0.138
	(0.131)	(0.136)	(0.185)	(0.0541)	(0.0679)	(0.112)	(0.0505)	(0.0514)	(0.107)
P	-0.0151	0.00106	-0.0151	-0.0452	-0.0384	-0.0452	0.00787	-0.0104	0.00787
	(0.141)	(0.139)	(0.276)	(0.101)	(0.0976)	(0.172)	(0.0693)	(0.0674)	(0.162)
MR	0.0967	0.0718	0.0967	-0.179	-0.0908	-0.179			
	(0.214)	(0.199)	(0.192)	(0.107)	(0.151)	(0.125)			
SPI	0.136	0.160	0.136	-0.134	-0.0568	-0.134			
	(0.225)	(0.247)	(0.147)	(0.108)	(0.116)	(0.126)			
NT	-0.169	-0.140	-0.169						
	(0.158)	(0.143)	(0.197)						
M23	-0.208	-0.138	-0.208						
	(0.169)	(0.177)	(0.203)						
Observations	125	125	125	161	161	161	189	189	189
R-squared	0.295	0.292	0.295	0.246	0.267	0.246	0.269	0.291	0.269
CD p-value	0.682	0.714		0.683	0.745		0.786	0.968	
FE/RE		0.618	0.561		0.113	0.538		0.064	0.309
Robust Hausman			0.002			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.52. The Excess Bond Premium and Employment at 4-quarter horizon

Empl 4-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-0.0146	0.00390	-0.0146	-0.351***	-0.315***	-0.351*	-0.396***	-0.452***	-0.396**
	(0.0627)	(0.0916)	(0.155)	(0.104)	(0.0909)	(0.196)	(0.121)	(0.0794)	(0.170)
EBP	-0.101	-0.153	-0.101	-0.715***	-0.688***	-0.715***	-0.846***	-0.879***	-0.846***
	(0.248)	(0.208)	(0.146)	(0.151)	(0.126)	(0.221)	(0.125)	(0.117)	(0.110)
L	0.130	0.0721	0.130	-0.349**	-0.158	-0.349	-0.568***	-0.491**	-0.568***
	(0.146)	(0.172)	(0.224)	(0.159)	(0.192)	(0.282)	(0.198)	(0.215)	(0.192)
S	0.306***	0.288***	0.306**	0.0721	0.134***	0.0721	0.0538	0.0606	0.0538
	(0.0406)	(0.0444)	(0.128)	(0.0470)	(0.0364)	(0.129)	(0.0399)	(0.0427)	(0.0980)
C	0.159***	0.142***	0.159***	0.0829**	0.0940**	0.0829	0.0402	0.0447	0.0402
	(0.0478)	(0.0439)	(0.0414)	(0.0407)	(0.0398)	(0.0720)	(0.0546)	(0.0517)	(0.0651)
ER	-0.181**	-0.162**	-0.181**	-0.0139	-0.0533	-0.0139	-0.0244	-0.0386	-0.0244
	(0.0702)	(0.0676)	(0.0769)	(0.0551)	(0.0547)	(0.0530)	(0.0503)	(0.0520)	(0.0391)
P	-0.114*	-0.111**	-0.114	-0.159***	-0.157***	-0.159**	-0.147**	-0.158**	-0.147**
	(0.0623)	(0.0529)	(0.115)	(0.0527)	(0.0554)	(0.0661)	(0.0573)	(0.0644)	(0.0737)
MR	0.481***	0.448***	0.481***	0.169**	0.227*	0.169			
	(0.101)	(0.0900)	(0.0680)	(0.0808)	(0.121)	(0.127)			
SPI	0.442***	0.423***	0.442***	0.0904	0.122	0.0904			
	(0.135)	(0.131)	(0.0757)	(0.0861)	(0.0821)	(0.119)			
NT	-0.0580	-0.0302	-0.0580						
	(0.0720)	(0.0590)	(0.0446)						
M23	-0.129	-0.0623	-0.129**						
	(0.102)	(0.108)	(0.0539)						
Observations	122	122	122	157	157	157	184	184	184
R-squared	0.596	0.612	0.596	0.504	0.540	0.504	0.520	0.547	0.520
CD p-value	0.242	0.368		0.279	0.337		0.000	0.000	
FE/RE		0.009	0.001		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.53. The Excess Bond Premium and Employment at 8-quarter horizon

Empl 8-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-0.101	-0.0183	-0.101	-0.273	-0.257	-0.273*	-0.347*	-0.393**	-0.347**
	(0.213)	(0.153)	(0.268)	(0.206)	(0.156)	(0.164)	(0.183)	(0.149)	(0.174)
EBP	-0.0864	-0.164	-0.0864	-0.612***	-0.688***	-0.612***	-0.693***	-0.775***	-0.693***
	(0.300)	(0.149)	(0.250)	(0.142)	(0.0842)	(0.176)	(0.0906)	(0.0530)	(0.0814)
L	-0.590***	-0.646***	-0.590***	-0.736***	-0.827***	-0.736***	-0.813***	-0.900***	-0.813***
	(0.133)	(0.0988)	(0.132)	(0.167)	(0.129)	(0.192)	(0.175)	(0.110)	(0.185)
S	0.0714	-0.0233	0.0714	-0.112	-0.176*	-0.112	-0.118	-0.229**	-0.118
	(0.110)	(0.0702)	(0.0956)	(0.0859)	(0.101)	(0.118)	(0.0782)	(0.0945)	(0.0903)
C	-0.0551	-0.0375	-0.0551	-0.0138	0.000288	-0.0138	-0.0359	-0.00996	-0.0359
	(0.0467)	(0.0459)	(0.0466)	(0.0478)	(0.0433)	(0.0572)	(0.0555)	(0.0471)	(0.0568)
ER	-0.116*	-0.0793	-0.116**	0.00881	0.00339	0.00881	-0.0239	-0.0133	-0.0239
	(0.0570)	(0.0535)	(0.0572)	(0.0310)	(0.0446)	(0.0379)	(0.0255)	(0.0346)	(0.0366)
P	-0.105	-0.0838	-0.105	-0.153**	-0.144**	-0.153***	-0.153***	-0.146***	-0.153***
	(0.0924)	(0.0553)	(0.0748)	(0.0594)	(0.0581)	(0.0201)	(0.0480)	(0.0508)	(0.0345)
MR	0.178	0.120	0.178**	-0.0202	-0.0267	-0.0202			
	(0.139)	(0.103)	(0.0900)	(0.0646)	(0.0606)	(0.0744)			
SPI	0.430**	0.416***	0.430***	0.117	0.105	0.117			
	(0.206)	(0.117)	(0.161)	(0.0829)	(0.0700)	(0.0911)			
NT	-0.0598	-0.0212	-0.0598						
	(0.0703)	(0.0398)	(0.0612)						
M23	-0.0808	0.00417	-0.0808						
	(0.0745)	(0.0944)	(0.0553)						
Observations	102	102	102	133	133	133	156	156	156
R-squared	0.633	0.670	0.633	0.575	0.610	0.575	0.567	0.633	0.567
CD p-value	0.022	0.135		0.023	0.195		0.000	0.004	
FE/RE		0.000	0.000		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.54. The Excess Bond Premium and Real GDP at 1-quarter horizon

Real GDP 1-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-0.640***	-1.031*	-0.640***	-1.031***	-1.746***	-1.031***	-1.078***	-1.624***	-1.078***
	(0.222)	(0.542)	(0.190)	(0.227)	(0.360)	(0.280)	(0.266)	(0.317)	(0.227)
EBP	-1.880***	-2.205***	-1.880***	-2.914***	-3.340***	-2.914***	-3.113***	-3.312***	-3.113***
	(0.427)	(0.617)	(0.638)	(0.418)	(0.428)	(0.433)	(0.506)	(0.476)	(0.239)
L	-0.681	-0.826	-0.681	-0.315	-1.038	-0.315	-0.613	-1.003*	-0.613*
	(0.779)	(0.758)	(0.580)	(0.568)	(0.694)	(0.357)	(0.532)	(0.556)	(0.370)
S	0.0695	0.0116	0.0695	-0.106	-0.348**	-0.106*	-0.141	-0.378**	-0.141**
	(0.297)	(0.227)	(0.117)	(0.141)	(0.148)	(0.0603)	(0.151)	(0.146)	(0.0552)
C	0.100	0.103	0.100	0.0534	0.0232	0.0534	-0.0169	0.000609	-0.0169
	(0.155)	(0.156)	(0.0886)	(0.136)	(0.126)	(0.0754)	(0.137)	(0.117)	(0.0767)
ER	-0.357	-0.314	-0.357***	-0.0591	0.0420	-0.0591	-0.0925	0.0193	-0.0925
	(0.269)	(0.276)	(0.0743)	(0.194)	(0.188)	(0.123)	(0.229)	(0.215)	(0.0848)
P	0.465**	0.409*	0.465**	0.303	0.253	0.303**	0.269	0.250	0.269***
	(0.191)	(0.215)	(0.198)	(0.210)	(0.203)	(0.131)	(0.238)	(0.224)	(0.0845)
MR	0.483	0.491	0.483***	0.275	0.165	0.275***			
	(0.440)	(0.431)	(0.117)	(0.380)	(0.354)	(0.0709)			
SPI	0.761**	0.574	0.761**	0.170	-0.0558	0.170			
	(0.350)	(0.469)	(0.342)	(0.165)	(0.177)	(0.236)			
NT	-0.118	-0.0683	-0.118						
	(0.110)	(0.104)	(0.158)						
M23	-0.521	-0.521	-0.521***						
	(0.329)	(0.331)	(0.179)						
Observations	125	125	125	161	161	161	189	189	189
R-squared	0.666	0.667	0.666	0.622	0.652	0.622	0.620	0.659	0.620
CD p-value	0.000	0.000		0.000	0.150		0.000	0.000	
FE/RE		0.502	0.458		0.007	0.000		0.000	0.000
Robust Hausman			0.001			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.55. The Excess Bond Premium and Real GDP at 4-quarter horizon

Real GDP 4-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	0.0143	0.331	0.0143	-0.324*	-0.590	-0.324	-0.443**	-0.654*	-0.443**
	(0.179)	(0.240)	(0.181)	(0.178)	(0.401)	(0.216)	(0.196)	(0.370)	(0.220)
EBP	-0.665**	-0.515*	-0.665***	-1.918***	-2.253***	-1.918***	-2.208***	-2.366***	-2.208***
	(0.278)	(0.298)	(0.182)	(0.346)	(0.350)	(0.357)	(0.466)	(0.399)	(0.156)
L	-1.272***	-1.284***	-1.272***	-0.934***	-1.818***	-0.934***	-1.431***	-2.028***	-1.431***
	(0.372)	(0.352)	(0.337)	(0.302)	(0.270)	(0.333)	(0.443)	(0.389)	(0.505)
S	-0.474***	-0.435***	-0.474***	-0.331**	-0.549**	-0.331***	-0.453**	-0.689***	-0.453***
	(0.123)	(0.129)	(0.126)	(0.162)	(0.213)	(0.0887)	(0.189)	(0.237)	(0.116)
C	-0.118	-0.141*	-0.118	-0.0138	-0.0738	-0.0138	-0.0938	-0.106	-0.0938
	(0.0853)	(0.0827)	(0.101)	(0.0901)	(0.108)	(0.107)	(0.130)	(0.132)	(0.129)
ER	-0.212*	-0.212*	-0.212***	-0.0400	0.0788	-0.0400	-0.0528	0.0906	-0.0528
	(0.115)	(0.118)	(0.0441)	(0.100)	(0.0838)	(0.130)	(0.110)	(0.0932)	(0.0635)
P	-0.122	-0.0890	-0.122*	-0.327	-0.353	-0.327***	-0.363	-0.361	-0.363***
	(0.188)	(0.193)	(0.0676)	(0.293)	(0.267)	(0.0312)	(0.333)	(0.281)	(0.0520)
MR	0.740***	0.687***	0.740***	0.553	0.359	0.553***			
	(0.200)	(0.199)	(0.145)	(0.347)	(0.271)	(0.175)			
SPI	1.000***	1.103***	1.000***	0.233**	0.0428	0.233			
	(0.205)	(0.197)	(0.0951)	(0.0899)	(0.104)	(0.186)			
NT	0.0179	0.0526	0.0179						
	(0.0779)	(0.0810)	(0.0757)						
M23	0.104	0.154	0.104						
	(0.231)	(0.211)	(0.0825)						
Observations	125	125	125	161	161	161	189	189	189
R-squared	0.747	0.756	0.747	0.574	0.639	0.574	0.539	0.638	0.539
CD p-value	0.000	0.001		0.000	0.000		0.000	0.000	
FE/RE		0.090	0.396		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** p<0.01, ** p<0.05, * p<0.1

Table 6.56. The Excess Bond Premium and Real GDP at 8-quarter horizon

Real GDP 8-q	Panel 1			Panel 2			Panel 3		
	OLS1	FE1	RE1	OLS2	FE2	RE2	OLS3	FE3	RE3
Predicted Spread	-0.0132	0.143	-0.0132	-0.140	-0.793***	-0.140	-0.113	-0.554**	-0.113
	(0.154)	(0.106)	(0.255)	(0.159)	(0.216)	(0.235)	(0.181)	(0.214)	(0.272)
EBP	-0.339	-0.281**	-0.339	-1.203***	-1.713***	-1.203***	-1.204***	-1.394***	-1.204***
	(0.261)	(0.117)	(0.261)	(0.107)	(0.128)	(0.274)	(0.0906)	(0.0990)	(0.195)
L	-1.849***	-1.925***	-1.849***	-0.900*	-2.156***	-0.900**	-1.101**	-1.757***	-1.101**
	(0.333)	(0.344)	(0.328)	(0.486)	(0.520)	(0.434)	(0.496)	(0.500)	(0.546)
S	-0.727***	-0.706***	-0.727***	-0.498**	-0.927***	-0.498***	-0.532***	-0.890***	-0.532***
	(0.158)	(0.173)	(0.157)	(0.211)	(0.305)	(0.119)	(0.194)	(0.304)	(0.160)
C	-0.301***	-0.324***	-0.301***	-0.159	-0.266**	-0.159	-0.187*	-0.205***	-0.187*
	(0.0966)	(0.0961)	(0.0916)	(0.102)	(0.106)	(0.0977)	(0.0991)	(0.0744)	(0.0989)
ER	-0.168	-0.165	-0.168***	-0.0293	0.0825	-0.0293	-0.0346	0.104**	-0.0346
	(0.115)	(0.130)	(0.0358)	(0.0466)	(0.0621)	(0.0999)	(0.0580)	(0.0447)	(0.0876)
P	0.0261	0.0413	0.0261	-0.103	-0.152*	-0.103**	-0.107	-0.104	-0.107***
	(0.0660)	(0.0465)	(0.0854)	(0.136)	(0.0820)	(0.0448)	(0.120)	(0.0746)	(0.0364)
MR	-0.00510	-0.0481	-0.00510	0.0532	-0.236	0.0532			
	(0.202)	(0.195)	(0.0418)	(0.201)	(0.174)	(0.0560)			
SPI	0.567**	0.619***	0.567**	0.0244	-0.282***	0.0244			
	(0.254)	(0.141)	(0.264)	(0.0572)	(0.0974)	(0.137)			
NT	-0.0744	-0.0442	-0.0744						
	(0.112)	(0.0837)	(0.0988)						
M23	-0.108	-0.0784	-0.108						
	(0.153)	(0.161)	(0.0857)						
Observations	105	105	105	137	137	137	161	161	161
R-squared	0.755	0.775	0.755	0.447	0.631	0.447	0.429	0.632	0.429
CD p-value	0.000	0.000		0.000	0.000		0.000	0.000	
FE/RE		0.014	0.005		0.000	0.000		0.000	0.000
Robust Hausman			0.000			0.000			0.000

Note: Sample period: Sept 2001 – Aug 2010. Panels 1-3 have 5, 6 and 7 country groups respectively. R-squared reported for OLS models, Within R-squared reported for FE models and Overall R-squared reported for RE models. The CD p-value represents the Cross-sectional Dependence test p-value. The FE/RE represents the p-value for the significance of fixed-effects in FE models and the p-value for the Breusch and Pagan Lagrangian multiplier test for random effects in RE models, respectively. Newey-West or Driscoll-Kraay standard errors are reported in parentheses for OLS and FE models as per the CD p-value, and Robust standard errors only are reported for the RE models. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

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