

" 'The Finance and Growth of the Lancashire Cotton Textile Industry, 1870-1914'

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For my mother

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Abstract

Using accounting records and financial data, a business history of the Lancashire textile industry from 1870 to 1914 is presented. Issues of technology and industry structure, which have attracted a great deal of comment are first re-addressed. The discussion is then widened to include other aspects of the industry which have previously been neglected, namely the social processes of capital accumulation with reference to those evolving relationships between managers and shareholders which, in the context of broader economic change, helped forge the special characteristics of Lancashire capitalism.

The industry is found to be generally healthy and competitive, although its fortunes were dangerously dependent on the overseas value of the pound. Whilst the original technologies of the industrial revolution were maturing, the alternative twentieth century means of automated throughput had still not been developed. External economies and flexibility associated with vertical specialisation thus continued to outweigh those of integrated throughput production.

Meanwhile a transformation of the industry occurred in terms of its ownership, as the previously influential small shareholder was forced to surrender influence to a rising class of promotional and financial capitalists, a trend accentuated by, *inter alia*, a very serious stock exchange crash in the 1890s which forced many to sell their holdings. A shift of industry value added from labour to capital and record profits after 1900 are identified. These attracted capital into cotton and reinforced the position of the newer owners of the industry. Important features of their behaviour are examined, primarily their ability to construct impressive business empires through personal shareholdings and interference in day to day management, and their corresponding reluctance to establish professional management hierarchies, which, although increasingly common in other industries, were compromised by preference for individual, and not corporate, accumulation.

Characterised as they were by their easy access to financial resources, these new capitalists might well have made sweeping changes to industry structure and technology had they chosen to do so. However, although ring spinning was found to be in general more profitable, the basis of that superiority was an extension of the process of increased specialisation. All specialised companies, whether ring spinners, mule spinners, or weavers, tended to do much better than their vertically integrated counterparts in the period after 1900.

Evidence from this period has implications for our understanding of subsequent developments. If the industry could have been restructured before 1914, then so it could have been after the First World War when it arguably became more necessary. Pre 1914 technical constraints are identified and it is also noted that it was in the inter-war period that the means to remove them were fully developed. However, considering technical issues in conjunction with characteristics of capital ownership, it is concluded that, as the industry failed to attract investment when profit signals turned negative, for example in the 1890s, and attracted a lot of capital in the booms of the early 1900s, any constraint did exist to prevent restructuring it was financial rather than organisational. The process and character of capital accumulation is therefore advanced as a crucial ingredient of our understanding of business history.

In short, the established financial, technical, and organisational structure, when combined with buoyant overseas monetary and trading conditions, is found to have created the synthesis of a profitable industry; when external conditions changed, financial, technical, and organisational constraints became important but in that strict and steeply descending order. Lancashire was highly vulnerable to the world market; that vulnerability was accentuated by the way in which capital was created. It was the social process of capital accumulation which was the principal determinant of the development, and perhaps therefore ultimately the decline, of a once great industry.

Preface and Acknowledgements

There are those who have said that the decline of the Lancashire textile industry was a function of its excessive specialisation in the period before 1914. This proposition is analysed at length and challenged in the pages that follow, although no doubt it will remain a moot point among historians of the industry for many years. What is perhaps unfortunately less debateable is that economic history as a discipline is suffering increasingly from an excess of specialisation. In such an environment, it becomes ever more difficult for historians using archives to communicate with those applying the newest econometric techniques or those employing accounting data and analysis. The work that follows is an unashamed attempt to draw on all of these methods of enquiry simultaneously. There are aspects that will be disappointing as a result from the point of view of the purist econometrician, accountant, or archival based researcher. However, the objective is to support historical enquiry and the method is regarded as only a means to an end. In arguing for such a synthesis, history is put first and economics second. It is hoped that in the process, interdisciplinarity in method serves historical enquiry more effectively than where history itself is subordinated to the purity of the method.

By espousing interdisciplinarity, this project achieved a certain degree of originality at its inception, at least from an institutional point of view, being the first University of Nottingham research project to be lodged jointly with the Department of History and the School of Management and Finance. The process of learning cannot be achieved in a vacuum and the more one learns, the more one incurs the debt of gratitude from others. There are therefore many people whose assistance with this work deserves acknowledgement. The first among these are my two supervisors, Professor Stanley Chapman, of the History Department and Dr. Paul Barnes, of the School of Management and Finance, whose differing backgrounds, experience, and advice were well complemented and from whose wisdom I have benefited immeasurably.

I would also like to reserve a special thank you to Brian Law, who was more than generous in his provision of helpful comments and assistance in acquiring access to valuable archival material. The publication of his impressive business history, *Fieldens of Todmorden*, came too late to be cited in detail below, but it is hoped that our differing perspectives complement each other adequately. Many academic colleagues, both at the University of Nottingham and elsewhere, have provided assistance and encouragement in many different ways. In particular, Douglas Farnie, Alan Fowler, David Higgins, Christine Ennew, Stephen Procter and Paul Fenn, whose comments, loans of articles and papers, and suggestions of additional references, have all contributed. I should also like to thank the staff of the various record offices and libraries who have helped with my enquiries in a patient and professional manner. Thank you as well to Mr. J.R.R. Buchanan for helping me to read some otherwise illegible old newspapers, to Caroline Bevan for technical drawing assistance and to Jean Collins for an extended loan of some useful old manuals. A special thanks to my mother, Sheila, for her encouragement and conveniently located overnight accommodation.

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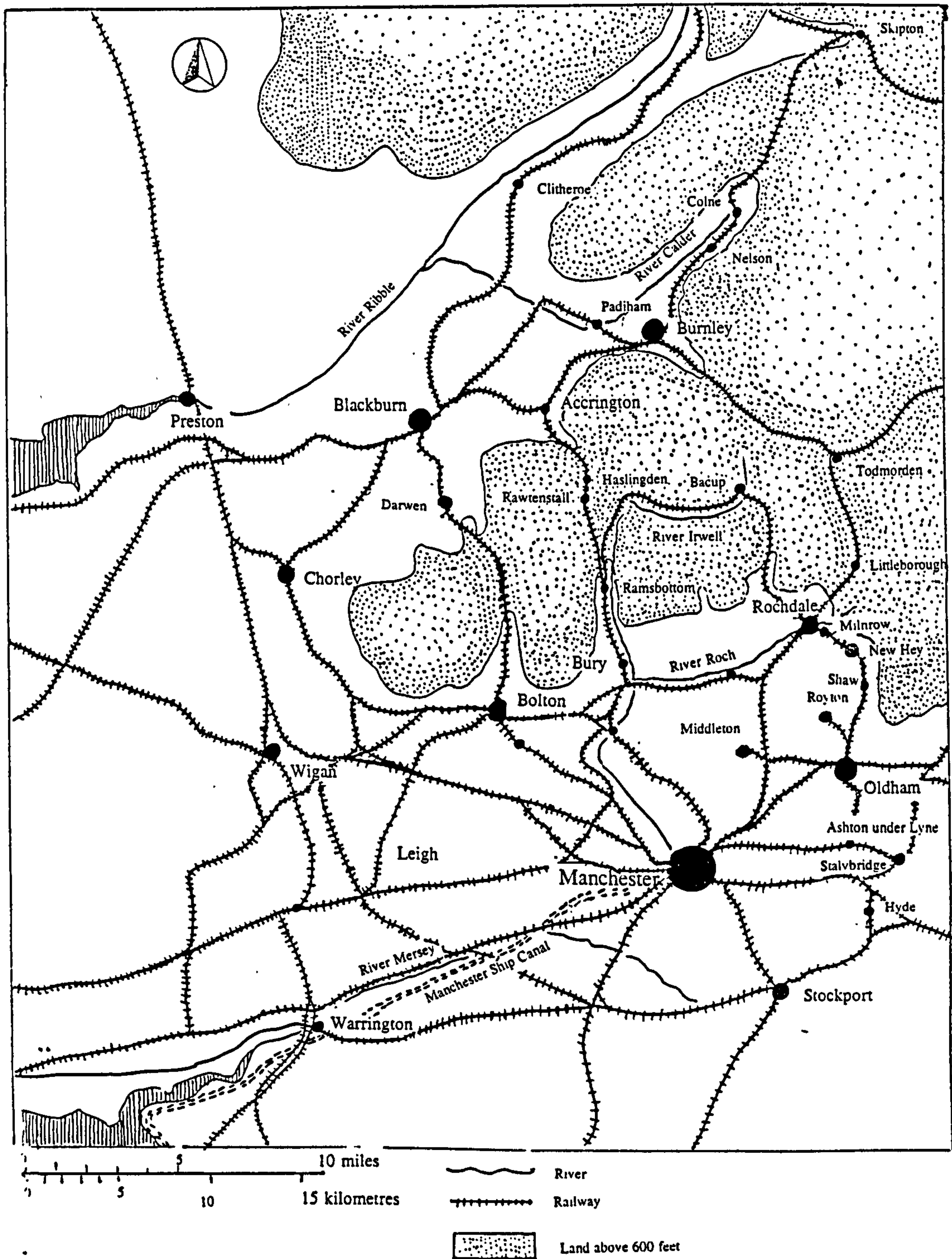
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List of abbreviations

BPP	British Parliamentary Papers
CAD	Courtaulds Archives Department, Coventry
CVR	Coats Viyella Records, Rawtenstall.
DBB	Dictionary of Business Biography
LCRO	Lancashire County Record Office
LGL	London Guildhall Library
MES	Mule equivalent spindles.
MCRL	Manchester Central Reference Library.
OLSL	Oldham Local Studies Library.
RHCM	Royal Commission on Historical Manuscripts.
RLSL	Rochdale local studies library.
RM	Rossendale Museum, Rawtenstall.
SECR	Stock Exchange Commercial Reports.
SEOI	Stock exchange official intelligence (Burdetts, before 1900).
UTR	United Turkey Red archives, Glasgow University.
WYRO	West Yorkshire Record Office, Wakefield.

The cotton districts of Lancashire



Adapted from the map in John Worrall's *Steam user's directory*, per Farnie, *English cotton*.

Part 1

Introduction

Chapter 1: Aims and methods

The cotton industry, and its dark satanic mills, has long been a metaphor for the rise and fall of Britain as a manufacturing economy. Useful questions can thus be addressed by an examination of the transition of the industry from growth to maturity. In 1860, no one would have disputed its world supremacy and domination of the British export economy. By 1922 there were as many pessimists as optimists regarding future prospects. It is therefore appropriate to seek answers to the important questions which governed long term development in the period between these dates.

Many previous authors have addressed the broad agenda of the evolution and growth of the cotton industry. In following that agenda, the evidence presented below is aimed primarily at a contribution towards business history. It seeks some originality of approach by following what might be called an accounting method; that is the use of published company financial statements to assess the performance of individual and groups of businesses. The publication of these results are treated as historical events and form a body of empirical evidence for judging the behaviour and response of entrepreneurial and investor groups. Accounting techniques may have been relatively primitive, but our purpose is to examine what was actually reported under historical conditions, rather than to say what would have been reported under modern conditions.

No other business history of Lancashire textiles has thus far sought to make such a direct and integral use of accounting data. Yet such evidence is of relevance to the major areas of discussion and controversy, such as technology, entrepreneurship and the world market, dealt with by previous histories. The scope

of the ensuing analysis is therefore wide, and we seek to comment on each of these issues in turn. *Obiter dicta*, the use of the accounting method also allows room for comment on issues of accounting history. Similarly the data used lends itself to the opportunity to review aspects of economic, labour, financial, and econometric history (or 'cliometrics'), as well as historical geography.

Nonetheless, the primary focus and differentiating feature of the current study is its concern with the financing and the financial performance of the industry. Financing of productive activities serves both as an issue in its own right, much neglected hitherto in the pre 1914 period, and as a vehicle for the introduction of new evidence. Historians of the Lancashire cotton industry have for many years shared much the same bank of statistical data and narrative accounts. In addition to these established sources, the two most important types of new evidence are financial statements of cotton companies and capital market data in respect of their shares. Such evidence facilitates not only comment on the performance of the industry and its component firms, but also allows discussion of the context of managerial decisions, for example by reference to technology, industry structure, and significant groups of stakeholders. These themes are directly addressed in the chapter structure that follows.

However, before developing the themes, some justification of the method adopted for their analysis is appropriate. Therefore, the discussion below first considers previous interpretations of the history of the industry, thereby highlighting the issues which inform the structure of the ensuing analysis. Potential research problems associated with the use of accounting and financial data are then recognised and concerns that might be raised in their use are addressed. In relation to the major debates that have characterised our understanding of the industry hitherto, it is argued that, whilst being aware of limitations, the use of this data can potentially offer new

insights when considered in conjunction with other evidence. Finally, on the basis of the foregoing discussion, definitions of key terms, delimitations, and structural outlines for the research are provided and justified.

The 'Condescension of posterity':¹ A historiography of the Lancashire cotton industry

The following discussion will outline briefly the influences which have coloured the views of commentators on the cotton industry from about 1880 to the present day. In sketching a historiography, it is always difficult to determine the boundary between the territory of the contemporary commentator and that of the historian. No attempt to define the distinction is made here and there is to an extent no need. Cotton was a classical victim of the trade cycle and a perennial continuity of views can be established by reference to the peaks and troughs of its fortunes. For example, contemporaries' doom laden interpretations of the problems of the industry in the 1890s are in some ways strikingly paralleled by the gloomy interpretations of historians writing from the standpoint of depression in their own times, either in the 1930s or following the almost total collapse of cotton after the 1960s.

For optimistic accounts, one must therefore turn first to the views of those writing during the period of Lancashire's dominance of British export industry and world cotton markets. After the industry had recovered from the traumas of the 1890s, notions of failure and decline were generally absent from the accounts of those writing prior to the First World War.² Adherence to Free Trade, a dominant principle of the so-called 'Manchester School', was almost inevitable in a period of

¹ Farnie, *English cotton*, p vii.

² Ellison, *The cotton trade*; Schulze-Gaevernitz, *The cotton trade in England*; Chapman, *The Lancashire cotton industry*; see also, Farnie 'Three historians of the cotton industry', pp. 75-89.

overwhelming export dominance, and its advocacy was well exemplified by the political activities of cotton industrialists such as Edward Tootal Broadhurst³ and writers such as Ellison.⁴ Remarkably, as the supremacy of Lancashire internationally was increasingly challenged in the twentieth century, there were few parallel challenges to this dominant idea.⁵ Thus recent historians, with one important exception, have broadly supported the precepts of the Manchester School.⁶ During trade depressions, the adverse impact of Protection in export markets was highlighted by these authors, but the superiority of British products in 'open markets' strongly emphasised.⁷

After 1922, and the onset of decline, attitudes began to change. Some writers reacted to the depressed conditions of the 1920s by viewing the pre war period as a 'golden age'.⁸ Decline in cotton was paralleled in other sectors, notably heavy industry,⁹ and by the 1930s, when economic historians had begun to examine the pre 1914 period to find explanations of post war problems, commentators on the cotton

³ Clarke, *Lancashire and the new Liberalism*.

⁴ Ellison, *The cotton trade*, p. 113.

⁵ Although a consistent advocate of Free Trade in the period of Lancashire's dominance of the world market, Sydney Chapman became a convert to Protection during the years of decline; MacKenzie (ed) *Diary of Beatrice Webb*, 30 April, 1928, vol. 4, p. 141 (I am grateful to D.A. Farnie for pointing out this reference).

⁶ For example, Boyson, *The Ashworth cotton enterprise*, p. vi; the exception is William Lazonick, see below.

⁷ Examples include Ellison, *The cotton trade*, p. 116; Marsden, 'Optimistic views of the cotton trade', p. 275; Chapman, 'Report of the Tariff Commission', p. 420.

⁸ Bowker, *Lancashire under the hammer*, p. 23.

⁹ See for example, Aldcroft, *The inter-war economy*, Ch. 5.

industry made similar, and more pessimistic, reappraisals.¹⁰ Historians of the cotton industry have thus been influential in the formation of views about the British economy as a whole, and the commonly addressed question of British economic decline.

Relative economic decline has continued until the present day and has been a dominant theme in the historiography of Lancashire cotton textiles since the 1930s. Hypotheses purporting to explain decline have been influential in economics, and indeed politics, and most of them have been applied, or are applicable to, the cotton industry. Obsession with manufacturing decline in the 1970s and 1980s has coloured interpretations of pre 1914 Lancashire, and left its recent historiography dominated by the views of economists.

The chief concerns of these more recent economic investigations can be grouped under four interrelated headings. First, the issue of whether or not the industry generally was unsuccessful and inefficient. Industry representatives writing in the 1930s strenuously denied such allegations arguing that whenever poor export performances were recorded, including during pre 1914 recessions, the fault lay with governments and monetary policy.¹¹ An early influential comparative survey from a more neutral observer suggested that Lancashire cotton performed poorly vis a vis the American competition,¹² and such a view was mirrored in later arguments about the slowing of productivity growth rates for the economy as a whole.¹³ The second

¹⁰ Jones, *Increasing return*.

¹¹ Munro, Review of Schulze Gaevernitz's *Cotton trade in England*, p. 691; Federation of Master Cotton Spinners' Associations, *Measures for the revival*.

¹² Jones, *Increasing return*.

¹³ Phelps Brown and Handfield-Jones, 'The climacteric of the 1890s', pp. 266-307, identified general economic failure based on a review of output per operative data for selected key industries. Coppock, 'The Climacteric of the 1890s: a critical note' argued the slow down was attributable to cotton, and

issue is technological choice, alleged conservatism, and the rationality of the choices made.¹⁴ Connected are the third and fourth issues which have formed part of two wider debates regarding the British economy; entrepreneurial failure, which has been developed and criticised from a broader sociological perspective;¹⁵ and industry structure, particularly the impact of vertical specialisation.¹⁶

The issue of technology has perhaps been the loudest metaphor of all for the mistakes of Lancashire. 'Iron clad arguments against re-equipment'¹⁷ and perseverance with the so-called 'stubborn' mule¹⁸ and associated technology, when other nations were introducing and developing other production methods, has provided many critics with an apparently obvious explanation for the failures of the industry.¹⁹ Our period begins with the unquestioned dominance of mule spinning

dated from the 1860s, pp. 1-31. Floud, and McCloskey, *The economic history of Britain since 1700*, noted a period of stability in productivity 1873-1890 with a decline from then on. In contrast, other estimates suggest any retardation prior to 1899 was explicable solely by the agricultural and mining sectors, Matthews, Feinstein, and Odling-Smee, *British economic growth, 1856-1973*, p 606.

¹⁴ Aldcroft, 'The entrepreneur and the British economy' pp. 113-34; Landes, *The unbound Prometheus*; McCloskey and Sandberg, 'From damnation to redemption' pp. 89-108; Sandberg, *Lancashire in decline*.

¹⁵ Aldcroft, 'The entrepreneur and the British economy' pp. 113-34; Wiener, *English culture*; these views have been criticised in Rubinstein, *Capitalism, culture and decline*.

¹⁶ For the main interpretations; Sandberg, *Lancashire in decline*; Lazonick, 'Competition, specialization and industrial decline', pp. 31-8; Lazonick, 'Factor costs', pp. 89-109; Lazonick, 'Industrial organization and technical change' pp. 195-236; Saxonhouse and Wright, 'Stubborn mules and vertical integration', pp. 87-94, Mass and Lazonick, 'The British cotton industry', pp 9-65.

¹⁷ Coleman and McCleod, 'Attitudes to new techniques', p. 589.

¹⁸ Saxonhouse and Wright, 'Stubborn mules', p. 87.

¹⁹ For an early exposition of this view see Young, *The American cotton industry*, p. 137; for later views of technological conservatism see Lazonick, 'The cotton industry' and 'Stubborn Mules: Some Comments', pp. 80-6.

and plain loom weaving, and ends with the increasing advocacy of their replacement with ring spindles and automatic looms. An important objective of the current analysis is therefore to monitor, and if possible date, the supersession of the one technology with the other. Only then is it possible, if not necessarily appropriate, to attribute blame.

With the advent of 'new economic' history, or the use of applied economics techniques to investigate historical issues, entrepreneurial failure and associated technological conservatism were initially called into question.²⁰ Subsequently a series of interpretations readdressed the evidence with reference to the additional issue of industry 'constraints', namely the rise of vertical specialisation and the structure of labour relations.²¹ These issues have dominated recent debates.

It was noted above how few critics of the Manchester School emerged among historians of the cotton industry. The work of one school of thought, however, forms an important and recent exception.²² As an industry dominated by the small, vertically specialised firm, and governed by intense competition, Lancashire cotton has been used as an exemplification of the inability of such industries to compete on an international stage increasingly dominated by large, concentrated companies. The 'myth of the market economy', the organising principle of those attempting to draw wider conclusions on issues of economic policy and industry structure, finally provides an antithesis to the Manchester School, or if its analysis of the history of Lancashire cotton is correct, a suitable epitaph for the industry. For the moment, this, and other pronouncements referred to above, shall enjoy the status of hypotheses to

²⁰ McCloskey and Sandberg, 'From damnation to redemption' pp. 102-3; Sandberg, *Lancashire in decline*.

²¹ For a summary, see Mass and Lazonick, 'The British cotton industry'.

²² For example, Elbaum and Lazonick, *The decline of the British Economy*; Lazonick, *Business organization*.

be re-examined in the analysis that follows.

The current dominance of these interpretations, and the 'state of the debates'²³ surrounding them, are of particular importance when considering new evidence. Indeed, the value of gathering evidence at all is perhaps best judged by the likelihood of its contribution to the major research questions. The linkage between hypotheses and evidence is even more important when the hypotheses are dominated by economic model building and the new evidence presented is quantitative. In collating the evidence for the survey below, the major debates already noted were used as a constant reference point. The path steered by the historian is inevitably governed by the directional impetus of previous studies. Indeed the strength of this impetus is a function of the validity of hypotheses advanced to date. If the momentum is weak, only a small amount of new evidence contradicting established thought is required to change direction, perhaps significantly. On the other hand, a powerful explanatory theory creates a forward impetus where only the most decisive and explicit new evidence can form a fulcrum strong enough to alter the course of accepted wisdom. Historiographically, as noted above, recent views and debates have supported contradictory conclusions; as more hypotheses have been advanced, consensus based knowledge of the working of the industry has not proceeded proportionately. New evidence, which this study seeks to present, ought therefore to be valued highly.

Whilst tracing the historiography of the industry in outline, it is important to note that participant writers have hitherto relied on similar bodies of evidence, such as measures of output, quality growth and the marginal profitability of investment decisions,²⁴ on world market share,²⁵ and estimates of efficiency based on measures

²³ Mass and Lazonick 'The British cotton industry', pp. 9-65.

²⁴ Sandberg, *Lancashire in decline*, ch. 3.

of factor input in relation to output.²⁶ All of these perspectives have advanced our understanding of the development of the industry, and it is hoped that by adding to the body of evidence, and concurrently reinterpreting major hypotheses, the process of advancement will be continued. To achieve this task, certain methodological points must be addressed. These are; first, the relationship between economics and history; second, the nature of the evidence; third, the process of evidence selection; and fourth, definitional and temporal limitations placed on the study.

Quantification, History, and Economics

The first issue is important because the roots of the investigation are simultaneously based in economics and history. Generally, the two disciplines have enjoyed a harmonious relationship in recent years, with a tendency for the latter to accept new techniques and methods from the former.²⁷ The natural response to such developments is to recognise the economics bias noted in the above historiographical review and to structure research around deductive social science hypotheses. Indeed, this would imply adoption of the economic model building approach which has characterised historical analysis of the cotton industry since the late 1960s.

However, in doing so, it might easily be forgotten why economists have undertaken historical analysis. History provides what the economist lacks; a theory of change. Being concerned not with 'origins, but transitions',²⁸ history explores the paths which, to the classical economist, are simply movements from one state of

²⁵ Lazonick and Mass, 'Performance of British cotton', pp. 5-13

²⁶ Jones, *Increasing return*, pp. 100-19; Phelps Brown and Handfield-Jones, 'The climacteric of the 1890s', pp. 266-307.

²⁷ For example, see Hawke, *Economic for Historians*, ch. 1.

²⁸ Butterfield, *The Whig Interpretation of History*, p. 61.

equilibrium to another. Thus Mass and Lazonick criticised Sandberg for applying 'static' models of neo - classical equilibrium to the cotton industry, suggesting instead that history and economics should seek a dynamic theory of institutional change.²⁹ Also, simple acceptance of the dominance of economics places potential limitations on conclusions, since where the historian 'counts heads' it is incumbent upon him to be concerned with people as well as categories.³⁰ Keynes, as an economist, was careful to recognise the need for a wider context for his own discipline, when he postulated that economics is a method rather than a doctrine.³¹ Indeed, thorough analysis of the documentary sources without any reliance on formal economic models and a conscious neutrality vis a vis contradictory ideological interpretation remains a viable alternative standpoint.³² However, both history and economics share the common problem of incompleteness,³³ the former in terms of evidence, the latter in terms of the restrictive assumptions necessary for the analysis of isolated economic relationships. The obvious and uncontroversial solution is to combine the best aspects of both; using economic models and data to add to the evidence where appropriate, and using historical context to qualify the conclusions drawn from economic analysis.

In the latter case, it is important to point out how historical perspective can strengthen bare economic analysis. There is a significant difference between the use of an economic, econometric, or financial model and the methodological standpoint of the historian. For example, to argue that contemporary entrepreneurs would have made decisions according to the realisable rate of return on investment calculated

²⁹ Mass and Lazonick 'The British cotton industry', pp. 58-9.

³⁰ Elton, *The practice of history*, p. 28.

³¹ Keynes, quoted in Henderson, *Supply and demand*, p. vii.

³² A good example being Farnie, *English cotton*, p. vi.

³³ Hawke, *Economics for historians*, p. 3

according to the assumptions of marginal economics is a possible model for analysing the decision making process. Indeed, such techniques are a common means today by which investment decisions are rationalised.³⁴ For the historian, noting that decision makers in a market economy behave according to certain precepts, perhaps governed by the simplifying static assumptions of equilibrium, can be a useful means of understanding the past. It is not the same thing as endorsing those precepts, rather it is the acceptance of their use as a tool of historical investigation. A neo classical economist using neo classical economic models to investigate historical problems is one thing; a historian examining the same problem with the same model, because the model was used by historical actors, and aware of the limitations of that model, is quite another.

New economic history as applied to British cotton textiles has been labelled neo classical, in so far as it has assumed rationality and maximising behaviour.³⁵ However, much judgement about rationality has been coloured by subsequent events. The heyday of the cotton industry and the modern era are separated by a period of restructuring in the rest of the economy which witnessed the emergence of vertical integration and the dominance of mass production techniques.³⁶ That Lancashire entrepreneurs were apparently oblivious to such changes until it was too late is an easy judgement to make with the benefit of hindsight. A specific attribute of hindsight particularly relevant to cotton is 'technological determinism', or the notion

³⁴ Modern techniques such as discounted cash flow (DCF), as applied by Sandberg in *Lancashire in decline*, only began to supersede the traditional emphasis on payback, accounting rate of return and the perceived inverse relationship between the two. Even DCF fails to provide any illusion of optimality vis a vis 'qualitative factors', (Pike, 'An empirical study', pp. 341-351)

³⁵ Mass and Lazonick 'The British cotton industry', p. 25.

³⁶ Chandler, *Strategy and structure*.

that the technology which eventually became dominant was always inevitably destined to become so. For some, hindsight is easily assimilated; for example Carr argued that the only way for the historian is to write 'as if what happened was bound to happen'.³⁷ Yet if history is intended to improve modern decision making through learning from the past, this approach is of little use, and the equivalent of expecting decision makers to rely on a crystal ball. It is in circumstances such as these that historical analysis, the explanation of specific events and decisions in terms of cause and effect, can lay claim to equal and complementary status alongside economic analysis. Empiricism, as defined by Mill, as the establishment of 'laws' by direct examination of instances of their operation, is avoided by using economics to test those laws by reference to human nature.³⁸ For current purposes, human nature is represented by the managerial decision making context. Our preoccupation here is thus not with facts, but with decisions, the output of the management process, and the distinctly human aspect of economic development. To measure the effectiveness of decisions is only partly a quantitative exercise, but as qualitative performance indicators can be difficult to define, there is an inevitable pressure to place undue emphasis on the numbers. Coupled with the hindsight problem, where the outcome of counterfactual decisions based on what the historian thinks ought to have been done are quantified, there is serious risk of misinterpretation. Major debates, such as entrepreneurial failure, might even have to be ignored since standards against which decision makers are judged could not be defined.³⁹ Alternatively, relating decisions made in one period to outcomes in another might be to mistake a sequence of historical events for cause and effect; another version of the hindsight problem.

³⁷ Carr, *What is history?*, p. 97.

³⁸ Mill, *A system of logic*, Book 6, Chapter 9, Section 1.

³⁹ Casson, *The entrepreneur*, pp. 10-11.

A compromise solution is required. Research, as exemplified by the study below, might be constructed to explain as objectively as possible the reasons why decisions were made. As a first stage, economic models and historical fact are allowed to inform one another as much as possible, the former being allowed to play its correct role as method rather than doctrine. Having determined the possible multiple causes of an event or decision by this process, an evaluative stage then follows. At the second stage, historical method is given priority. Our concern is the evaluation of cause and effect; the identification of dominant and subordinate causality; of sufficient and necessary conditions. The role of economics is now more limited, given its tendency to make deductive assumptions about human behaviour. Where economics is used, it is in its applied form, at the stage of partial analysis and in terms of its incremental contribution to the historical record. Placing a broadly inductive umbrella above a variety of methods of enquiry provides the fundamental methodological framework to justify the internal validity of a case study of a particular industry against a backdrop of issues affecting the economy as a whole, and which, above all, allows a workable and constructive coexistence of history and economics.

The Use of Financial and Accounting Evidence in Historical Analysis

The second issue, that of evidence, can now be addressed with the above framework in mind. As noted already, one purpose of the research is to widen the scope of the evidence available for the analysis of the industry. For this reason, a summary collation of some important aspects of the new evidence is presented in Appendix 1 in a format other historians of the industry will find easy to assimilate into their own work. Mostly the data is gathered from accounting reports of textile companies, collated with evidence from other sources. Capital market data is also included.

If any reliance is to be placed upon them, these types of data require some recognition of their uses and limitations. Accounting and finance are generally recognised as sub branches of economics.⁴⁰ If this proposition is accepted, then the arguments advanced by the new economic historians to justify the use of applied economics in history,⁴¹ which have gained acceptance, can be extended to accounting and financial techniques. Of course, the methodological caveats noted above on the use of economic models in the historical context therefore also apply.

Further caveats, specifically associated with published accounting data and the creativity that can be involved in their preparation, should be added.⁴² It is important that this concern should be stressed, as some dismiss accounting evidence as completely unreliable. For example, one author has gone as far as to argue that 'few, if any, series of profit figures before 1900 can be taken at their face value'.⁴³ Studies of specific industries confirm that view. Historical analysis of accounting records in the case of the coal industry, has suggested that the figures reported were completely unreliable.⁴⁴ However, it might be argued that these conclusions were simply a function of the industries surveyed. For example, financial reports in the coal industry, upon which Wale based her conclusion, made no attempt to separate capital and revenue expenditure. It is hardly surprising under such circumstances that profit was measured inaccurately. None of the authorities referred to above considered the cotton industry, and this is an important omission, given the

⁴⁰ See for example, Tinker, *Paper prophets*, pp. 108-11

⁴¹ McCloskey, *Essays on a mature economy*, p. 3

⁴² Brief, 'Nineteenth century accounting error' pp. 12-27; Marriner, 'Company financial statements as source material for business historians', pp. 203-5.

⁴³ Lee, 'The concept of profit in British accounting,' pp. 6-36.

⁴⁴ Wale, 'How reliable were reported profits', pp. 253-268.

considerable variation in accounting practice between industries.⁴⁵

There are two further reasons why the historian should not succumb to the unreliability hypothesis and abandon accounting data as a tool of analysis. The first is that even if accounts were unreliable, that in itself constitutes an interesting historical fact. Where the *dramatis personae* are entrepreneurs, investors, and trade union negotiators, as is often the case in business history, accounting reports are an important mediating document between the stakeholder groups. They are also one of the few annually published company documents likely to survive, thereby offering potentially valuable time series and cross sectional data. Such reports have been argued to be a response to a political agenda⁴⁶ and their origins in the context of the modern joint stock company explainable in terms of the relative freedom of managers to produce them in the absence of shareholder scrutiny.⁴⁷ Conflict between managerial and shareholder groups has been used by some economic historians to explain the development of the British economy.⁴⁸ These can be reflected in the content, or lack of content, of accounting reports. Hence the relative accuracy or otherwise of accounting reports can be used by the historian to judge the emergent relationship of managerial and investor classes and how that relationship evolved with economic growth. In addition, there is a second argument. If the historical actor can use accounting data to distort the truth in order to gain particular advantage, then so the historian can use accounting data to undo the bias and produce reports which approximate to the true picture. Lee acknowledged that his conclusion of

⁴⁵ Toms, 'Supply and Demand' p. 7.

⁴⁶ Solomons, 'The political implications of accounting' pp. 114-5.

⁴⁷ Yamey, 'Some topics in the history of financial accounting', p. 39.

⁴⁸ Hannah, *Rise of the corporate economy*; Kennedy, *Industrial structure*, p. 126.

unreliability might be modified when the figures supporting the published report could be investigated by the historian.⁴⁹ In some cases, surviving accounting data might allow the figures to be reconstituted.⁵⁰ The method adopted below is thus constructed at two levels; first an identification and historical explanation of bias; and second, a reconstruction of the truth.

In collecting the evidence, it was assumed generally that the accounts of cotton companies might be more reliable than those of other industries. Paradoxically, such reliance is a function of the pressures which would have tempted accountants to distort the economic reality facing their companies. For example, the overstatement of profits would create an opportunity to pay higher dividends than otherwise. Conversely, as the cotton trade famously linked its collective bargaining procedures to the trade cycle,⁵¹ the disclosure of high profits would tend to encourage demands for advances from the operatives. Such contradictory social pressures meant that, on average, across large samples of companies and through time, the profits of companies were probably accurately reported. Moreover, issues such as depreciation accounting and stock valuation, which attracted controversy in other industries,⁵² were dealt with in remarkably uniform fashion in the cotton trade. For example, cotton companies had little difficulty in distinguishing capital and revenue, and seven and a half per cent reducing balance depreciation on plant and

⁴⁹ Lee, 'The concept of profit', p. 34.

⁵⁰ Church, Baldwin, and Berry, 'Accounting for profitability at the Consett Iron Company', pp. 706-8.

⁵¹ Burgess, *Origins of British industrial relations*.

⁵² For example; Coal, Wale, 'How reliable were reported profits?', pp. 253-68; Coal and Iron, Church, Baldwin, and Berry, 'Accounting for profitability at the Consett Iron Company', pp. 703-24. Brief, 'Nineteenth century accounting error', argued that error arose from failure to systematically distinguish between capital and revenue expenditure, p. 14. In the cotton industry few such difficulties arose.

machinery became an industry norm.⁵³ This is not to say that the use of cotton company accounts is entirely unproblematic. Balance sheets cannot have accurately reflected the true value of capital invested. Until 1896, prices and hence replacement costs fell, and thereafter tended to rise,⁵⁴ and accountants provided no adjustment for this. The effect of depreciation charges was to show old but productive plant and machinery at relatively low book values.⁵⁵ If the performance of a company is examined over a number of years distortions can easily arise and must be borne in mind when interpreting the data. However, these distortions can be quantified, and may not have been of great significance.⁵⁶ The problem is less serious when data is used comparatively between companies, since each would be affected in a similar way.

Putting these problems to one side, some facets of the profitability of Lancashire textiles can be derived from earlier work.⁵⁷ However, these either deal only in absolute measures or fail to relate the profits of the industry fully to the scale of capital investment responsible for their creation. Without such data, it is difficult to draw conclusions on the behaviour of management within the industry and their investment decisions, together with investment decisions made by external individuals and institutions. Our understanding of these issues is thus likely to benefit from the construction of a return to capital series. Return on capital is defined as profit before interest as a percentage of long term capital invested. The latter is defined as

⁵³ Moss, *Cotton spinning company accounts*, p. 34.

⁵⁴ Robson, *The cotton industry*, p. 336.

⁵⁵ Ryan, 'Machinery replacement in the cotton trade', p. 569.

⁵⁶ See for example, the calculation in Toms, 'The financial performance of Lancashire cotton', p. 33.

⁵⁷ Campion, 'Pre-war fluctuations', p. 627; Robson, *The Cotton Industry*, p. 338; Sandberg, *Lancashire in decline*, pp. 104-5.

shareholders' equity plus fixed interest loan finance.⁵⁸

A major potential problem with using such a measure is its subjectivity regarding asset values, in particular their understatement through the charging of excessive depreciation. As illustrated in Part Three, companies tended to depreciate their assets but instead of using depreciation funds for replacement, surplus cash was used to repay loan accounts or was paid out as dividends. The money would then circulate back into fixed capital via the flotation of new mills.⁵⁹ Furthermore, many assets would remain productively employed long after they were fully written off for accounting purposes. For a typical established company, therefore, the book value of capital employed tended to diminish and accounting returns would tend to rise, and this is an important bias which deserves full recognition in the discussion below.

A further defence against bias is to plan the careful use of accounting data in conjunction with other evidence. Documentary evidence, whether in the form of accounting numbers or narrative, poses problems of survival and selection. Both types are biased by the coincidence of survival. This has implications for the formulation of hypotheses *ex ante* as lack of required data may lead to their subsequent modification. Much depends on the historical fact and its interpretation.

According to Carr:

The historian starts with a provisional selection of facts, and a provisional interpretation in the light of which that selection has been made - by others as well as himself. As he works, both the interpretation and the selection and ordering of facts undergo subtle and perhaps partly unconscious changes, through the reciprocal action

⁵⁸ More formal economic definitions are the subject of academic debate and will not be examined here. The definition used deals exclusively with loan and share capital as disclosed in the *Economist* and *Oldham Chronicle* surveys. Loan capital does not include bank loans since such loans were rare, typically short term and used to finance working capital. The usage of return on capital in this paper is consistent with that referred to periodically by the *Economist* and *Oldham Chronicle*.

⁵⁹ See also, Toms, 'Financial constraints on economic growth', pp. 374-5.

of one or the other.⁶⁰

Such an iterative process arguably underlies all analysis of the past, and featured in the evolution of this study. The approach to evidence selection was governed by two considerations. First, a prior examination of the available statistical, financial and documentary evidence in conjunction with a review of the major issues, discussed already, as identified by previous historians of the industry. Second, the design of a research structure facilitating the integration of industry and individual case study perspective.

By analysing evidence from the industry as a whole in conjunction with evidence from individual firms, and combining different data sources, the aim was to minimise the impact of missing or biased data via triangulation. Where individual companies were selected as case studies, the ability to triangulate the evidence was the most important consideration. Thus it was important that where accounting data had survived, it could be used in conjunction with surviving manuscripts, contemporary published sources, or capital market data.⁶¹

To return to the earlier historiography, part of the judgement applied in selecting the evidence was also governed by its potential relevance to issues affecting the industry. Another source of bias was therefore introduced via the *a priori* conclusions of previous historical studies. However, although some degree of originality of approach is claimed for this work, it is accepted that the majority of new knowledge is created incrementally and that reference to previous studies is a necessary starting point, regardless of the methodological standpoint of the new work. Even so, when comparing existing literature with previously unused historical

⁶⁰ Carr, *What is history?*, pp. 29-30.

⁶¹ The best source giving simultaneous coverage of the first two areas is, RCHM, *Records of British business and industry*.

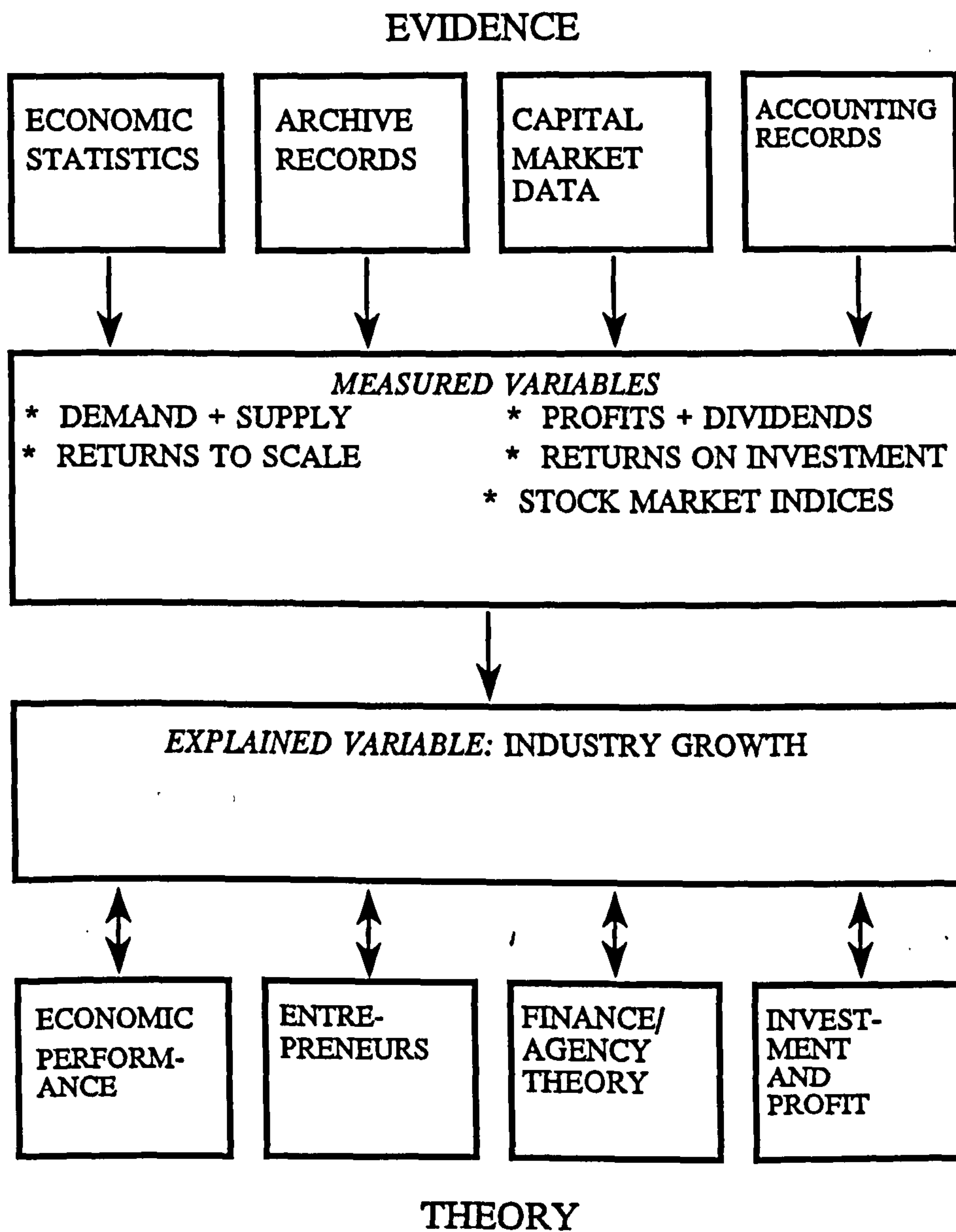
evidence, ideas for new areas of exploration are inevitably suggested. Indeed this is a particularly important justification for undertaking historical research.

On this basis, with reference to the historiographical review above, but without forming specific hypotheses, or identifying others for falsification as is standard in the social sciences, although nonetheless identifying important issues, the analysis has been constructed around the following broad areas:

- (i) The issue of technological choice. In which the choices between the mule and ring spindle in spinning and the plain and automatic loom in weaving are considered.
- (ii) The issue of industry structure. In which the impact of vertical specialisation is examined.
- (iii) The issue of capital accumulation and divestment. In which the use of profits in terms of their distribution and reinvestment is analysed.
- (iv) The financial and economic performance of the industry. In which case study evidence and industry data are examined and conclusions from previous studies reconsidered.

All but the third area have occupied an important place in the historiography of the industry. Item (iii) has attracted much less comment, but is an obvious subject for further investigation, given the nature of the evidence used. All four areas are clearly interrelated and whilst each section will have its dominant theme, interrelationships with the other areas will be developed at the appropriate stage of analysis. Figure 1 presents an analytical model upon which the structure of the ensuing examination is based. The model is structured so as to present the theoretical and evidence categories used in previous studies on the left, and the incremental perspectives presented in this study on the right.

Figure 1.1: Evidence and Hypotheses



Sample selection and documents

The documents chosen for study were governed by the priorities of debates identified in the historiography, and considerations about the nature of evidence discussed previously. In terms of objectives, this translated into finding data which would measure the variables identified in figure 1.1. Companies chosen for detailed study are listed, together with their attributes in table 1.1. In most cases the objective was to construct a profit series from original accounting records, supported where appropriate by documentary and secondary sources. Those companies selected for detailed study were chosen from a recent record of available archive material.⁶² Table 1.2 shows the principal archive or other source used for each sample company. Of the surviving archives, it was considered important to concentrate on those spinning and manufacturing firms which were based in Lancashire and where the following were available:

- * Financial records, ie accounts and ledgers for the longest possible unbroken period prior to 1914.

- * Shareholding records and minute books.

Out of a total listing of 172,⁶³ 30 companies broadly met the above criteria, albeit in many cases with fairly limited time series of data. To narrow the field further, priorities were established according to the apparent quality and continuity of the surviving evidence. Thus firms with the longest run of pre 1914 figures were given precedence. On this basis, ten companies were initially selected.⁶⁴

Further companies were then added to the list where comparison was useful,

⁶² RCHM, *Records of British business*.

⁶³ RCHM, *Records of British business*, pp. 29-47.

⁶⁴ These were: Dowry, Era, Fielden, Healey Wood, Horrockses, Osborne, T & R Eccles, Tootal, Werneth, and Whiteley.

but the analysis of primary data unjustifiable, either because the work had already been done in previous studies, as with Moorfield,⁶⁵ Rylands and Sons,⁶⁶ and Sun Mill,⁶⁷ or because original data had not survived. In these three cases, the issues of profitability and other aspects of financial performance have only been partially dealt with in previous studies, and it was thus necessary to study each in conjunction with other data sources. Moorfield and Sun Mill data were therefore gathered also from local newspaper reports, in which a fairly full disclosure of financial statistics was normally made on a quarterly basis.⁶⁸

The availability of published press sources for financial results greatly widened the sample from which further companies could be selected. However, to widen the sample too far on this basis would have biased the study through the inclusion of too many specialised Oldham based spinning companies. Nonetheless the availability of such data meant that companies which might have been of particular importance *vis a vis* the historiography of the industry could still be chosen regardless of the absence of archival material. Hence the inclusion of the three Rochdale district ring spinning concerns, the New Ladyhouse, New Hey and Haugh Spinning Companies.⁶⁹

Extending the same principle to other important companies, it was also possible to include Ashton Brothers of Hyde in the sample. As a pioneer in automatic

⁶⁵ Smith, 'An Oldham limited liability company', pp. 34-53.

⁶⁶ Farnie, 'John Rylands of Manchester', pp. 3-103.

⁶⁷ Tyson, 'Sun Mill'.

⁶⁸ *Oldham Chronicle*, 'Commercial reports', Saturday issues published the quarterly reports of companies detailing profits, dividends, share and loan capital, 2nd April 1884 - 27th December 1913.

⁶⁹ The precise location of these mills was the township of Milnrow south east of Rochdale and north west of Oldham. They are referred to collectively below as the 'Milnrow ring spinners'.

weaving, this company has attracted considerable comment.⁷⁰ Again, its inclusion could not be justified on the basis of listed archives. However, because the company was quoted at Manchester from 1899 onwards, it filed accounts with the stock exchange, and these were available in the archives of the Guildhall Library and in stock exchange collations of financial data.⁷¹ Reports of a few other companies were obtainable from this source, and two others were chosen. These were Rylands and Sons, and Barlow and Jones. The former was included to complement the data available from the secondary source noted above⁷² and the latter as an additional comparator. Others, such as those specialising in thread manufacture and finishing processes⁷³ were excluded as being beyond the scope of the current investigation.⁷⁴

Taken together the 18 companies discussed above and selected for detailed analysis will be referred to as the 'main sample'. The general approach throughout is to use simple averages for each of these companies to produce an average for the industry as a whole. Two further samples were also used, as detailed below; the 'spinning sample' and the *Economist* sample. The objective in creating the main sample was, given the constraints of data availability, to ensure coverage and contrast

⁷⁰ Sandberg, *Lancashire in decline*, pp. 80-1; Lazonick, 'Industrial organization', pp. 211-2; Fowler, 'Trade unions and technical change', pp. 43-55.

⁷¹ LGL, Commercial reports, half yearly balance sheets, 1899-1913; SEOI, 1899-1914.

⁷² Farnie, 'John Rylands of Manchester', pp. 3-103.

⁷³ Notable examples of the former included J. and P. Coats, and the English Sewing Cotton company, and of the latter, the Bleachers Association and the Calico Printers Association.

⁷⁴ There is an important exception to this delimitation in chapter 6 below. Some vertical companies, such as Horrockses, integrated forward into finishing. Thus when the performance of vertically integrated companies is compared to horizontally specialised spinners and manufacturers, it is appropriate also to review the performances of specialised finishing companies.

in terms of size (capital employed), structure (ie the degree of integration), technology, ownership and, to a lesser extent, geographical location. These contrasts are detailed fully in table 1.1.

Table 1.1: Main Sample Companies

(1) Sample companies

Company	Description	Capital in 1890 (£)*
Ashton Brothers of Hyde	VI;M,R,AL;Q;Ma	325,948
Barlow and Jones	VI;M;Q;Bo	500,002
Dowry Spinning Company	VSS;M;Q;Ol	44,726
Era Ring Mill Company	VSS;R;Q;Ro	100,000
Fielden Brothers	VI;R,PL,AL;P;To	130,169
Haugh Spinning Company	VSS;R;Q;Ro	44,238
Healey Wood Mill	VI;M,PL;P;Bu	15,000
Horrockses Crewdson	VI;M,R,PL;P;Pr & Bo	1,067,620
Moorfield Spinning Company	VSS;M;Q;Ol	75,699
New Hey Spinning Company	VSS;R;Q;Ro	58,521
New Ladyhouse Spinning Company	VSS;R;Q;Ro	30,361
Osborne Spinning Company	VSS;M;P;Ol	23,960
Rylands and Sons	VI;M,PL;Q;Ma	4,196,994
Sun Mill Company	VSS;M;Q;Ol	99,270
T and R Eccles	VSW;PL;P;Bl	28,885
Tootal, Broadhurst and Lee	VI;M,R,PL,AL;P;Bo,Ma	830,130
Werneth Spinning Company	VSS;M;Q;Ol	135,885
Whiteley and Company	VI;M,R,PL;P;Bl	38,976
Total		7,746,384

* where 1890 figures were not available, eg for companies formed after then, the nearest alternative date was used.

Key

Structure:	VSS, vertically specialised, spinning company; VSW, vertically specialised, weaving company; VI, vertically integrated company.
Technology:	M, mule spindles; R, ring spindles; PL, plain looms; AL, automatic looms.
Ownership:	Q, quoted; P, private.
Location:	Ol, Oldham district; Ro, Rochdale district; Bl, Blackburn district; Pr, Preston; Bo, Bolton; Ma, Manchester; To, Todmorden; Bu, Burnley.

(2) Lancashire textile industry as a whole

Number of firms (1890)	1801
Capital employed (1886):	Total £108 million
	Spinning £58 million
	Weaving £14 million
	Finishing £22 million

Note: a useful rule for the conversion of money values to modern equivalents is to multiply the above figures, and those used throughout the text, by a factor of 60. It should also be borne in mind that relatively, these values compare to 1890 GNP.

Sources: (1) see table 1.2; (2) Number of firms, Jones, *Increasing return*, p. 277, capital employed, Ellison, *The cotton trade*, p. 70 and analysis by industry branch based on Blaug, 'Productivity of capital', p. 111 (where the capital of each branch is the cited figure, plus a proportion of the £25m floating capital of the whole industry allocated *pro rata*).

Table 1.2: Data and sources

Company	Source
Ashton Bros	LGL, Commercial reports, half yearly balance sheets, 1899-1913.
Barlow & Jones	LGL, Commercial reports, half yearly balance sheets, 1900-1913.
Dowry	CAC, LCC/Dow1, nominal ledger; June 1885 - December 1912; <i>Oldham Chronicle</i> , 'Commercial reports', Saturday issues, quarterly reports detailing profits, dividends, share and loan capital, April 1884 - December 1913.
Era	RLSL, C/IND/COT/ERA, miscellaneous, details of net profits and spindles, 1898 - 1914.
Fielden	WYRO, C353/475, Detailed accounts, balance sheets and summary profit and loss accounts, December 1891 - December 1914; RMA, detailed profit and loss accounts and costings, December 1895 - December 1914; 1884-1889, Law, <i>Fieldens of Todmorden</i> , table XVII, p. 129.
Haugh	<i>Oldham Chronicle</i> , 'Commercial reports', Saturday issues, quarterly reports detailing profits, dividends, share and loan capital, April 1884- December 1913; <i>Rochdale Observer</i> , ditto, 28th June 1890 and quarterly reports April 1892- June 1914 inclusive.
Healey Wood	RM, BB614, Balance sheets, quarterly trading and profit and loss accounts and balance sheets, April 1907 - December 1914; dividends ledger, April 1882 - December 1914.
Horrockses	CVR, Detailed accounts, half yearly balance sheets and profit and loss accounts, November 1887 - October 1905; LCRO, DDHs/53, Balance sheets, half yearly balance sheets and profit and loss accounts, October 1905 - April 1914.
New Hey	<i>Oldham Chronicle</i> , 'Commercial reports', Saturday issues, quarterly reports detailing profits, dividends, share and loan capital, September 1886 - June 1913; <i>Rochdale Observer</i> , ditto, 28th June 1890 and April 1892 - June 1914.
New Ladyhouse	<i>Oldham Chronicle</i> , 'Commercial reports', Saturday issues, quarterly reports detailing profits, dividends, share and loan capital, April 1884 - December 1913; <i>Rochdale Observer</i> , ditto, 28th June and April 1892 - June 1914.
Moorfield	<i>Oldham Chronicle</i> , 'Commercial reports', Saturday issues, quarterly reports detailing profits, dividends, share and loan capital, April 1884 - December 1913; Smith, 'An Oldham limited liability company', pp. 34-53.
Osborne	LCRO, DDX/869/3/1, Trade, capital, and profit and loss accounts, June 1889 - June 1914.
Rylands	LGL, Commercial reports half yearly balance sheets, 1899-1913; SEOI, 1884-1898; Farnie, 'John Rylands of Manchester', pp. 71-2.
T & R Eccles	LCRO, 868/7/1, Profit and loss accounts and balance sheets, annual reports, September 1897 - September 1914.
Sun Mill	<i>Oldham Chronicle</i> , 'Commercial reports', Saturday issues, quarterly reports detailing profits, dividends, share and loan capital, April 1884 - December 1913; Tyson, 'Sun Mill', appendices 1 and 2.
Tootal	MCRL, M.461, Board minutes, yearly balance sheets and profit and loss accounts, July 1888 - July 1914.
Werneth	OLSL, Misc. 42/17 and 18, quarterly reports to members, April 1889 - October 1912; <i>Oldham Chronicle</i> , 'Commercial reports', Saturday issues, quarterly reports detailing profits, dividends, share and loan capital, April 1884 - December 1888.
Whiteley	LCRO, DDX/868/21/5, Balance sheets, annual balance sheet and profit and loss account summary, September 1898 - September 1914.

Note: The above show the primary sources from which profit and capital series were constructed; for details of full sources, see bibliography, section 1. Aggregate data from these 18 companies have been used to construct financial indices which are used throughout the text.

Because of the intention to segment the sample on the basis of vertical structure and technological adoption, when combined with the availability of archival evidence, the sample showed a bias towards south east Lancashire. Inclusion of The Fine Cotton Spinners' and Doublers' Association, which comprised over 40 firms and employed over 2.8 million spindles after 1900⁷⁵ might have corrected this bias, but would have added little comparative value. The relative profitability of the fine and coarse sections of the trade have not attracted attention in the historiography of the industry before 1914, partly because the ring was not a competitor in the province of the fine spinning section, and such a comparison is beyond the scope of the present study. Whereas the Oldham district (which included Rochdale) may not have been typical of Lancashire as a whole, it was nonetheless useful for providing the necessary comparative data for companies using different spinning technology.

In contrast to the data sources for spinning companies, for weaving, the dominance of the private company meant very few archival records and published results were available. Specialised weaving companies therefore do not figure prominently in the research. Nonetheless the vertically integrated companies provided examples of important issues in weaving and cotton economics as a whole, and were chosen with this consideration in mind. For example, only four companies using automatic looms in the pre 1914 period could be identified. These were, Gregs of Quarry Bank, Ashton Brothers of Hyde, Tootal, Broadhurst and Lee, and Fielden Brothers of Todmorden. For the first two companies, the impact of the use of automatic looms has been evaluated elsewhere.⁷⁶ The study of automatic looms is therefore based around the additional data gathered for the three latter companies and

⁷⁵ Macrosty, *The trust movement*, p. 138.

⁷⁶ Respectively, Fowler, 'Trade Unions and Technical Change', pp. 43-55; Rose, *The Gregs of Quarry Bank Mill*.

using the previous analyses for comparison.

Selection of these vertically integrated companies was also useful for purposes of comparison with specialised concerns. Vertically integrated companies also tended to be large in relation to the rest of the industry, and it is the larger concerns that have received considerable attention elsewhere.⁷⁷ Notable exceptions were Horrockses, Crewdson and Co. Ltd. and Tootal, Broadhurst, and Lee, and Co. Ltd., which were therefore chosen for inclusion in the study. The rationale for the inclusion of other vertically integrated companies, Ashton Brothers and Fielden Brothers, was referred to above. Many vertically integrated firms were also relatively small. Thus the sample was further extended through the inclusion of three other, smaller concerns, G. Whiteley and Co. Ltd. and T. and R. Eccles and Co. Ltd., both of which joined the Birtwistle Group before 1914, and Healey Wood Mill Ltd., a small Burnley company, were also selected.

A further rationale behind sample selection was to provide contrasts between different patterns of ownership structure. Contrasts were therefore sought between diverse and narrow ownership patterns within case study companies. The second sample of companies (the 'Spinning sample'; see below, table 1.3, p. 33) used to test the issue of technology was also of use in providing a database for the performance of companies which had wide share ownership. By contrast, Horrockses and Tootals, at least in its earlier years, provided useful examples of narrowly controlled but large companies, with Fielden, Whiteley, Eccles and Healey Wood, representing the

⁷⁷ For example, Macrosty, *The Trust Movement in British Industry*, ch. V. Although this survey included Horrockses, the comparison was with the larger amalgamations viz, the Fine Cotton Spinners' and Doublers' Association, J & P Coats and the English Sewing Cotton Company, Calico Printers Association and the Bleachers Association. These large amalgamations featured prominently in later surveys, for example Hannah, 'Mergers in British manufacturing industry', pp. 1-20, and *The rise of the corporate economy*, pp. 9-13 and p. 23.

smaller, family controlled sector. Finally, all the above were considered with reference to their strategies of capital accumulation and divestment. For each company chosen in the main sample, data was sought on dividend distributions and accumulated profits. In conjunction with the above data, ownership could then be fully investigated vis a vis its impact on financial performance.

To evaluate further the effects of the variables in figure 1.1 it was important to ensure that companies were included which used types of technology considered unusual for Lancashire before 1914, specifically ring spindles and the automatic loom. Lancashire adopted the former earlier and in greater numbers than the latter. An emphasis was placed on the spinning, rather than weaving, sector since documentary sources were available for several companies. To specifically address issues associated with spinning, using stock market data, a further sample of companies was identified differentiated by technology, thereby allowing the relative profitability of ring and mule spinning to be assessed (table 1.3). This will be referred to as the 'spinning sample'. The twenty one companies were selected from the group of companies whose financial details were disclosed on a regular basis in the Lancashire press. Some publicly quoted, vertically specialised, companies included in the main sample were also included in the spinning sample.⁷⁸ The remaining two ring mills were chosen as the only ones where published data was available for a sufficiently long period before 1914.⁷⁹ For the mule mills, the remaining ten were selected randomly from the April 1884 share list, which comprised a total of 83 companies.⁸⁰ Between 1884 and 1914 the average population of Oldham companies

⁷⁸ The eight companies in both samples were: Dowry, Era, Haugh, New Hey, New Ladyhouse, Moorfield, Sun Mill, and Werneth.

⁷⁹ Palm Mill, April 1884 to June 1914 and Cromer Mill, December 1907 to June 1914.

⁸⁰ *Oldham Chronicle*, 2nd April, 1884.

quoted on this basis varied between about 83 and 160, tending to increase more dramatically in the later years, especially after 1900.⁸¹

⁸¹ *Oldham Chronicle*, Saturday issues, commencing 2nd April 1884 - 27th June 1914 inclusive. The *Economist* 'Commercial history and Review of 1895, VII, Textiles: the cotton trade', 22 February 1896 and the corresponding report for each year thereafter through to 1914.

Table 1.3: The spinning sample

a) Ring Mills

Name	Spindles 1890	Product Range
New Ladyhouse	16,696	18s/32s twist
Haugh	27,768	20s/32s twist
New Hey	35,200	16s/32s twist
Palm	70,000	12s/40s twist
Era	70,000	12s/40s twist
Cromer	60,000	18s/64s twist

b) Mule Mills

Name	Spindles 1890	Product Range
Albert	24,000	4s/24s twist
Borough	57,250	16s/40s back beams
Duke	70,380	40s/70s twist and weft
Dowry	66,760	30s/50s twist and weft
Garfield	61,364	30s/50s twist and weft
Guide Bridge	156,864	26s/46s twist and weft
Greenacres*	114,034	24s/50s twist and weft
Hathershaw	77,424	24s/52s twist and weft
Moorfield*	72,000	20s/50s twist and weft
Oldham Twist	125,562	20s/70s twist and weft
Park and Sandy	35,992	10s/26s twist and weft
Sun Mill	143,930	32s/60s twist and pin cops
Shiloh	37,132	20s/36s twist and weft
Stanley	48,480	20s/52s twist and weft
Werneth	99,992	30s/62s twist and weft

* Predominantly a mule mills, but also using a small number of ring spindles by 1914.

Sources: Compiled from, Worrall, *Cotton Directory*, 1889, 1891 and 1913; Gurr and Hunt, *Cotton Mills of Oldham*, Jones, F., 'The Cotton Spinning Industry'.

Of the companies with share listings, the local press was only able to detail and collate profit and other financial figures for those companies which published balance sheets. Thus in the survey for 1899, the *Oldham Chronicle* correspondent wrote:

The results declared by the limited cotton spinning companies of Oldham and district for the year 1900 show that, though the profits are not so large as those of 1898, they compare very favourably with the results of any other year since 1890. We have returns relating to 128 companies, of which, however, only eighty six issue balance sheets...The average profit of these eighty six companies is £3405 each (or a total of £292,861), or about £8 7s 2d per cent on the paid up capital.⁸²

Using the same data, the *Economist's* 'Commercial history and review' typically contained aggregate data for the same 80 to 110 spinning companies whose results were reported in individual detail in the *Oldham Chronicle*.⁸³ Although impressive in its detail, and in many ways an unrivalled source of published financial data for the period, it should be borne in mind that only a minority of the cotton industry was represented, predominantly in the coarse to medium section of the industry.⁸⁴ The companies referred to above were taken from the Oldham, Ashton and Rochdale districts out of a total of around 320 operating in Oldham alone in 1914.

The local and national press was thus identified as a potentially important source of data for further analysis of industry profitability. Indeed, the aggregate table as published in the *Economist* has been used extensively by historians of the cotton

⁸² *Oldham Chronicle*, 'Cotton spinning in 1900', 29th December, 1900, p. 8(i).

⁸³ *Economist*, 'Commercial history and review of 1900, VII-textiles: the cotton trade', 16th February, 1901, p. 29. After reproducing the above quotation from the *Oldham Chronicle*, the *Economist* then reproduced the same table of aggregate profits back to 1884. It is clear from this that the *Oldham Chronicle* acted as the source document for the *Economist*.

⁸⁴ The ranges of counts tended to be predominantly coarse to medium, the data in table 1.3 being fairly typical; see also Jones, 'The cotton spinning industry', table 5, pp. 221-3.

industry.⁸⁵ Because the *Economist* based its own survey on information published in the *Oldham Chronicle* it is possible to identify the same individual firms as components of the listings in the latter, and which were consistently included on a year to year basis. Hence certain companies in the main sample were selected by reference to these lists and the criteria for sample selection noted above.⁸⁶

The aggregate index, of which these companies formed part, in the *Economist* constituted a useful comparator against which to judge the performance of individual companies. However, the published format of this data, measured profit only in absolute terms and not by reference to the amount of capital employed. One of the first tasks of the research was thus to convert the data from this source into return on capital employed measures. By combining data from this with several other sources it was possible to construct an index along these lines. In addition to data on profits for all years, capital employed details were also available for some years in the *Economist*.⁸⁷ Earlier years data were obtained from a list of aggregate share and loan capital for the period 1877 to 1896 for similar numbers of companies to those whose profits were quoted in the *Economist*.⁸⁸ From these sources it is possible to estimate a return to capital index for most years, with only occasional missing observations.⁸⁹ Otherwise, the only major assumption required was for the rate of interest on loan

⁸⁵ Smith, 'A history of the Lancashire cotton industry', p. 179; Robson, *The British cotton industry*, p. 338; Sandberg, *Lancashire in decline*, p. 105.

⁸⁶ For details of main sample companies where press sources were used either partially or as the only data source, see table 1.2.

⁸⁷ *Economist*, 'Commercial history and review', included the amounts of share and loan capital for the years 1895 to 1911;

⁸⁸ Farnie, *English cotton*, table 14, p. 260;

⁸⁹ Interpolation was therefore used where there was no data for share and loan capital as in 1887, or missing data for loan capital, as in 1888, 1889, 1913 and 1914.

capital. A figure of 5% was used to 1888 and 4% from then on, being an approximation to the average rate used throughout the period.⁹⁰ The aggregate index resulting from these calculations is widely used for comparative purposes in ensuing chapters and is referred to as the *Economist* sample.

Definitions, delimitations, and scope

The above discussion has sought to define the scope of the work by its relationship to current academic debates and to research problems in terms of the evidence available. More detail is required in both areas and will be introduced in the appropriate section below. At this stage, however, some further formal definitional points are called for in order to establish the broad parameters and delimitations of the research. The cotton textile industry is defined as those firms engaged predominantly in activities concerning the production and sale of cotton goods from the importation of raw cotton via the port of Liverpool to its conversion and sale as grey or dyed piece goods into the British or world market. The scope of the study is 1870 to 1914, although as suggested by the data description above, 1884 formed the beginning of the period from when certain important sources of financial data became available. It will not be possible to address the above issues without occasionally referring to the periods either side of these parameters, since the data are to be measured in relative terms. Earlier and later periods will thus be referred to where useful for comparative analysis. Excluded from the scope of the study in the first instance are those branches of the textile industry located outside Lancashire, as defined geographically rather than administratively (see map, p.xv). For the purposes

⁹⁰ Thomas, *The provincial stock exchanges*, p. 153, and Farnie, *English cotton*, p. 257.

of the study and the selection of sample data, Lancashire is taken as a geographical rather than administrative expression comprising the axes of the Pennine watershed and the Irish Sea, the Calder and Ribble valleys to the estuary of the latter at Preston, and a southern axis from the Mersey estuary via Stockport to the Pennines around Glossop.

The ensuing analysis is structured around issues (figure 1.1) more than case studies, although the latter will be used to exemplify the former where appropriate. Apart from this introduction (part 1) and the concluding chapter (part 5), there are three other major sections, dealing in turn with industry structure and technology (part 2), and then with financial policy and ownership (part 3), in which these two areas are linked to the performances of the sample companies described above. Finally in part 4, the industry is reappraised from a macro economic perspective, concentrating on relative performance, efficiency and world markets. The first area has generated many controversies and Chapter 2 documents these as far as they are relevant to the new evidence to be presented. The next four chapters introduce and analyse this evidence. First, as an introduction to its significance, chapter 3 examines the diffusion of alternative technology in Lancashire. Chapter 4 analyses the profitability of those alternatives and chapter 5 adds a further dimension to the comparison by focusing on spinning labour costs and technical efficiency. Both are primarily concerned with the specialised spinning companies in the sub sample described above. Chapter 6, by contrast, re-examines the issues from the point of view of vertical integration, concentrating on the experience of several case study companies.

The second major area, financial policy and ownership, has attracted less controversy than the first, but is worthy of attention precisely because of its neglect to date. Chapter 7 considers dividend policy, the role of entrepreneurs and their

impact on investment decisions, an area often neglected in business history generally, as well as cotton in particular. Chapter 8 develops these themes further by assessing the changing pattern of ownership and control of the industry through an assessment of the accountability of managers and entrepreneurs to the providers of industry finance. Chapter 9, after reassessing the characteristics of entrepreneurship, revisits some old arguments on the performance of the industry but from new the perspective of financial indicators, used in previous chapters to consider specific issues, but here collated to present a systematic comparison of corporate performance. Chapter 10 uses the collated return on capital data gathered from archival and other sources to re perform economic analysis, which, where conducted previously, has not drawn on such information. Finally chapter 11 reappraises the evidence in the previous chapters and attempts to quantify the impact of wider economic and market forces on the performance of the industry, thereby setting the scene for the concluding chapter.

Part 2

Structure, Technology, and Performance

Chapter 2: Controversies and Debates

In 1914 the British economy remained dominated by the industries of the first industrial revolution.¹ As a result, the 'window of opportunity' briefly opened in the 1890s for investment in those industries of the second industrial revolution, which, through productive, distributional, and organisational economies of scale, created high profit potential, was now beginning to close.² Chandler argued there were three possible reasons for this decisive lag; small geographical size and domestic market, lack of raw materials, and that older industries were still profitable. The final point emphasises the importance of analysing the profitability of the cotton industry in the period 1880 to 1914, not just in relation to its own attempts to modernise, but in relation to the impact on deployment of capital in the wider economy.

However, such a view is in part predicated upon the assumption that the industry remained unmodernised. As the previous chapter noted, such a view has gained historiographical dominance. Before considering the implications for the wider economy, it is therefore necessary to examine the ways in which the industry attempted to modernise, and to do so by reference to data, drawn from business accounting records, share prices and archival records, in conjunction with wider economic statistics and narrative accounts.

Lancashire entrepreneurs have been judged by reference to their willingness or otherwise to adopt the ring spindle and automatic loom. A mythology of the industry has thus grown around the ostensible old fashioned attitudes of Lancashire

¹ Chandler, *Scale and scope*, p. 250.

² Chandler, *Scale and scope*, p. 286.

entrepreneurs and commonly held views concerning incorrect investment decisions, poor leadership and inappropriate industry structure. Although ring spinning eventually supplanted mule spinning, and the automatic loom the traditional power loom, during this period the two technologies coexisted in direct competition.³ Few could necessarily foresee at that time the ultimate demise of the mule and the Lancashire loom. It is therefore more appropriate to use the term 'alternative technology' when referring to the ring spindles and automatic looms adopted by the minority of Lancashire companies.

None of the evidence considered to date has included any case studies of the experience of actual companies, nor reference to the profitability of those companies that shifted to the less familiar technology. To what extent, therefore, were Lancashire entrepreneurs genuinely reticent in experimenting with ring spinning and the automatic loom, was any such reticence justified, and if so, did it ultimately cost the industry its world leadership? To address these questions, the actual experiences of Lancashire companies are examined. The analysis is divided into five chapters, which facilitate the linkage of previous explanations with a framework for the presentation of the empirical evidence introduced by this research. It is first necessary to develop the historiography introduced in chapter 1 in more detail; thereby establishing the nature of the hypotheses to be tested against empirical evidence. The latter is then presented, first by examining the diffusion of alternative technologies and examples of companies which sought to specialise in ring spinning or experiment with automatic looms, in some cases from a relatively early date, are identified. Ring spinning is then analysed by reference to the financial performance of and experiences

³ The essential difference was that ring spinning was a continuous process, whereas mule spinning was intermittent, with twist inserted only on the outward movement of a wheeled carriage. For a more detailed explanation see Sandberg, *Lancashire in decline*, pp. 18-20.

of companies pursuing different investment policies. There follows a re-examination of ring spinning by reference to technical progress cost structures and labour relations. Finally, vertical integration is considered with exemplifications from major companies. Automatic looms investments can be examined within this final area, since vertically integrated managements were responsible for all the decisions taken.

Did Lancashire fail?

As the discussion in the rest of this chapter will attempt to show, much of the history of Lancashire cotton has been characterised by a dominance of economic theory, sometimes based on hindsight, and based more on generalisation than actual examples of corporate and entrepreneurial behaviour. Nonetheless, much debate has arisen from these analyses.⁴ The objective here is to add to these debates through an examination of the realised profitability in ring and mule sections of the spinning industry. It is thus important to consider hypotheses advanced hitherto on why ring spinning was not adopted and the extent to which non adoption was linked to the performance of the industry.

As noted in chapter 1, four major issues have dominated the historiography of the industry and are therefore worthy of further review. The first argument advanced was by those using comparisons with the U.S. cotton industry who alleged that the industry had 'failed' as a result of its non adoption of the ring spindle and automatic loom.⁵ The extent of alleged non- adoption is addressed by reference to empirical evidence in chapter 3. Of particular influence was Jones's 'real cost' index which showed no gain in productivity in the period 1880-1914, and compared badly

⁴ For a comprehensive summary of these debates, see Mass and Lazonick, 'The British cotton industry', pp. 9-65.

⁵ Young, *The American cotton industry*, Copeland, 'Technical Development' p. 149, Jones, *Increasing return*, p. 53.

with the industry of Massachusetts.⁶ Measures used were aggregates for the industry as a whole. The method has been criticised methodologically, particularly for its exclusion of return on capital.⁷ Failure to consider the level of profit earned created an unjustifiably dim picture, and recent studies incorporating this element have suggested a more encouraging view of the industry.⁸ The survey in chapter 4 seeks to build the foundation blocks for a more detailed understanding of the determinants of industry profitability by comparing the performances of actual companies pursuing different entrepreneurial strategies. Further analysis of returns to capital is well justified since evidence accumulated to date is indecisive in its support of the accusation of failure.

Were Lancashire entrepreneurs irrational?

The second argument, advanced principally by Sandberg and McCloskey, was that decision makers responded rationally to the profit signals sent from the alternative investment opportunities.⁹ Therefore the loyalty of the Lancashire entrepreneur to the mule was justified by its apparently superior profitability on counts above 40s.¹⁰ The argument has formed an important part of attempts to refute the so-called 'entrepreneurial failure' hypothesis.¹¹ Evidence for entrepreneurial rationality was based on calculations of internal rates of return, albeit based on generalised

⁶ Jones, *Increasing return*, p. 55.

⁷ Lazonick and Mass, 'Performance of British cotton industry', pp. 33-4.

⁸ Toms, 'Financial constraints', pp. 365-8.

⁹ Sandberg and McCloskey, 'From damnation to redemption', p. 100.

¹⁰ Sandberg, *Lancashire in decline*, p. 28. The fineness of yarn was measured by the count(s), the ratio of hanks to the pound.

¹¹ McCloskey and Sandberg, 'From damnation to redemption', p. 101.

assumptions about the replacement cost of rings and the resulting factor cost savings.¹²

However, such a calculation can be criticised since it is unlikely that rates of return would be uniform throughout the industry and through time. For example mill architecture would have caused variations in marginal cost of replacement from firm to firm.¹³ Furthermore, when new investments did take place, they tended to be as much in the form of new mills as for the replacement of machines within existing structures. Finally, it has been demonstrated by Lazonick that the assumptions used in terms of operative per machine, shipping costs, and the level of investment in rings, have been applied inaccurately.¹⁴ Therefore, instead of such theoretical calculations, the actual realised performances of companies form a more suitable basis for comparison, being less dependent on assumptions.

To criticism of the empirical evidence and assumptions used by Sandberg, Lazonick has added methodological concerns. In particular, that entrepreneurship was too narrowly defined, allowing cotton managers to be adjudged successful by reference to their ability to produce a rational or optimal solution, given certain constraints. Had the industry been led by successful entrepreneurs as defined in the Schumpeterian sense, they would have concentrated their efforts on removing those constraints, for example by vertically integrating as a precursor to introducing ring spinning.¹⁵ Furthermore, in analysing the problem, Sandberg adopted a 'static methodology' and failed to define the problem of entrepreneurship in its correct

¹² Sandberg, *Lancashire in decline*, p. 51.

¹³ Frankel, 'Obsolescence and technological change', p. 313. The example is based on weaving but is equally valid for spinning.

¹⁴ Lazonick, 'Factor costs', pp. 89-109; Mass and Lazonick 'The British cotton industry', p. 25.

¹⁵ Lazonick, 'Industrial organization', pp. 232-6.

institutional setting.¹⁶

Both these points need to be addressed here as the analytical method used below could be subject to similar criticism. Sandberg's analysis was indeed static as the internal rate of return calculation was based on similar assumptions for the whole of the period, with modifications only for changes in the level of capacity utilisation.¹⁷ This provides further justification for the use of actual rates of return and their variation from year to year. Such a method can also assist with establishing at what point in historical time commercial supremacy was actually achieved by ring spinning. The emphasis is thereby correctly placed on the dynamics of the industry's development. As to the definitional problem of entrepreneur, if Sandberg's use of the term is too narrow, Lazonick's is too wide. Whereas it is correct to say that entrepreneurs should concentrate on removing constraints, the extent to which they can do so must be limited, otherwise they would effectively plan the economy. However, the study of Lancashire cotton is essentially the study of a market economy; it is felt more important to examine how that market influenced entrepreneurial behaviour than the other way around.

Was Lancashire inappropriately structured?

A third, and very important, argument advanced to explain the development of the Lancashire textile industry was the 'institutional constraints' hypothesis.¹⁸ In particular, that the increasing vertical specialisation of the industry became a constraint on the development of high throughput, integrated manufacture. According

¹⁶ Mass and Lazonick, 'The British cotton industry', p. 21

¹⁷ Sandberg, *Lancashire in decline*, pp. 56-8.

¹⁸ Lazonick, 'Competition, specialization and industrial decline', pp. 31-38; Lazonick, 'Industrial organization and technological change', pp. 195-236; Lazonick, 'The cotton industry', pp. 18-50.

to this argument, in the rest of the industry both branches began to resist the introduction of new technology because of their structure. Spinning companies were incapable of replacing mule spindles with ring spindles because weaving companies required mule yarn for their technology. Simultaneously, weaving companies could not replace power looms with automatic looms because the spinning companies could only supply yarn suitable for the former.¹⁹ Ring weft bobbins were not a suitable production ready package for power loom weavers. Packaging was a very important reason for preferring the ring since weft bobbins were much cheaper than mule weft rewound onto pirns.²⁰ Conversely ring weft with its strength and break resistant qualities was ideal for automatic weaving. Also, the automatic loom was more effective when using ring yarn since mule cops needed to be skewered resulting in more work for battery fillers, increased waste, and more breakages.²¹

The reason for the slow adoption of rings and automatics was industry structure.²² According to this view, specialised weavers demanded mule yarn for their power looms; the fragmented structure of the industry prevented the simultaneous introduction of the ring spindle and automatic loom.²³ Thus in Britain, only in the production of warp yarns were specialist ring spinners able to compete.²⁴ Furthermore, in a locally specialised industry, not only were there costs involved in transporting yarn to the weaving mill, but also ring yarns for weft could not be

¹⁹ Lazonick, 'Competition, specialization and industrial decline', p. 34. Frankel, 'Obsolescence and technical change in a maturing economy'.

²⁰ Bennett, *An introduction to automatic weaving*, p. 29.

²¹ Bennett, *An introduction to automatic weaving*, p. 29.

²² Lazonick, 'The cotton industry', pp. 22-3.

²³ Lazonick, 'Factor Costs', p. 100

²⁴ Lazonick, 'Stubborn mules', p. 82.

wound onto packages that were light and ready for use in weaving.

Thus ring spinning tended to be used for spinning warp yarns. Here the choice of technology was less relevant since whether rings or mules were used for warp, the yarn still had to be rewound from bobbins onto beams prior to weaving.²⁵ Before or after travel, all warp yarns would need to be rewound in preparation for the weaving. Moreover, because weaving firms were committed to plain looms, mule spun yarn, with its higher elasticity and loom-ready packaging, was favoured. The latter combination was arguably easier to achieve where organisations were vertically integrated, due to easier co-ordination between spinning and weaving and lower transport costs. Where ring spinning was adopted, it ought therefore to have been in integrated concerns which could also take advantage of developments in automatic weaving; a proposition examined further in chapter 6.

However, it has been argued by means of international comparatives that vertical integration was not a sufficient condition for the adoption of ring spinning.²⁶ Other considerations were important, such as product specialisation²⁷ and possibly, as explored in chapters 4 and 5, rates of profit and cost structures. If the institutional constraints hypothesis is accepted, it would be expected that vertically specialised ring spinning companies would be less profitable than similar mule mills. A further justification for the approach adopted in chapter 4 is that the identification of a group of dedicated, vertically specialised ring spinners, producing warp yarns, provides a useful comparative sample. The institutional constraints argument only applies to the incompatibility of ring spun weft yarn with the plain loom. Producers of warp yarn,

²⁵ Lazonick, 'Stubborn mules: some comments', p. 82.

²⁶ Saxonhouse and Wright, 'Rings and mules around the world', p. 293; Saxonhouse and Wright, 'Stubborn mules', p. 92.

²⁷ Saxonhouse and Wright, 'Stubborn mules', p. 93.

whether on ring or mule frames, would both have needed to wind their output onto beams prior to the yarn being used in weaving.²⁸ Similarly, both would have had the option of selling directly into export or hosiery markets. Direct comparability of product range and strategic options is crucial to the analysis. If ring mills producing warp yarn could significantly outperform mule mills, then entrepreneurs, on the evidence that the ring was genuinely superior in the commercial sense, would have had an incentive to switch technology for warp production. On the other hand, if there appeared to be no significant advantage to ring spinning in circumstances where the use of the ring frame was relatively unconstrained, then it would hardly be surprising if entrepreneurs stuck to the mule for warp spinning and even more so for weft. This vital question is addressed directly by the ensuing analysis.

In addition to vertical integration, the evidence presented also allows comment to be made on other facets of the Lazonick and Mass argument. For example, that the structure of labour relations and the substitution of cheaper inputs was the basis of the survival and indeed success of the mule prior to 1914. It has been contended that Lancashire's success was based its responses in these areas to the cost cutting strategies of overseas companies, which were armed with the ostensibly advantageous combination of the ring spindle and cheap labour.²⁹ Again, if the hypothesis is correct, vertically specialised mule mills would be expected to outperform vertically specialised ring mills in Lancashire. Wage cost savings in ring mills would be outweighed by the option of substituting cheaper raw materials in mule mills and there would be additional reasons, associated with packaging and transport costs, to expect the superior performance of the latter. These issues are analysed in more detail

²⁸ Lazonick, 'Stubborn Mules', p. 82.

²⁹ Lazonick, 'Production relations', pp. 512-3, Lazonick and Mass 'Performance of British cotton', p. 5.

in chapter 5.

Other explanations

The final relevant contribution in the context of the ensuing analysis are the explanations put forward by those placing greater emphasis on empirical surveys rather than the testing of economic hypotheses. The work of Farnie is particularly important in this respect, providing a comprehensive analysis of all the forces underlying the development of the industry, but only as far as 1896.³⁰ Saxonhouse and Wright have been more directly concerned with the specific issue of why Lancashire failed to adopt the ring at the same time as the international competition. Use of archival evidence, in this case the sales records of textile machinery companies, has helped to widen the scope of the debate.³¹ Also, by means of international comparisons, they have sought to highlight patterns of technological diffusion.³² The approach followed below is similar, in that empirical evidence is used to ascertain the historical facts and events delaying the introduction of the ring. Saxonhouse and Wright used their evidence to challenge the conclusions of Lazonick, principally by arguing that vertical specialisation and mule spinning was consistent with a profitable and expanding industry.³³ However, Lazonick agreed with this view, maintaining that the conditions which led the industry to its success before 1914, were equally responsible for its demise after 1920.³⁴ Although some of the conclusions of these authors appear to overlap, the contribution of Saxonhouse and

³⁰ Farnie, *English Cotton*.

³¹ Saxonhouse and Wright, 'New Evidence', p. 507.

³² Saxonhouse and Wright, 'Rings and mules around the world', pp. 271-300.

³³ Saxonhouse and Wright, 'Stubborn mules', pp. 89-90.

³⁴ Lazonick, 'Stubborn mules', pp. 83-4

Wright is important, since their archival work has helped to add to our knowledge of the industry; an objective shared by the present enquiry.

Towards a Consensus

Much uncertainty, and a large measure of disagreement, remains regarding the pre 1914 period. Empirical evidence, particularly in business and company archives has not featured prominently in these discussions, and it is in this direction we must turn if consensus is to be reached. Additional and relevant evidence is therefore important and likely to clarify understanding of the actual conditions facing the industry.

The parameters of most typical discussions of Lancashire textiles are dominated by by certain assumptions. First, and perhaps oversimplistically, that Lancashire did not adopt ring spindles and automatic looms to the extent it ought to have done. Second, that ring spindles and automatic looms were more efficient than mules and power looms. Third, that industry structure was an important influence on investment decisions. Each of these points will be examined in more detail in the next four chapters. An additional point of reference, hitherto neglected entirely, will be the strategies and profitability of specific companies differentiated by their investment policies.

Chapter 3: The diffusion of alternative technology in Lancashire, 1870-1914

The technological breakthroughs of the industrial revolution had given Lancashire cotton a position of prominence in Britain and the world. Throughout the nineteenth century, the basic technologies were improved and refined, but it was the new alternatives to established production methods which arguably presented the industry with its greatest challenge. Detailed descriptions of machinery are available in many texts¹ and are not repeated here in detail, other than to make explicit important specific attributes which have a bearing on the evidence presented and the way it may influence currently held views on the evolution of the industry.

Such views as those referred to in the preceding chapter were heavily influenced by the existence of such alternatives. Before proceeding to an analysis of the commercial profitability of ring spinning and automatic looms, it is necessary to establish the scale of their introduction and how importantly their development was perceived in contemporary Lancashire. Their introduction was uneven, despite their apparent complementarity.² In fact, the introduction of ring spinning preceded the automatic loom by three decades, and was thus adopted by far more firms. The former was available on a commercial basis from the 1870s, the latter not until the early 1900s. Greater emphasis is therefore placed on ring spinning in ensuing chapters, simply because there are a greater number of case studies. Below we

¹ For example, Murphy in *The textile industries*, writing in 1910, provides a contemporary portrait of the technical issues.

² Mass and Lazonick 'The British cotton industry'; especially in addressing the debate originated by Sandberg, there is an uncontested assumption that firms could have introduced rings and automatics simultaneously.

consider the establishment of specialised ring spinning companies in South East Lancashire, and then go on to discuss the diffusion of ring spinning and automatic looms in case study companies located elsewhere in Lancashire.

Throstles, rings, and mules

The great innovations of Arkwright and Crompton provided the impetus for the industrial revolution in the late eighteenth century. For over a century after that, their inventions provided cotton spinners with two generic alternative types of equipment. These were the continuous methods of the throstle, later the ring, and the intermittent method of mule spinning. Continuous spinning was developed from Arkwright's water frame, which, as steam power replaced water, became known as the 'throstle' due to the singing noise it made when run at high speed.³ The method was favoured from the outset by firms producing strong, even yarns;⁴ a tradition continued by those adopting the ring frame. Also like the ring, the throstle was limited by its driving speed and the delay and expense associated with doffing the full bobbins.⁵ Based on a similar spinning method, the ring was able to supplant the throstle by virtue of its greater speed, as facilitated by the use of a 'traveller' to guide the yarn onto the bobbin.⁶ As the evidence presented below illustrates, such improvements meant that many companies replaced their throstles with the new ring spindle.⁷ There were far fewer cases of rings replacing the mule.

³ Murphy, *The textile industries*, Vol. 3, p. 68.

⁴ Nasmith, *Students' cotton spinning*, p. 501.

⁵ Murphy, *The textile industries*, Vol. 3, p. 71.

⁶ Copeland, 'Technical development', p. 122.

⁷ *Textile Recorder*, 13th May, 1897, attributed the spread of ring spinning in Rochdale to the previous tradition of throstle spinning; see also *Cotton Factory Times*, 26th March, 1897.

Explaining the diffusion of ring spinning

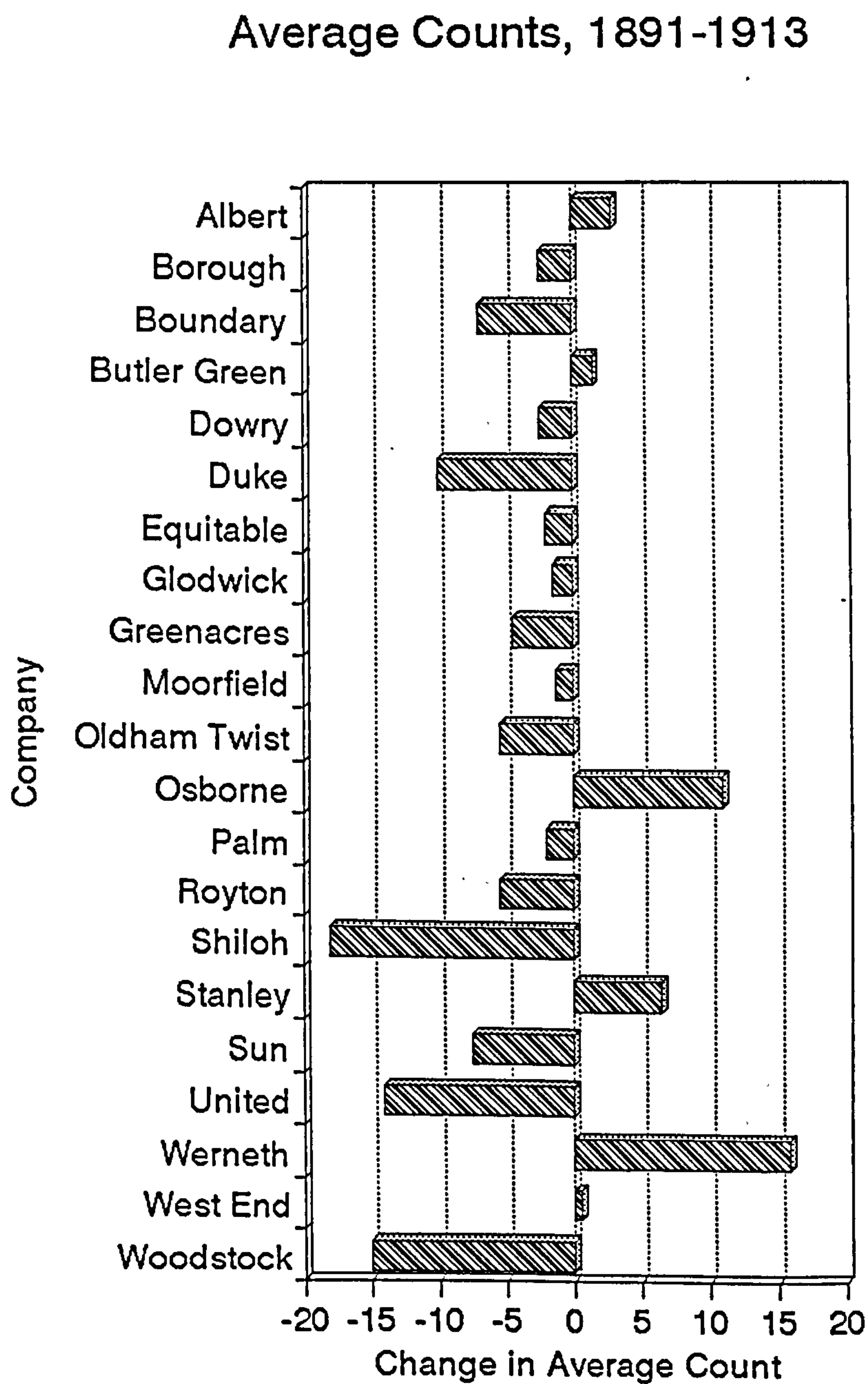
A number of interpretations of the diffusion of textile technology have pointed to the division of the market as an important determinant. Ring spinning was particularly useful for the production of coarser yarns and was widely adopted by companies worldwide spinning counts of below 40s.⁸ Yet Oldham, the centre of the British coarse trade and with its dependence on Platts for machinery, was notable for its retention of the mule.⁹ Whereas there is some evidence that the industry as a whole had begun to shift to finer counts,¹⁰ many Oldham companies moved to coarser counts (figure 3.1; table 3.1). In parallel, many also narrowed their product ranges, although the tendency in this respect was not pronounced in its own right (table 3.1). Nonetheless, in the context of the wider economy, where horizontal diversification was becoming more important, the trend was perhaps more significant.

⁸ Sandberg, *Lancashire in decline*, p. 59.

⁹ Jones, 'The cotton spinning industry', p. 18; Farnie, 'The emergence of Victorian Oldham', p. 49.

¹⁰ Helm, 'The alleged decline', p. 739; Marrison, 'Great Britain and her rivals', p. 309; 'Finer counts in Oldham and what they are indicative of', *Textile Mercury*, 16th August 1890.

Figure 3.1: Average counts, Oldham Mills, 1891-1913



Source: Worrall, *Cotton spinners' and manufacturers directory*, 1891 and 1913. Calculated by taking the average mid point of each count range.

Table 3.1: Product ranges and specialisation, Oldham Mills, 1891-1913

Company	Average Count		Change	Count range		Change
	1891	1913		1891	1913	
Albert	14.0	17.0	3.0	20	30	-10
Boundary	38.0	31.0	-7.0	28	26	2
Borough	32.5	30.0	-2.5	24	26	-2
Butler Green	45.0	46.5	1.5	30	32	-2
Dowry	40.0	37.5	-2.5	20	24	-4
Duke	55.0	45.0	-10.0	30	30	0
Greenacres	37.0	32.5	-4.5	26	30	-4
Glodwick	35.0	33.5	-1.5	2	16	-14
Equitable	33.0	31.0	-2.0	32	22	10
Moorfield	35.0	33.6	-1.4	30	16	14
Oldham Twist	40.0	34.5	-5.5	50	24	26
Osborne	48.0	59.0	11.0	38	26	12
Palm	26.0	24.0	-2.0	28	32	-4
Royton	26.5	21.0	-5.5	18	22	-4
Shiloh	34.0	16.0	-18.0	36	16	20
Stanley	31.5	38.0	6.5	32	26	6
Sun Mill	42.0	34.5	-7.5	18	20	-2
United	50.5	36.5	-14.0	38	10	28
Werneth	44.0	60.0	16.0	32	60	-28
West End	34.0	34.5	0.5	30	30	0
Woodstock	42.0	27.0	-15.0	36	44	-8
Average	37.2	34.4		28	27	

Notes

1. Count range is the difference between the lowest and highest count spun.
2. Average count is the simple average of the lowest and highest count spun.

Source: Calculated from Worrall, as for figure 3.1

There was thus no generalised shift to either fine or coarse counts, but simply an increase in the degree of product specialisation. As specialisation grew, fostered by the development of the cotton and yarn markets in Liverpool and Manchester, naturally there were niches available for ring spinners. Machine sales data would tend to support such an interpretation,¹¹ but without showing any association between technology and product quality. According to this data (table 3.2), no rings were ordered from the six main machinery manufacturers by British firms prior to 1880, and gross investment in rings did not supersede mules until 1915. The period between these dates is thus most important for further investigation of technological diffusion.

¹¹ Saxonhouse and Wright, 'Rings and mules around the world', p. 284.

Table 3.2 Cotton spinning machinery orders by British firms, 1878-1920

Period	Mules	%	Rings	%	Total
1878-1879	258,246	100	0	0	258,246
1880-1883	3,210,034	95	151,931	5	3,361,965
1884-1890	8,219,590	93	640,279	7	8,859,869
1891-1898	5,813,819	87	860,215	13	6,674,034
1899-1906	13,659,835	84	2,670,776	16	16,330,611
1907-1914	10,055,583	75	3,264,996	25	13,320,579
1915-1920	1,336,445	46	1,594,406	54	2,930,851

Source: Adapted from, Saxonhouse and Wright, Tables 7 and 8, 'Rings and mules around the world', pp 282-3.

Although offering further scope for specialisation, as noted in chapter 2, the ring spindle remained confined to the production of warp yarns. The packaging and transport problem for weft inevitably influenced the diffusion of ring spinning. a recent survey concluded that whilst this may have been a constraint in Oldham, it was not elsewhere in Lancashire, since the majority of spinning companies in other districts had sufficient local weaving capacity to avoid long distance transport if they chose to do so.¹² According to the 1906 *Enquiry*¹³ quoted in this survey, Rochdale accounted for around 27% of all sub 40s in Lancashire. Transport may not have been a constraint, but clearly there must have been other factors at work reinforcing the concentration of ring yarn output into one particular district.

Specialist ring spinners

The move from throstle to ring spinning began in Rochdale in the 1870s and geographical specialisation was an important reason. Traditionally the town had relied on wool and worsted, but with the emergence of the cotton industry transferred some of its dependence to flannels and flanelettes, the latter being introduced in 1883.¹⁴ All of these fabrics were conducive to the use of the continuous spinning method. Dependence on cotton increased at the expense of the woollen trade following the depression of 1878 and the arrival, in imitation of nearby Oldham, of the first limited liability companies.¹⁵

The ring spinning system had been originally developed and later widely adopted in the United States. The U.S. patent of John Thorp was adopted and

¹² Leunig, 'Lancashire at its zenith', p. 44.

¹³ BPP, *Report of an enquiry*, p. 241; Leunig, 'Lancashire at its zenith', p. 42.

¹⁴ Farnie, 'Cotton towns', p. 44.

¹⁵ Farnie, 'Cotton towns', pp. 43-4.

patented in England within six months by George William Lee in 1829.¹⁶ Notwithstanding the relatively early date of patent registration, in the USA, it was only the development of the Sawyer and Rabbeth spindles from the 1870s and its associated increase in productivity, that created a significant shift to rings from mules.¹⁷ In parallel to these improvements, no references to the operation of the ring in Lancashire were noted until the 1870s when competing claims began to circulate. Representatives of capital equipment manufacturers, particularly Howard and Bullough of Accrington, were the first to make moves to acquire the patents of the Booth-Sawyer and later the more efficient Rabbeth, or gravity spindle.¹⁸ Rival machine makers, Samuel Brooks of Manchester,¹⁹ as well as Howard and Bullough, became enthusiastic about the ring following various visits to America by representatives who were impressed by its operation. Perhaps the most important visit was by the latter company in 1872 since it resulted in the acquisition of patents for the Booth-Sawyer, and the commencement of commercial production using ring frames in 1874.²⁰

The earliest experiment in ring spinning involving a dedicated factory unit commenced at New Hey, Rochdale in 1878. Quickly thereafter a large number of Rochdale companies replaced their throstle spindles with rings, so that by 1890 there were 400,000 ring spindles in operation in the Rochdale area, making Rochdale the

¹⁶ Jeremy, *Transatlantic industrial revolution*, pp. 214 and 243.

¹⁷ Saxonhouse and Wright, 'Rings and mules around the world', p. 289.

¹⁸ *Rochdale Observer*, 4th January 1890.

¹⁹ Murphy, *The Textile industries*, p. 75, refers to this visit, but not the others, which occurred approximately contemporaneously.

²⁰ Farnie, *Cotton towns*, p. 44; Farnie, *English Cotton*, pp. 229-231. *Rochdale Observer*, 28 June 1890, p.4, 4 January, 1890, p.6. Samuel Tweedale was a director of New Ladyhouse mill until his death in 1881.

centre of a 'great industry'. Of these, 300,000 were supplied by Howard and Bullough.²¹ Ring spindles supplied by the six leading machine makers up to 1890 totalled 792,000 (table 3.2), illustrating the preponderance of one district and one capital equipment supplier in the early stages of the diffusion of the new spinning method. The first company to use the new method was the New Ladyhouse Cotton Spinning Co. Ltd, registered on 26th April, 1877,²² Lancashire's first major vertically specialised, dedicated ring spinning mill.²³ It replaced an older mill which had previously burned down and was constructed on a shed pattern, a style emulated by later larger ring mills, notably Cromer at Middleton (1906).²⁴ Although the company used Howard and Bullough spindles, their sale in 1877-8 was not apparent in the survey by Saxonhouse and Wright (table 3.1).

In the early 1880s, a group of three companies was formed around the New Ladyhouse which became known as the 'Milnrow Ring Spinners'.²⁵ These were relatively small companies operating in a geographically concentrated cluster, sharing cross directorships and shareholdings, characteristic of emergent industrial organisation in the industry.²⁶ Samuel Tweedale (1846-1928) was a founding director of the New Ladyhouse company and, as a trusted lieutenant of John Bullough (1837-

²¹ *Rochdale Observer*, 4 January, 1890.

²² New Ladyhouse Cotton Spinning Co. Ltd, RLSL, Memorandum and Articles of Association.

²³ Details of this development are documented in a detailed newspaper article; *Rochdale Observer*, 28 June 1890, p. 4. The New Ladyhouse actually followed an earlier and smaller experiment at Bright Bros.

²⁴ Farnie, 'Cotton towns', p. 44; Farnie, *English cotton*, p. 230.

²⁵ *Rochdale Observer* and *Oldham Chronicle*, *passim*.

²⁶ *Rochdale Observer*, 28th June 1890, p. 4. Similar loose structures were beginning to emerge elsewhere in Lancashire, for example the so-called 'Bunting group', Farnie 'John Bunting', *DBB*, pp. 506-9; these are discussed extensively below in part 3.

1891), also played a leading role in the management of Howard and Bullough and Co. Ltd.²⁷ Tweedale sent a relative on the visit to America in 1872, and from then on was closely involved in the ring spinning experiments at Milnrow. The role of capital equipment manufacturers and their relationship with the spinning companies was thus crucial in the diffusion of the ring. James Heap (1828-1892), like all the other directors and shareholders, a local man, was the Chairman of all three companies until his death in 1892. Like John Bullough in Accrington, he was a prominent Conservative and the main employer, and a dominant figure in the locality,²⁸ although largely unrecognised in histories of the industry. In a way, this was surprising. Because ring mills were unusual, they attracted considerable interest from contemporary observers.²⁹ The Rochdale experiments were described as a 'leap in the dark, involving great risk'.³⁰

Few emulators of the Milnrow experiment were willing to launch new dedicated ring concerns, notable exceptions being the Palm (1884), specialising in strong rope yarns,³¹ and the Nile (1898) in Oldham, Burns Ring Spinning Co. Ltd at Heywood (1891), promoted with the backing of the rival ring frame pioneer, Samuel Brooks,³² and the Era (1898) in Rochdale. The latter was again backed by Howard and Bullough, equipped with 51,200 of their ring spindles and finding

²⁷ *Rochdale Observer* 4th Jan., 1890; Kirk, 'John Bullough', in Jeremy (ed.) *Dictionary of Business Biography* (hereafter, *DBB*), p. 502.

²⁸ *Rochdale Observer*, 16th April, 1892.

²⁹ For example, a correspondent in the *Oldham Chronicle* noted: 'The companies at New Hey are attracting attention all over the country', (4 July 1887, p. 8).

³⁰ *Rochdale Observer*, 28 June 1890.

³¹ Worrall, *Cotton spinners and manufacturers directory*; see the company's advertisement in the annual editions of the directory.

³² I am grateful to D.A. Farnie for information on this mill.

employment for 450 operatives, was described as one of the finest mills of its kind by the local newspaper.³³ It was three times the size of the prototype Milnrow company, and as with the previous investments, backed and encouraged by capital equipment suppliers.

However, such projects were isolated. In the 1890s a fog of gloom enveloped the cotton industry, and its prospects were viewed by many as bleak.³⁴ As a result, very few new mills of any kind were built in the 1890s, and the diffusion of the ring was undoubtedly slowed by the dampening of expectations. Indeed little investment of any sort took place, particularly in the depressed Oldham area for the whole of the 1890s, and this may be one reason for Oldham's notable commitment to the mule. Nonetheless, mule spindleage in the area actually declined from 11.4 million spindles in 1891 to 10.9 million in 1897.³⁵ Unsurprisingly, other than those noted above, there were no other significant ring mill constructions before the early 1900s.³⁶

The period 1905-9 saw a new mill building boom in south-east Lancashire. After a lag of more than ten years, the centre of the coarse spinning trade in Oldham began to emulate Rochdale to an extent. Although the majority were new mule mills, there were some significant investments in specialised ring spinning establishments. Out of 74 new mills commenced in the Oldham district between 1900 and 1907,³⁷ eight were specialist ring spinners. In spindleage terms they were small in relation to mule mills, Belgrave 2 had only 43,200 spindles, although Iris (62,568), Moston

³³ Era Ring Mill Company Ltd, *History of the Era Ring Mill*, p. 1.

³⁴ 'Is the cotton trade leaving the country?', *Textile Mercury*, 21 January, 1893, p. 43.

³⁵ Farnie, 'The emergence of Victorian Oldham', p. 42.

³⁶ Jones, 'The cotton spinning industry', p. 223.

³⁷ Jones, 'The cotton spinning industry', pp. 221-3.

Ring (59,796) and Royton Ring (64,176) were more typical. By contrast, the median mule specialist in the Oldham district was by this time of the order of 100-130 thousand spindles. The largest, Times No. 2, at 174,000 spindles, revealed the limits of economies of scale in the mule section.³⁸ Nonetheless ring spinners also became larger, and, unlike the highly specialised large new mule mills, developed higher count product ranges. Whilst the counts spun by the Milnrow group began at 18/36s and became 6/36s by 1914,³⁹ the newer companies had average counts of 31s, including some, such as Cromer spinning up to 64s Egyptian and Nile, 80s Egyptian, entering the finer product range.⁴⁰ Product specialisation and market niches undoubtedly played a part in these developments, although the ostensible constraint of sub 40s coarse specialisation for ring spindles was far less applicable in the 1900s than it had been in the 1880s.

The 'constraint' of specialisation

The above examples show how the adoption of ring spinning was part of a process of product and geographical specialisation in Lancashire. Yet, as noted above, it has been argued by some that such specialisation represented a constraint on the adoption of alternative technologies.⁴¹ It is therefore useful to note examples of diffusion among vertically integrated companies in other parts of Lancashire, where the vertical specialisation constraint did not apply. Of the vertically integrated companies in the main sample, the best archival records providing evidence on equipment decisions were those of Fielden Brothers and Horrockses Crewdson, and these are considered

³⁸ Jones, 'The cotton spinning industry', p. 88.

³⁹ Worrall, *Cotton spinners' and manufacturers' directory*, 1891 and 1913.

⁴⁰ Jones, 'The cotton spinning industry', pp. 221-3.

⁴¹ Lazonick, 'Cotton industry', p. 20.

in turn.

Fielden Brothers, based at Todmorden and geographically close to Rochdale and Milnrow, scrapped its throstles in favour of rings in 1889-90.⁴² However there were important differences. There were disadvantages associated with being a combined mill peripheral to the emerging centres of spinning and weaving specialisation, such as the physical constraint of old buildings, dependence on coarse and plain product range and lack of access to joint stock finance.⁴³ The age of the Fielden concern committed it to older buildings, in contrast to the purpose built ring spinning sheds of Rochdale and Oldham. Nonetheless, in such situations, the ring spindle was more adaptable than the ever widening mule frame. It was no surprise therefore that Robinwood Mill, in the Calder valley at Lydgate near Todmorden, abandoned mule spinning, replaced its throstles, and specialised in ring spinning from the 1890s onwards.⁴⁴

Another integrated company, Horrockses Crewdson and Company Ltd., with its activities centred on Preston also introduced a significant number of ring spindles. Again obsolete throstles were replaced by rings. But by contrast with the examples so far, there was also a tendency to replace ageing mules with rings as part of the plant replacement cycle (table 3.2). True, the company did construct a specialist mule mill in 1895 of nearly 80,000 spindles, but otherwise the ring spindle became increasingly important. One reason was that Horrockses resisted the trend towards specialisation. By 1900 the company was producing a wide range of goods, many of which were for the domestic market.⁴⁵ However, this company was an exception, and

⁴² WYRO, C/353/1, Directors minutes.

⁴³ Kenney, 'Sub regional specialization', pp. 41-63.

⁴⁴ C353/1, Directors' minutes, *passim*.

⁴⁵ Platt, *Latin America and British trade*, p. 166.

in general the throstle was the main victim of the development of the ring.

Table 3.3: Horrockses Crewdson, Installed Spindleage, 1887-1905

	Number of Spindles		
	1887	1905	Net Investment
Mule spindles	118002	173752	54662
Ring spindles	14220	58464	44244

Notes

- 1. If the 78572 mule spindles installed at Centenary Mill are excluded, there is a very strong trend to replace mules with rings on a routine basis at existing sites.
- 2. There was no investment of any kind between 1906 and 1914.

Source: CVR Machine Book

The automatic loom

Although there were earlier experiments, the automatic, or Northrop, loom was only commercially available in Lancashire from 1903 onwards, largely on the terms of the American parent company, following the establishment of the British Northrop Loom Company.⁴⁶ The manufacturer claimed that the weaver using Northrop automatic looms could be up to eight times more productive than the plain loom weaver.⁴⁷

Automatic looms were adopted by a small minority of firms prior to 1914, and typically not in the main centres of geographical specialisation. Of the total looms installed a large proportion were at Ashton Brothers of Hyde.⁴⁸ Other examples of pre 1914 introductions included Tootal Broadhurst and Lee, Fielden Bros of Todmorden, and Gregs of Quarry Bank.⁴⁹ At Ashtons and Tootals, automation led to strikes by the weavers; in the Ashton case in 1904 and again in 1908, in the Tootal instance at Rumworth Mill in 1906.⁵⁰ Nonetheless labour relations did not necessarily constitute a significant reason for slow diffusion; the strike at Hyde was partly at the instigation of the employers, faced as they were with high stocks and falling demand. As with the ring spindle, automatic loom adoption was related to product specialisation. Ashton Brothers produced plain cloths, whilst North east Lancashire concentrated on fine goods.⁵¹

⁴⁶ Saul, 'The engineering industry', p. 195.

⁴⁷ British Northrop Loom Company, *Northrop labour saving looms*, p. 10.

⁴⁸ Fowler, 'Trade unions and technical change', p. 43; in 1911, of the total 5409 automatic looms in Lancashire, 1820 were installed at Ashton Bros.

⁴⁹ Tootal, MCRL, M461, Board Minutes; Fielden, C353/1, Board minutes; Greg, Rose, *The Gregs of Quarry Bank Mill*, p. 96-8.

⁵⁰ Fowler, 'Trade unions and technical change', pp. 45-6; Tootal, MCRL, M461, Board Minutes, 4th September, 1906.

⁵¹ Fowler, 'Trade unions and technical change', p. 52.

Again, like the ring spindle, the role of the capital equipment supplier was important. In the case of the automatic loom, however, the machinery company, through its patent and pricing policy tended to act as a constraint. In contrast to the flotations of mills in the Rochdale and Oldham areas, there was little support for new weaving companies from the British Northrop Loom Company. Established in 1903, there were some connections via cross directorships between equipment supplier and manufacturer; for example Henry Philips Greg (1865-1936), a director of Ashtons, and Edward Tootal Broadhurst (1858-1922) both held directorships with the British Northrop Loom Company.⁵² However, the American parent, the Draper Corporation, retained a strong influence owning two thirds of the shares,⁵³ and demanding, in return for production under patent, a high level of monopoly profits. Unlike the ring spindle, whose relatively simple 'traveller' device had improved the throstle, the Northrop loom was a complex piece of equipment. Costs of invention have been estimated at \$1m and patent control for the machine, together with improvements and attachments, became an important part of management strategy for the parent company, which had 1,330 enforceable patents in 1907.⁵⁴ As a consequence, the prices of the looms were set high and may have deterred adoption by British manufacturers.⁵⁵ Thus there were compelling reasons other than industry structure for slow diffusion of automatic looms.

Nonetheless in three out of four known cases, companies which adopted automatics were also vertically integrated. The exception was Quarry Bank, which

⁵² Howe, 'Sir Frank Hollins', *DBB*, p. 316; Dupree, 'Edward Tootal Broadhurst', *DBB*, p. 452.

⁵³ Saul, 'The engineering industry', p. 195.

⁵⁴ Mass, 'Mechanical and organizational innovation', pp. 901; 906-12.

⁵⁵ Sandberg, *Lancashire in decline*, p. 77.

abandoned spinning in 1894.⁵⁶ Integration removed the ostensible constraint of co-ordination of weft yarn production on rings with the acquisition of automatic looms. At Fielden many of the ring frames purchased in the 1890s for Lumbutts Mill and in the 1900s for Robinwood Mill were for weft spinning onto pirns. In one case, the purchase was made simultaneously with automatic looms.⁵⁷ The decision appears to be the only known example of Lancashire entrepreneurs putting into practice what their critics have accused them of failing to do; it is analysed in detail in chapter 6.

Without casting doubt on the ultimate reasons for the adoption of the automatic loom, the evidence of corporate behaviour induces scepticism as to whether it represented a decisive breakthrough before 1914. In the Fielden case, the 14 automatics purchased in the period 1907-1914 represented only a minute proportion of total weaving capacity whereas by 1914 94% of its spinning capacity was accounted for by ring frames. Vertical integration *per se* did not prevent this experiment taking place, but equally cannot account for the lack of more widespread introduction. At the other vertically integrated companies, there was no apparent evidence of simultaneous use of the looms with ring weft spindles.

General trends of diffusion

The above discussion has highlighted several interesting trends. The diffusion of ring spinning was associated with product and geographical specialisation, manifesting itself prominently at first in one district, Rochdale. A decisive impetus came from one capital equipment supplier, Howard and Bullough, which having acquired the patents, sold the majority of the earlier frames.

Ring spinning was carried out in a significant and increasing minority of

⁵⁶ Rose, *The Gregs of Quarry Bank Mill*, p. 92.

⁵⁷ WYRO, C353/1, Directors' Minutes, 2nd March 1909, p. 334.

establishments in the 1889-1914 period in other districts as well as Rochdale, but in virtually all cases in vertically specialised mills producing warp yarn. Vertical integrated firms, albeit unconstrained regarding the deployment of machinery in spinning and weaving branches, did not adopt the ring spindle and automatic loom simultaneously. Part of the reason was that ring spinning was associated with growing geographical diversity, product specialisation and the establishment of market niches. This was also true of automatic weaving. In spinning there had been a hundred years of competition between continuous and intermittent methods and the adoption of the ring reflected the tradition and replacement of throstle spinning in certain districts, whereas in weaving the transition from the power loom was a straight forward question of automation. In ring spinning, capital equipment manufacturers played an important supporting role in the establishment of the technique and several British firms were supplying the domestic and export market for ring spindles by 1914. By contrast, capital equipment manufacture of automatic looms was monopolised and hence less supportive of manufacturers. Furthermore, automatic loom diffusion lagged ring spinning for reasons of technical development. The British Northrop Loom Company was established 31 years after Howard and Bullough first acquired ring spinning patents from the United States. Ring spinning and automatic weaving also had potentially asymmetric consequences for the structure of industry labour relations. Some of the consequences of the last two points are explored further in chapter 5. However, the next stage is to focus on the spinning aspects in more detail by comparing the performances of some of the companies identified in the above survey.

Chapter 4: The profitability of alternative investment decisions

Like the evolution of the industry as a whole, the diffusion of ring spinning was uneven, and tended to an extent to reflect growing product and geographical specialisation of the industry before 1914. An important influence on diffusion, hitherto not fully considered, was likely to have been the relative profitability of alternative technologies. Of the two stages of production, as we have seen in the previous chapter, only in weaving, with the development of the automatic loom, was there a technological discontinuity before 1914. Ring and mule spinning co-existed in competition with one another, and the progress of that contest in terms of relative profitability of spinning investments is the subject of this chapter. Experiments in automatic weaving were more isolated, and are dealt with in chapter 6 in the case studies of vertically integrated companies. Below the relative profitability of investments in ring and mule spinning companies in the period 1880-1914 are examined by reference to return on capital, share prices, and investor returns.

Data and method

The principal data were the trading results, share prices, and dividends published in the local press of south east Lancashire, supplemented where possible by the company business records. Trading activity in shares was centred around Oldham, although companies in other towns, such as Rochdale, Middleton, Shaw, and Stalybridge also had their shares quoted at Oldham. For this reason, reference is made throughout to the Lancashire, rather than specifically the Oldham, stock market. This market was

uniquely concerned with Lancashire's main industrial activity, and its specialism in cotton shares uniquely distinguished it from the finance capital dominated London, Manchester and Liverpool exchanges.¹ Returns to the equity investor in each mill were calculated using the weekly share list published in the local press, by reference to the share price quotation and percentage dividend. Return (r) to an investor using such a sequence of data was calculated as follows:

$$r = \frac{P_t - P_{t-1} + d}{P_{t-1}} \quad (4.1)$$

Where P is the share price in pence at times t and $t-1$ and d is dividend in pence relating to the period between those dates. Two initial problems were the use of non metric currency and the method of quotation. Thus all financial data were first decimalised. Information for use in the return formula and for share price indices was derived by reference to published share price quotations. Usual practice was to quote the share price at bid/offer spread of x shillings discount or premium to a quoted nominal value, the latter corresponding to the amount of share capital called up. Dividends were quoted at a percentage of the called up share capital rather than of the market price. To represent the data in a usable form, the decimal equivalent mid price was calculated. Dividend per share was then calculated and added to the capital gain.

Ex ante, there are several potential problems associated with using share market data. In modern financial theory, it is usually assumed that financial markets equalise rates of return for securities with similar risk and produce returns adjusted for the appropriate degree of expected risk, based on knowledge of previous

¹ Thomas, *The provincial stock exchanges*, p. 145; Lavington, *The English capital market*, p. 208.

volatility.² Thus, in the context of historical research, an important potential difficulty associated with such financial data is the so-called 'market' problem.³ Differential returns between investments in ring and mule shares might therefore simply reflect the perceived differences in risk associated with the two types of technology, or possibly differences in their respective product markets. Therefore to investigate the problem historically, measures of risk as well as return must also be considered. These will then be interpreted with reference to the historical circumstances in which investment decisions were made. It is accepted at this stage, however, that using financial market data alone, it may be difficult to draw inferences on the commercial superiority of either form of technology.

Much modern theory rests on the assumption of market efficiency.⁴ However, rather than presuppose efficiency, for example by simply applying twentieth century theory to nineteenth century conditions, it is the historian's task to investigate the origin and evolution of the market. Social, and other detailed institutional aspects of the emergence of the financial market are examined in Chapter 8.⁵ The issue of whether or not the market efficiently allocated capital to different sectors of economic activity is also dealt with in later chapters.⁶ At this stage, in seeking to justify the use of investor returns as evidence, it is necessary to investigate one particular aspect of how efficiently the market reflected new information through

² Sharpe, 'Mutual fund performance', pp. 119-38 and 'Risk aversion and the stock market', pp. 416-422.

³ Davis and Huttenback, *Mammon and the pursuit of empire*, p. 63.

⁴ Brearley and Myers, *Principles of corporate finance*, pp. 309-10.

⁵ In particular, this chapter discusses the co-operative origins of share ownership, extensive financial disclosure, and the evolution of powerful equity based interests.

⁶ See especially chapter 11 which charts the fortunes of Lancashire investors against those investing in the wider economy.

the adjustment of share prices. Efficiency in this respect is demonstrated if past market price changes, and their direction, cannot be used to predict future price changes.⁷

However, in nascent or small markets, for example where there are relatively few buyers and sellers, shares might be thinly traded and such a condition may not necessarily follow. Under such circumstances returns are serially correlated and return variances biased.⁸ If this were the case, rates of return to the investor would be of little value to the historian applying modern financial empirical tests due to the presence of 'sticky prices', for example if share prices remained unchanged for long periods of time without responding to changes in the circumstances of the company. Conversely, if a problem of bias did exist, the evidence from a nineteenth century stock market would extend the scope for empirical studies of financial markets from the perspective of the modern financial economist. Either way, further investigation is well justified.

Further aspects of market efficiency in the informational sense, given data problems, were difficult to test and therefore not subjected to systematic analysis. Two particular aspects of this are the speeds with which market prices adjust to new published information or to all information whether in the public domain or not.⁹ For example, opportunities to profit from published financial information are rare in a modern efficient market due to the speed of price adjustment.¹⁰ In the case of

⁷ Kendall, 'The analysis of economic time series, pp. 11-25; Fama, 'The behavior of stock market prices', pp. 34-105.

⁸ Dimson, 'Risk measures when shares are subject to infrequent trading', pp. 197-8.

⁹ Respectively these are referred to in finance theory as the semi strong and strong forms of the efficient market hypothesis; for a fuller description, see Levy and Sarnat, *Capital investment and financial decisions*, pp. 666-7.

¹⁰ Ball and Brown, 'An empirical evaluation', p. 174.

Lancashire, share lists were published only weekly, and disaggregation of share price movements between anticipation of, and responses to, the announcement of earnings figures, would be very difficult using century-old data. Given these difficulties it is necessary to exercise caution when interpreting the market data.

In addition to market data, accounting results were also used. As with any financial market, a close relationship between profit and share price might be expected, and the same result might also therefore be expected from comparisons of market returns and accounting returns on capital employed. Moreover, use of two sets of financial data creates the advantage of greater objectivity. Thus two definitions of profit were used and compared. First, the return on investment, that is the rate of return accruing to an investor as a result of holding a share for one year (equation 4.1). Second, the rate of return to total long term capital employed. This was defined as profit before interest, tax, and dividends, divided by the total long term capital employed. In turn, capital employed was defined as equity share capital plus distributable reserves plus outstanding long term loans. To achieve consistency, historical cost asset valuations were used for all companies and for all years.

Whilst market data represented objectively determined measures of value, accounting reports would not necessarily have possessed the same neutrality. Quoted companies were under competitive pressure to pay large dividends, and in the absence of regulation, tended to manipulate reported profits through depreciation and stock valuation policies.¹¹ However, accounting policies of Lancashire spinning companies were relatively uniform with respect to fixed assets, depreciation, and stock valuation.¹² Even so, by using two sets of data, the potential weaknesses of each can

¹¹ For an excellent example, *inter alia*, 'Albany Spinning Company: The policy of no depreciation: shareholders had enough of it', *Oldham Chronicle*, 28th December, 1895, p. 8.

¹² Moss, *Cotton spinning companies' accounts*, pp. 27-34.

be overcome by reference to the other.

A method relying upon rates of return of whatever description might be open to the accusation that conclusions can only be drawn on the behaviour of decision makers who were optimising subject to constraints, and that the full scope of entrepreneurial behaviour is not being addressed.¹³ The first point in response to this is that the ring mill investments examined represent instances of entrepreneurs altering at least some of the constraints, namely those associated with the use of skilled mule spinning labour.¹⁴ According to this argument, under such circumstances any incremental level of profit for ring spinning would represent a return to 'innovative' activities, and not optimisation within constraints.

A second point raises important methodological issues on performance measurement. It was not the purpose of the comparative analysis to establish what the optimum solution was, and therefore what entrepreneurs should have done. The two problems with optimisation are first, that it is impossible to measure consistently through time; in economics it is represented as an equilibrium position, and second, that it is inadequate as a proxy for actual human behaviour, which tends to seek satisfactory rather than ideal solutions.¹⁵ It is equally likely that in the conditions of technological change which existed a hundred years ago, decision makers would have sought a satisfactory rather than an optimal solution. If mule spinning provided satisfactory solutions, ring spinning was unlikely to be favoured unless there was evidence of decisive superiority.

¹³ This point formed the basis of the debate between Lazonick and Sandberg; see Mass and Lazonick, 'The British cotton industry', pp. 25-6.

¹⁴ Lazonick, 'The cotton industry', identified two constraints, industrial relations and industrial organisation, p. 20

¹⁵ For an elaboration of these perspectives, see Simon, *The New Science of Management Decision*; Pfeffer and Salancik, *External Control of Organizations*.

In attempting to replicate the decision making methods of historical actors, the historian must first examine the evidence of the indicators used, and then make assumptions, if necessary, about how investments were determined. Given the incidence of regular press comment, it would appear that, although the dividend was the aspect of financial performance that attracted the greatest comment, return on investment was also used frequently by external investor groups.¹⁶ It is, however, unlikely that these measures alone would determine investment decisions, given the role of complexity, bias, and qualitative factors. In examining rates of return in their historical context, it is probable that entrepreneurs would not have shifted from one technology to another without unambiguous evidence of superiority.

Putting these methodological problems aside, an investigation into the profitability of ring spinning technology in Britain was likely to be constrained by three further factors. First, as noted in chapter 3, relatively few companies adopted exclusively ring spinning technology before 1914, but even fewer did so in the 1880s. Nonetheless, the willingness of promoters to launch new concerns of this type must have been influenced by the profitability of those already in production. The fewer the number of ring spinning companies, the greater the individual attention each would have attracted.¹⁷ Second, the survival record of documentary evidence for

¹⁶ *Oldham Chronicle*, weekly reports never omitted dividend data (as a percentage of paid up capital) throughout the period; *passim* various issues also published rankings of companies in the district by reference to profit per spindle or profit as a percentage of equity and loan capital. The rankings ceased to appear after 1892, but the measures themselves continued to be used.

¹⁷ For example, the *Oldham Chronicle* reported: 'The result at the Palm was awaited with some interest, this concern having adopted what is known as the ring principle of spinning' (1 January 1887, p. 8 (vii)); other examples of interest in ring mill shares from this source, see 3 January 1891, p. 8 (iii); 4 April 1891, p. 8.

individual concerns for this period was relatively poor.¹⁸ Finally, the availability of comparative evidence was restricted to the south east Lancashire area, which although representing a significant proportion of British and world output,¹⁹ prevented the survey from being described as comprehensive.

¹⁸ RCHM, *Records of British business*, section on cotton, pp. 29-47, and as acknowledged by other historians, for example, Lazonick and Mass, 'Performance of British Cotton', p. 33.

¹⁹ The Oldham 'district' of Oldham, Rochdale, and Ashton under Lyne accounted for 26% of spindles in Britain and 12% of the world total in 1890, Farnie, 'The emergence of Victorian Oldham', p. 42.

Table 4.1: Sample data

Observation	Sample companies and dates
<hr/>	
(1) Returns on investment: Share market data	
Share prices; mule spinners	Per table 1.3: all mule companies, Apr 1884 - June 1914, except Hathershaw, Apr 1884 - April 1907.
Share prices; ring spinners	Per table 1.3: New Ladyhouse, Apr 1884 - June 1914. Haugh, Apr 1884 - June 1914 New Hey, October 1886 - June 1914. Palm, June 1884 - June 1914. Era, June 1898 - June 1914. Cromer, October 1907 - June 1914.
Return on investment, all companies	Equally weighted average calculated from individual company data.
 (2) Returns on capital: Accounting data.	
Return on capital; mule spinners	Dowry, 1884 - 1913 Werneth, 1884 - 1913 Moorfield, 1884 - 1913 Sun Mill, 1884 - 1913 Osborne, 1890 - 1913.
Return on capital; ring spinners	New Ladyhouse, 1884 - 1913 Haugh, 1884 - 1913 New Hey, 1886 - 1913
Return on capital; averages	Equally weighted average calculated from individual company data for mule and ring mills listed above.
Return on capital; industry average	Average returns for approximately 85 companies, 1884 - 1913.

Sources: All share prices and dividends for each quarter in the above ranges taken from the *Oldham Chronicle*; profit before interest and tax and capital employed calculated by company for each of the above years from each source listed in table 1.2; industry average return on capital, based on the *Economist* sample, see chapter 1, pp. 34-6.

Details of the samples used are given in table 4.1. Financial data, as published in share lists, were available for a large number of mule companies and a restricted number of ring spinning companies. The sample used was the 'spinning sample' (see chapter 1), which was selected from the Oldham share list, the population having been segmented on the basis of the technology employed. All ring spinners floated prior to 1906 with market quotations were included, but even so the sample consisted of only four companies in the earlier decades, the three companies in the Milnrow group and Palm Mill of Oldham. For later flotations, the time series of data would be too short to support valid conclusions. Fifteen mule spinners were selected randomly from the eighty three companies in the Oldham share list of 2nd April 1884,²⁰ subject to the inclusion of the Werneth, the Moorfield, the Sun Mill, and the Dowry Spinning Companies, whose performance could be corroborated from other published and archival sources.²¹ The mule sample was large enough to be insensitive to unusual factors affecting specific companies. For example, one of the companies selected, the Hathershaw, was put out of business when its mill was destroyed by fire in 1907, causing an estimated £60,000 worth of damage.²² Another, the Shiloh, enjoyed an extraordinary fivefold increase in size during the period (table 4.5).

Accounting data were more restricted for both types of company, and sample sizes smaller than for the 'spinning sample'. For mule spinning, the four companies listed above, plus the Osborne Spinning Company were used, and contrasted with the

²⁰ As published in the *Oldham Chronicle*. The list included Rochdale companies and those from other districts near Oldham.

²¹ Werneth, OLSL, Misc/42/17 and 18, quarterly reports to members, 1890-1912; Dowry, Courtaulds Plc Archives Dept, LCC1/Dow.1, nominal ledger, pp. 269-272; Moorfield, Smith, 'An Oldham limited', pp. 34-53; Tyson, 'Sun Mill'.

²² Gurr and Hunt, *The cotton mills of Oldham*, p. 35.

three Milnrow ring spinning companies.²³ However, to supplement individual companies, the *Economist* sample, being aggregate data for between 70 and 100 companies, was also drawn into the analysis as an industry average measure.²⁴ All the companies in the 'spinning sample' were also included in the *Economist* sample, along with other similar companies from the same area. Thus although comparable, the term 'industry' average, should be used cautiously since the companies included were exclusively from south east Lancashire.

Similarity of product range amongst the mule spinning companies prevented a matching of each of the ring mills to a comparable mule spinner on the basis of yarn count or raw cotton input, since all used American cotton and spun typically Oldham counts of 32s. Mule mills tended to produce wefts as well as warps (table 1.2). Ring mills produced warps only, but this condition allowed us to test whether or not any incentive existed for mule mills to shift to rings on the warp section of their product range, since the constraints of vertical specialisation did not exist for warp production.²⁵ Given the small number of ring concerns, the simple choice facing the investor would have been between ring mill shares and the shares of mule mills, not between shares of ring and mule mills specialising in particular product ranges.

Data analysis (1): Stock market trends

On the basis of the above justifications of the method adopted, the samples used, and

²³ For Osborne, LCRO, DDX/869/3/1, trade, capital and profit and loss accounts, 1889-1914; for the Milnrow companies there were no surviving archival records, and their profits and capital as published in the *Rochdale Observer*, and *Oldham Chronicle* were used instead.

²⁴ See chapter 1, p. 22.

²⁵ Lazonick, 'Stubborn mules', p. 82.

the significance of the data, we now examine two areas in turn. First, stock market data is analysed in terms of investor's returns and share prices. Stock market data is then reanalysed incorporating measures of risk. The second stage of data analysis, conducted in the next section, is to examine returns to capital, contrasting accounting rates of return between ring mills and other mule mills and ring mills against the industry average.

Interpreting the capital market data, it has to be borne in mind that throughout the period, the Lancashire stock exchange failed to establish a formal set of trading procedures and permanent location.²⁶ The Lancashire market was relatively narrow,²⁷ and it would be correct to conclude that investments were not based on diversified portfolios in the modern sense.²⁸ Transactions occurred in specified hotel rooms, and generally without contract notes or other formal trappings.²⁹ Press advertising of shares for sale was a common practice, not only for brokers, but for will executors and members of the public.³⁰ Open soliciting of custom and

²⁶ Thomas, *The provincial stock exchanges*, chapter 7.

²⁷ Thomas, *The provincial stock exchanges*, p. 155.

²⁸ Modern portfolio theory (Evans and Archer, 'Diversification and the reduction of dispersion', pp. 761-7), has suggested that 95% of specific, non-market risk, can be avoided by holding a portfolio of 15-25 shares. The average shareholding in the early 1870s was 5 shares per investor (as calculated from the number of shares listed, per *Oldham Chronicle*, and number of investors, per Farnie, *English Cotton*, p. 252). In any case, given the similarity of activity and product range, investors would have had little to gain by diversification.

²⁹ Farnie, *English cotton*, pp. 253-4.

³⁰ Typical advertisements listed shares bid and offered by company and by number required. Private individuals tended to offer small lots in contrast to the established brokers. On 7th January 1905, one regular advertisement employing, along with seven other broking firms, a regular weekly format, John Hood and Sons, Stock and Sharebrokers of Clegg Street, listed 2530 shares in 43 named companies on a 'want to buy' list, and 2345 shares in 34 companies on a 'have for sale' list.

commission in this manner exemplified the unregulated nature of the market.

Whilst on the one hand creating a certain transparency, broking practices might well have generated profit making opportunities for unscrupulous brokers and promoters. Weekly reporting of financial news, with daily trading opportunities, might have supported such behaviour. News events such as profit results may have been known to directors and their associates during the week, but in practice they would not be widely known until published on the Saturday.³¹ Anecdotally, there is evidence that prices were often slow to respond to new information, and that certain dealers had strong advantages over potentially naive investors.³² Brokers such as John Kidger and John Bunting provided the weekly share price and dividend collations, together with, in the case of the latter, market commentaries.³³ Some investors were occasionally caught by surprise when trading results were published, but this may have provided good profit making opportunities for more expert dealers. For example the stocktakings of September 1891 'made serious havoc in the prices of some notable companies'.³⁴ Naive investor groups might well have lost out to increasingly dominant cliques of promoters. In addition to promotional groups, there were many examples of established clientele groupings of shareholders,³⁵ which

³¹ John Kidger, a sharebroker, supplied the *Oldham Chronicle* with collations of company results (the 'latest stocktakings' column appeared weekly).

³² *Inter alia*, *Oldham Chronicle*, 24 September, 1892, p. 8(iii); BPP, *Royal Commission on the depression of trade and industry*, pp. 427-9, evidence of A. Simpson blamed limited liability legislation for the rise of a new class of speculators.

³³ *Oldham Chronicle*; Bunting contributed a regular column on progress and expectations for the share market from 4th January 1890 onwards.

³⁴ John Bunting, writing in the *Oldham Chronicle*, 3rd October, 1891.

³⁵ Typical shareholders of this sort exercised influence over managerial behaviour by 'voice' (active participation at meetings), as opposed to 'exit' (selling their shares). See the examples of the Mitchell Hey, Sun Mill, Werneth and Albany Spinning Companies in chapter eight. For a more

might have counterbalanced activities of insiders and promoters. The average investor held shares in perhaps one or two companies, participated actively in their affairs, and understood the trade.³⁶ Investors were overwhelmingly local, although this became less true as the century progressed.³⁷ Generally, it was unlikely that Lancashire investors diversified into nationally based portfolios, a point given further empirical support in chapter 11. For now, it is enough to note that a significant proportion of investors' capital became committed to specific companies. If the strategies of large numbers of investors were based around the principle of 'buy and hold', there may have been slow turnover in certain securities and hence sticky prices.

The first stage of the empirical analysis is to deal with those aspects of market efficiency as pointed out above, which, if not present, might bias the data. To establish efficiency, it is necessary to show that successive price changes are not correlated.³⁸ Similarly, where the differences between two prices in a time series can be equated to an error term which displays random attributes, the conventional unit root test can be applied.³⁹ Efficiency was thus tested for via the following equation:

$$P_t = \alpha P_{t-1} + a_t \quad (4.2)$$

general discussion of the 'exit/voice' dichotomy and capital market operation see: Hirschman, *Exit, voice and loyalty*; Fama and Jensen 'Separation of ownership and control', pp. 301 - 26; Fama and Jensen, 'Agency problems and residual claims', pp. 327 - 52.

³⁶ Lavington, *The English capital market*, p. 208; Ellison, *The cotton trade*, p. 138.

³⁷ Smith, 'An Oldham limited liability company', p. 41; Tyson, 'Sun Mill', p. 296.

³⁸ Fama, 'The behavior of stock market prices', pp. 34-105.

³⁹ Gujarati, *Basic econometrics*, p. 718.

where P_t is the price observed at time t . The error term, a_t has zero mean, constant variance and is non- autocorrelated. Modern stock market data is normally expected to follow a random walk,⁴⁰ and under these circumstances, the predicted value of the co-efficient α is 1, which is sufficient to prove the non stationarity, or random properties, of the error term.

Arising from the techniques pioneered by the authors of this method,⁴¹ in empirical work it is conventional to re-arrange equation 4.2, to incorporate first differences, as follows:

$$\begin{aligned}\Delta P_t &= (\alpha-1)P_{t-1} + a_t \\ &= \delta P_{t-1} + a_t\end{aligned}\quad (4.3)$$

In this reformulation, the expected value of the co-efficient δ is zero if randomness is to be demonstrated. A regression for the Lancashire stock market, using quarterly observations for the period 1884-1913 gave the following results:

$$\begin{aligned}\Delta P_t &= -0.033901 + 0.003470 P_{t-1} \\ &\quad (0.020) \quad (0.222)\end{aligned}$$

$$r^2 = 0.00041; \quad DW = 1.5647^{42}$$

t (= tau) statistics are in parentheses, and by reference to *a priori* computed critical values,⁴³ the hypothesis of non stationarity, or randomness is strongly supported at

⁴⁰ Kendall, 'The analysis of economic time series', pp. 11-25.

⁴¹ Dickey and Fuller, 'Distribution of estimators', pp. 427-431.

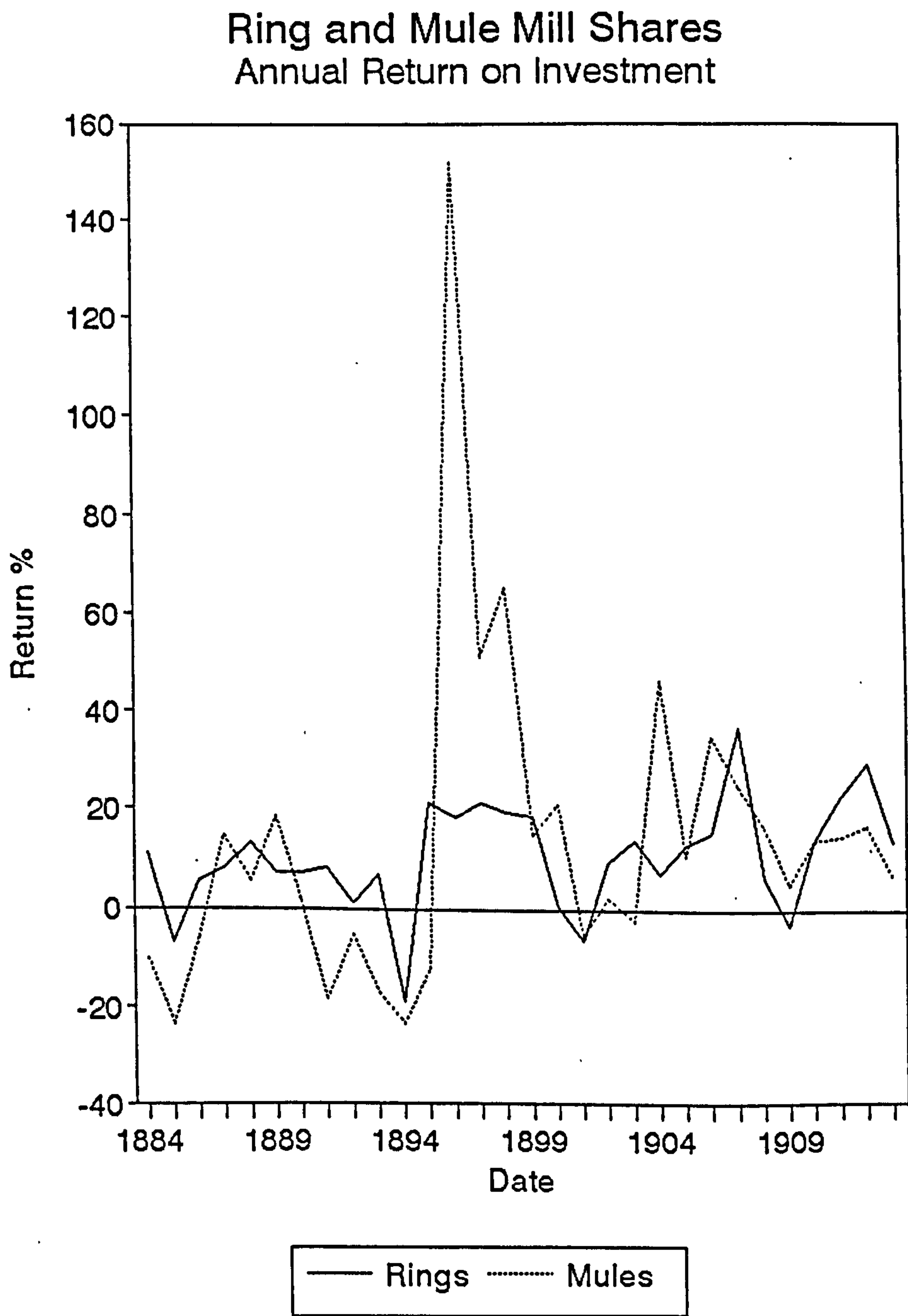
⁴² DW = Durbin Watson ratio. A result close to 2, as in this case, confirms the absence of serially correlated error terms, Gujarati, *Basic econometrics*, p. 424.

⁴³ MacKinnon, 'Critical values of cointegration tests', p. 275.

the 99% confidence interval. Hence the market is concluded to have been weak form efficient. In other words, it was likely that shares were not so thinly traded as prevent a market response to a change in profit or risk expectations. Thus despite aspects of primitiveness in organisation and its informality, the stock market of nineteenth century Lancashire, provides perhaps a surprisingly close parallel with a modern financial market.

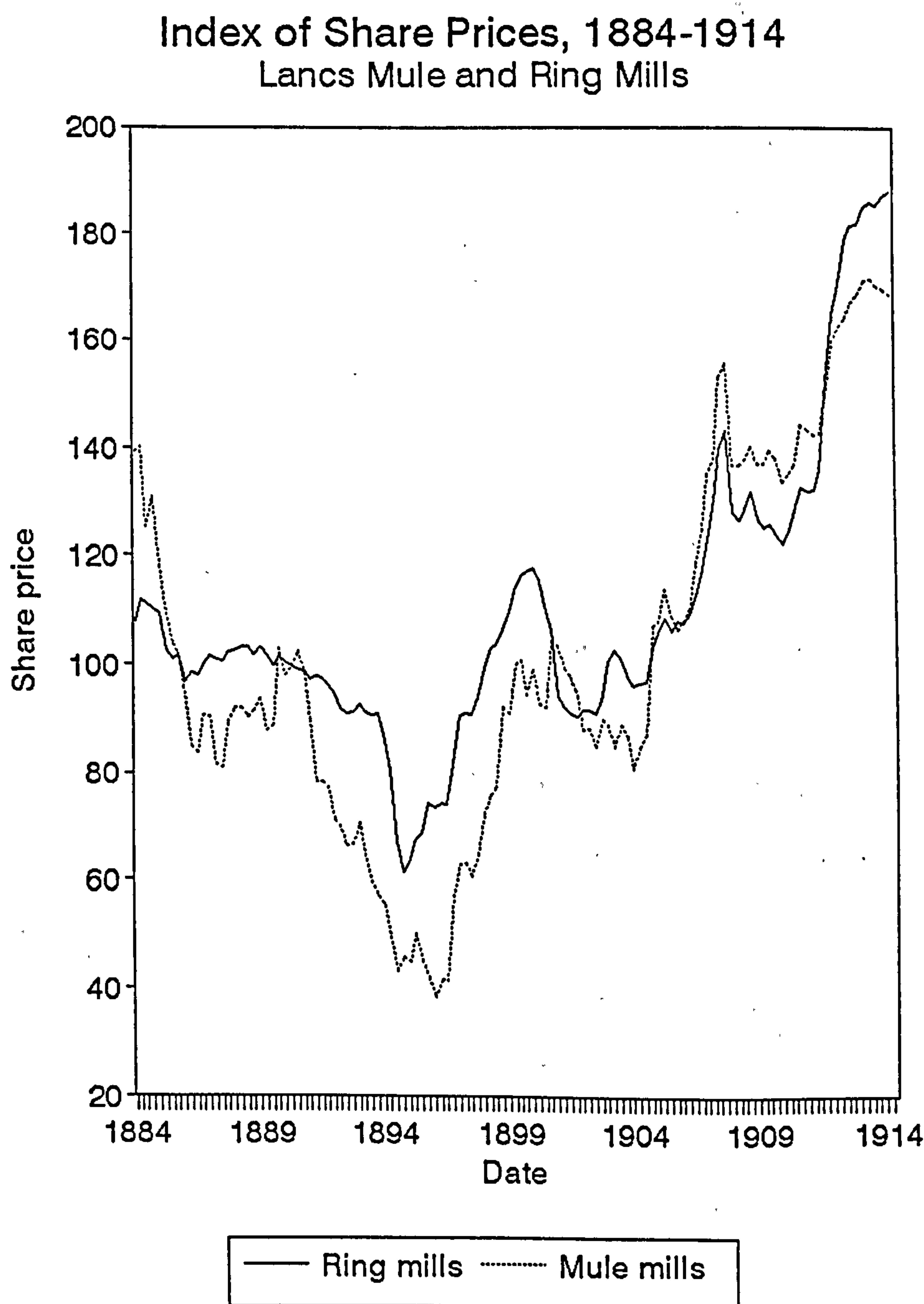
On the basis of such a conclusion, the next stage is to analyse return and risk differentials between different types of companies. Taking returns first, in terms of investor's total return (equation 4.1) and an index of share prices, both types of technology enjoyed short periods of supremacy (figures 4.1 and 4.2). For the period as a whole, investor returns were higher, but not significantly higher, for ring spinners (table 4.2). In the years immediately following their flotation in the late 1870s and early 1880s, the ring mills tended to outperform the mule mills, as measured by share price. However, at certain periods, mule spinning was able to compete on an apparently equal footing, especially in the upswing years of the trade cycle. For example in 1887-9, during a trade cycle upswing, mule spinners overtook the ring spinners. Once the cycle had reached its peak, market confidence shifted back to the ring spinners. A similar pattern occurred in the final boom period before the First World War. Under such conditions, it would be difficult for investors, and hence perhaps, entrepreneurs, to arrive at any sort of 'optimum' solution regarding plant and equipment.

Figure 4.1: Stock market returns on investment, 1884-1913



Sources: Share prices and dividends for each quarter taken from *Oldham Chronicle* as per table 4.1; returns on investment calculated for each company using equation 4.1 and aggregated into equally weighted averages for ring and mule sub groups.

Figure 4.2: Share price index, 1884-1913



Sources: Share prices for each quarter taken from *Oldham Chronicle* as per table 4.1; and an index constructed for each company (2nd quarter 1890 = 100) and aggregated into equally weighted averages for ring and mule sub groups as per table 4.1

Table 4.2: Annual percentage returns on ring and mule mill shares, 1884-1913

(1) Financial Market Returns

	Ring mills %	Mule mills %
Average return, 1884-1913	10.90	13.82
Standard Deviation	11.10	33.08
By period:		
1886-1892	7.23	1.48
1893-1903	9.60	22.49
1904-1910	12.85	21.79

(2) Accounting Returns

	Ring mills %	Mule mills %
Average return, 1884-1913	10.46	5.26
Standard Deviation	6.11	5.43
By period:		
1886-1892	9.72	4.19
1893-1903	8.08	3.58
1904-1910	14.52	8.75

Sources: Financial market returns; share prices and dividends taken from *Oldham Chronicle* and returns on investment calculated as per figure 4.1, but using annual rather than quarterly observations. Accounting returns; sample as per table 4.1, annual accounting rate of return calculated from data sources of profit and capital and listed in table 1.2

In the 1890s technology provided neither solution nor shelter; cotton investors of all persuasions were buffeted by severe economic storms. The significance of the depression in share values in the period 1890-6 is clear from figure 4.2, and was well understood by commentators of the time. In 1893, a *Textile Mercury* correspondent had written of an 'unparalleled depression and of severity and duration'.⁴⁴ Yet the real significance of the depression of the 1890s has been overlooked by historians. First, the depression amounted to a financial crisis. The consequences of the great crash of 1929, often depicted as a sudden panic, were better characterised by the 49 months of continual decline in the London share index. In Lancashire the period of continuous decline, if one insignificant upturn is ignored, was of equal length. Despite absence of newsreel showing suicidal investors on high buildings, Lancashire's agony matched that of the world's stock markets four decades later. The economic consequences were not quite as significant, but nonetheless it is important to note that there were powerful forces at work in the world market which moulded the destiny of Lancashire.

Some of these wider issues are left to a later chapter. Our concern here is with choice of technology, and this prompts a second reason for the importance of the 1890s depression. Speaking from the artificial standpoint of an economic vacuum, the 1890s was an important, and short lived, opportunity for Lancashire to install ring spindles. The patents had been acquired, the main capital equipment supplier, Howard and Bullough, was keen to extend its new market, and the pioneer companies were successful. But if developments in ring spinning had been facilitated by the spread of joint stock finance to Rochdale in the 1880s, in the 1890s that system of finance became a barrier to its further spread. As noted in chapter 3, very few mills of any kind were floated in the half decade before 1898, and an important reason was lack

⁴⁴ *Textile Mercury*, 21 January 1893, p. 43.

of confidence. If new mills were to be floated, the *sine qua non* was a rising stock market. Earlier booms had created 'cliques' of promoters for whom a rising financial market provided liquidity to exit from their investment at a profit once the mill was launched. These practices were often criticised, especially by those who blamed promotional groups for overcapacity in the industry during trade depressions.⁴⁵ Whoever or whatever was to blame, the effect was a dearth of investment activity.

Investors may have noticed from press reports that ring mills performed better than mule mills during the slump. However, in a market where the scarcest commodity is confidence, they would have been unlikely to seek investments associated with risk. As a recent technological development, the uncertainties associated with ring spinning would have no doubt counterbalanced any increased confidence that may have been associated with above average profits or below average losses (figures 4.1 and 4.2, table 4.2). Underlying profits of ring mills continued to be strong despite the fluctuations of the stock market.⁴⁶ Unfortunately confidence was too low to sustain new investment in any part of the joint stock section of the industry.

Ring spinning was thus not an alternative, even though during the early 1890s it was the mule mill shares that performed particularly badly. All mills in the sample, including those in Rochdale, were equally affected by the strikes which culminated in the Brooklands lockout of 1893. Ring mill shares thus declined along with those of the mule mills, albeit less steeply. By 1895, the continuation of the depression had

⁴⁵ For examples of similar comments made at the depth of two trade cycles, see BPP, *Royal Commission on the depression of trade and industry*, 1886, J. Mawdsley, p. 407; *Textile Mercury*, 16th November, 1895.

⁴⁶ *Oldham Chronicle*, *passim*; *Rochdale Observer*, 27 December, 1902, noted the comparative success of the Milnrow mills over the previous nine years.

caused protracted declines in share prices, in some cases to catastrophic levels.⁴⁷ Ring mill shares demonstrated some immunity to this downward pressure (figure 4.2), and certainly escaped the worst of the switch back ride experienced by shareholders in the mule mills.

An outstanding feature of the trends figure 4.1 was the high returns to mule mill investors in 1896-7. Much of this was attributable to a strong speculative element in the rapid rise of mule mill shares, matching earlier steep declines. Investors would have been able to pick up certain shares cheaply and watch them quickly treble or quadruple in value. High returns now became a function of previous poor performance, as investors looked first to the 'discount class' of shares, leaving 'the dividend class of shares somewhat neglected'.⁴⁸ As will become clear in the analysis of risk below, the mule spinners tended to be in the former class and the ring spinners in the latter.

Earlier, the 'market problem' was suggested as a possible obstacle to data interpretation. The implication was that return must be analysed in conjunction with risk, and, in particular at this stage, through an examination of how contemporaries would have interpreted these aspects of investment. We have already seen that ring mills enjoyed a slight advantage in terms of return; when risk is introduced into the picture, the advantage appears all the more decisive. Figure 4.3 shows the risk/return trade off for all companies in the spinning sample. Standard deviation provides a measure of volatility, and hence the risk, of each share (see table 4.2 and figure 4.3). Generally it might be expected that there should be a direct trade off between risk and return, since rational investors are risk averse and would demand

⁴⁷ For example the Albert mill had shares of called up nominal value £2 15s quoted at just 1s.6d. A survey in the *Textile Mercury*, 2 November, 1895, showed market capitalisations to have fallen to one third of 1883 levels.

⁴⁸ *Oldham Chronicle*, 27th March, 1897, p. 8.

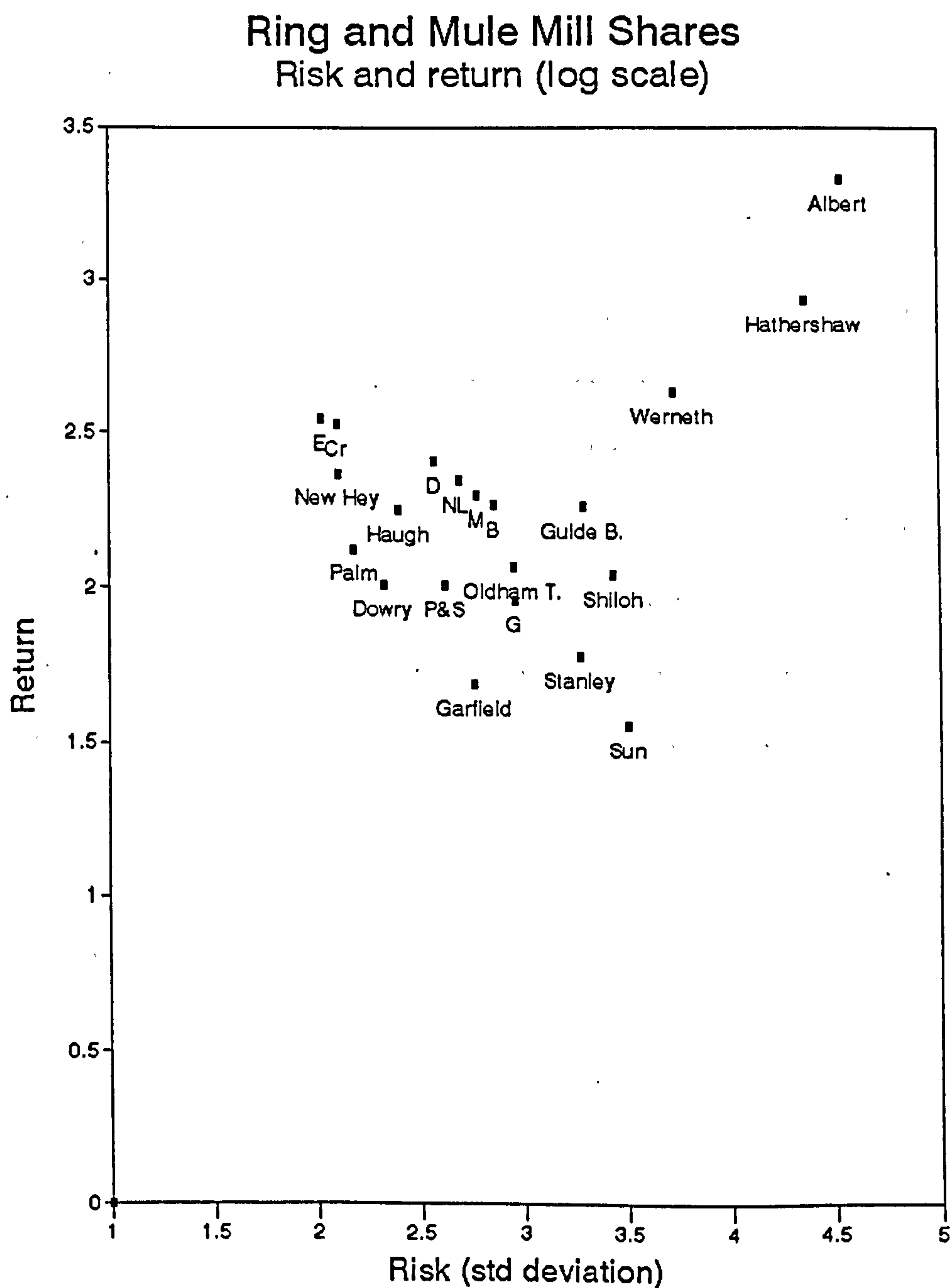
compensation for holding risky assets.

There are two surprising features in figure 4.3. First, although the expected risk return trade off might be expected to display an approximately linear relationship,⁴⁹ the correlation is less obvious. The rank correlation coefficient is only +0.017, which means there is virtually no linear relationship between risk and return.⁵⁰ Only very high risk mule companies, Albert, Hathershaw and Werneth provide any evidence of a trade off. As we have seen, this was attributable to the very serious decline, and subsequent recovery, in their share prices during the 1890s.

⁴⁹ Brearley, *An introduction to risk and return*, p. 51.

⁵⁰ In contrast, a survey of a more recent data for mutual funds showed a statistic of +0.44; see Sharpe, 'Mutual fund performance', p. 119-138.

Figure 4.3: The risk and return trade off



Abbreviations: B = Borough; Cr = Cromer; D = Duke; E = Era; G = Greenacres; NL = New Ladyhouse; M = Moorfield; P & S = Park and Sandy.

Sources: As for figure 4.1; standard deviations calculated by reference to quarterly return data and expressed as logarithms.

The second important feature, which in part accounts for the surprising aspects of the first, is the clustering of ring mills on an axis of higher relative returns, but lower relative risk. Such a pattern is highly counter intuitive for the additional reason that if ring spinning was a new technology, expected risk would be higher than for mule mills where technology was more established.⁵¹ However, as we have already seen in chapter 3, ring mill introductions were associated with continuous throstle spinning traditions and reflected the continuing geographical and functional specialisation of the industry.

Investors may therefore have adopted alternative methods of appraising risk. The Oldham district, reflecting the traditions of co-operation and the large pay outs associated with the flotation manias of the 1870s and 1880s, had been noted for its obsession with dividends and earned the nickname of 'Diviborough'.⁵² Apparent generosity of dividend payments is a phenomenon investigated further in chapters 7 and 8. The dividend is an obvious component of investor return, but may also have formed part of the risk perception of investors. In particular, the regularity of dividend, arising either from steady profits or careful accumulation and use of reserves, may explain the low rating of Sun Mill and the high rating of the Milnrow and other ring spinners in figure 4.3.

⁵¹ In this sense the data are imperfect as actual returns are proxies for expected returns - a common problem in stock market based research; see Merton, 'On estimating the expected return on the market', pp 323 - 361.

⁵² Farnie, 'Emergence of Victorian Oldham', p. 41.

Table 4.3: Dividend payment reliability

Number of Quarters in which no dividend paid, January 1890 - June 1914

Company	Number of quarters
High risk mule spinners	
Sun Mill	58
Shiloh	32
Low risk mule spinners	
Dowry	18
Duke	9
Ring spinners	
Haugh	1
New Hey	nil
New Ladyhouse	10

Source: Oldham Chronicle share listings by quarter, April 1890 - June 1914. High and low risk mule spinners were sampled according to standard deviations per figure 4.3.

Regularity of dividend payment may have helped underpin market confidence and risk assessment. For the ring spinners, what had been technically a 'leap in the dark'⁵³ in the 1870s, had, by 1890 become a stable and accepted method of producing regular profits and dividends. The Milnrow ring spinners established a reputation for paying a regular 10% per quarter; for one of these companies to fail to pay a dividend was a very rare exception.⁵⁴ The ability of these companies to guarantee a reasonably regular earnings stream, and its implications for risk assessment by investors, is analysed further by reference to profit data below. It is worth noting at this stage that despite their financial reliability, none of the ring mills attracted a significant amount of incremental capital investment.

By contrast mule mills, such as Sun Mill, Shiloh, and Werneth, went for very long periods without paying dividends. They suffered serious misfortunes in the 1890s, losing out to failed futures speculations and poor buying policies.⁵⁵ Large adverse balances on reserve rendered these companies incapable of paying dividends, relegating them to a long struggle for promotion from the 'discount' class, and were unattractive to investors other than in speculative periods. Past profit, whether accumulated to reserves or paid as dividends, was thus an important determinant of investor perception of risk.⁵⁶ Unlike the ring mill companies, these three companies all made significant investments in new fixed assets after 1900.

⁵³ *Rochdale Observer*, 28th June 1890.

⁵⁴ *Rochdale Observer*, 28th June, 1890; *Rochdale Observer*, 27th December, 1902.

⁵⁵ Tyson, 'Sun Mill', p. 275; Jeremy, 'T.E. Gartside', *DBB*, p. 495; Werneth, *OLSL*, Misc. 42/17, quarterly reports to members, 27th October 1893;

⁵⁶ The crucial determinant was the balance on reserves, and hence accumulated past profits. Those with credit balances were referred to as the 'dividend class'; in contra distinction from those with negative balances, which thus had no prospect of paying a dividend, *Oldham Chronicle*, *passim*.

Table 4.4: individual company rates of return

Company	Investor return %	Beta	Return on capital %
Mule mills			
Albert	21.43	2.14	
Borough	10.66	0.92	
Duke	9.68	0.46	
Dowry	8.62	0.52	4.70
Garfield	7.81	0.62	
Greenacres	9.59	0.82	
Guidebridge	10.23	1.71	
Hathershaw	23.57	3.94	
Moorfield	8.23	0.67	5.33
Oldham Twist	7.81	0.72	
Osborne	not quoted		7.19
Park and Sandy	10.81	0.37	
Shiloh	9.63	1.19	
Stanley	10.36	1.80	
Sun Mill	15.85	2.08	4.60
Werneth	12.03	1.25	4.60
Average	13.82		5.28
Ring spinners			
Cromer	16.87	2.32	
Era	10.92	0.50	
Haugh	10.25	0.31	8.06
New Hey	11.08	0.18	9.38
New Ladyhouse	11.66	0.35	13.72
Palm	8.34	0.14	
Average	10.90		10.43

Note: Averages are weighted by length of period of inclusion for each company.

Sources: as per table 4.2.

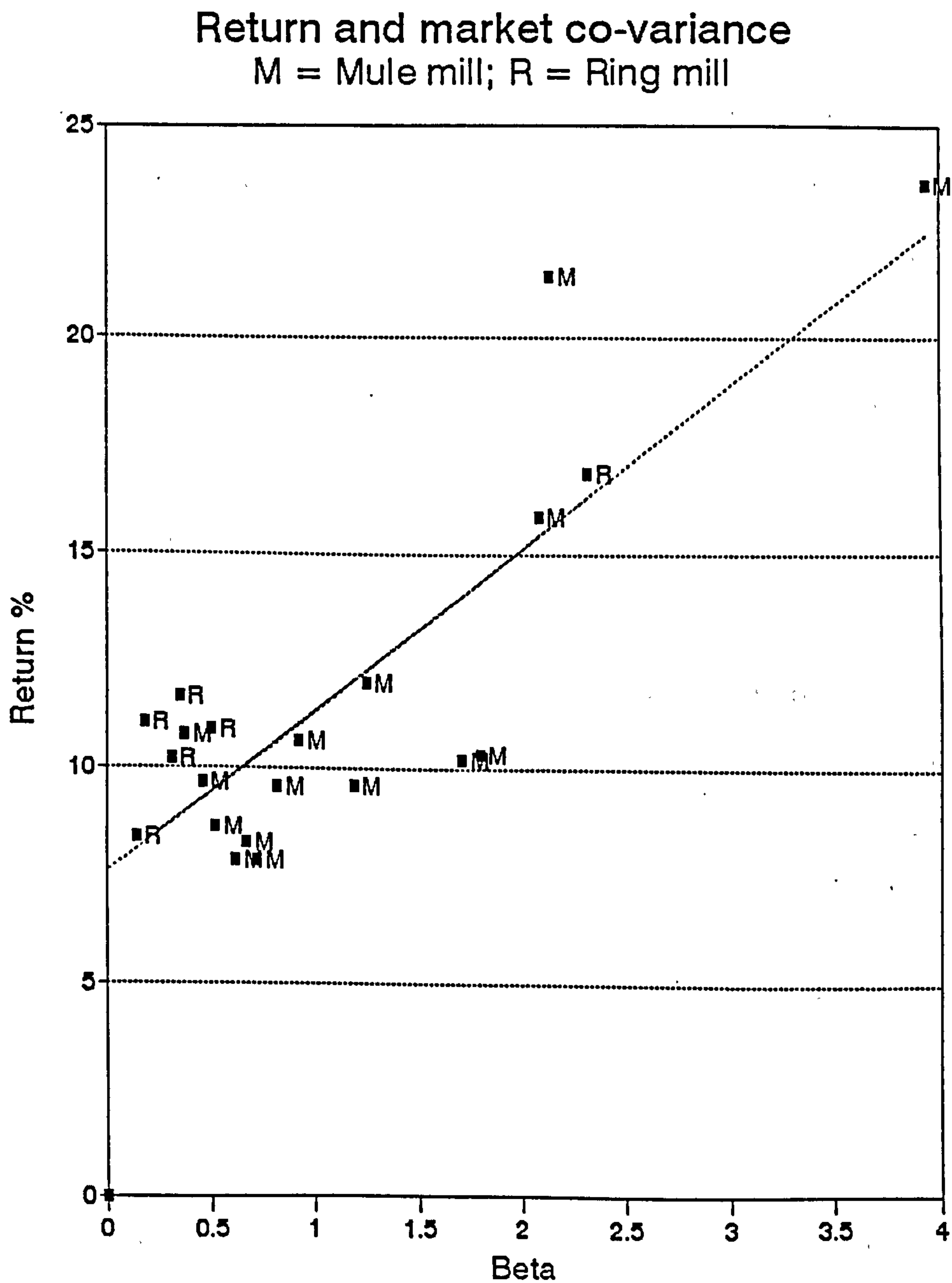
A further aspect of risk was that which arose from investing in a strongly cyclical industry. Such influences tended to dominate both profits and investor returns, and hence it is likely that investor risk perception might have been governed by the extent to which movements in the price of a particular share were amplifications of movements in the market as a whole. To avoid the so-called 'systematic' risk associated with these movements, the response of the rational investor should be to diversify into other sectors. In Oldham, for the social and infrastructural reasons explored in chapter 8, this did not happen, and investors remained exposed to the specific risks associated with cotton shares. Our discussion of risk so far, using the standard deviation measure, has examined the total volatility of a share. To measure the risk associated with the cyclical aspects of the cotton trade, the beta factor (table 4.4) was used to formally measure covariance between an individual security and the market.⁵⁷ Because we are concerned with investment in a specific sector, the beta factor is calculated by reference to the returns on an individual cotton security and the market index for the Lancashire stock exchange.

The above trends further explain the apparent anomaly of higher apparent risk associated with mule shares. Shareholders whose companies fell into the 'discount class' by the 1890s, such as the Albert, the Hathershaw, and the Sun Mill companies found themselves holding highly volatile stock. Furthermore, their investments amplified in value vis a vis movements in the market. In the crash of the early 1890s they performed very badly indeed, but recovered very strongly thereafter. Ring mills, especially the Milnrow companies, demonstrated similar responses to cyclical effects,

⁵⁷ Beta factors were obtained by regressing quarterly company return against the market return, where beta was determined by the slope co-efficient. In all cases the co-efficient was statistically significant. Hence beta determines the extent of covariance with the market. For example, a share with a beta factor of two would on average rise or fall at double the movement of the market index.

but with far less dramatic variation.

Figure 4.4: Cyclical impacts on risk, 1884-1913.



Sources: as per table 4.1; investor returns calculated from quarterly data per figure 4.1; beta factors calculated from a quarterly return index for each company and a market average quarterly return figure derived from all the companies in the sample.

Figure 4.4 plots return against risk, as measured by beta, for each company. Generally high risk, high beta, shares were a feature of mule mills and not ring mills.⁵⁸ More importantly, in an active and competitive market, investors might have been expected to switch from the mule mills which tend to cluster below the line of best fit to those ring mills which tend to cluster above. This is because the ring mills would have offered a higher return for an equivalent, or even lower, degree of risk. These shares would have been in high demand and as the market price rose, the return would fall, thereby eroding these differentials. The extent to which this market process actually took place is not clear from figure 4.4; it is simply suggested that over a thirty year period ring mills were highly rated shares, a fact regularly confirmed by share market reports in the press.⁵⁹ To a fairly large degree, it seems that investors took little notice of market signals. The reasons why are examined in more detail below, and in later chapters.

One explanation was that during the renaissance of 1896-1914, ring mill shares were caught up by the mule mills (figure 4.2), although both were able to sustain high levels of profitability relative to the economy as a whole.⁶⁰ Strong performances of by mule mill shares were further accentuated by changes in the financial structure of the companies. In the booms of the early 1900s, many became cash rich, despite generous dividend payments and extensive re-equipment.⁶¹ In some

⁵⁸ It is noteworthy that investors in mills with high betas, especially Albert and Hathershaw, also received high actual returns, which would have compensated for the perceived risk of these shares, as predicted by modern asset pricing theory (Sharpe, 'Capital asset prices', pp. 425-442; Lintner, 'Valuation of risk assets', pp. 13-37).

⁵⁹ *Oldham Chronicle*, *passim*.

⁶⁰ Jones, 'Cotton Spinning Industry', pp. 10-11; chapter 10 below.

⁶¹ Sun Mill was a typical example; Tyson, 'Sun mill', pp. 286-90.

cases surplus cash was used for investments in the shares of other mills,⁶² and in many others for the repayment of loan accounts.⁶³ Where rate of return on capital was above the cost of borrowing, as it normally was after 1896, the effect would have been to reduce shareholder returns in accounting terms. For share prices, however, there was a beneficial outcome, first from the bubble effect of purchases of shares by other mill companies, and then from elimination of financial risk previously associated with indebted companies. Shareholders now had sole rights to the large amounts of cash generated. Even more importantly, once loan accounts were repaid, surplus cash was used to reduce share capital.⁶⁴ This was an important financial side effect of the boom of 1907. Earnings were thus concentrated over fewer shares, thereby boosting share prices. Furthermore, there was important distinction between policies of ring and mule mills. The Milnrow companies all used surplus cash to pay straight bonus dividends to their shareholders. Other mills, by contrast, cancelled share capital with the return of cash to shareholders. The apparent superiority of mule mill shares in the period 1906-12 (figure 4.2), which was in any case marginal, might thus be explained purely in terms of this effect. It also allows some explanation of the evident contradiction between the share prices and investor returns examined above, and the accounting returns analysed in the next section.

⁶² *Oldham Chronicle*, 15th July, 1911, p. 12; Tyson, 'Sun mill', p. 301.

⁶³ New Hey closed its loan account in 1905; Moorfield, Dowry closed theirs in 1906; *Oldham Chronicle*, 30th December 1905 and 29th December 1906.

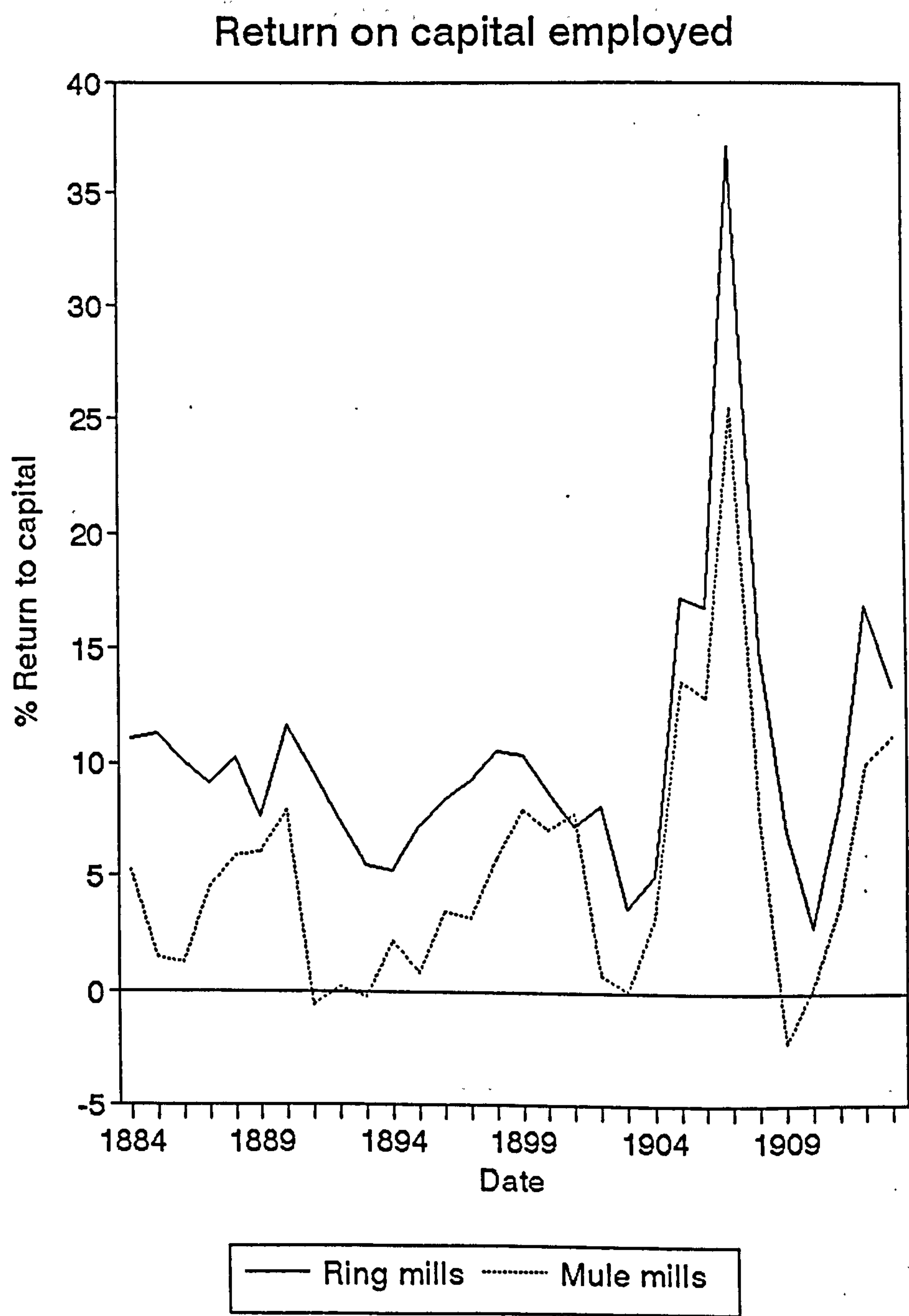
⁶⁴ Detailed cases are considered in chapter 8.

Data analysis (2): Return to capital trends

Aside from these specific causes of divergence, when accounting rates of return were used the same overall trends were apparent. Impacts of creative accounting can be discounted to an extent since although manipulations might have occurred in different companies at different times, such pressures were likely to be felt relatively evenly by many companies, given their collective vulnerability to the trade cycle.⁶⁵ In any case, it would have been difficult to distort figures persistently through accounting devices over a number of years without errors cancelling each other out. There was a strong similarity between the performances of individual mule companies and the industry average, reflecting high dependence upon forces beyond the control of the individual entrepreneur.

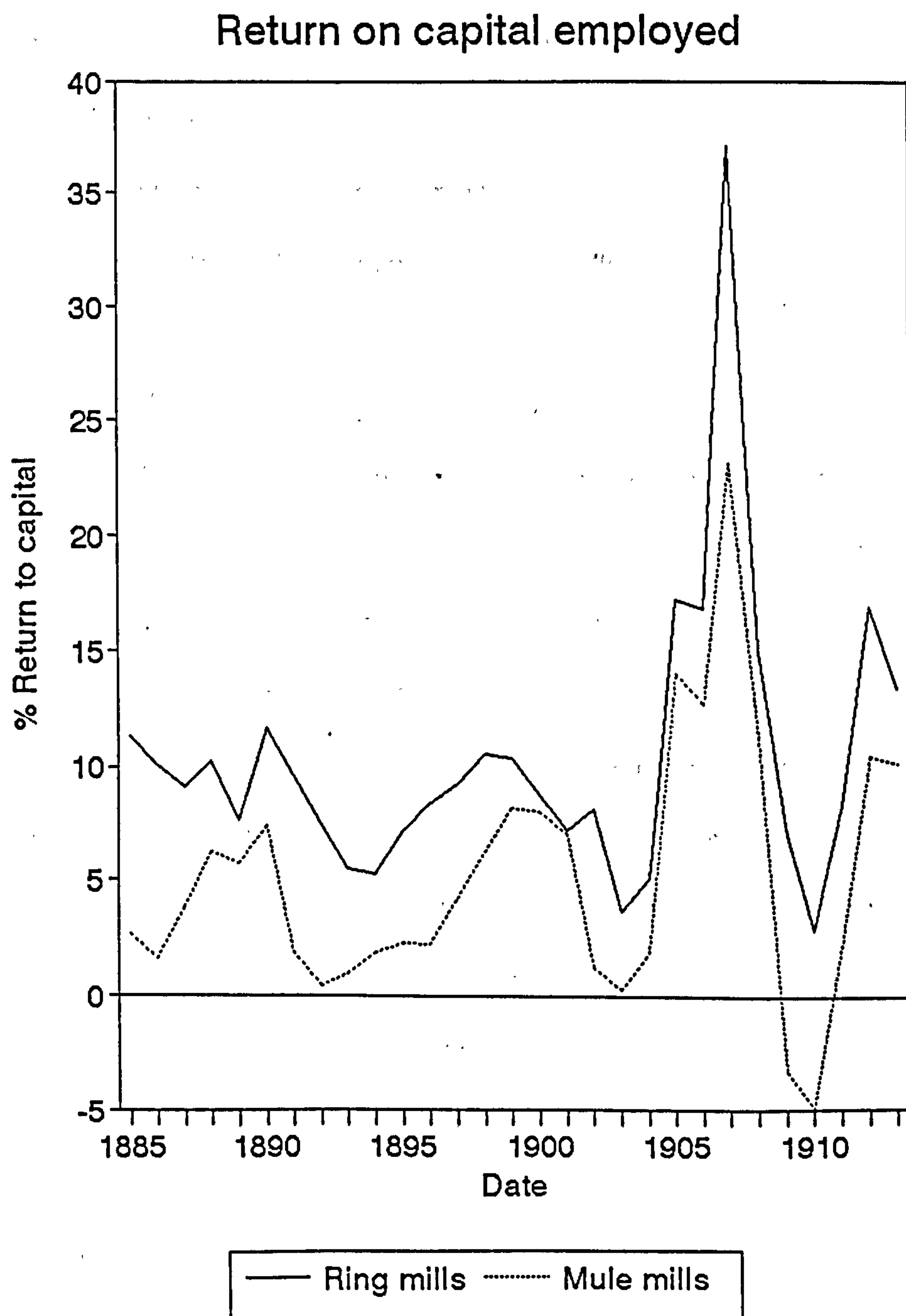
⁶⁵ Note the close correspondence in returns between the individual mule companies in figure 4.5 and the average for the section of the industry represented by the *Economist* sample in figure 4.6.

Figure 4.5: Returns to capital; ring and mule mills, 1884-1913.



Sources: as per tables 4.1 and 4.2.

Figure 4.6: Returns to capital; ring mills and industry average, 1885-1913.



Sources: as per tables 4.1 and 4.2; in this case the mule mill index is derived from the *Economist* sample; see pp. 34-6 above.

As with the stock market trends, the mule mills had their best relative performances during trade recoveries. The local press, which periodically published league tables of companies showing profit as a percentage of capital and profit per spindle, noticed these trends. For example, in 1889, as the trade recovered strongly, the three Milnrow companies only achieved 10th, 12th and 22nd positions out of 68 companies.⁶⁶ Once the cycle had reached its peak, a more usual state of affairs persisted. Commenting on the profit per spindle results for 1890, in a table showing the Milnrow group at 1st, 2nd and 4th positions, an *Oldham Chronicle* correspondent wrote: 'The ring spindle concerns lead the way as usual...'.⁶⁷ The same turning points of 1896 and 1907 were also apparent in the return to capital trends. When aggregate ring and mule samples were compared, however, the picture changed, in that the ring companies achieved consistently superior performance, earning greater profits whatever the condition of the trade cycle (figures 4.5 and 4.6). The New Ladyhouse performed better than its two apparently identical neighbours, but the Haugh and New Hey companies in turn were able to earn higher profits than any mule company. Some of the reasons for differential performances have already been pointed out. Nonetheless, on the basis of this evidence, the failure of Lancashire to emulate the pioneer ring spinners might still appear surprising. But to assert failure and seek to attribute blame, and to conclude merely on the basis of generic technical differentiation alone, might lead to oversimplification. What is more important is to seek causes of differential performance. For example, the high profitability of ring mills may have been to product range, geographical location, or factory architecture and organisation. To address these issues, further comparative analysis of the sample companies was carried out by reference to the aspects of individual company

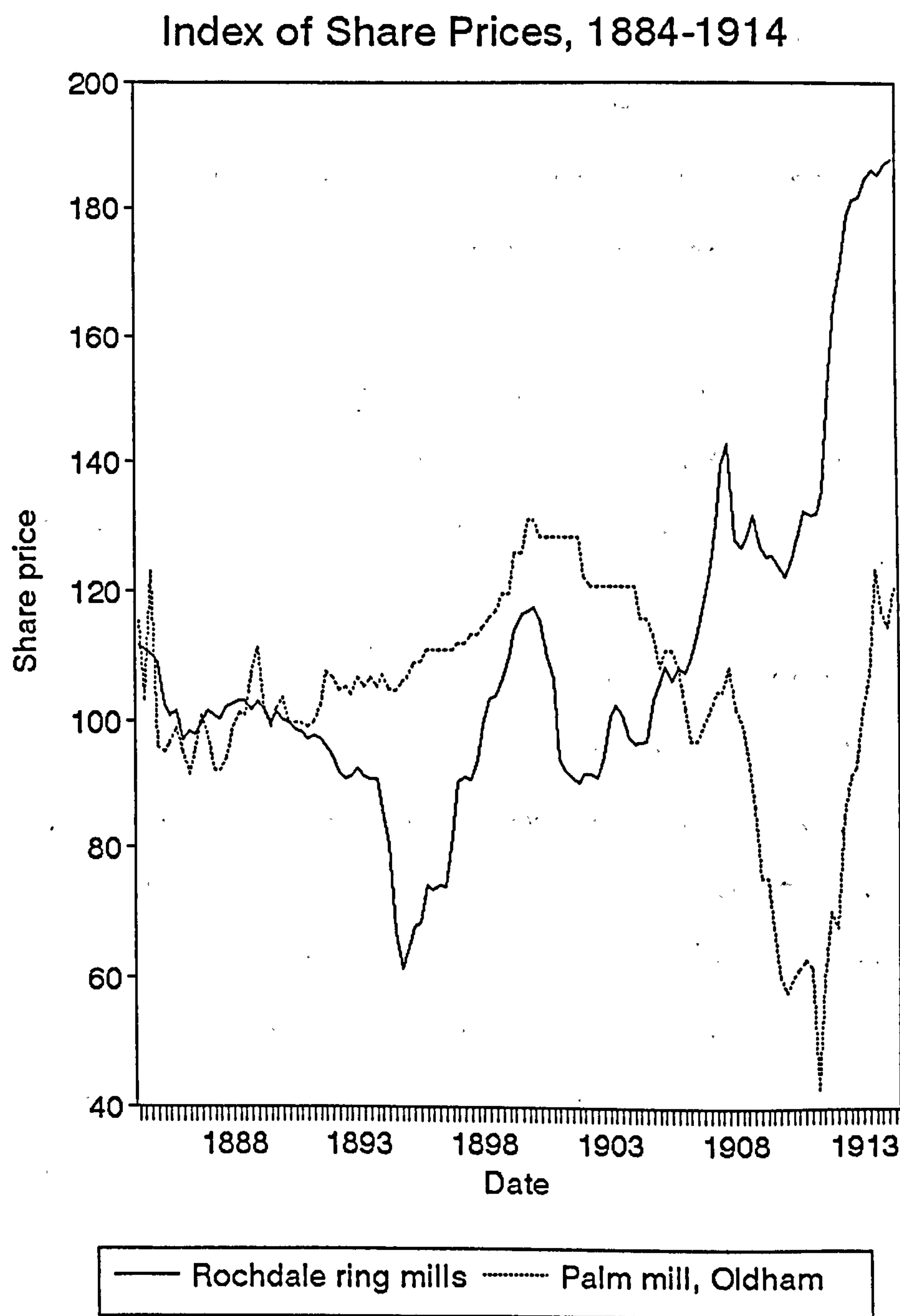
⁶⁶ *Oldham Chronicle*, 4th January, 1890.

⁶⁷ *Oldham Chronicle*, 3rd January, 1891.

performances (tables 4.5, 4.6 and figure 4.7).

One obvious reason for the apparent discrepancy lies in the nature of the data. Accounting data were available for the Milnrow ring spinners, but not for the rest of the ring spinners in the sample. Despite their stock market quotations, none of the other companies in the ring mill section of the spinning sample published balance sheets. It was therefore likely that the Milnrow group simply out performed the later ring mills or those located elsewhere. Comparison with stock market returns to a shareholder of the Palm Mill of Oldham (figure 4.7) tended to support such an interpretation.

Figure 4.7: Comparative ring mill performance



Source: as per table 4.1 and 4.2.

Product range helped explain the unusual performance of Palm mill shares which tended to move in the opposite direction to the rest of the market. In the depression of 1894-5, Palm mill investors did remarkably well and uniquely amongst cotton investors saw their shares rise. Conversely, in the boom years of the 1900s a dismal performance contrasted markedly with record share prices elsewhere. Price behaviour of Palm shares distorted the ring share indices and exclusion from the accounting data confirmed the superior performance of ring spinners as represented by the Milnrow group alone. One reason for the differential performance of Palm Mill, the sole Oldham ring mill at this time, was niche marketing; the company developed its own trade mark in the 1880s,⁶⁸ and some of its wide range of output was for the domestic hosiery trade.⁶⁹ The crisis of 1894-5 caused for the industry as whole by the loss of the Indian market was therefore not a serious problem for Palm, unlike most other companies in the industry.

Those mule mills which lowered their average count, or that specialised in warps, did not perform significantly better or worse than the rest of the mule sample (table 4.4). The Albert and Borough Spinning companies specialised in warps. As we have seen, very high average returns to investors in the former specifically resulted from the recovery from near zero values in 1896. Speculators were attracted to such shares in the 'discount section... which... afford(ed) opportunities for a quick rise'.⁷⁰ In a couple of years, 1896 and 1897, investor returns were two and three hundred percent. For example, the Albert saw a rise in its shares from 1s and 6d to 15s 6d in just over a year.⁷¹ Borough shares achieved more average returns during this

⁶⁸ Worrall, *Cotton spinners' and manufacturers' directory*, 1889.

⁶⁹ UTR, credit ratings, 4th April 1923.

⁷⁰ John Bunting, *Oldham Chronicle*, 26th December, 1896.

⁷¹ *Oldham Chronicle*, 28th September, 1895; 26th December, 1896.

period. Unlike the ring mills, which also specialised in warps, the shares of neither company attracted much press comment. It was likely therefore, that the ring mills, or at least those at Milnrow, were genuinely more profitable when spinning warp yarns. Another company which specialised increasingly in lower counts was the Shiloh Spinning. Although the company achieved something of a turnaround during the 1890s,⁷² its average investor return for the period including the 1880s was not spectacular (9.63% compared to 13.82% for other mule mills; table 4.4).

Geographical location might have been a further reason for differences in performance. To address the point in more detail, despite some obvious data restrictions, further comparisons were performed. The Era Ring Mill at Rochdale, floated in 1898, was contrasted with the Milnrow companies on a profit per spindle basis. On average it appeared to have been about as successful, recording a profit per spindle of £0.15 compared to £0.13 for the Haugh and New Ladyhouse companies (table 4.5). When we add the trends from figure 4.7, which showed that Palm mill of Oldham, unlike all other companies, missed out on the boom of 1907 and suffered a dramatic decline until 1911, there was a hint that Rochdale might have been a preferred location. If acknowledged it could be concluded that ring spinners in Rochdale performed better than ring spinners in Oldham, and that furthermore, what was a well established and flagship ring mill, performed much worse than Oldham mule spinners in the period 1906 - 1911. That promoters generally rushed to float the new mule mills in the 1905-8 building boom was perhaps therefore not surprising.

New mills were of an unprecedented size; factory organisation, and implicitly capital accumulation, provided further important contrasts between the two spinning methods. The single storey, shed based, construction of the early ring mills has already been noted in chapter 3. Mule mills, by contrast, continued to be built on a

⁷² Jeremy, 'T.E. Gartside', *DBB*, p. 495.

multi storey model, principally to accommodate rising mule lengths. What seems very surprising is that, given their profitability, not only were they not widely emulated, but in spindleage and capital terms, the Milnrow mills were the same size in 1914 as

Table 4.5: Comparative performance of ring spinners; profit per spindle, 1884-1913.

(figures in decimal pence, p)

YEAR	COMPANY			
	Haugh	New Lady-house	New Hey	Era
1884	0.13	0.33		
1885	0.16	0.31		
1886	0.12	0.35		
1887	0.10	0.15	0.43	
1888	0.14	0.16	0.25	
1889	0.10	0.11	0.09	
1890	0.15	0.16	0.22	
1891	0.12	0.13	0.17	
1892	0.08	0.10	0.13	
1893	0.07	0.05	0.09	
1894	0.02	0.05	0.13	
1895	0.10	0.08	0.12	
1896	0.09	0.11	0.18	
1897	0.11	0.13	0.18	
1898	0.13	0.14	0.22	
1899	0.13	0.15	0.21	0.11
1900	0.10	0.12	0.18	0.10
1901	0.06	0.10	0.13	0.09
1902	0.08	0.10	0.15	0.06
1903	0.03	0.03	0.08	0.01
1904	0.04	0.03	0.12	0.10
1905	0.20	0.19	0.33	0.30
1906	0.22	0.16	0.31	0.23
1907	0.50	0.48	0.58	0.52
1908	0.19	0.17	0.31	0.09
1909	0.08	0.06	0.20	0.04
1910	0.01	0.00	0.16	0.04
1911	0.10	0.08	0.20	0.14
1912	0.21	0.20	0.32	0.23
1913	0.19	0.15	0.25	0.22
Averages				
Overall	0.13	0.13	0.22	0.15
1899-1914	0.14	0.13	0.23	0.15

Sources: Compiled from Worrall, *Cotton spinners' and manufacturers' directory*, 1889, 1913; *Rochdale Observer*; RLSL, C/IND/COT/ERA, balance book, trade accounts.

they were in the 1880s (table 4.6).⁷³ Issues of capital accumulation and divestment are addressed in chapter 7. Meanwhile, the size of ring mills would lend support to the hypothesis, borne out by the spindleages of new Oldham district mills in the early 1900s, as noted in chapter 3 (pp. 62-3), that the efficient scale of ring mills was smaller than for mule mills. In the cash rich 1900s, investors, and especially the promotional groups, were interested in large, and even record breaking projects, such as Times No. 2 and the rumoured 'Mammoth' mill.⁷⁴ Little ring mills might have appeared dull by comparison.

It should be apparent from this discussion that investment decisions in plant and equipment did not automatically reflect the signals sent via the capital market in terms of relative profitability. This is all the more manifest when growth rates in terms of manufacturing capacity for each company are examined (table 4.6). Generally, once established, cotton companies tended to operate on a relatively fixed capital base. A notable exception was the Shiloh Spinning Company. It achieved very significant growth through investment in a new, much larger, mill together with significant machinery purchases.⁷⁵ Thus the average growth in spindleage during the period was 6.03% (table 4.6). On a smaller scale, the Werneth became a two mill company in 1899⁷⁶ and Sun Mill embarked on a significant capital replacement programme in the early 1900s.⁷⁷ However, these companies were the exceptions.

⁷³ The New Ladyhouse, unlike the rest of the industry, increased its loan account in the period 1907-1911. It was likely that this money was used to finance re-equipment.

⁷⁴ *Oldham Chronicle*, 29th December, 1907.

⁷⁵ Jeremy, 'T.E. Gartside', *DBB*, p. 496.

⁷⁶ OLSL, Misc 42/2 Werneth, Directors and general meetings minutes, 10th July 1895.

⁷⁷ Tyson, 'Sun Mill', p. 290.

Most surprising of all, is the almost static situation of the highly profitable ring mills. Not only were there few emulators of the Milnrow companies before 1900, but even the original companies, despite their success, failed to attract any incremental investment. This startling finding forms part of a broader picture of a unique system of economic, infrastructural, and social control which is explored in much more detail in later chapters.

Table 4.6: individual company growth rates

Company	Spindles		Growth rate
	1889	1913	
Mule mills			
Albert	24000	37982	1.93
Borough	57250	68952	0.78
Duke	70380	70380	nil
Dowry	66760	66760	nil
Garfield	61364	94292	1.81
Greenacres	114034	122322	0.29
Guide Bridge	150240	150240	nil
Hathershaw	77424	n/a	n/a
Moorfield	72000	90640	0.96
Oldham Twist	125562	166538	1.18
Osborne	45320	45320	nil
Park and Sandy	35822	35992	nil
Shiloh	37132	151296	6.03
Stanley	48480	50178	0.14
Sun Mill	143930	157000	0.36
United	91548	95600	0.18
Werneth	99992	136000	1.29
Average			1.00
Ring spinners			
Cromer	n/a	60000	n/a
Era	n/a	70000	n/a
Haugh	27768	23400	-0.71
New Hey	35200	36000	0.09
New Ladyhouse	16696	19000	0.54
Palm	105000	130000	0.89
Average			0.20

Note: Growth rates are annual compound equivalents. Doubling spindles excluded. All spindles in actual numbers, not MES.

Source: Worrall, *The cotton spinners' and manufacturers' directory*, 1889 and 1913.

The profitability of ring spinning

Trends in the relative profitability were explained by the interplay of demand in product markets, the allocative signals of the capital market, and the investment decisions taken by entrepreneurs. The causes of demand variations are considered in more detail in chapter 11. Putting these to one side for now, the relationship between the profit signals sent to investors by capital markets, as confirmed by accounting profits, played an important role in determining the future of Lancashire cotton. The industry was driven strongly by the trade cycle and when demand was weak, the profits of companies were depressed and the industry attracted no new investment. Such circumstances tended to coincide with otherwise good opportunities for ring spinning and superior profit and risk signals. Confidence was the important missing factor. During an upswing, pressure was placed on capacity and all sections of the industry were able to record strong profit performances. This was particularly true after 1896, when demand for Lancashire products grew rapidly in response to rising incomes in export markets (see chapter 11). The period tended to coincide with superior share price signals for mule spinning and profit parity. In all circumstances of the trade cycle, but for different reasons at different points in time, the possibilities for investment in rings were seriously limited. These causes of the cyclical impacts, especially demand in overseas product markets, would have created problems for entrepreneurs whichever technology they adopted.

Since the primary purpose has been to explain British investment behaviour prior to 1914, it would be incorrect to attempt to extend conclusions into the changed conditions of the 1920s. However, if the trade cycle was important before the First World War, it must have been equally crucial in the 1920s and the 1930s. Furthermore, it will be demonstrated in the next chapter that the ring did not emerge as definitely superior in all technical aspects until the 1920s. By then the industry had

lost markets, and remained in a state of overcapacity. Investment was stymied by the same lack of confidence that characterised the 1890s. The crucial difference between the two decades was that in the 1890s ring spinning was an option; by the 1920s it was becoming a necessity.

In practice, the pioneer British ring spinners were able to overcome apparent obstacles and set up profitable companies. Although the profits were good, abnormal returns to ring investors were confined to a small group of companies, were intermittent, and did not suggest that ring spinning had developed a decisive and permanent superiority. Hence there were relatively few early emulators. Historical causation, systems of finance, and geographical location have provided some alternative explanations of investment behaviour, in addition to interpretation of profit signals. In this sense, the partial adoption of ring spinning in certain locations can be seen as a continuation of the process of specialisation.

It is therefore difficult to see industry organisational structure as a constraint. However, ring spinning was slightly more profitable, despite the apparent advantages of mule spinners in terms of transport costs. More companies might thus have been expected to introduce ring spindles for the warp side of their product ranges, where no constraints existed. Yet despite their profitability, the early ring companies made no attempt to expand and widen their customer base. Furthermore, the entry of newer ring mills into the market after 1900 did not erode the superior profits of the established firms. Thus, whatever yarns were demanded by weavers, and it is generally accepted that they were indifferent on sub 40s counts, there was probably scope for greater specialised ring mill construction before 1914.

The general lack of growth of established companies was a notable feature, and it is clear that the capital market did not fulfil its expected function of channelling financial resources into the more profitable sections of the industry. Those companies

that did invest in fixed assets tended to be mule mills not ring mills. Thus investment behaviour of entrepreneurs was asymmetrical to the signals sent by the capital markets in terms of profits, share prices, and risk.

There are several possible explanations as to why this divergence occurred. The first is that entrepreneurs simply did not follow the signals sent by the market. Part 3 will examine the rôle of the entrepreneur in much more detail, and further comment on this issue will be reserved for later. Alternatively, suspicion of ring spinning technology may have played its part, or labour relations and cost structure may have imposed further difficulties. These issues are explored in the next chapter.

Chapter 5: Spinning labour cost and technical efficiency

The previous chapter has shown that the alleged superiority of ring spinning was not definitely established in commercial terms prior to 1914. Before accepting such a conclusion, however, the technical development of spinning, and linkages with improvements elsewhere along the chain of production, will be addressed from three further perspectives. First, a comparison of cost structures, with particular reference to labour cost. To examine this issue, new evidence will be used based on the analysis of financial reports of ring and mule spinning companies, and the relative costs of each spinning method will be contrasted. Second, an examination of technical improvements affecting both ring and mule spinning is conducted, primarily by reference to technical manuals published at the time, but also with allusion to the labour and other cost patterns established from the first area of discussion. Finally, the overall efficiency of the two methods is reconsidered. On the basis of these comparisons, an attempt is made to date the final establishment of the supremacy of the ring spindle.

As we have seen, entrepreneurs were aware of the risks involved with the 'leap in the dark' of ring spinning; for the investor the risk was less apparent, once the early ring companies began production. Chapter four suggested that, for the pioneer ring spinners at least, and in contrast to mule spinners, risk was discounted by superior profits, the accumulation of reserves and a policy of steady dividends. However, possible reasons already advanced for their creditable financial performance prior to 1914, such as geographical location and product range, have not provided a

complete interpretation, and it is thus important to extend the enquiry further.

Labour cost

A further possible explanation might have been labour cost savings. The use of unskilled, female labour has been unanimously acknowledged by recent contributors to the debates on Lancashire cotton as one of the reasons for its eventual replacement of the mule.¹ According to the Lazonick-Mass hypothesis, saving on raw material input was an important reason for adherence to the mule. Trade union inflexibility and the minder-piecer system prevented the reorganisation of work to achieve labour cost savings; at the same time the system was threatened by the availability of ring spinning.² Masters and men therefore co-operated to achieve the best productivity possible through raw material savings, for example in the agreement for bad spinning compensation in the Brooklands agreement of 1893.³

Whilst providing a plausible theory, this argument is not backed by the evidence from Rochdale. It is noteworthy first of all that the managers making the experimental moves in ring spinning did not cite labour cost as a source of saving. Rather, the Rochdale entrepreneurs justified their investment in rings in terms of savings in raw material input without any loss of quality, low breakdown and maintenance cost, and the relative cheapness of the machinery.⁴ In Rochdale, and

¹ For example Sandberg based his calculations on a weekly labour cost of \$0.5 per 100 spindles (approximately 2s.) for rings compared to \$1.65 for mules, *Lancashire in Decline* p. 30. Lazonick, 'Factor Costs' p. 93 correctly pointed out that comparatives used for mule spinners were overestimated, but still higher than for ring spinning.

² Lazonick, 'Industrial relations', pp. 253-7.

³ Lazonick, 'Production relations, p. 505.

⁴ *Rochdale Observer*, 4 January, 1890, p. 6; *Textile Mercury*, 5 December, 1896

elsewhere, raw material saving was given as a key reason for the introduction of the ring. Had Lancashire entrepreneurs wished compete against the threat of low wage competition from overseas on the basis of savings in raw material input, the ring spindle would have given them the means of doing so for the lower range of counts.

On the other hand, using the ring spindle did not provide the early Milnrow pioneer companies with an easy way round the increased institutionalisation of industrial relations. Their entrepreneurs relied on paternalism rather than exploitation, but at the same time sought solidarity with employers elsewhere in the industry. Such contradictions were keenly felt throughout Lancashire, especially where joint stock companies were prevalent.⁵ As elsewhere, Milnrow had many of the characteristics of a 'company town', and like the Ashtons of Hyde and the Fieldens of Todmorden, the Heaps exercised a good deal of local deferential and political influence. All the mills of the town, with one exception, were closed on the morning of James Heap's funeral in 1892, and flags flew at half mast above the mills, the school, the educational institute, and the Conservative club, each symbolising a locus of power and influence for the departed industrialist and his successors. Most of the local population appeared to turn out to pay their respects.⁶ Yet only a few days earlier the hands employed at the New Ladyhouse, the New Hey and the Haugh spinning companies had been placed on a week's notice. Local management acted at the behest of the Masters' Federation, which had decided to stop the mills until the settlement of the Stalybridge dispute. In addition to the Milnrow ring spinners, mule spinners such as the Garfield were also involved.⁷ Whatever reason Heap and Tweedale had for promoting the ring spindle at Milnrow, it was not because they sought to drive

⁵ Joyce, *Work, society and politics*, pp. 339-40.

⁶ *Rochdale Observer*, 13th April, 1892.

⁷ *Rochdale Observer*, 9th April 1892.

down wages, nor was it to escape from the increasingly institutionalised structure of labour relations.

In order to gain further insight, and to reassess the apparent contradictions arising from the above discussion in further detail, actual cost structures of ring and mule companies, as reported in published balance sheets, are compared below. Table 5.1 shows a compilation of ring and mule labour cost statistics for the late 1880s and early 1890s. In this respect, data observations were relatively limited, as not all companies disclosed their financial results in the same way or in the same level of detail. From the main sample, wages data were available for only certain companies for certain years.⁸ However, these could be supplemented by accounting data analysis published intermittently in the local press. The years 1890 to 1892 were particularly useful for the extent of press analysis⁹ and were also selected as being relatively neutral in terms of the trade cycle. For a limited number of years, there were thus data available for more than fifty mule companies and the ones shown in table 5.1 are intended to be representative. For the four ring companies then in existence,¹⁰ because of their small number, it was more difficult to obtain consistent and detailed accounting information. Hence the periods selected for analysis were contingent on the availability of data on ring mills. In general, although the data give only a snapshot in time, they are nonetheless revealing.

⁸ Fielden Brothers, Robinwood Mill (RMA, 1895-1914), Healey Wood Mill Co. Ltd., (RM NRA 29093, Trading and Profit and Loss Accounts 1907-1914), Osborne (LCRO DDX/869/, Capital, trading, and profit and loss accounts, 1890-1914), T and R Eccles (LCRO, 868/7/1, Profit and Loss Accounts and Balance Sheets, 1897-1914), Werneth (OLSL, Misc. 42/17 and 18, Quarterly Reports to Members. 1890-1912), Whiteley, ' (LCRO, DDX/868/21/5, Balance Sheets, 1898-1914).

⁹ In a typical week at the end of a quarter, the *Oldham Chronicle*, (2nd January 1892, p. 8, 'Limited companies' balance sheets) carried detailed sales and expenses analysis of eight companies.

¹⁰ The three Milnrow companies and Palm mill of Oldham.

Table 5.1. Comparative wages in mule and ring mills, 1890-92.

(1) Wages analysis, 1889-90

	Spind.	Hands	£ Wages	£ Wages/ hand	£ Wages/ spind.
Ring mills					
Haugh	27,200	260	8,692	33.43	0.3196
New Hey	38,000	370	11,802	31.90	0.3106
New Lady-house	15,728	200	5,477	27.38	0.3482
				----	-----
Average				30.90	0.3261
				----	-----
Mule mills					
Hathershaw	77,424	376	9,644	25.65	0.1245
Stanley	48,480	236	7,172	30.39	0.1479
Lees Union	63,000	306	7,048	23.02	0.1119
Dowry	66,670	324	8,244	25.44	0.1237
				----	-----
Average				26.13	0.1270
				----	-----

(2) Comparative cost analysis, early 1890s

	Ring %	Mule %
Material	70.8	74.7
Labour	13.9	12.9
Depreciation	3.8	3.2
Other	11.5	9.2
	----	----
	100.0	100.0
	----	----

Sources: (1) Compiled from, *Oldham Chronicle*, 1st October, 1889, *Rochdale Observer*, 28th June 1890 (for mule spinners, in the absence of data on actual hands employed the number was estimated using the industry average of 206 spindles per hand, per Wood, ‘Factory Legislation’, p. 316). Wages data per the quarterly reports of each company, as published in the above newspapers; annual equivalents obtained by multiplying by four. (2) Collation of figures for the same companies as in (1).

Table 5.2. Comparative labour intensity in mule and ring mills, 1890.

	spindles/ hand
Ring mills	
Haugh	105
New Hey	103
New Ladyhouse	79
Average	
Mule mills	
Industry average	206

Sources: as for table 5.1

Use of time limited cross sectional data of this sort is open to accusations of inconsistency. However, the wages analysis in part (1) of table 5.1 showed similar patterns when 1892 data was used. The collation in part (2) of the table is therefore considered representative of the typical cost structure at the beginning of the 1890s.

The most striking feature of table 5.1 was the pattern of labour cost and, in 5.2 the relative labour intensity. One reason for general reluctance to invest in ring spindles in nineteenth century Lancashire may have been that the labour content of their output was actually *higher* in the 1880s and 1890s than for mule spindles. Unlike the paternalist managements of the Milnrow mills, potential emulators may not have had a generous attitude towards expensive, and perhaps locally scarce, ring spinning labour. Table 5.1 suggests the early ring spinners had a greater labour intensity than mule spindle concerns. The higher productivity of ring spindles meant that labour formed an approximately equal proportion of total cost. Expensive labour in the context of ring spinning directly contradicts the usual understanding of the development of this technology.

If labour cost savings did exist, they were confined to the spinning process itself. Ring spinning required more labour in roving and other preparation stages and in after spinning processes, such as doffing and winding.¹¹ Where ring spinning developed from throstle spinning, as in Rochdale and other areas, there was a tradition of labour intensity, particularly with regard to doffing.¹² Doffing was an unskilled task, normally assigned to teams (four per machine) of young and

¹¹ Winterbottom, *Cotton spinning calculations*, p. 261. Jewkes and Gray, *Wages and labour*, p. 129.

¹² Production at the throstle section of the Fielden spinning plant at Waterside was facilitated by an 'army of doffers', *Todmorden Advertiser*, 9 November, 1889, p. 4.

inexperienced workers,¹³ and their employment no doubt added to the apparent labour intensity of ring spinning. The evidence in table 5.1 and 5.2 was corroborated by international comparisons. A ring spinning mill in France in 1882 producing 30s twist had a spindle per operative ratio of 75,¹⁴ and was thus directly comparable in labour intensity with the New Ladyhouse spinning company (table 5.2).

That labour cost saving was not a strategy associated with the introduction of ring spinning was confirmed by contrasts of costs between the ring mills themselves. In the previous chapter, the New Ladyhouse was shown to be the most profitable of the three Milnrow concerns (table 4.4). Yet it was also the most labour intensive (tables 5.1 and 5.2). Profit may have been helped by the relatively low average wage, which in turn may have reflected the application of piece rates to at least some of the hands. Even so, workers were paid more here on average than in the strongholds of labour aristocracy in the mule mills of Oldham. James Heap would have been regarded as a generous employer and the public grief apparently expressed by the whole town on his death may have run deeper, and for reasons beyond those of pure paternalism, than guessed at by the newspaper correspondent.¹⁵ Expensive labour cost may have been compounded by the absence of a comprehensive, institutionalised wage list coupled with the relative scarcity of ring spinners. Highly individual lists for ring spinners existed by the early 1900s. Following industrial action, the final moves towards a universal official list for ring spinners' wages were not made until

¹³ According to the recollections of former ring spinners; Kenney, *Cotton Everywhere*, pp. 130-1.

¹⁴ Merrtens, 'The hours and cost of labour', p. 160; the mill at Roubaix had 13.3 operatives per 1000 spindles. The comparable figure for mule spinning was 4.86, or 206 spindles per operative, as used in table 5.1.

¹⁵ See above and the commentary in the *Rochdale Observer*, 13 April, 1892.

1912.¹⁶ Moreover, the same factor may have led to variation in wages over time and by geographical area. Thus, although wage structures were important, as far as the early experiments in ring spinning were concerned, they were not decisive. The new ring mills might well have employed female labour and probably young girls to doff the machines; they were hardly sweatshops though, and labour cost savings were patently not the reason for the introduction of ring spinning.

Relative expense of ring mill labour may also have been a product of cheap labour in the mule spinning section of the industry. As an oft quoted example of a labour aristocrat,¹⁷ relatively high wages in the mule room were confined to the senior minder. Out of his own wage, he would effectively sub-contract his two assistants, the big piecer and little piecer, both of whom depended on promotion up this hierarchy.¹⁸ Both earned relatively low wages,¹⁹ and would have depressed the wages per hand in table 5.1. Thus expensive and cheap labour existed side by side. Whereas the subcontracted payment system might create the risk of double counting when using industry data, and although there was no evidence of this,²⁰ firm specific published accounting reports could be relied upon to contain only the net labour cost to the firm.

¹⁶ *Oldham Chronicle*, 29th June 1912; Porter, 'Industrial peace' p. 55; Jewkes and Gray, *Wages and labour*, Ch. 9.

¹⁷ Fowler and Wyke, *The barefoot aristocrats*.

¹⁸ Burgess, *The origins of British industrial relations*, p. 239.

¹⁹ Wood, 'Statistics of wages', pp. 134-7.

²⁰ For example in the debate between Sandberg and Lazonick; for example the data in Lazonick, 'Factor costs', appendices 1 and 2, was derived from Winterbottom, *Cotton spinning calculations*, although that source contained no supporting breakdown of its departmental labour cost statistics, pp. 272-3.

Table 5.3: Gross margins, ring and mule mills, 1892

	COMPANY		
	RING Haugh	Hathershaw	MULE Oldham Twist
	£	£	£
Sales	17,572	23,798	38,092
Cotton cost and charges	12,221	17,491	28,573
	%	%	%
Margin	69.49	73.50	75.0

	RING Fielden	Werneth	MULE Osborne
	£	£	£
Sales	13,209	28,378	7,981
Cotton cost and charges	9,094	20,981	5,350
	%	%	%
Margin	68.85	73.93	67.03

Note:

- (1) For Fielden, in the absence of 1892 data, 1895 was used.
- (2) Werneth prepared its trading account on a receipts and payments basis and its purchases fluctuated dramatically, therefore a quarterly average was used based on the previous eight quarterly results.
- (3) In all cases raw material costs were adjusted for changes in stock levels.

Sources: Haugh, Hathershaw, and Oldham Twist, calculated from *Oldham Chronicle*, 'Commercial Notes' 2nd January, 1892; Fielden, RMA, 1895; Werneth, OLSL, Misc/42/17, Quarterly reports to members; Osborne, LCRO, DDX/869/3/1, trade, capital and profit and loss accounts.

As noted above, saving of raw material input using ring spindles was thought to be important by entrepreneurs. Rings were acknowledged to be more productive on the lower count range.²¹ That argument was well supported in the evidence presented in table 5.1, with raw material accounting for a significantly lower proportion of production cost in ring mills. Table 5.3 provides a collation of data showing sales, cotton costs, and profit margins for ring and mule mills. When compared with mule mills spinning low counts, such as Hathershaw and Oldham Twist, ring mills tended to show a 4-7% superiority in margin.²² The comparison was flawed however, as even lower count mule mills were producing higher counts than the ring mills, and also weft yarns. Taking into consideration count differentials, the advantage for ring mill margins would have been greater. Only when compared with Osborne, a fine spinner by Oldham standards and therefore operating on above average margins, did the advantage disappear.²³ High labour cost, averaging just under 15% of total cost (table 5.1), cancelled out the benefit for this company on raw material value added. At the coarse end of the market, margins were much narrower, and hence the ring spinners benefited from higher productivity per unit of cotton input, without having to increase their prices. Bearing the above interpretative difficulties in mind, the superiority of the ring on raw material usage clearly made a net contribution to company profits.

Another factor influencing cost structure was lack of industry concentration, and the very small market share of each firm. Under such circumstances high levels of fixed cost create disproportionately large losses as output falls in a recession.

²¹ Winterbottom, *Cotton spinning calculations*, pp. 212-3.

²² Table 5.3. The tendency was for ring mills to be in the high 60%s and mule mills to be in the low 70%s.

²³ The Osborne produced 32s/50s warp and 40s/70s weft; Worrall, *Cotton spinners and manufacturers' directory*, 1890.

Increasing the scale of operations would accentuate such risks. There was thus a strong incentive to avoid ring spinning where, despite some tentative evidence for the use of piece rates at Milnrow, time based wage rates predominated. By contrast mule spinning was attractive, since labour was paid according to piece rates and the Brooklands agreement specifically allowed wage rates to vary with the trade cycle.²⁴ Fixed cost was also avoided through vertical specialisation, allowing management and administrative costs to remain minimal, the market acting as the co-ordinating mechanism.²⁵ Lazonick has argued that investment in rings was more likely to occur in integrated firms developing high throughput production.²⁶ However, under the highly variable demand conditions imposed by the trade cycle, the last thing entrepreneurs needed was the high fixed cost structure that such investment implied.

Previous discussions of the relative merits of ring spinning which have used labour cost in their analysis have thus concentrated too narrowly on the spinning process itself. Under British conditions, if wage cost was a barrier to competitiveness, labour intensity in preparatory and after spinning processes must have been an important reason for the coexistence of the ring and mule for a further generation. In its early years at least, ring spinning was not a route for substitution of labour by capital.

The above examination of the cost structures of actual firms by reference to their business records and published balance sheets has suggested the opposite conclusion to that normally associated with views of ring spindle diffusion. However, the evidence used was static, being confined to the early decades of the 1890s when

²⁴ BPP, *Board of trade report*, c. 7567.

²⁵ The flexibility of vertical specialisation and its advantages were noted in Jewkes, 'Is British Industry Inefficient?' pp. 9-10.

²⁶ Lazonick, 'The Cotton Industry', pp. 21-2.

only a very few British ring spinning companies were in existence. The cheap female labour hypothesis may have become more relevant with the passage of time and indeed with the changing relative efficiencies of ring and mule technology, and these are considered in the next section.

The technical race

Patterns of commercial returns and cost structures suggested more than one route existed to the achievement of acceptable profit levels. But did satisfactory profit signals encourage a complacent entrepreneurial attitude towards technical innovation? Technical distinctions contributed towards differences in commercial performance, although the effects noted above and in chapter four were perhaps, in some cases, marginal. One interpretation might be that the two spinning methods were in a neck and neck race, with new technical developments for each in turn heralding the promise of superiority over the other. In this section the important turning points in that race are identified and evaluated.

In 1890, both methods were imperfect, but the mule was established and the ring was not. It is therefore necessary to find evidence that the latter was gaining ground technically up to 1914. If it was, then entrepreneurs perhaps can be criticised for not being more alert to developments. Furthermore, if the relative profitability of the mule was attributable to the technical superiority of the ring being cancelled by industry structure constraints, they could also be criticised for failing to remove those constraints.

Mule technology displayed few characteristics of obsolescence in the period up to 1914. Dependence upon the intrinsic nature of its intermittent action was a limiting factor, but also gave the machine certain important advantages. The action of the carriage facilitated a final stage of drawing following intermediate processing,

giving mule yarn the advantages of 'gain' and 'ratch'.²⁷ Mule yarn was thus less susceptible to snarl and possessed greater uniformity, attributes of great value in weaving. Further improvements in the efficiency of the mule helped prolong the period of competitive coexistence. Speed and size increases were achieved with the full co-operation of piece workers, who had their own rewards built into the system. Mule efficiency was further improved through speed ups. R.P.M. was increased (13%) and faster draws in carriage speed (19%) between 1870 and 1910.²⁸ The latter placed limits on the development of the mule, since production depended on the number of draws per minute. Larger machines, in preparation and spinning itself, increased spindleages by 25-30% between 1870-1910.

One particular constraint resulting from bigger machines was architectural. According to Wood, writing in 1910:

Some firms have actually had to put in ring frames and spin ring yarn because their mills would not, when the old mules were taken out, contain the mules of the size with which it has been desired to replace them.²⁹

Mule size increases, combined with existing factory layout were thus very important in the choice of technology. A wider issue is also raised. The slow growth rates for existing mule mills, noted in chapter four, may be explained by this problem. Such size constraints would add to the incentive to float new mills, rather than to re-equip or expand existing ones.

In ring spinning, improvements were mainly concentrated on the reliability

²⁷ 'Gain' refers to the differential between the carriage speed and the rate at which yarn was given out by the rollers; 'ratch' was the additional twist insertable by a special jacking motion at the end of the outward run of the carriage (Taggart, *Cotton spinning*, pp. 232-4; Thornley, *Cotton spinning*, pp. 149-174; Winterbottom, *Cotton spinning calculations*, pp. 166-8).

²⁸ Wood, 'Statistics of wages', pp. 612-3; Tyson, 'The cotton industry', p. 123.

²⁹ Wood, 'Statistics of wages', p. 155.

of the spindles used. The replacement of Booth-Sawyer spindle by the Rabbeth and the improvements to the latter such as the Howard and Bullough 'quick running' spindle reduced alignment problems, oiling time, ultimately facilitated automated doffing, and allowed spindle speed to increase.³⁰ But due to the limit on roller speed, these were not decisive improvements.

A further difficulty was the requirement to use even, short staple, American cotton. Snarling remained a problem when Egyptian cotton was used, unless additional drafting was carried out in intermediate processing.³¹ Reliance on American cotton was an important constraint facing ring spinners, although such dependency did have its periods of advantage when coarse American was cheap. Dependence on raw material supply dictated mill margins, and it may have been for this reason that although producing superior performance, the return to capital trend for the Milnrow ring spinners mirrored the rest of the coarse section of the industry in Oldham almost exactly (figures 4.5 and 4.6).

Dependence on short staple American cotton continued prior to 1914. The speed of the front rollers, which could not be accelerated too much with short staple, was the limiting factor on further productivity gain, contrasted with the mule, where the speed of the carriage imposed limitations. The next phase of technical development would necessarily concern itself with the removal of the speed constraint for both spinning methods.

Relative efficiencies of rings and mules

Both systems were gradually improved between 1880 and 1914. But the race was indecisive, technology was in a state of flux, and the choices facing decision makers

³⁰ Thornley, *Cotton spinning*, pp. 265-7; Murphy, *Textile industries*, pp. 80-1.

³¹ Thornley, *Cotton spinning*, pp. 269-77.

were far from clear. Overall, the indecisiveness of the technical race was a significant determinant of investment behaviour and hence overall similar pattern of financial performance. Table 5.4 shows improvements in productivity, as measured by hanks per spindle.

Table 5.4: Productivity, ring and mule spindles 1866-1920.

Output: Hanks per spindle

(1) Mule Spinning

Period	Average % annual increase
1866-1885	1.69
1885-1893	1.33
1893-1915	0.08
1915-1920	0.14

(2) Ring spinning

Period	Average % annual increase
1893-1915	0.08
1915-1920	1.01

Source: Calculated from Thornley, *Modern Cotton Economics*, p. 302. Hanks per spindle was a common measure of production in the industry, see also for example, Winterbottom, *Cotton spinning calculations*, pp. 255-60.

By the 1900s, as illustrated by table 5.4, improvements in mule spinning productivity were becoming progressively slower. However, for the period 1893-1915, improvements in both methods were identical, but not spectacular. In ring spinning productivity only began to accelerate after 1915. The evidence appears to be consistent with the similar commercial profitability associated with the two technologies, and hence there would have been no felt need for re-equipment. Those ring spinning companies which were able to sustain superior performance prior to 1914, such as the Milnrow companies, and especially the New Ladyhouse, were able to do so without increasing their spindleage, and as table 5.3 has confirmed, without increasing their technical efficiency.

The discussion thus far has tended to suggest that technical issues associated with the transfer of output between plants within a vertically specialised industry structure were not important. If there was little incentive to shift from mules to rings on warp production, industry fragmentation would have eliminated it altogether from weft production, unless any decisive technical breakthrough occurred in transfer technology as well.

Of particular importance in this respect were the methods associated with winding and transport between plants. There has been considerable disagreement on the pattern of adoption of paper tubes and their actual importance.³² According to contemporaries, a major objection to the ring was the requirement to rewind yarn output to avoid the high cost of transport on wooden bobbins.³³ Attempts were made to overcome the problem, albeit with dubious success. According to some authorities, the solution was via modifications to winding mechanisms on ring spindles. It would

³² Lazonick, 'Stubborn mules', pp. 80-6; Saxonhouse and Wright, 'Stubborn mules', pp. 87-94.

³³ Copeland, 'Technical development', p. 149; Murphy, *The Textile Industries*, Vol III, p. 115.

thus be easier for weft as well as warp, to be spun.³⁴ However, these experiments met with limited success. Attempts were made to develop new ring spindles which manufacturers claimed could achieve efficient weft output onto lightweight paper tubes.³⁵ However, even this would not have been decisive as a cost saving measure. Competitive ring spun, loom ready yarn, would need to be produced on the bare spindle or at least on a low diameter cop, as with mule yarn.³⁶ Attempts were made to do this, but the result generally was bad spinning.³⁷ The empirical evidence suggested a marginal superiority in the profitability of ring spinning in vertically specialised mills producing warp yarns. Given these additional obstacles in the weft section, the adoption of the ring was unlikely to appeal as a business strategy.

The automation of ring spinning

If the technical evidence suggests an indecisive struggle for supremacy in the period before the First World War, when exactly and how did the ring spindle finally emerge as the preferred alternative? As noted already, speed was a production constraint for rings and mules. The former, being independent of the wheeled carriage, was less restricted in terms of technical possibilities. It has also been noted that the lack of automation in drafting, doffing, and winding, before 1914 meant the introduction of the ring did not displace labour.

The development of high speed drafting was decisive in both these respects. By overcoming speed constraints, its invention in 1914 created the possibility of much

³⁴ Murphy, *The Textile Industries*, p. 115

³⁵ *Textile Mercury*, 5th December, 1896

³⁶ Lazonick, 'Stubborn Mules', p. 82.

³⁷ Thornley, *Cotton spinning*, p. 247; Nasmith, *Students' cotton spinning*, p. 532.

higher efficiency in ring mill preparatory processes. Early drafting mechanisms, responsible for the attenuation of yarn in processes prior to spinning, placed limitations on speed, in terms of impaired quality and irregularity, for both ring and mule systems.³⁸ To ensure correct quality, several stages of intermediate drafting were required. Like all important inventions the high draft was based on a simple idea; the use of a grip device to ensure even pressure and attenuation. Cotton of uneven staple could thereby be regularised by a single process and at high speed.³⁹ Although attempts were made to apply the new system to mules, high drafting destroyed the rationale of the intermittent carriage based spinning system. Carriage speed rather than roller speed was now the constraint, and whereas there were few technical obstacles to further speed increases for the latter, there were obvious problems in trying to accelerate the speed of a large wheeled carriage. Moving the frame instead of the material would increasingly look like fitting a light bulb by turning the ceiling round.

Cost structures prior to 1914, especially in terms of the relative labour intensity of ring spinning, provided further evidence of the ultimate importance of high speed drafting, and the automation of other intermediate processes. Its effect was to displace labour in significant numbers in preparatory and intermediate processes rather than in spinning *per se*. However, it was not fully developed commercially until the 1920s.⁴⁰ Although at this time some contemporary writers still regarded the mule as superior,⁴¹ its supremacy was now being seriously undermined. A survey

³⁸ Noguera, *Theory and practice of high drafting*, p. 20.

³⁹ Noguera, *Theory and practice of high drafting*, pp. 22-3.

⁴⁰ Catling, *The Spinning Mule*, p. 189

⁴¹ See for example, Thornley, *Modern cotton economics*, p. 137; Taggart, *Cotton spinning*, pp. 331-2.

in 1932 noted three cases of ring mill replacing low draft with high draft spinning, resulting in improvements in labour productivity of 42%, 56% and 50%.⁴² Most of the gain came from the elimination of intermediate roving stages.⁴³ A further important development was the automation of the intermediate processes of doffing and winding. In view of the labour intensity of ring spinning in the 1890s (tables 5.1 and 5.2) and compared with the improvement in ring spinning efficiency prior to 1920 (table 5.3), such gains were of great significance. For the first time spinning became capital, and not labour, intensive.⁴⁴ Furthermore, the automation of doffing and winding might have given a new impetus to integrated manufacture, since efficient throughput and compatibility between spinning and weaving machines could be more easily guaranteed.

A technical stalemate

There is little evidence that the ring spindle possessed any decisive technical superiority in the period before 1914. As ring spinning was actually more labour intensive than mule spinning, it could not have had any great appeal to employers seeking to displace labour, or circumvent the increasing institutionalisation of wage negotiations. Commercially, the superior profits enjoyed by the Milnrow companies resulted from savings on raw material inputs; an advantage that would have been shared by other ring spinning companies, although as we have seen in chapter 4, not all succeeded in translating this into superior profitability.

Rings and mules had coexisted for a long time in their various forms, and the reason for the ultimate triumph of the former was greater adaptability to new

⁴² BPP, Board of Trade, *Industrial Survey*, p. 135.

⁴³ Tippet, *Portrait of Lancashire cotton*, p. 60.

⁴⁴ BPP, Board of Trade, *Industrial Survey*, p. 135.

efficiencies in before and after spinning processes, not from any inherent superiority *per se*. These advantages became apparent in the 1920s and obvious to all in the 1930s. By the time they were available, the conditions facing Lancashire entrepreneurs had changed dramatically.

The pre 1914 ring spindle has been overrated as a technical competitor to the mule under British conditions.⁴⁵ Technical imperfections and the cost structures of ring spinners restricted opportunities in this period. Saxonhouse and Wright stressed the importance of high speed drafting as the major technical breakthrough for the ring⁴⁶ and the trends highlighted in the analysis support that conclusion. There is little evidence of the definite superiority of the ring until the 1920s and 1930s. By that time, the interventions of the government and the Bank of England were of particular importance.⁴⁷ It is therefore to this period that future investigations should look towards for the attribution of blame, if appropriate, both for failure to innovate and failure to restructure the industry.

Commercially and technically therefore, although an argument existed for ring spinning, it was not a compelling one, and when set against the backdrop of a conservative business culture whose policies were rewarded with a record cash and profit bonanza in the 1900-14 period, the partiality of its adoption should not be greeted with any surprise. However, Lancashire cotton was neither static nor

⁴⁵ It is noteworthy that Lazonick, in observing the compatibility of ring spinning with the automatic loom and automation through high draft preparation, cited authorities writing from the early 1930s onwards, eg BPP, Economic Advisory Council, *Report of the committee*, p. 17 (1929-30), Clay, *Report on the position*, pp. 13-14 (1931), BPP, Board of trade, *Industrial survey*, p. 16 (1932), but argued that the adoption of these methods could have extended productivity at the end of the nineteenth century; Lazonick, 'Industrial relations and technical change', p. 258.

⁴⁶ Saxonhouse and Wright, 'New Evidence', p. 519.

⁴⁷ Bamberg, 'The Rationalization of British Cotton', p. 97.

complacent, and some restructuring had occurred which resulted in some of the largest corporate structures in the British economy. To further examine the nature of technological change, it is perhaps appropriate to turn away from the competitive, vertically specialised, section of the industry, to those companies which might be expected to realise the largest economies of scale and speed; the vertically integrated combines.

Chapter 6: The costs and benefits of vertical integration

Earlier chapters have revealed possible explanations for the investment decisions taken by Lancashire entrepreneurs. However, the companies examined to date have all been vertically specialised; the impact of structure, in terms of both industry and organisation has been held constant. Nonetheless it has been impossible to avoid, at least in passing, mention of the importance of this alleged constraint to the evolution of the cotton industry. Three interrelated issues are therefore introduced in this chapter. First, by reference to returns to capital, vertically integrated companies will be compared with their vertically specialised competitors. Specialisation can be approached in several dimensions; geographically, horizontally in terms of product, and vertically in terms of production and marketing process. Vertical specialisation in particular has been blamed for ultimately retarding the progress of the industry; efficient throughput from raw cotton to finished piece goods became the concern of too many independent and competing management groups, and was therefore never achieved. As Keynes put it in 1928:

There was probably no hall in Manchester large enough to hold all the directors of cotton companies...One of the first things should be to dismiss the vast majority of these people, but the persons to whom this proposal would have to be made would be precisely those directors.¹

Although widely accepted, that conclusion, when applied to before 1914, has rested to a certain extent on generalisation and thus merits further enquiry. The second area, exploiting the advantages of the survival of relatively detailed business records of several vertically integrated companies, introduces comparative case studies.

¹ Quoted in Daniels and Jewkes, 'The post war depression', p. 200.

Restricted availability of archival data led to the selection of three companies, none of which have been dealt with extensively elsewhere in relation to the issues explored in this chapter; Horrockses, Crewdson and Co. Ltd (Horrockses), Tootal, Broadhurst and Lee and Co. Ltd (Tootals), and Fielden Brothers Ltd (Fielden). Finally, given the relatively rare instances of automatic loom introductions in pre 1914 Lancashire and their coincidence with vertically integrated companies, the comparative case study analysis is extended to consider how each of the firms responded to the opportunities provided by this technology. Although archival evidence was limited, because of its importance to the automatic loom issue, Ashton Brothers of Hyde is also included as a case example for the final part of the study.

Vertical integration and financial performance

It has been universally acknowledged that growing specialisation in Lancashire became a source of competitive advantage after the early years of the industrial revolution.² Whilst recognising this point, others have argued that in later times it was also the cause of the ultimate downfall of the industry.³ The first problem, therefore, is to establish precisely *when* specialisation assisted competitive performance. If specialisation was a positive influence, returns to capital in the specialised sector might be expected to be higher than in the vertically integrated sector. On the other hand if vertically integrated companies performed better, it would be difficult to conclude that any organisational constraint existed.

A second dimension of organisation structure was use of technology. Again it has been asserted that vertically integrated companies were unconstrained from

² The commencement of the period of advantage for the vertically specialised company is variously dated at between 1820 and 1850; Taylor, 'Concentration and specialisation', p. 122, and Lyons, 'Vertical integration', p. 425

³ Mass and Lazonick, 'The British cotton industry', p. 57.

adopting what were claimed to be superior technologies.⁴ Given that the sample of vertically integrated companies adopted these technologies to varying degrees, the evidence presented below provides the opportunity to test that alleged superiority. If vertically integrated companies adopting ring spindles and automatic looms did enjoy a decisive advantage, it might be expected that they would achieve superior profits *vis a vis* their apparently more reticent specialised counterparts.

⁴ Lazonick, 'Rings and mules', p. 396.

Table 6.1: Rates of return, integrated and specialised companies, by period, 1884-1913

(1) Spinning and manufacturing

Period	Return to capital (%)		
	Vertically integrated	Specialised mule spinners	Specialised ring spinners
1884-1913	6.26	5.26	10.46
1890-1899	6.37	3.10	8.59
1900-1912	7.02	7.00	11.93

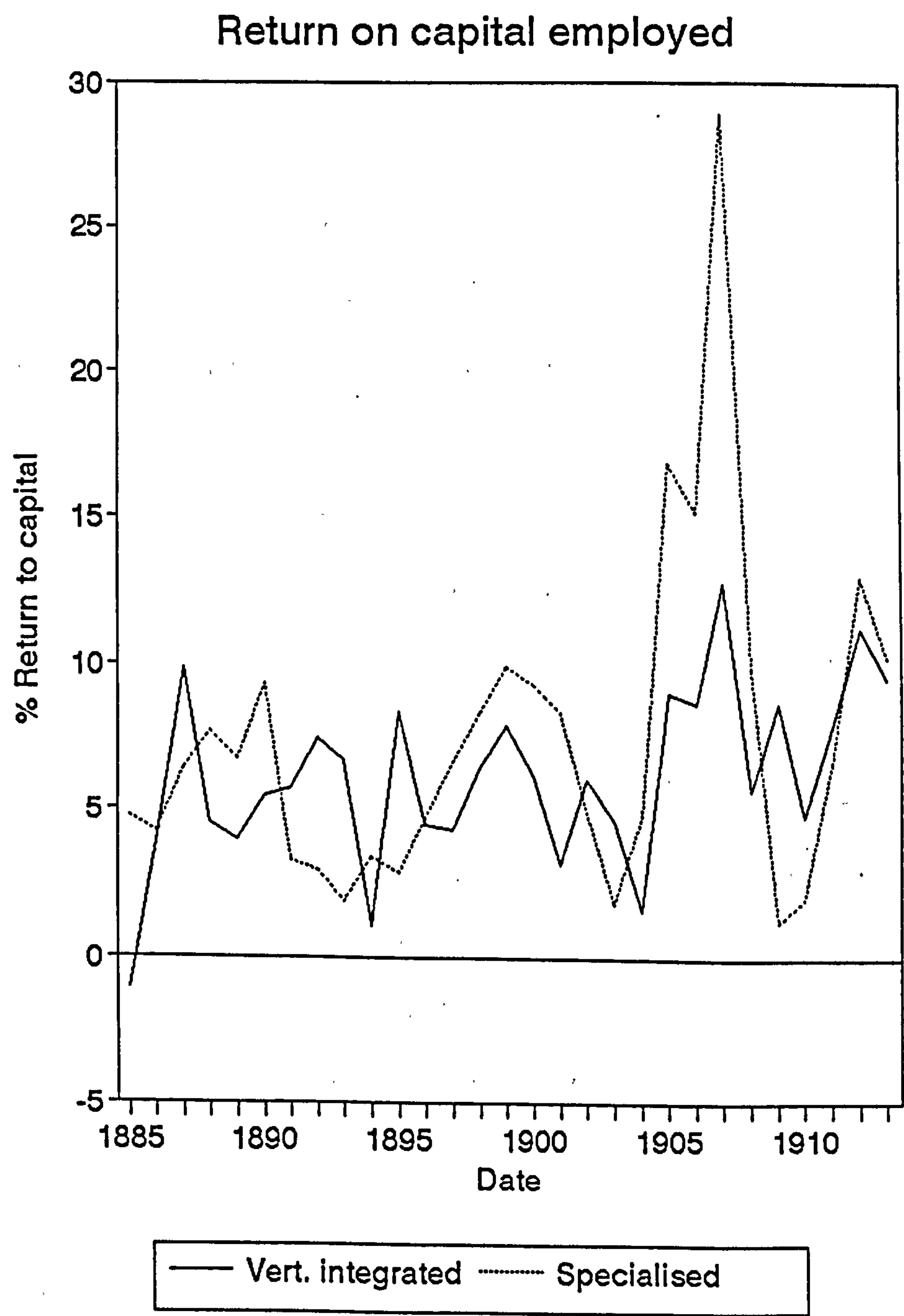
(2) Finishing

	Bleachers' Association
1903-1912	5.10

Note: The Bleachers' Association is not fully representative, but along with the Calico Printers' Association, it controlled a large proportion of the finishing section.

Sources: (1) as per tables 1.1 and 1.2, samples split by category of company and a simple average rate of return calculated for each; see also appendix 1. (2) Calculated as a simple average from the data in Jeremy, 'Survival strategies', p. 188.

Figure 6.1: Rates of return, integrated and specialised companies



Sources: as per table 6.1; see also appendix 1.

Using the sample of companies listed in table 1.1, and differentiating them on the basis of organisational structure, rates of return to capital were contrasted. Overall, results suggested that both types of organisation recorded similar rates of return over the period 1884-1914 (table 6.1). It might therefore be concluded that organisation structure was irrelevant to profit, or at least that more important forces were at work and shaped the destiny of the industry, a hypothesis explored further in chapter 11.

When variations in profitability through time were analysed, however, significant differences emerged. Before 1900, vertically integrated companies tended to perform at least as well as specialised firms. In the 1890s they tended to perform rather better. However, they were relatively less successful after 1896 (figure 6.1). As noted in chapter four, the depression of the 1890s was especially severe in the specialised coarse spinning sector based around Oldham, amounting to a major financial crisis for its investors. Integration was therefore a useful hedge, perhaps less in its own right, since the depression in weaving was in some respects more protracted than in spinning,⁵ but certainly in the sense that larger integrated companies had wider product ranges and access to more than one market; a theme illustrated by the Horrockses and Tootal case studies below.

However, if integration benefited the cotton investor in the 1890s, it had the opposite effect in the 1900s. Large returns attainable by the specialised spinners were beyond the reach of the broader based vertical companies,⁶ again it might be inferred,

⁵ Sigsworth and Blackman, 'The home boom', p. 89.

⁶ In the finishing section, the final stage of the value chain, returns were generally low in all years after 1900. Thus when the average Oldham mule spinner was earning returns of 20-30% in 1907, the Bleachers' Association earned only 5.19% on its capital (Jeremy, 'Survival Strategies', p. 188). Avoidance of investment in such activities may have helped the specialised spinning and weaving sections at the expense of integrated companies.

as a result of portfolio effects from their broader product and market ranges. Even more significantly, vertically integrated companies were outperformed in all periods, and especially after 1900, by vertically specialised ring spinning companies (table 6.1). As the vertically integrated companies also adopted ring spindles, albeit to varying degrees, technology must apparently have been an insignificant determinant of competitive advantage, whereas vertical integration may have damaged it. Although, as we have seen from chapters four and five, technology itself was not a sufficient condition for achieving superior returns, and the ring spinning sample was very selective, it would now appear to be a more important determinant than organisation structure. Far from being a constraint, vertical specialisation offered superior profit opportunities where ring spinning technology was used, and significantly, in the boom periods after 1900, for specialist mule spinners as well.

Certainly therefore few would have held integration to be a panacea and the boom years of the early 1900s must have given enormous confidence to Lancashire entrepreneurs reliant on specialisation and established technology. On the other hand, the superiority of specialised ring spinners suggests either that entrepreneurs were irrational in switching or that specialisation constituted a constraint on ring spinning diffusion that they were forced to abide by, regardless of profit signals. Rather than rely on generalisation too much at this stage, it perhaps appropriate now to consider individual cases in more depth, before drawing more definitive conclusions.

Corporate case studies

This section will examine how profit signals and technical improvements influenced the policies of specific organisations. Although alive with controversy, the

historiography of Lancashire cotton, with occasional exceptions,⁷ has not dwelt heavily on case studies of individual organisations to inform its debates. Investment decisions analysed in studies elsewhere⁸ have relied on data and assumptions, which although true for the industry as a whole, may not have applied to actual organisations. Through an analysis of the business records of several cotton companies, it was possible to compare and contrast the decision making processes against the backdrop of the wider trends already highlighted.

Although the growth of specialisation was a dominant feature of Lancashire cotton in the three decades before 1914, a significant proportion of the industry remained, and grew, within the control of vertically integrated organisations. Prominent examples are included in the comparisons below. Other accounts of such organisations range widely in detail,⁹ but do not consistently address the purpose of the enquiry below, which is to examine the profitability and investment decisions of these and other vertically integrated companies in contrast to more specialised cotton spinners elsewhere in Lancashire. Whereas in the wider setting, the role of significant Lancashire entrepreneurs can also be reviewed, their function is analysed in more detail in later chapters. As far as their actions are assessed at this stage, it is in the context only of their alleged failure to remove constraints imposed upon them by the structure of the industry.¹⁰

Vertically integrated limited liability companies tended to emerge in waves

⁷ For example, Smith, 'An Oldham Limited Liability Company', pp. 34-53; Farnie, 'John Rylands', pp. 3-103.

⁸ Sandberg, *Lancashire in decline*, p. 51-6; Lazonick, 'Factor costs', pp. 107-8.

⁹ For example, Farnie, 'John Rylands' pp. 3-103; Pedrick, *The Story of Horrockses*; Dupree, 'Edward Tootal Broadhurst', *DBB*, pp. 452-7; Howe, Henry Lee and Joseph Cocksey Lee, *DBB*, pp. 703-714.

¹⁰ Mass and Lazonick, 'The British Cotton industry', pp. 56-7.

of recapitalisation and reconstruction. Three such waves occurred; in 1887-1889, 1898-1900 and 1919-21.¹¹ All were associated with trade cycle upswings. and many other new and interesting organisations began to emerge. However, it is beyond the scope of the present work to investigate the performances of the larger combines which emerged during the late 1890s. J and P Coats, Fine Cotton Spinners and Doublers, Rylands, and others, have been dealt with elsewhere.¹² Nonetheless a broader comparative analysis of profitability including some of these other companies is provided in chapter nine. Given the concern of the present chapter with the link between organisation structure and technological choice, the study was confined to the three specific companies referred to above. Of the three waves, our main concern was with the first. Those companies had business records which could be traced longitudinally for sufficient periods prior to 1914. Although one further company studied, Ashtons, was reconstructed in 1899, it was accepted that evidence would necessarily be more limited and constrained, due to the shorter run of data.

The three chosen companies provide useful illustrations of the early wave of reconstruction. Horrockses was established in 1887 as the first of a series of amalgamations and incorporations of previously successful partnerships influencing a significant section of the cotton industry prior to the First World War. In the following year Tootals followed suit. As such they represented, after Rylands and Sons, two of the largest of the integrated concerns beginning to emerge in cotton and

¹¹ Macrosty, *The trust movement*, ch. V; Hannah, 'Mergers in British manufacturing industry, 1880-1918', pp. 1-20; Hannah, *The rise of the corporate economy*, p. 23; Amalgamated Cotton Mills Trust Ltd., *Concerning Cotton*.

¹² For a summary of the main amalgamations see Macrosty, *The Trust movement*, ch. V.

other industries during this period.¹³ On a smaller scale, what had previously been one of the largest cotton partnerships of the mid nineteenth century, Fielden Brothers and Co., was incorporated in 1889, albeit on a much reduced scale. Nonetheless given its established reputation and continued dominance in the locality, the firm remained significant. These companies emerged as part of a trend of reorganisation, but continued their commitment to a vertical structure. It is thus likely that the subsequent performances of the merged companies would have been viewed with interest by contemporary observers.

Whatever their size, vertically integrated companies in theory enjoyed certain advantages and disadvantages. An important benefit was the ability to avoid extra transport costs, especially when using ring spindles. This was because ring spun yarn had to be transported on returnable wooden bobbins, as opposed to cheaper, disposable paper tubes.¹⁴ It was calculated that transport costs could be trebled as a result of this factor.¹⁵ As noted in chapter three, whether transport costs were a genuine constraint on diffusion is a moot point. It is thus important to consider their impact on profitability. Where integration occurred, perhaps, production efficiency at least would be likely to improve. On the other hand, there was a potential conflict between production efficiency, as manifested in long continuous production runs, and marketing flexibility, for example the need to tailor output to the needs of specific customers. A study of Horrockses and other companies in the post 1945 period identified precisely such problem;¹⁶ it was likely to be equally applicable also before

¹³ Farnie, *The English Cotton Industry*, p. 194; Dupree, 'Sir Edward Tootal Broadhurst', *DBB*, p. 452

¹⁴ Sandberg, *Lancashire in Decline*, pp. 32-3.

¹⁵ Copeland, *The cotton manufacturing industry of the United States*, p. 69.

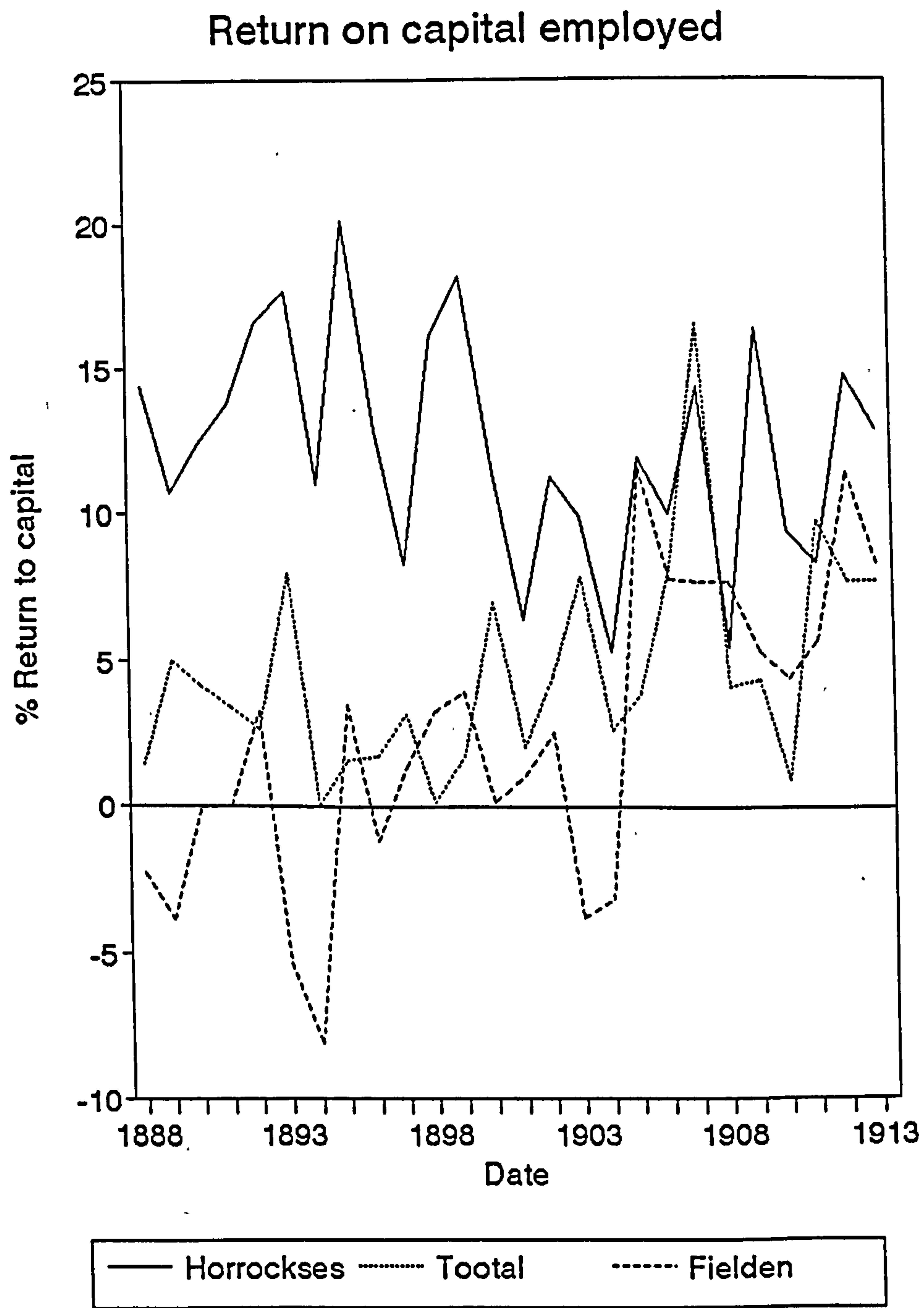
¹⁶ Higgins, 'Re-equipment as a strategy' pp. 225-6, and 'Structural constraints', p. 20.

1914. Below we examine first problems in marketing and then go on to discuss production efficiency and technology.

Horrockses and Tootals provided some particularly interesting contrasts in their marketing strategies. Detailed time series comparisons for these companies showed that Horrockses was the best performer throughout (figure 6.2). The company enjoyed a particularly decisive competitive advantage in the 1890s, a period when the rest of the industry remained in deep depression. To achieve a return of 20% at the depth of the depression in 1895 was a particularly remarkable result. Further financial analysis (table 6.2) suggested the likely source of superiority lay in the development of markets, and specifically through the achievement of high margins. Asset turnover showed a slowly declining trend but with little dramatic variation from year to year. Profit margin on the other hand, varied more dramatically and was a much stronger explanatory factor in determining the overall rate of return to capital. In other words, profitability was achieved because of good margins on finished products, and in spite of the declining efficiency of the assets required to produce them. The figures reflected the growing importance of product quality an element in Horrockses marketing strategy.¹⁷ Higher profit margins were thus achieved by moving away from a purely commodity style product range; the price was declining efficiency through the holding of a wider range of stocks and shorter, differentiated production runs. Effective merchanting, in this case at least, contributed to reduced manufacturing efficiency.

¹⁷ Amalgamated Cotton Mills Trust Ltd., *Concerning Cotton*. A section on Horrockses stressed its commitment to quality. The Centenary Mill investment, being exclusively committed to mule spinning, would have been at the leading edge of this strategy.

Figure 6.2: Rates of return, vertically integrated companies, 1887-1913



Sources: as per table 1.2; see also appendix 1.

Table 6.2: Horrockses, rates of return, 1887-1913

Year	ROCE	Margin	Asset turnover	Sales/ sp	Sales/ loom
1888	14.34	12.13	1.18	6.65	168.28
1889	10.75	9.40	1.14	6.44	166.31
1890	12.41	9.93	1.25	6.84	180.31
1891	13.80	12.03	1.15	6.40	169.06
1892	16.61	15.65	1.06	6.07	157.91
1893	17.67	17.00	1.04	5.88	143.42
1894	11.11	11.16	1.00	5.99	147.53
1895	20.11	21.41	0.94	6.29	153.66
1896	12.88	14.58	0.88	4.03	145.52
1897	8.40	9.62	0.87	3.77	149.82
1898	16.19	18.07	0.90	4.09	162.25
1899	18.20	19.76	0.92	4.29	167.79
1900	11.67	13.15	0.89	4.23	164.93
1901	6.52	7.56	0.86	3.62	158.66
1902	11.25	14.61	0.81	3.96	164.44
1903	9.93	11.81	0.84	4.08	168.56
1904	5.36	6.91	0.78	3.68	153.09
Average	13.06	13.30	0.97	5.08	160.09
Std Dev	3.95	3.98	0.14	1.20	9.77

Note: Margin is defined as profit before interest divided by sales; asset turnover is defined as sales divided by capital employed. The former provides a yardstick of value added through pricing and cost control, the latter a measure of efficiency and throughput.

Sources: Calculated from CVR, Balance sheets and detailed accounts, 1887-1904, machine book.

Despite its apparent overall marketing efficiency, like its competitors, Horrockses had serious problems in selling to overseas markets. A report on the company by Barings stated:

Large concerns like Horrocks lost so much in Latin America in years gone by that they now employ a London intermediary who pays them at once for their goods and runs this risk with their buyers. This must be a very expensive way of working and there must be many concerns who cannot afford, or who would wish to dispense with the intermediary.¹⁷

A solution was found by direct selling where possible, and this was done by establishing control over price and quality, previously functions of the intermediary. Horrockses policy of branding and dealing directly with retailers in the home market from the 1880s onwards was innovatory at that time, but appeared to have been successful.¹⁸ Brand names were applied to products from other producers such as the Hollins and Co. 'Viyella' brand, and the goods marketed on their behalf.¹⁹ Unlike other integrated manufacturer/ merchants which tended to lack the capital and the experience to sustain their activities,²⁰ at a time when companies selling into the export markets performed badly, the Horrockses strategy was an outstanding success.

Tootal followed a similar strategy, but with a greater dependence on exports, and less apparent achievement. Although like Horrockses, its branded products were also marketed domestically, the company remained exposed to problematic overseas markets. Difficulties were in part attributable to worthless debts taken over from the partnership, in particular arising from the failed chartered corporation, the North

¹⁷ Quoted in Chapman, *Merchant enterprise*, p. 200.

¹⁸ Howe, 'Sir Frank Hollins', *DBB*, p. 315.

¹⁹ Wells, *Hollins and Viyella*, p. 98; following the establishment of the 'Viyella' trademark in 1894, the product was sold via Horrockses agents because of their connections with retailers.

²⁰ Chapman, *Merchant enterprise*, p. 304.

West Africa Company.²¹ However, bad debts also accumulated in many other export markets. The West Indies, for example caused serious difficulties; in June 1891 overdue accounts reached £34,900, or more than half the total outstanding in that market.²² The problem worsened and the auditor, A.A. Gillies, qualified his report in the years 1894, 1895, pointing out that the debts represented fictitious assets, without which there was insufficient capital to pay a dividend.²³ Put more bluntly, the company was technically insolvent. A solution of sorts was found, through the implementation of a 'scheme' suggested by the Auditor. This involved the revaluation of property assets, thereby creating a reserve against which bad debts of over £69,000 could be written off without reducing reported and distributable profits to catastrophic levels.²⁴ However, the problems of selling into overseas markets were endemic. Even with the implementation of his own scheme, the auditor remained unsatisfied, qualifying the 1897 accounts again arguing the previous bad debt write off was insufficient. New York was the problem this time, and the auditor hinted at both poor trading position and management control by pointing out that 'serious losses had occurred which required further investigation'.²⁵ Such difficulties explained the poor performance of the company in the 1890s.

Despite difficult trading circumstances, management exercised considerable determination in forging an effective organisation. In terms of structure, marketing

²¹ Howe, 'Henry Lee and Joseph Cocksey Lee', *DBB*, p. 708.

²² MCRL, M.461, Finance committee minutes, Minute book No.1., 22nd June 1891.

²³ MCRL, M.461, Minutes of general meetings, Minute book No. 2, auditors reports, 9th October 1894 and 22nd October 1895.

²⁴ MCRL, M.461, Board minutes; minutes of annual general meetings, Minute book no. 2., Sept 29th 1896.

²⁵ MCRL, M.461, Board minutes, Minute book No. 2, September 21st 1897.

departments were organised by horizontal specialism. Each important market had a separate department allocated to it, thereby allowing staff to gain specialist knowledge but also enabling the Finance and other committees to exercise strategic control. That function, although unsuccessful in some cases at first due to the inadequate communication of credit terms,²⁶ was performed by monitoring overdue accounts and setting credit limits.²⁷ Departments were given considerable flexibility, in particular they were allowed to place orders direct with the mills. Their actions were controlled via the assignment of stock limits, authorised by directors at committee level, to each department.²⁸ Again the obvious problem would have been the imposition of short production runs and inefficiency on the manufacturing half of the company. The problem was solved through an effective application of 'personal' capitalism. Henry Lee (1817-1904) was an enthusiastic and effective mill manager and was able to work in close harmony with his brother, Joseph Cocksey Lee (1832-1894), whose function was to help Tootals develop its overseas markets.²⁹ Despite poor profitability in the 1890s, these policies became the foundations of later success.

By the early 1900s, profits reached much higher levels than previously. The recovery was described as a turnaround; aggressive marketing, coupled with withdrawal from the Coats' dominated sewing thread market, represented an important component of the strategy.³⁰ Tootals helped retain their important North

²⁶ MCRL, M461, Finance Committee minutes, Minute book No. 1, 22nd December, 1890.

²⁷ MCRL, M461, Finance Committee minutes, Minute book No. 1, 24th November, 1890 and *passim*.

²⁸ MCRL, M461, General Management Committee Minutes, Minute book no.1, 19th November 1888.

²⁹ Howe, 'Henry Lee and Joseph Cocksey Lee', *DBB*, p. 706.

³⁰ Howe, 'Henry Lee and Joseph Cocksey Lee', *DBB*, pp. 708-9.

American markets by establishing channels for branded products direct to the retailer; a policy similar to that of Horrockses.³¹ Nonetheless despite the determination of its management, Horrockses remained the more successful.

One reason might have been that Horrockses, as noted in chapter three, made large investments in ring spinning from the late 1880s and replaced many of its mule spindles in favour of ring spindles. Evidence reviewed to date has suggested that such a policy was not necessarily a guarantee of superior profit. Nonetheless, Horrockses evidence represents a useful opportunity to examine plant replacement decisions. Parallels can be drawn this time with Fielden, a smaller company with a much narrower product range, but where similar archival evidence helps facilitate comparison.

The analysis below seeks reasons for plant replacement and investment policies. Horrockses commitment to both mules and rings was probably a function of its widening product range. Under British investment conditions, the mule was acknowledged to be superior at yarn counts of 40 and above.³² Such finer yarns would have been produced on mules with coarser and twist yarns on ring spindles.

The opportunities available to a company such as Horrockses, with spinning and weaving sheds adjacent on its main Preston site, to plan its production efficiently were clear. Management were presumably faced with varying levels of replacement cost at the margin; some replacement would have been little more than direct technological substitution, whilst other changes to capacity would have involved changes to factory lay out, modifications to supplementary machinery, and extensions to buildings. These decisions were analysed (table 6.3) into the two categories of spinning technology, using an arbitrary cut-off point of 5000 spindles, into 'minor

³¹ MCRL, M.461, Board Minutes, Minute book no. 1, 8th March, 1888.

³² Sandberg, *Lancashire in Decline*, pp. 24-8.

replacement' (MR), and 'larger refit' (LR) classifications.³³

In the absence of specific data on machinery additions, estimates were made from the available records. The method adopted in the compilation of table 6.3 was to compare data on number and type of spindle in the Machine book with fixed asset values in the accounts for each major location on a year to year basis. Like many other companies in the industry, Horrockses provided depreciation at 7.5%,³⁴ and disposals of machines would explain further falls in book values carried forward in the accounts. After making adjustments for these effects, where there is a rise in the book value of the machinery in the accounts this most probably explained by the inclusion of the cost of any new machinery purchased during that year. Such cost can then be compared with the numbers of new spindles actually purchased by examining differences in the machine book between spindles at the beginning of the year and the end, and a unit cost then calculated.³⁵ Other sources tended to confirm the overall accuracy of these figures (table 6.4). The data presented excludes the Centenary mill investment of 78,572 mule spindles at 32s per spindle.³⁶

³³ CVR, Machine book; Balance sheets and detailed accounts. Changes in spindleage were noted from the Machine Book. Balance sheet values of plant obtained from the accounts. Clear from the latter is the consistent use of a 7.5% reducing balance depreciation charge.

³⁴ CVR, Balance sheets and detailed accounts, 1887-1905.

³⁵ The method used consisted of the following steps:
Fixed asset value per balance sheet at beginning of year = A
Less: depreciation ($A \times 7.5\% = B$)
Less: identifiable scrappings (undepreciated value eliminated on a pro rata basis)
($A - B$) x proportion scrapped = C
Notional fixed asset value at end of year: $A - B - C = D$
Fixed asset value per balance sheet at end of year = E
Imputed cost of new capacity: $E - D$
(expressed in shillings per unit in table 6.3; pounds and fractions thereof in table 6.5)

³⁶ CVR, detailed accounts, Centenary mill accounts.

Table 6.3: Horrockses, spindle replacement marginal costs

Replacement costs (in shillings)

Date	No of spindles	Unit Mules		cost Rings	
		MR	LR	MR	LR
1888	3040	16			
1889	5040			12	
1890	2352			11	
1891	380	20			
1894	832	17.5		17.5	
1894	2976	17.5		17.5	
1894	2920	30			
1896	612			7	
1897	9326		21		21
1898	2000			13	
1899	6800			9.5	
1901	17600				23
1902	1300		40		
1904	2400			28	
1905	336			11	

Weighted average cost of all replacements:

Mules	22.9s
Rings	18.7s

Sources: Calculated from CVR, Machine book; detailed accounts.

Table 6.4: Cost of new capacity, spinning industry

Date	Value in shillings		Source
	Mule	Ring	
1878		39.7	Cost of New Ladyhouse Mill, calculated from figures in <i>Rochdale Observer</i> , 28 June 1890.
1883	21		An Oldham mill, Schulze-Gavaernitz, <i>The cotton trade</i> , p. 151.
1885	20		Average cost of mills built to date, Smith, 'An Oldham Limited Liability Company', p. 38.
1886	24		Ellison, <i>The cotton trade</i> , p. 70.
1887	20		Murray, <i>The Accountant</i> , p. 611.
1889	23.6		Beal Mill, Oldham; Gurr and Hunt, 'Cotton Mills of Oldham', p. 24.
1895	31.9		Centenary Mill, calculated from CVR, Accounts of Centenary Mill.
1898	28	40	Typical current prices; <i>Oldham Chronicle</i> , March 26th, 1898, p. 8.
1907	20		Times No. 2; <i>Oldham Chronicle</i> , 29th December, 1907.
1907	23.3		C Mill; Jones, 'Cotton spinning Industry', p. 88.
1914	24.5	33.3	Mule mill, Thornley, <i>Modern Cotton Economics</i> , p. 203 ; Ring mill, Textile Mercury Annuals, <i>Cotton Year Book</i> , 1914, p. 179.

Perhaps the most striking trend in tables 6.3 and 6.4 was that whereas in new mill flotations ring mills always had a higher cost per spindle, the Horrockses evidence suggested that where new machinery was purchased for existing buildings, the ring was cheaper than the mule at the margin. New ring mills required greater investment per spindle in preparatory machinery and engine power.³⁷ Such costs were not however, necessarily incurred for more marginal decisions. There was a wider variation in marginal cost for decisions on ring spinning installations, perhaps a reflection of ring frame versatility for installation in corners and extensions where mules were too large. At Horrockses rings were relatively cheaper, although the difference is far from dramatic at the margin. Given guidelines and norms on optimal mill size, whilst taking the opportunity to fill space vacated by older, narrower mules, entrepreneurs may have been reluctant to engage in more wholesale replacements at high marginal cost. The larger the replacement, the more necessary additional construction or alteration was likely to be since on the whole there was a positive relationship between the size of the replacement and the marginal cost.

Cotton machinery may have become relatively cheaper *vis a vis* other industry sectors, especially in the last decade before 1914. Elsewhere, there was a disincentive of rising plant replacement costs.³⁸ No such rising trend of replacement cost occurred in the cotton industry (table 6.4), rather there was a fall up until 1907, followed by a rise thereafter. For Horrockses, there was no apparent rising trend of replacement costs (table 6.3), although no new purchases of capital equipment were made in the period 1906-14. As mills became larger, economies of scale drove down

³⁷ For example, see the comparative costings in *The Cotton Year Book*, 1914, pp. 179-180.

³⁸ Phelps Brown, and Handfield- Jones, 'The Climateric of the 1980s', p. 305; the cost of manufacturing equipment for the British economy as a whole rose by 17% between 1885 and 1912.

unit spindle cost; particularly in mule mills where efficient scale was higher than for ring mills.³⁹ Inflation counteracted this effect after 1907 pushing prices higher. In general marginal costs of new investments fluctuated dramatically; it was not simply a question of the 'rational' investor preferring rings to mules on the ground of rapid payback of investments in the former type of technology.

The additional dimension to investment in production equipment, was as we have seen with Horrockses and Tootals, the potential conflict with marketing. In general, vertically integrated structures are difficult to manage, and such difficulties were well exemplified by the case of Fielden. The first problem was a result of the partiality of integration. There were external markets for the outputs of the spinning mills at Robinwood and Lumbutts and the weaving shed at Waterside also bought some of its yarn from local spinning companies.⁴⁰ Under such circumstances, the management of the vertically integrated organisation becomes problematic, since management co-ordination replaces the market as the mechanism for transfer between different processes of production. For Fielden Bros. Ltd. management, the co-ordination problem would have also manifested itself at the interface of spinning and weaving technologies, both of which were in flux and both of which demanded different types of specialist knowledge. The difficulties faced in this respect were generally not shared by cotton entrepreneurs in the emergent specialist spinning and weaving centres.

Vertical integration tends to pose a series of dilemmas for central

³⁹ See above, pp. 96-7.

⁴⁰ WYRO/353/421, 480 and 481 Lumbutts and Robinwood mill accounts; RMA, 1895-1914.

management. For example, the choice open to Edward Brocklehurst (EB) Fielden,⁴¹ would have been whether to treat the units of the business as cost centres or profit centres. Fielden chose the former option, with cotton costed into Robinwood at invoice price, in conjunction with a system of the spinning mill charging the weaving shed on the basis of average daily prices quoted in the *Liverpool Cotton Circular*.⁴² As local management thereby had no control over mill revenues, their performance could only be evaluated by reference to controllable labour and other costs. Again, the choice of this method gave the minimum possible delegation to plant level management. Apparent lack of trust may have been motivated in part by worry over poor accounting controls and by concern that the true state of the business was thereby concealed.⁴³ Because of these difficulties, management was changed frequently as Fielden's dissatisfaction with financial performance continued. Something of a turnaround was achieved after 1908, and this coincided with the closer involvement of George Coates, a Rawtenstall based manufacturer hitherto employed on a part time basis.⁴⁴ At the same time, if local management could keep costs under control, thereby fulfilling their part of the bargain, any responsibility for poor overall performance remained with E.B. Fielden himself.⁴⁵

Given the adopted structure and practices, is it possible to blame local management for the poor general profitability of the company? The key indicators

⁴¹ Edward (1857-1942) became the first chairman of Fielden Brothers Ltd on its formation in 1889, thereby succeeding the last partners of the third generation, John (1822-1893) and Samuel (1816-1889).

⁴² Note from a conversation with Mr. J. Hirst, the former company secretary of Fielden Brothers Ltd.

⁴³ EBF diaries; *Coates to Fielden*, March 13th 1909.

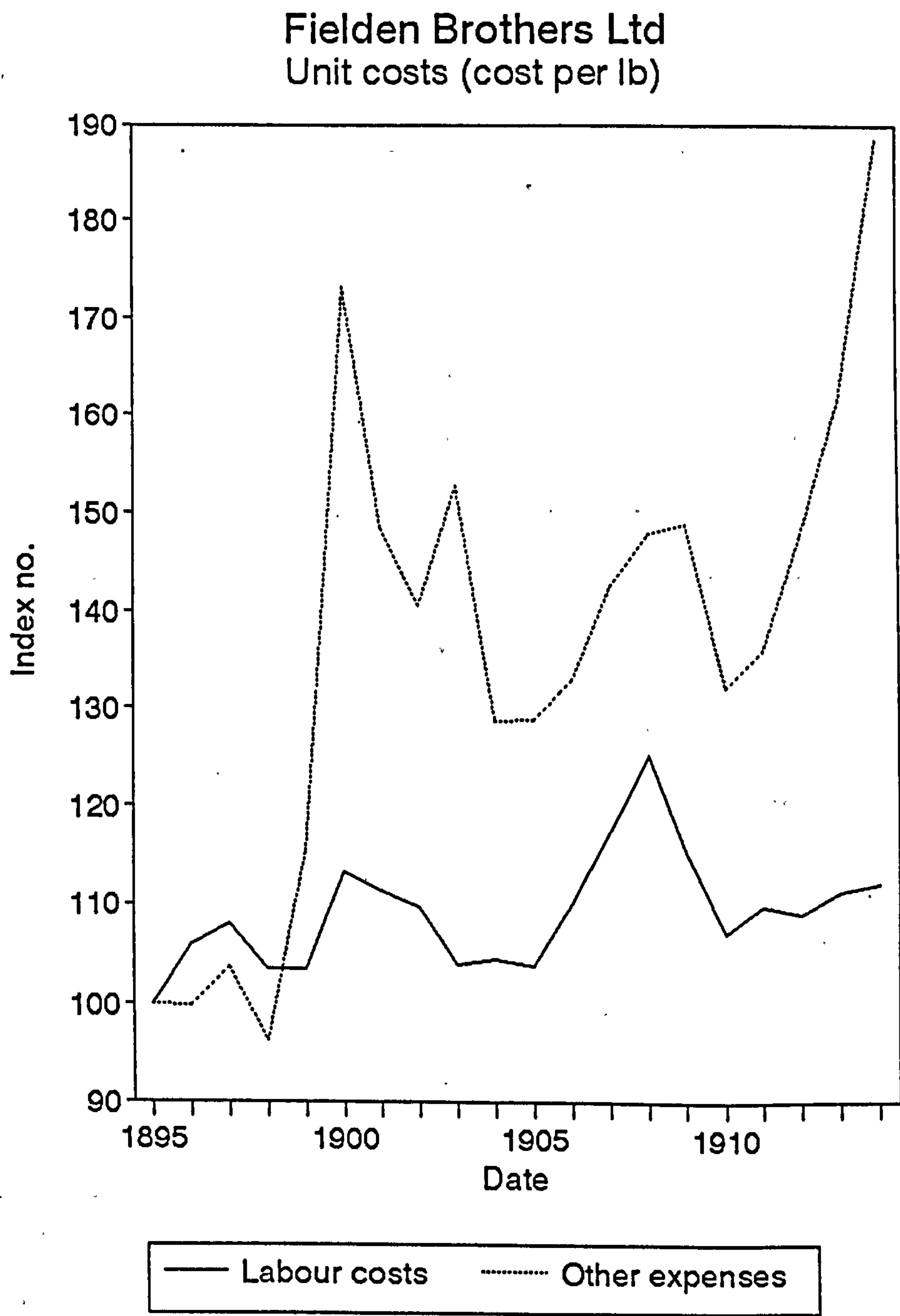
⁴⁴ Various correspondence, *Coates to Fielden*, 1908-1912.

⁴⁵ RMA, 1895-1914. These show clearly the use of unit cost as the mechanism for management control.

used by central management to judge local performance were cost per lb. of yarn and the percentage of waste to production.⁴⁶ For example, did the adoption of a cost centre based approach lead to a general reduction of costs at Robinwood? Figure 6.3 shows unit cost trends for Robinwood, including labour and other cost controllable (ie non raw material) by local management.

⁴⁶ RMA, 1895-1914. Prior to forwarding the accounts to EB Fielden, losses were calculated every year as a percentage of output, and each major category of expense calculated on a cost per pound basis.

Figure 6.3: Robinwood mill, unit costs



Sources: Calculated from RMA, 1895-1913. Each category of expense was divided by output and indexed (1895 = 100).

There was no general reduction in cost during the period. 'Other expenses' climbed steeply on two occasions, in 1900 and in 1912-3, reflecting the vulnerability of the company to coal prices.⁴⁷ The second rise in coal charges may have been an important reason for the conversion of Robinwood mill to electric power in January 1914.⁴⁸ However, the measures in figure 6.3 are based on money amounts. As far as unit labour costs were concerned, real wages in the cotton industry rose during this period. Moreover, labour was the most significant expense item after raw materials. Further analysis of the labour cost figure is therefore required. Figure 6.4 shows Robinwood unit labour cost relative to unit labour costs under the Oldham list. As part of total costs, labour costs appear to have been well managed. The comparison is a fair one since Oldham was the centre of the coarse to medium trade and the Robinwood count tended to average low 20s.⁴⁹ Moreover, Fielden Bros. Ltd paid wages according to the industry wide lists and therefore would have had the same wage cost per employee. On the other hand, the Oldham figures would have reflected the commitment of that section of the industry to mule spinning. The improving labour cost per unit of output suggests Robinwood was an efficient mill, especially after 1908, when the previous manager, John Migley, was sacked for persistent drunkenness.⁵⁰ The longer run trend towards improved efficiency may have reflected the earlier conversion from throstle to ring spinning in the late 1880s and the efforts of Wrigley, outlined below, in helping to modernise the mill.⁵¹

⁴⁷ RMA, 1900 and 1912-3.

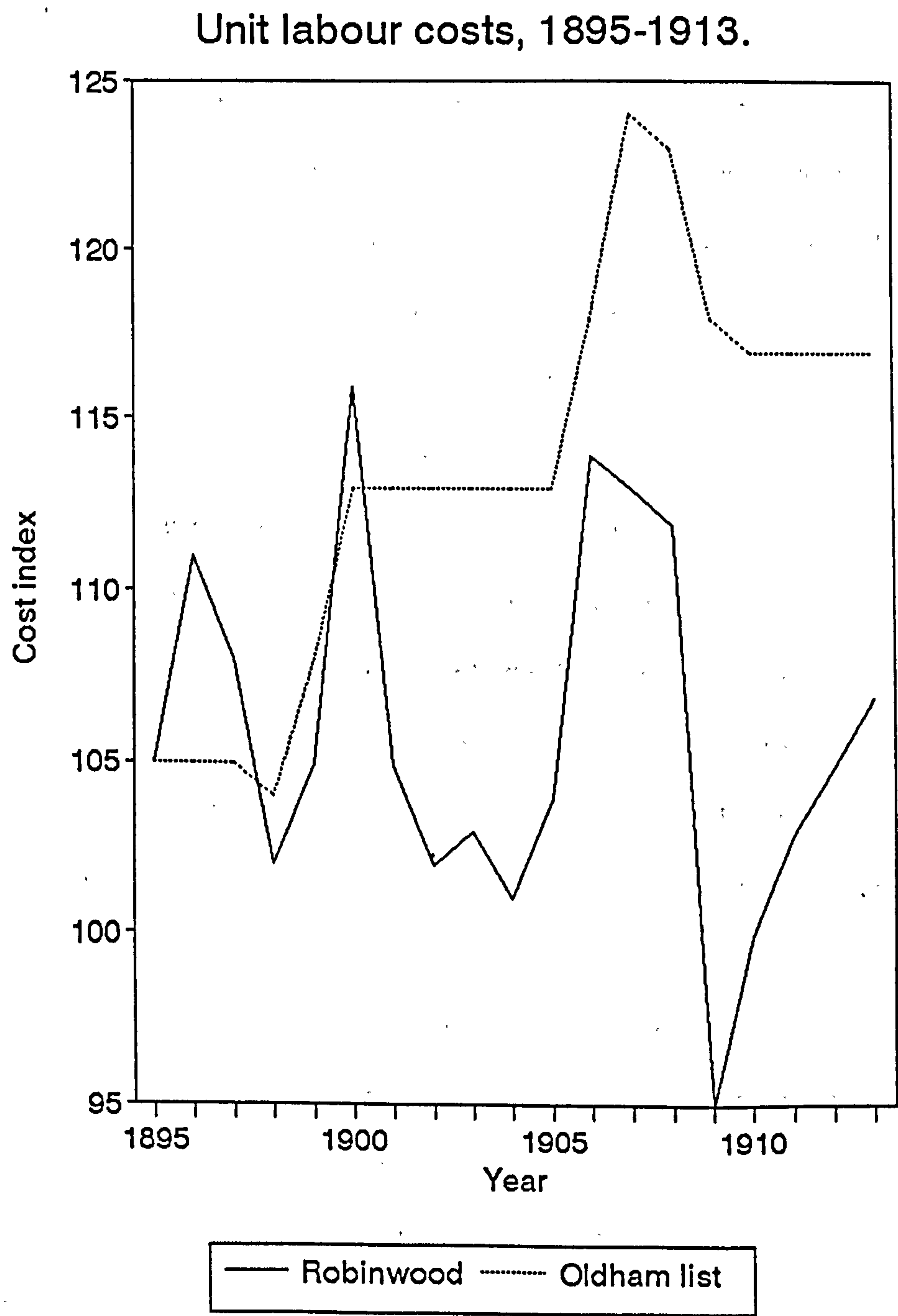
⁴⁸ WYRO, C351/1 Board Minutes, p. 380.

⁴⁹ RMA, 1895-1914.

⁵⁰ *Coates to Fielden*, December 12th 1908.

⁵¹ WYRO C/353/475, detailed accounts. Some modernisation occurred after Wrigley's departure, for example the conversion to electric power in 1914.

Figure 6.4: Unit labour costs



Sources: RMA, 1895-1913 and calculated as per figure 6.3; Jewkes and Gray, *Wages and labour*, p. 210.

During the period costs for the industry as a whole rose considerably whereas the equivalent for Robinwood showed a small decline (figure 6.4). Because labour costs were a significant proportion of total costs controllable by local management, and in general these were controlled well, the evidence suggests competence at local management level, especially after 1900.⁵² In itself, however, good cost control was insufficient to secure competitive advantage for the company as a whole. If local management were competent, but entrepreneurial drive from the centre were lacking, it is a further fault of the latter if a centralised management style is adopted. Under such conditions, technical innovation was hardly likely to thrive, even where opportunities existed.

Fielden Bros. Ltd. pursued the unusual strategy of using ring spinning for the production of weft yarns, and after 1909 did so in conjunction with a handful of experimental automatic looms.⁵³ Although much smaller than Horrockses, and like Gregs of Styal, a shadow of its former self, the Fielden concern became highly innovative. Its automatic loom experiment is dealt with in the next section. At this stage we concentrate on this vertically integrated company's attitude to ring spinning.

Unconstrained by the obstacles of specialised industry structure, the company used predominantly ring spindles at its two spinning mills, Robinwood and Lumbutts, and experimented with automatic looms at the third site, Waterside weaving shed (figure 6.5). Lumbutts was converted substantially to ring spinning from 1895 onwards, although some mules were retained. All capital equipment purchases after 1895 were for ring frames, and mules in use in 1890 were gradually supplanted from thereon. Ring frames for weft spinning were installed at Lumbutts in 1895, the old

⁵² Despite fluctuating with output, unit labour costs were always below those in Oldham after that date. In some years, such as 1909, the difference was significant (figure 6.4).

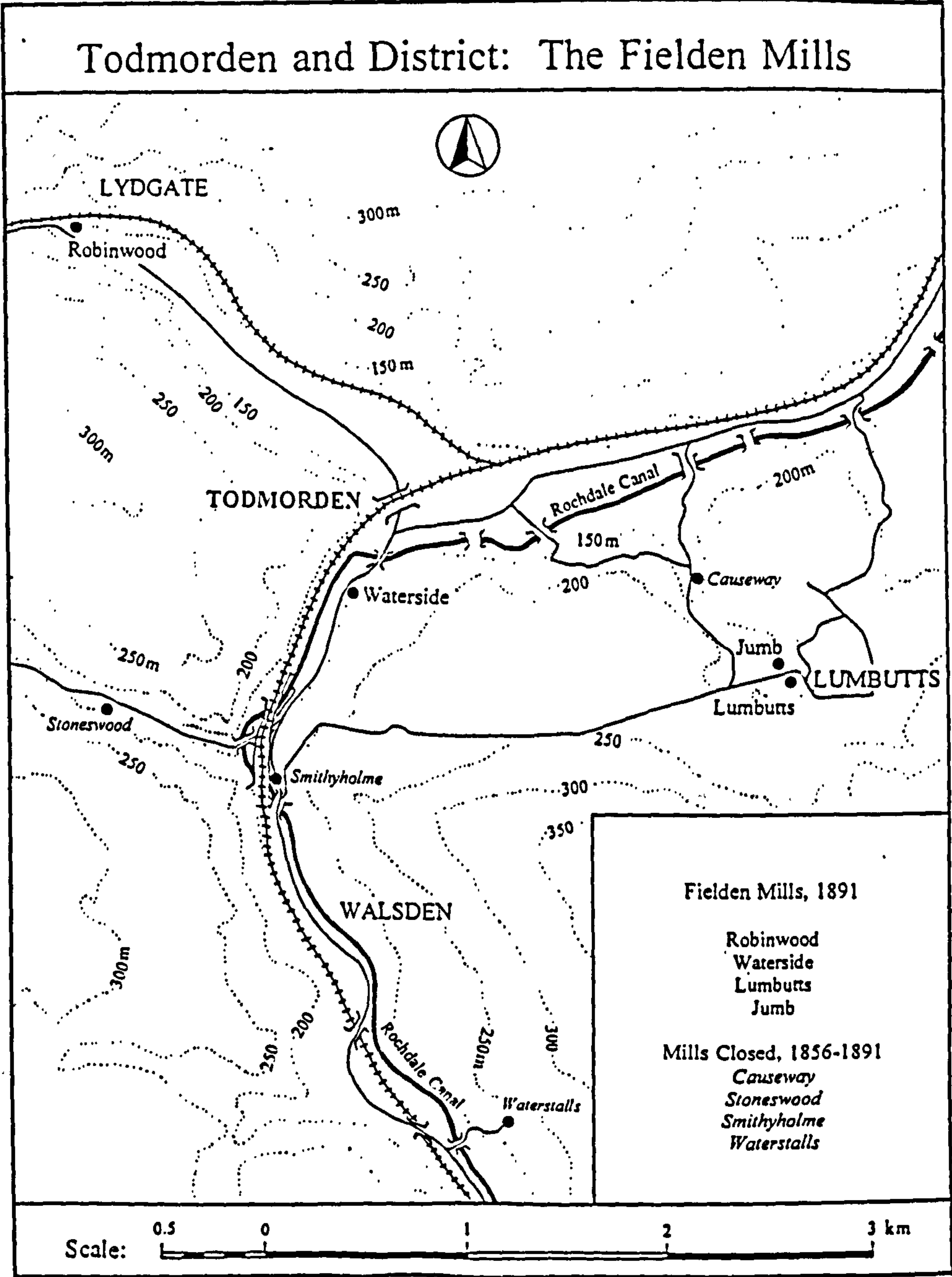
⁵³ WYRO C353/1 Directors' Minutes, 2nd March 1909, p. 334.

mules being moved to Robinwood.⁵⁴ According to one source, by 1913 94% of the total spindles were rings.⁵⁵ Generally, its simultaneous use of rings and automatics confirmed exactly the predictions of the broad elements of the institutional constraints hypothesis.

⁵⁴ WYRO C353/1, Directors' minutes. Details of new machinery purchased between 1895 and 1900, pp. 182-256.

⁵⁵ Worrall, *The cotton spinners' and manufacturers' directory*, 1891 and 1913.

Figure 6.5: The Fielden Mills



E.C. Bevan

However, vertical integration was not a necessary condition for this innovative stance. Geographically Todmorden was located in an area, like Milnrow, which had a tradition of throstle spinning.⁵⁶ As noted in chapter three, the ring was seen as a logical development of throstle spinning. Another reason was that the company remained geographically specialised. Developments in spinning and weaving occurred at separate sites; responsiveness to innovation prior to 1900 was thus not driven by opportunities to develop integrated throughput manufacture, but by perceived advantages for each specialist application. As we have seen in chapter five, the real benefits of throughput manufacture were not in any case available until after the First World War.

Another important reason for innovation was the role of the talented individual. Several specific inventions were inspired by Thomas Wrigley, the manager of Waterside. One was described as a 'most ingenious device' for the loading of coal into hoppers.⁵⁷ Another device was given particularly favourable mention by one correspondent:

Anti-Ballooning arrangement for Ring Frames ... a recent invention of Mr. Thomas Wrigley, of Fielden Bros., Todmorden, whose name we have had the pleasure of mentioning in these pages in connection with many improvements in cotton machinery ...The appliance has been found highly satisfactory in working.⁵⁸

In the 1890s the ring frame was in a relatively early stage of its development. A general problem was 'ballooning', referring to the tendency of the yarn between the traveller and the spindle to fly out thereby causing breakages.⁵⁹ The development

⁵⁶ Edward Fielden, as Chairman of Fielden Brothers and as MP for the Middleton division, briefly served both towns, 1900-2; Law, *Fieldens of Todmorden*, p. 266.

⁵⁷ *Todmorden Advertiser*, 22nd November 1889.

⁵⁸ *Textile Mercury*, July 8, 1893, p. 28.

⁵⁹ Nasmith, *Students' cotton spinning*, p. 535.

of 'anti-ballooning' devices was therefore important in improving the efficiency of machinery for a company such as Fielden Bros. Ltd.. Other improvements occurring in the 1890s, in which Wrigley had an important influence, were attempts to increase the reliability of the spindles used in ring spinning. The replacement of Booth-Sawyer spindle by the Rabbeth, and other improvements referred to earlier such as the Howard and Bullough 'quick running' spindle (p. 134), allowed spindle speeds to increase.⁶⁰ A refinement of the Howard and Bullough spindle became known as the 'Wrigley spindle'.⁶¹

In addition to specific inventions, Wrigley applied his expertise to the organisation of the factories. The local correspondent quoted above also gave examples of his apparent achievement in these respects:

The originator of the improvements at Waterside, as well as those carried out at Robinwood, and those in contemplation at Lumbutts, Jumb and Waterside, has been Mr. Wrigley...(and) will place their establishments on a footing equal to that of the best modern mills.⁶²

Such was the public perception based on the views of newspaper correspondents. As will be demonstrated below, the validity of this view is open to question when compared to actual evidence from inside the company. In the modernisations of 1889-91, throstle and mule spindles were moved out of Waterside to allow the shed to concentrate exclusively on weaving. The improved efficiency from increased specialisation must have been a compelling argument, as the company were prepared to incur transport costs from the two spinning mills, both of which were located more than a mile away (figure 6.5). The transport costs must have been significant and thus the benefits of specialisation also considerable.

⁶⁰ Thornley, *Cotton spinning*, pp. 265-7; Murphy, *The Textile industries*, pp. 80-1.

⁶¹ Nasmith, *Students' cotton spinning*, pp. 517-9.

⁶² *Todmorden Advertiser*, 22nd November 1889.

Despite transport costs, the main function of Lumbutts Mill was to supply weft to Waterside weaving shed. The installation of ring spindles was a major innovation at this site. In the mid 1890s, ring frames for the production of weft were in early developmental stages and the weft changing mechanisms of the automatic loom not yet available. It is doubtful that local management at Robinwood would have welcomed the transfer of the old mules, since the ring was more productive for lower count warps. The output of Robinwood prior to 1900 was coarse twist yarn (20s average) and it may not have been able to use old mules particularly efficiently for this function. However, the transfer was a short term measure. Where new purchases were made at Robinwood, rings were always ordered.⁶³ Willingness to experiment with new technology, however, does not in itself constitute successful entrepreneurship. The key question remained the success of implementation, and when tested by reference to the levels of profit recorded by Fielden, relative to the performances of Tootals and Horrockses accounts, the results were quite dismal.⁶⁴ In circumstances where the usual institutional constraints of vertical specialisation did not apply, their importance can also be assessed by reference to the Fielden records. If such constraints were serious obstacles, an unconstrained firm such as Fielden would be expected to perform better than the rest of the industry. If it failed to do so, it may have been due to other constraints or the failure of the management in its entrepreneurial function.

Automatic loom investments before 1914

In discussing the diffusion of the automatic loom, some mention of the policies of

⁶³ WYRO/353/1, Directors' minute book; Robinwood was respindled with new ring frames in the period 1908-1910, pp. 325 and 348.

⁶⁴ WYRO 353/475, Detailed Accounts; Robinwood Mill Accounts.

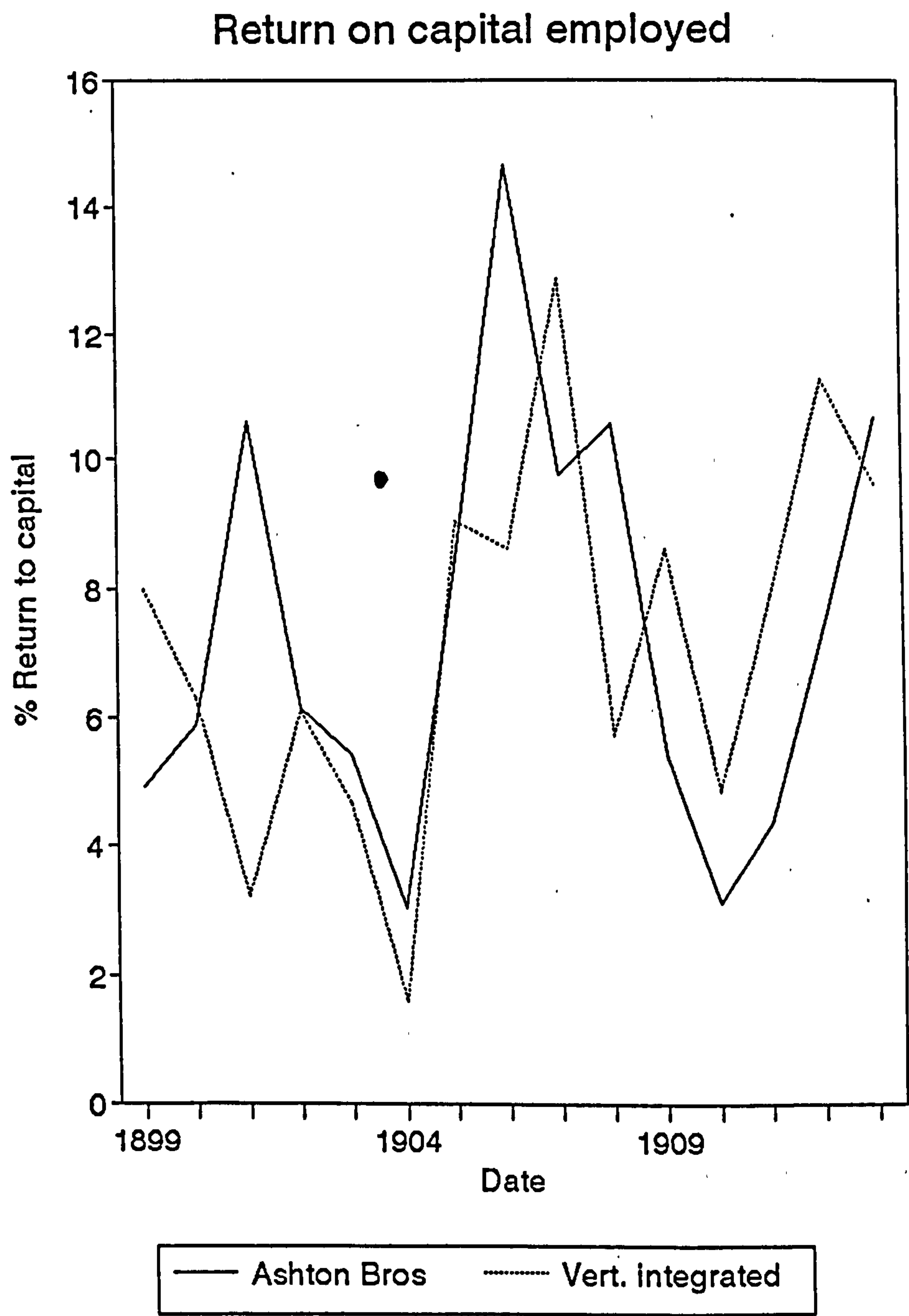
individual companies was made in chapter three. As already noted there, automatic looms were not introduced into Britain until the early 1900s, and were an insignificant chapter in the diffusion story relative to the ring spindle before 1914. In the next section, all companies that were known to have installed automatics will be examined. Each will be considered in as much detail as possible, evidence permitting, to determine how profitable the investments made actually were. Of the companies considered above, Tootals adopted a determined and systematic attitude towards the automation of weaving, Horrockses may have experimented, but nothing more, and Fielden began, but failed to carry through, a programme of asset replacement. A fourth company, Ashtons, was alone in Lancashire in showing a decisive commitment to the new loom, and was therefore included in our analysis. The only other documented, pre 1914, introduction of automatics was by the Gregs at Styal, and their policies have been documented elsewhere,⁶⁵ although they are referred to again here for comparison. In considering each company in more detail below, we present the first comprehensive survey, as far as data sources allow, of the profitability of automatic loom investment in pre First World War Lancashire.

Ashtons were the dominant force in automatic weaving and are therefore dealt with first. Given the ostensible advantages of the new method, the company might have been expected to perform well in comparison to the rest of the industry. In 1911, 34% of all automatics in Lancashire were installed at Ashtons.⁶⁶ As it was also a publicly quoted company from 1899 onwards, contemporaries would have thus monitored its progress with great interest. Returns to capital for Ashtons were compared with an average for the other vertically integrated firms in the industry (figure 6.6).

⁶⁵ Rose, *The Gregs of Quarry Bank Mill*, pp. 96-8.

⁶⁶ Calculated from Fowler, 'Trade unions and technical change', p. 43.

Figure 6.6: Rates of return, Ashton Brothers Ltd, 1899-1913



Sources: Ashtons, calculated from LGL, Commercial Reports and *SEOI*; industry average, average rates of return for vertically integrated companies per table 1.2 (see also appendix 1).

By installing automatic looms on such a scale, which it used in conjunction with ring spindles,⁶⁷ Ashtons went in the opposite direction to the rest of Lancashire, and precisely in the direction advocated by the critics of the industry. Yet even a cursory glance at figure 6.6 provides no indication of decisive competitive advantage. Ashtons under performed against its competitors in more years than it outperformed them, although its profits in 1901 and 1906 were very good. Fellow entrepreneurs considering the model of vertical integration combined with ring spindle and automatic loom adoption would have not felt an urgent need to emulate the company.

If vertical integration was not a constraint for Ashtons, then perhaps labour relations were. Two strikes, one in 1904 and a longer one in 1908, were occasioned by the use of automatic looms. However, the profitability trend of the company (figure 6.6) would appear not to have been influenced by either dispute. In the former case, the buoyancy of trade helped guarantee the union easy concessions within a week, whereas in the more depressed times of 1908 the strike was more protracted. Management used the 13 week 1908 strike to unload surplus stock, but also wanted to test, and if possible break, the strength of the union.⁶⁸ In doing so, they had significantly departed from their hitherto paternalist management style.

Although doing no damage to profit, the strikes thus caused other problems for managements. Henry Philips Greg, in common with Henry Lee of Tootals, and others in the family connected group responsible for the diffusion of Northrops in Lancashire, was instinctively paternalist in management style. Traditions of the earlier Gregs and his own management of Neville mill at Reddish exemplified this

⁶⁷ Worrall, *The cotton spinners' and manufacturers' directory*, 1913; Ashtons had 98,594 ring spindles and 67,284 mule spindles; looms totalled 4,445.

⁶⁸ Fowler, 'Trade unions and technical change', p. 53.

approach.⁶⁹ Yet wherever attempts were made to introduce automation to Lancashire weaving, such a management style must have appeared difficult to sustain. The strike problems experienced at Ashtons were paralleled by a dispute at Styal over speed ups six loom working, and attempts to introduce American methods.⁷⁰ Although automatics were not introduced there until 1909, industrial relations remained problematic as typified by the subsequent disputes in 1907 and 1908.⁷¹ Once introduced in 1909, the operation of the automatics was trouble free. As with Fielden, low profitability of a marginal concern and the need be more efficient to survive provided the motivation for experiment.

Another motivation was the determination of a particular entrepreneurial group. Henry Philips Greg was a business associate of the Tootals board through their joint promotion of the British Northrop Loom Company,⁷² and would therefore have drawn on the experience of the Daubhill strike of 1906. Of all the cases of weaving automation developments, Tootal's Sunnyside mill, part of the Rumworth Mills complex at Daubhill, Bolton, witnessed the longest and most bitter strike. Harold Lee, son of Henry and responsible for the management of Sunnyside did not consider Northrop looms to be suitable for the mills' high quality patterned output. Instead it was proposed to introduce 'drop wires', or automatic warp stop motions, and this became the specific cause of the strike.⁷³ The length of the strike, failure to recruit

⁶⁹ Rose, 'Henry Philips Greg', *DBB*, vol 2., pp. 647-8.

⁷⁰ O' Mahoney, *Quarry Bank Mill memoranda*, p. 66.

⁷¹ Rose, *The Gregs of Quarry Bank Mill*, p. 98; O' Mahoney, *Quarry Bank Mill memoranda*, pp. 71 and 75.

⁷² Simmons, 'Denis Machell Hollins', *DBB*, p. 308.

⁷³ Liddington, Mumby, and Seddon, 'There's no room on Daubhill for me', pp. 1-2 (the attitude of Harold Lee led to an escalation into a bitter dispute); for a description of the warp stop motion, see Sandberg, *Lancashire in Decline*, p. 81-2.

'knobsticks',⁷⁴ and favourable trading conditions placed the Tootal board under considerable pressure. The directors report to shareholders acknowledged:

...profits would have been higher but for a weavers strike at Rumworth Mill...This created considerable difficulty in meeting demands at a time of prosperity.⁷⁵

To put an optimistic gloss on the outcome of the strike the same report stated, 'new workers have been gradually introduced to replace those who have left the company's service'.⁷⁶ It was true that Lee had attempted to do this, but it was his failure that led to acceptance of union list terms two weeks later. A side effect of the strike was that Lee was persuaded by the arbitrators to join the masters' federation. The strike thus formally ended the paternalistic management style, of which the Sunnyside Institute was the hallmark, and the Victorian individualism initiated by earlier generations of management.⁷⁷ The lessons of the strikes at Bolton and Hyde were twofold; traditional management styles had to be severely compromised, and automation at a time of industry prosperity meant generous concessions to the labour force. Only the second effect had a direct impact on profit, but as the industry recovered in the 1900s, restored profitability elsewhere would ironically have created a disincentive to potential investors in automatic looms.

Horrockses management may well have found such arguments convincing. In the discussions of Tootals and Horrockses above, many similarities were noted; the timing of the establishment of the new companies and the marketing strategies

⁷⁴ Replacement non-union labour.

⁷⁵ MCRL, M461, Board Minutes, Minute book No. 3, Directors report to shareholders, 4th September, 1906.

⁷⁶ MCRL, M461, Board Minutes, Minute book no. 3, Directors report to shareholders, 4th September, 1906.

⁷⁷ Liddington, Mumby, and Seddon, 'There's no room on Daubhill for me', p. 31.

they pursued provided interesting parallels. Their managements also shared a common interest in subsequent reorganisations, such as the Calico Printers Association.⁷⁸ However, Horrockses management did not follow the example of the Greg, Lee, Broadhurst, and DM Hollins entrepreneurial axis down the road to automation of weaving with anything like the same vigour.

The attitude of Horrockses management to the automatic loom was not clear from the evidence, but was probably ambivalent. The marginal cost of loom replacement decisions at different locations within the company calculated are shown in table 6.5. They were calculated on the same basis as table 6.4.

⁷⁸ Howe, 'Sir Frank Hollins', *DBB*, p. 315.

Table 6.5: Horrockses, loom replacement marginal cost calculations

Date	Site	No of looms	Unit cost £
1889	Yard	18	3.17
1893	New Preston	344	7.46
1893	Yard	72	5.63
1894	New Preston	54	8.15
1894	Yard	375	4.47
1895	Field	32	31.50
1896	Yard	15	12.87
1896	Moses Gate	32	16.06
1896	Field	34	29.98
1899	New Preston	53	2.90
1899	Field	136	2.80
1900	Yard	18	30.67
1903	Moses Gate	8	46.38

Source: Calculated from CVR machine book.

Marginal costs for replacement looms showed a wide variation. A possible explanation of such variation is suggested by the availability of automatic and plain looms at substantially different purchase prices from the late 1890s onwards.⁷⁹ Prices varied according to width, and the acquisition of wider looms, for example for sheetings, would provide one interpretation. Alternatively, it is possible that the series of small purchases of looms in 1895, 1896, 1900 and 1903, consisted of experimental consignments of relatively expensive automatic looms, particularly those in later years. The British Northrop Loom company was not fully established until 1904, and these purchases would therefore be American imports.⁸⁰

Other evidence tended to support this conclusion. The business connections of between managements with other firms using and promoting automatic looms were strong.⁸¹ From 1902 onwards Horrockses itself became a major investor in the British Northrop Loom Company.⁸² Given that the records show no new net

⁷⁹ Feller, 'The Draper Loom in New England Textiles', p. 340. American prices were \$138 and \$50 for Draper automatic looms and plain looms respectively prior to World War 1. Sandberg, *Lancashire in Decline*, p. 79, pointed out that plain looms were 24% cheaper in Britain. Using an exchange rate of £1 = \$4.86, the approximate price of the two types of loom would be:

Automatic looms	£28.50
Plain looms	£7.82

⁸⁰ Sandberg, *Lancashire in Decline*, p. 81n noted that this version would be about 33% more expensive than the later British version.

⁸¹ Simmons, 'Denis Machell Hollins', *DBB*, p. 309; the connection between Hollins and Horrockses for purposes of brands and marketing has already been noted.

⁸² CVR, Balance sheets and detailed accounts; the balance sheet showed the shares being fully paid up via instalments in 1902-4. See also, Howe, 'Sir Frank Hollins', *DBB*, p. 316, and Saul, 'The Engineering Industry'. These three sources suggested, although 3/4 of the shares were owned by the US Draper company and other American interests, the British Northrop Loom company the balance of participative shares were owned as a consortium by interested entrepreneurs; principally Henry P. Greg, William Tootal Broadhurst, William Livesey, Frank Hollins and Denis Machel Hollins.

investment in looms between 1903 and 1912, and that the company would be unlikely to invest in the shares of another dealing in unfamiliar and therefore risky technology, it does appear possible that the earlier purchases were indeed automatic looms. There was little evidence from individual companies for the use of this type of loom before World War One. That a large, innovative company such as Horrockses should be one of the few to do so is not a surprising conclusion. Nonetheless the extent of its adoption, as with the rest of the industry, was clearly limited.

Industry structure, however, appeared to give no clue as to this pattern. The adoption of new looms did not parallel the adoption of ring spinning, as might be expected in a vertically integrated company. There were several further possible explanations as to why Horrockses may have experimented with the new looms but failed to adopt them on a large scale. Automatics were unsuitable for short specialised production runs and for the production of the heavily sized products typically produced for the far Eastern export market.⁸³ The product range, and the conflict between the marketing and production arms of the company referred to above, and its commitment to a quality image may have caused its management to resist the economies of scale opportunities presented by the faster throughput new looms. Another problem associated with the introduction of this technology was union opposition.⁸⁴ Unlike Ashtons, Tootals and Gregs, the company enjoyed excellent labour relations from the 1860s onwards and throughout the period. Based on the conciliatory management style of Hollins,⁸⁵ the risk of upsetting this employment

⁸³ Taussig, *Some Aspects of the Tariff Question*, p. 283.

⁸⁴ Taussig, *Some Aspects of the Tariff Question*, p. 284; Sandberg, *Lancashire in Decline*, pp. 84-92. Authorities agree that the introduction of automatic looms implied at least a quadrupling of worker/machine ratios if the full potential for efficiency gain were to be approached.

⁸⁵ Howe, 'Sir Frank Hollins', *DBB*, p. 316.

strategy may have been considered too great.

The final problem with the adoption of the new looms was cost. As noted above the cost of new automatics was about three times the cost of a traditional loom. The low rate of loom replacement suggests the company was generally reluctant to scrap well functioning plain loom capacity. It may also suggest that, given the faster rate of spindle replacement, although vertically integrated, there was an increasing willingness to sell yarn based products to independent weavers. Overall, full scale conversion to automatic looms would have been an inconsistent strategy, being unsuitable for the product range, unacceptable to the workforce, and unprofitable *per se* as an investment opportunity. The commitment to a wide product range also underpinned a commitment to both types of spinning technology. As regards overall marginal cost the advantage of ring spindles was relatively minor.

Fielden Brothers, by contrast, as a more peripheral smaller company, produced a much narrower range of goods. As we have already seen, its management was innovative but nothing like as professional as Horrockses, Tootals and Ashtons. Like Gregs on the other hand, the company was unprofitable and its management were willing to try new methods to attempt to increase efficiency. Also these businesses were located away from the main centres of spinning and weaving specialisation and forced to concentrate on coarse products against the backdrop of an increasingly competitive world market.⁸⁶ Gregs had abandoned spinning in 1894,⁸⁷ a strategy also open to Fielden given its proximity to the great weaving centres of the Burnley area. The alternative actually adopted was a significant investment in ring frames, including a combined purchase of spindles for weft and automatic looms, thereby confirming the apparent technical compatibility of these

⁸⁶ Rose, *The Gregs of Quarry Bank Mill*, pp. 88-90.

⁸⁷ Rose, *The Gregs of Quarry Bank Mill*, p. 90.

types of machine.⁸⁸ However, despite the apparent advantages, there are no other documented examples of companies making simultaneous introductions prior to 1914. The investment decision is therefore analysed in detail below.

Unlike all the companies considered so far, Fieldens enjoyed good labour relations in that the introduction of automatic looms and their associated methods uniquely did not cause a strike. Partly this was because Todmorden was a company town and the Fielden family commanded the respect and deference of their workforce.⁸⁹ Also the scale of introduction was very small and would have been seen as simply an experiment rather than a threat to working conditions.

Another unique feature of Fieldens was that their experiment dealt simultaneously with spinning and weaving technology. The crux of the institutional constraints hypothesis is that vertical integration prevented the diffusion of ring spinning because independent weavers did not demand ring spun yarn, and that independent managements were incapable of co-ordinating high throughput production.⁹⁰ At Fielden Brothers these problems were entirely absent.

However, there were other important and serious difficulties that thwarted successful experimentation. The first was that the elements of alternative spinning and weaving technology were imperfect and not therefore perhaps cost effective. In the 1890s and early 1900s, as shown in chapter five, both ring and mule technology were subject to improvements during this period, and in the former case there were special problems of 'bad spinning' when rings were used to spin weft yarn.⁹¹ Given that

⁸⁸ Lazonick, 'The cotton industry', pp. 23-4; Bennett, *An introduction to automatic weaving*, p. 29.

⁸⁹ E.B. Fielden diaries, *passim*.

⁹⁰ Lazonick, 'The cotton industry', pp. 24 and 20.

⁹¹ Thornley, *Cotton Spinning*, p. 247; Nasmith, *Students' Cotton Spinning*, p. 532.

interrelatedness constraints such as winding, and to some extent, transport were not present at Fielden Bros. Ltd., the relatively poor performance of the company may have been due to technical imperfections with the machinery. Also the scale of the investment in automatics was very small, especially given the availability of surplus capital, as represented by the build up of railway shares and other investments in their accounts.⁹² It was also very small in the context of the almost total conversion of the main mills to ring spinning.⁹³ There was thus a startling mismatch of technology if the claims about the mutual compatibility of the ring spindle and the automatic loom were true in conditions prevailing prior to 1914. Alternatively, if Fielden Bros. Ltd. are not to stand accused of wasting an excellent innovative investment opportunity by not following through their faith in the ring spindle with an equal investment in automatic looms, there must have been compelling reasons for not doing so.

Fielden's first contract for automatics was dated 31 October, 1906 when two looms were ordered at £61/16s each. The cost was two and a half times that of plain looms with the same reed space purchased from Butterworth and Dickinson in Burnley at around the same time.⁹⁴ This may have been too expensive. Only 14 automatic looms were installed prior to 1914, suggesting that although willing to experiment, management did not yet consider automatic weaving to be a major step forward. Indeed, there was considerable resistance to its introduction in Lancashire well into the 1930s and 1940s.⁹⁵ At Fielden Bros. Ltd. the usual disadvantages, associated with lack of ring spun weft, yarn rewinding, and to a certain extent high transport costs, were not present prior to 1914. Unless Fielden management acted

⁹² WYRO, C353/475, Detailed accounts.

⁹³ See above, p. 150.

⁹⁴ WYRO, C353/1, Directors' minutes, pp. 318 and 352.

⁹⁵ Bennett, *An introduction to automatic weaving*.

irrationally, it may therefore be inferred that there were reasons other than the constraints imposed by industry structure for the slow adoption of the automatic loom.

The decision can be analysed by reference to the costs incurred by the company. In the one major outlay, Fielden Bros. spent £1,300 on 396 weft ring spindles and 12 automatic looms, the former being purchased specifically to produce output for the latter.⁹⁶ Table 6.6 shows the saving in cash terms such an investment might have achieved. The source used was part of a treatise suggesting how savings might be made from investment in automatic looms under British conditions.

⁹⁶ WYRO, C353/1, Directors' Minutes, p. 334.

Table 6.6: Automatic looms, return on investment

	Plain loom	Automatic loom
Output per loom per week	263yds	209.5yds
Equivalent no. of looms	10	12
No. of weavers	2.5	1
Labour cost 6s/loom per week	60s	
Labour cost, plain loom weaver plus 25 %		30s
Sundry labour		6s
Extra tackling and stores		5s/10d
Extra wraps		6s/8d
Weekly saving		11s/6d

Sources: Based on the Fielden automatic loom and ring frame purchase, as detailed in WYRO 353/1 Directors' minutes, p. 334; assumptions as used by Young, T.M. *The American Cotton Industry*, p.139-40.

The weekly saving shown in table 6.6 arises as a result of replacing plain looms with automatics. The annual saving would have amounted to about £29 on the total investment. This is insignificant in relation to the total size of the business. However, the installation of automatic looms was an experiment and may have been replicated if satisfactory results had been obtained. It is therefore necessary to estimate the rate of return from the investment. A difficulty arises from the inclusion of the ring spindles in the single figure for total capital invested. However given the interrelatedness of the two technologies, the decision to invest in these spindles arose directly from the loom investment. Thus it is appropriate, in the first instance, to consider the purchases as a single decision. To the annual saving of £29 on the looms, any further savings on the rings must be added. However, from the board minutes it is clear that the company already possessed ring frames for weft.⁹⁷ It did not possess automatic looms. Therefore the overall effect of the purchase would be to displace only plain looms, with no opportunity cost saving from the new rings. Furthermore, as noted already, the efficiency of the ring spindle before 1914 in British conditions has been overstated. Moreover, the opportunity cost of the ring spindles would have been the market price of ring spun weft or its internally produced cost on existing ring spinning capacity. The saving on the new looms should therefore be compared with their net cost. From the average prices quoted in the board minutes, a high estimate of the installed cost of the ring frames would be £220.⁹⁸ The cost of the installed looms would be the remaining £1080, or £90 per loom. This may appear expensive compared to the cost of the earlier automatics noted above at £61 each. Whichever is taken, a saving of just over £2 per machine per year did not appear to justify further investment.

⁹⁷ WYRO, C353/1, Directors' minutes, 1st July 1896, p. 208.

⁹⁸ WYRO, C353/1, Directors' minutes, pp. 318-412.

Yet if management did take a decision on such a basis, they were not giving the automatic looms a fair chance. The main advantage of the loom, according to its manufacturers was that one weaver could mind up to 24 machines. Fielden Bros. Ltd. purchased a total of 14 machines, and were therefore only able to benefit from just over half of the potential productivity gain, since one weaver would still have been required to mind the 12 new machines, or possibly the 14 total number. To take a best case scenario, assume the latter and dispense with the sundry labour cost in table 6.6. This brings the annual saving to £59, or just over £4 per loom. If £61 is taken as the marginal cost and a generous 20 years as the useful life of the loom, the rate of return was only 3.2%. With the risk associated with new technology, investments in railway companies were an attractive alternative by this standard.

Fielden Bros. Ltd. could be criticised for choosing an investment which did not allow the full commercial benefits of their investment to be realised. Young's data suggested that if this had been done an annual saving of £119 could have resulted from an investment of £472, the equivalent of a return of 16.6%.⁹⁹ Using data from another contemporary source, Sandberg produced an estimate of 10%.¹⁰⁰ In this respect, however, the Fielden evidence is important since Sandberg assumed a much lower cost per loom, typically £30. The actual cost in the case of Fielden was between two and three times that amount. Company policy since 1895 had been to widen the looms and therefore the equivalent cost of the replaced plain loom was proportionately higher as well. Loom widening would have increased labour productivity, but in a replacement decision the labour cost would have been saved in a similar ratio regardless of loom width. For companies using wider looms therefore,

⁹⁹ Young, *The American Cotton Industry*, p. 139-40. Young assumes a depreciation rate of 15%.

¹⁰⁰ Sandberg, *Lancashire in decline*, p. 79.

the capital cost would be higher in proportion to the labour cost saving. The expense of automatic looms was also a function of the monopoly position of the British Northrop Loom company.¹⁰¹ For these reasons, it is possible to appreciate why the majority of British companies did not introduce the new looms prior to 1914.

Within the context of a vertically integrated structure, Fielden Bros. Ltd. management did at least take up the opportunity to use ring spindles and automatic looms in conjunction with one another. However, the important inventions noted in chapter 5 which allowed full integration and automation of manufacture were not commercially available until the 1920s. Prior to these developments, integrated firms such as Fielden Bros. Ltd were happy to deploy ring spindles and experiment with automatic looms. Only when full automation was possible did vertical specialisation begin to lose its rationale as efficient throughput became achievable in single factory units. The distance between the Fielden sites may have therefore become a constraint in later years. The company did become more reluctant to invest in new techniques.¹⁰² It was not until the end of the 1930s that the company installed high speed drafting.¹⁰³ Although pioneers in adopting rings for weft spinning, Fielden Brothers only had some of the necessary technical improvements available to it prior to 1914. It would thus be unfair to blame Fielden management for failing to introduce high throughput automated manufacture before the means to do so actually became available, and, in the case of automatic looms, before they became profitable.

Technology and industry organisation: some interim conclusions

Survival of archival evidence was inevitably patchy, and the comparisons in the above

¹⁰¹ Sandberg, *Lancashire in decline*, p. 77.

¹⁰² Note from a conversation with Mr. J. Hirst.

¹⁰³ RMA, 1939.

case studies were thus far from systematic. Nonetheless, each has sought to illustrate a particular facet, which when combined with the analysis in earlier chapters, should support valid conclusions on the relationship between industry structure, technology diffusion and profitability.

Little support has been found for the existence of constraints, in the form of labour relations and labour cost (chapter five), or in the form of vertically specialised industry organisation (chapter four and above). In the above discussion, we have seen that although integrated concerns performed better in the slump of the 1890s, they lagged all specialised, companies, whatever their technology, in the boom periods. Yet if industry organisation was a constraint, it would be expected that unconstrained integrated firms would perform better in all cases. As we have seen in chapter five, the real constraint was technical, and integrated firms did not have the means to introduce automated throughput manufacture. This would have to wait for the high draft ring spindle, automatic winding, and the more general availability of the automatic loom; these were the real technical constraints.

Lazonick, whose 'constraints' hypothesis has occasioned much debate on Lancashire cotton, has taken care to outline his precise argument. Vertical specialisation promoted competitive advantage before 1914 or at least imposed constraints that were non-problematic in that sense.¹⁰⁴ However, specialisation was acknowledged to be a constraint in that it prevented the diffusion of ring spinning.¹⁰⁵ Lazonick argued that these were separate issues, but the use of the main empirical ingredient of this and earlier chapters, realised profitability, has presupposed that such a distinction was artificial. Return to capital both measures competitive advantage and sends signals to investors, thereby influencing diffusion;

¹⁰⁴ Mass and Lazonick, 'The British cotton industry', p. 57.

¹⁰⁵ Lazonick, 'Rings and mules', p. 396.

such are the dynamics of a market economy. It is not consistent to argue that structure and labour relations were simultaneously a constraint and non problematic. The correct conclusion was that they were neither.

On the basis of all the evidence considered so far, the major hypotheses of failure to invest in the 'correct' technology and institutional constraints advanced elsewhere to explain the performance of Lancashire textiles are rejected. However, different routes to profitability existed which were not predicated on technology and organisation, although both might be important where other influences were also present. Such influences have, nevertheless, been alluded to so far only in passing; the next step will be to deal with them in turn, first, in the next section, entrepreneurship, finance and investment, and then in the final section, industry efficiency and the world market.

Part 3

Ownership, Control, and Divestment

Chapter 7: Growth and divestment - constraints on the entrepreneur?

The previous section examined the performance of the Lancashire textile industry strictly by reference to the variables of technology and industry structure. Given the interim conclusion of no definitive relationship between these attributes, it is necessary at this stage to turn to alternative hypotheses to explain the development of the industry. As much recent discussion has concentrated on the technology and structure aspects, such hypotheses are not easily derivable from extant literature. Thus, unlike Part 2, it is unnecessary to preface the next stage of the argument with an extensive literature review.

In searching for alternative models of business and economic development, it is thus appropriate to turn, at least initially, to the nature of capitalism itself, and specifically the social nature of capitalist institutions. A primary justification for such a perspective is that recent histories dealing with the British economy have emphasised it,¹ but have not necessarily fully incorporated the history of the cotton industry. One aspect is so-called 'personal capitalism', which has been identified as an important feature of British business. By this, it is understood that entrepreneurs viewed businesses in personal rather than organisational terms; as estates to be nurtured and passed onto heirs.² In such an economic system, the distribution of profits, corporate saving, and capital accumulation are vital issues. Yet very little research has been conducted in this area, and there is need for more.³ In judging the

¹ Chandler, *Scale and scope*; Elbaum and Lazonick, *The decline of the British economy*.

² Chandler, *Scale and Scope*, p. 286.

³ Chandler, *Scale and scope*, p. 390.

pattern of entrepreneurial behaviour and the institutional constraints upon it, divestment is as important as investment. Indeed the former might well influence the latter. Evidence on how the profits from Lancashire textiles were actually spent suggests some interesting conclusions on strategy and structure within the industry, and is examined below in the first chapter of Part 3.

Another important institutional element was the finance of economic activity, and in the case of a significant section of the cotton industry, the role of capital markets. Its study is important since it inevitably provides clues as to the importance of capital ownership, entrepreneurial groupings, and the features of managerial hierarchies. The second chapter of this Part analyses these relationships from financial and social perspectives.

The current chapter addresses two issues; the growth of individual companies, and the distribution of trading surpluses. These two issues are related since a low rate of capital accumulation would be the obverse of high dividend distributions; a phenomenon which may have influenced the development of the industry and the economy as a whole if divested cash was used unproductively. Having examined growth rates, in analysing the pattern of divestment reference is then made to the relationship between the ownership and management groups as measured by propensities and pressures for profits to be paid out as dividends. The general approach suggested here is based on agency theory, which has gained wide recognition in contemporary financial and economics literature,⁴ but has not been widely used in business history, even though well established historical analysis has presupposed a split between ownership and control.⁵ The difference in the current approach is the proposal of a financial agency variable hitherto unused in such a

⁴ For example, Jensen and Meckling, 'Theory of the firm', pp. 305-360.

⁵ For example, Chandler, *The visible hand*.

context, dividend policy, to explain the historical and institutional evolution of the relationship.

The sample

The evidence upon which much of the discussion in the following two chapters is based was drawn from the surviving business and published records of cotton firms in Lancashire. Using the same sample as described in chapter one, the constituent companies were first segmented on the basis of ownership. That is joint stock companies were compared with private companies. The former, having wider share ownerships than the latter, were arguably subject to different institutional pressures regarding their policies of capital maintenance and distribution. Three of the companies in the main sample, Ashton Brothers, Barlow and Jones, and Rylands had widely distributed ownership, their equity shares being quoted in London and Manchester. Of greater local significance were the large number of spinning companies quoted at Oldham.⁶ As pointed out previously, Oldham firms had a unique propensity to report their results to the general public. In addition to the companies in the main sample, therefore, it was possible to use aggregate data published in local and national newspapers and journals to examine the overall behaviour of Oldham spinning companies.⁷ The remainder of the main sample

⁶ Throughout this chapter 'Oldham' firms are those firms which were quoted on the Oldham stock exchange or located in the 'Oldham district', comprising Oldham, Rochdale, and the satellite towns to the immediate north east of Manchester.

⁷ The sources of published accounting data used were; *Oldham Chronicle*, financial reports (Saturday issues), 1885-1914. Listings by company of profit and dividend per quarter; 'Commercial history and review, VII-Textiles', *Economist*, 1895-1914. Both sources contained the same listing of profit per company, aggregate dividend and aggregate reserve balances carried forward. Here and elsewhere, the companies included in these aggregates are referred to as the *Economist* sample.

comprised private companies which were more secretive about their financial results. To investigate the dividend policies of their managements, archival business records were used, where possible, to isolate the necessary data variables.

For all companies, whether private or not, the important data observations collated were the distributable profit, the dividend, and the undivided profit accumulated as reserves. From series such as these it was possible to test the extent to which managements were able to use the corporate form as a means of accumulating capital and thus to secure growth and reinvestment, or, conversely, the extent to which they came under pressure from their shareholders to pay profits over as they accrued.

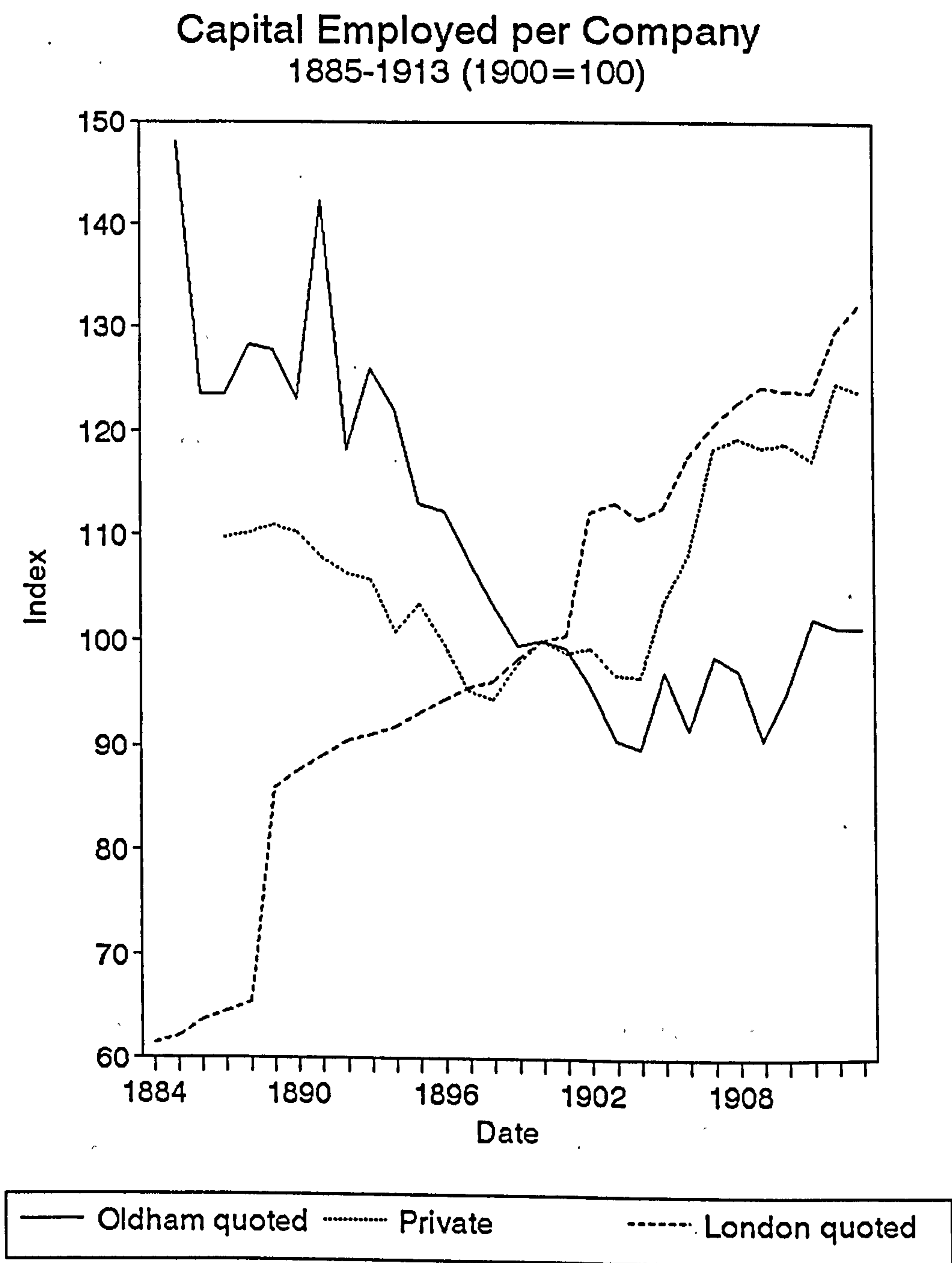
Growth and profit patterns: evidence

Patterns of growth are illustrated by reference to capital accumulation in figure 7.1 and table 7.1. As expected there was some divergence between private and public companies. Most surprisingly, however, whereas the former accumulated capital steadily, companies quoted in Oldham divested large amounts of cash. Figure 7.1 shows an index of the average capital employed in those companies publishing balance sheets and hence appearing in the *Economist* sample and contrasts it with a similar index for private companies, and for those companies which had their shares quoted in London rather than Oldham. Trends for the latter in figure 7.1 should be treated with caution, as the sample consisted of only three companies, and for earlier years only one, Rylands, was included. Depending upon which companies reports could be got hold of, the *Economist* and *Oldham Chronicle* aggregates varied their component companies from year to year, although the same companies tended to

feature in the long run.⁸ This might have caused some minor distortions for particular years but the general trend was unmistakeable; a sharp decline to 1900 and a plateau in the ensuing years.

⁸ For example, an *Oldham Chronicle* correspondent complained that Rochdale companies had become much more secretive in the 1890s; 26th June, 1899. Although information was difficult to obtain in some years, certain companies, such as those at Milnrow, published their results throughout the period and were thus included every year.

Figure 7.1: Average capital employed per company, 1884-1913



Sources: Compiled from the series published annually in the *Oldham Chronicle* and the *Economist* and from the sources listed in table 1.2.

Table 7.1: Fixed asset and capital growth

(1) Growth in spindleage (Compounded growth rates, 1884-1911)

	% Growth per annum
Spinning firms, Oldham area	2.29
Cotton spinning industry (excluding Oldham)	1.03

(2) Growth in capital: (Compounded growth rates)

	Period	Growth per annum %
Oldham quoted		
Dowry	1885-1912	-4.24
Haugh	1884-1913	-0.92
New Ladyhouse	1884-1913	-0.78
New Hey	1887-1913	-1.52
Moorfield	1884-1912	-2.00
Sun Mill	1884-1912	-1.56
Werneth	1889-1912	0.30
Private		
Fielden	1891-1913	1.42
Horrockses	1887-1913	2.93
Osborne	1890-1913	-3.50
Tootals	1888-1913	1.78
T.R Eccles Ltd	1897-1913	1.46
Whiteley	1898-1913	2.82
London quoted		
Ashton Brothers	1899-1913	3.43
Barlow and Jones	1900-1912	0.90
Rylands and Sons	1884-1913	1.63

(3) Economy as a whole (rate of growth of manufacturing and commercial capital)

	% Growth per annum
1882-1914	2.38

Sources: (1) Calculated from Chapman and Ashton 'Sizes of Businesses' pp. 469-555. (2). as per table 1.2. (3) Calculated as a compound growth rate from Feinstein, *National income*, p. 194.

The statistics in figure 7.1 and table 7.1 suggest that the pattern of capital accumulation in public company dominated Oldham was significantly different than elsewhere in Lancashire and in the wider economy. In spindleage terms, Oldham grew rapidly, and, if such a crude measure of fixed assets can be equated with monetary capitalisation, at a rate close to the average for the economy as a whole (compare table 7.1; parts (1) and (3)). Such growth was undoubtedly associated with the increased geographical specialisation of cotton spinning within Lancashire in the Oldham area.⁹ It has been argued that growth was facilitated by the joint stock system and associated ready access to finance.¹⁰ The 1904-7 boom witnessed a massive construction of new mills and expansion of capacity. The number of spindles installed in Lancashire increased from 46m in 1905 to 55.3m in 1908,¹¹ and in the Oldham area 40 mills were floated in 1905, 23 in 1906, and 39 in 1907.¹² However, shrinking balance sheet capitalisation of established Oldham mills was the dominant feature of table 7.1, and the purpose of much of this chapter is to explain that apparently odd trend.

The decline was a function of an absence of accumulated profits. For the industry as a whole in the period 1902-1911, credit balances on shareholders' reserves averaged 11% of total capital invested; the trend following the trade cycle with no secular increase.¹³ In 1912, total accumulated reserves for the whole British

⁹ Farnie, *English Cotton*, pp. 271-2.

¹⁰ Kenny, 'Sub regional specialization', p. 54.

¹¹ Robson, *The cotton industry*, p. 340.

¹² Thomas, *The Provincial Stock Exchanges*, p. 154.

¹³ Calculated from, 'Annual review of the cotton trade', 1903-1912, the *Economist*, by taking accumulated reserve balances as a proportion of the total of loan capital, share capital and accumulated reserve balances.

textile industry were only £8m.¹⁴ Assuming capital was divided equally between spinning and the rest of the industry, accumulated reserves were 1s 3d per spindle. This compares with a ratio of 14s 6d of total capital employed per spindle as calculated based on figures per the *Economist* and Mitchell and Jones.¹⁵ Accumulated reserves thus represented only 8.6% of total capital employed.¹⁶

Few individual companies were exempt from this trend. The index of Oldham quoted companies in figure 7.1 represents the average of just under one hundred companies regularly included in the *Economist* sample. Specific examples reinforce the impression of the general trend. Slow growth rates in spindleage terms for the Milnrow companies was noted in chapter four; these were matched by actual declines in terms of monetary capital employed. The Dowry and the Moorfield, being more typical Oldham companies established in earlier flotation booms, provided even better exemplification of the drain of capital from the older companies. Like many others, the Dowry had repaid its loan account by 1906.¹⁷ Companies featured in the *Economist* sample repaid £1.38m outstanding loan capital in the period 1893-1907.¹⁸ The policy of managements appeared to be to use cash to reduce dependence on third party financial stakeholders rather than to acquire new fixed assets.

The pattern was essentially one of capital circulation rather than capital accumulation. Between 1884 and 1907, the hundred or so companies featured in the

¹⁴ Cairncross, *Home and foreign investment*, p. 98.

¹⁵ 'Commercial history and review, VII-Textiles', *Economist*, 1901-1913; Mitchell and Jones, *Second abstract*, p. 186

¹⁶ Where 1s 3d (15d) is taken as a percentage of 14s 6d (174d).

¹⁷ CAD, DOW.1, nominal ledgers.

¹⁸ Toms, 'Financial constraints', p. 375.

Economist sample paid out an estimated £3.98m.¹⁹ In the same period there was a net repayment of loan capital totalling an estimated £2.58m for the same companies.²⁰ However, it is tempting to believe that this total divestment of around six and half million pounds, from a sub section the coarse spinning industry, was not entirely lost to the trade. The 100 or so new mills erected in the Oldham district between 1905 and 1907, if we assume 100,000 spindles for each mill at £1 a spindle, would have required new capital of say, £10m. Given that much of this capital was raised locally, it is highly probable that some of it came from the capital divested from established companies. An apparent trend, which will be investigated below in more detail, was thus the confinement of significant investment to new concerns, contrasted with the withering of capital in established companies.

There were exceptions. The Werneth was the only company in table 7.1 to show any growth in capital during the period, primarily as a result of its construction of a new mill.²¹ The Shiloh was another company which grew rapidly, constructing four new mills in this period.²² However, such companies were unrepresentative. The Sun Mill Company, despite undertaking extensive re-equipment in the period 1899-1907,²³ still showed a net decline in capital employed. In the case of the Dowry, the downward trend was more dramatic, as there were very few years when

¹⁹ Calculated by reference to the *Economist*, 'Commercial history and review (1895-1913), VII-Textiles', cumulative table of dividends per company and number of companies, taking the average dividend per company and multiplying by the number of companies submitting returns.

²⁰ Calculated by reference to the *Economist* 'Commercial history and review (1895-1913), VII-Textiles' and Smith, 'An Oldham limited liability company', pp. 52-3. For a note on the consistency of companies included in the sample between these dates, see above, pp. 34-5.

²¹ OLSL, Misc. 42/17, quarterly reports to members, 1892.

²² See table 4.5.

²³ Tyson, 'Sun Mill' pp. 286-90.

the company managed to spend even its depreciation charges on new plant and equipment.²⁴ In 1913, the company had exactly the same number of spindles as it had in 1889. For whatever reason, the managements of these companies lacked either the power or the will to expand their businesses. That such a phenomenon should emerge in the cotton, the engine of growth in the first industrial revolution, was indicative of important institutional changes, perhaps with implications for the wider economy.

Apparent reluctance to reinvest was, however, confined only to the publicly quoted companies which raise their finances predominantly within the Lancashire area. Those Lancashire companies which extended their capital raising endeavours as far as the London markets, were able to sustain higher growth rates than those companies whose shares were traded mainly in the hotel rooms of Oldham. Rylands and Sons, already the largest Lancashire firm, increased its capital dramatically between 1884 and 1895, although by a much slower rate thereafter.²⁵ The company expanded its capital base in 1886 through the issue of debentures, although the money came from immediate family. Expansion of the export business, combined with selected withdrawal from certain markets, took up some of the extra funding. Reinvested profits from these activities boosted reserves and contributed to further capital accumulation.²⁶ Surprisingly for a public company, Rylands thus raised most of its capital privately or internally. In contrast, Ashton Brothers grew rapidly, and following its reconstruction in 1899, was able to mobilise a large capital base via the London and Manchester stock markets. In the early 1900s the accumulation of profits

²⁴ CAD, DOW.1, nominal ledgers, 1886-1914.

²⁵ LGL, Commercial reports, 1884-1895.

²⁶ Farnie, 'John Rylands', pp. 66-9.

added to that capital,²⁷ and assisted the investment in automatic equipment reviewed in chapter 6.

Contrasts with privately owned companies were also dramatic. The extensive re-equipment of companies such as Horrockses, Tootals, and Fielden have been described in detail in chapter six. Frequent investment in plant, and other activities, meant that all three grew in terms of book value.

Horrockses exhibited the strongest growth trend in this category of company. Unlike the Oldham joint stock companies, Horrockses grew by means of takeover and phased organic expansion. The decisive developments, initiated and orchestrated by Sir Frank Hollins, were the intensive merger period of 1885-7 leading to the formation of the company, the developments of the Centenary Mill and the Manchester warehouse, and the acquisition of Swainson Birley.²⁸ The Centenary mill was so called as the project marked the centenary of the founding of the firm by John Horrocks in 1791,²⁹ although the mill was not brought into full production until five years later.³⁰ The development thus occurred at the height of the trade depression, but also when Horrockses, almost alone in the industry, was turning in record profit performances.³¹ On completion of the Centenary mill project, the company almost immediately commenced the construction of another important building; the

²⁷ LGL, Commercial reports, 1899-1913.

²⁸ Howe, 'Sir Frank Hollins', *DBB*, pp. 313 and 315.

²⁹ Pedrick, *The Story of Horrockses*, p. 27.

³⁰ CVR, Detailed accounts. The first profit and loss account for the mill appeared in the accounts in November 1895; the first balance sheet in November 1896. The first entry in the machine book was also for 1896, showing the full complement of 78,572 mule spindles.

³¹ See above, chapters 4 and 6.

Manchester warehouse.³² This development was part of a conscious policy to reduce dependence on the London wholesale and retail markets and whose staff, inherited from the pre 1887 merger, Hollins considered to be unreliable.³³ In addition to direct investment of this kind, some of the growth of the firm during this period came from the acquisition of Swainson Birley in 1900,³⁴ and additional capacity was added through the acquisition of Fishwick mills.³⁵

Like Horrockses, Tootals also expanded through a series of carefully staged developments. Its growth rate was slower (table 7.1), and this was due to repositioning in some markets. Withdrawal from the sewing cotton trade in the mid 1890s allowed the divestment of Lee Spinning Company to the English Sewing Cotton Company Ltd.³⁶ Sales of other parts of the business such as Dan Lane mills, Atherton and the Bradford branch, also formed part of a reconcentration strategy in the 1890s.³⁷ Such asset sales helped finance important aspects of this new strategy. Like Horrockses, the strategic centrepiece was the construction of a new Manchester warehouse; as for Horrockses, the building would have been a source of considerable prestige. Located in Oxford Street, the Tootals warehouse was commenced at about

³² CVR, Detailed accounts. The construction costs on work in progress first appeared in the balance sheet in May 1897. The building must have been substantially completed by November 1900, when the cost was shown at £67,560. However additional improvements pushed the cost up further to a peak balance sheet value of £70,031 in October 1902.

³³ Howe, 'Sir Frank Hollins', *DBB*, p. 315.

³⁴ Chapman, *Merchant enterprise*, p. 318; Howe, 'Sir Frank Hollins', *DBB*, p. 315.

³⁵ CVR, Detailed accounts. The acquisition appeared in the accounts of November 1900 as an asset of £38,649. These mills were presumably part of the assets acquired through the Swainson Birley takeover.

³⁶ MCRL, M.461, Board Minutes, Minute book no. 2, December 28th, 1897.

³⁷ MCRL, M.461, Board minutes, Minute book no. 2, 12th September, 1899 and Minute book no. 3, 9th September 1902.

the same time, but completed much quicker than that of its rival.³⁸

On a smaller scale, Fielden adopted a similar policy; the partnership divested older mills on or before incorporation in 1889,³⁹ and financed re-equipment from depreciation and accumulated profits.⁴⁰

Comparison of Horrockses, Tootal and Fielden, and contrasts with Oldham joint stock companies, has suggested that private, not public, capital was the more important engine of growth. All the developments referred to above for Horrockses and Tootals were financed from accumulated profits.⁴¹ The typical Oldham company, on the other hand, was content to work its existing plant and machinery within the usually unaltered confines of the four walls of its mill. Such an arrangement was somewhat paradoxical. Normally, especially under modern conditions, it is the public company, with ready access to finance from the stock market, which is capable of the fastest growth.

In the 1890s, that normal situation was reversed, temporarily at least. Putting aside important institutional constraints, which will be examined in detail later, the reversal might be attributed to the trading conditions that prevailed in the 1890s. As seen in chapter 4, vast fortunes were lost in the Oldham district in the early 1890s and it was hardly surprising that capital contracted through divestment. The Osborne Spinning Company, although privately financed, was affected in the same way as the Oldham publicly quoted companies, and adopted the same policies of high dividends

³⁸ The warehouse was reported to be ready in October 1898; MCRL, M.461, Board minutes, Minute book no. 2, 27th September 1898.

³⁹ Figure 6.3; also assets such as the Pernambuco Gas works, municipal responsibilities taken over by Todmorden Borough Council and the sale of office premises, EB Fielden diaries, *passim*.

⁴⁰ WYRO, C353/475, Detailed accounts, 1890-1914.

⁴¹ CVR, Detailed accounts and MCRL, M.461, Board minutes, *passim*.

and minimal plant replacement.⁴² By contrast, Horrockses and Tootals had ready sources of cash, the former from the profits of its operations, the latter from strategic divestments.

In the more prosperous 1900s the whole industry became cash rich, and in that period there were interesting parallels as well as contrasts. A common feature of both private and public companies was the accumulation of financial assets. Notable was Rylands, which by 1906 had financial assets equal to half its paid up capital.⁴³ Typical investments were in railways and consols; a policy shared by Horrockses and Fielden in the 1900s. Investment in railway shares was a traditional Fielden strategy and was resorted to again after 1895; in the earlier days of the company the banks had regarded such investments as good collateral.⁴⁴ Fielden had strong managerial connections with the railway companies and Edward Fielden, as a director of the Lancashire and Yorkshire Railways from 1898, directed spare cash from manufacturing operations into the railway associate.⁴⁵ After 1890, dependence on banking institutions almost completely disappeared as a consequence of the unwillingness of management to expand the business. Other railway and British industrial companies also benefited from the policy. The growth in capital of the company, from £130,000 in 1890 to £186,000 in 1913, was explained solely by the

⁴² LCRO, DDX/869/3/1 Trade, capital and profit and loss accounts. Between 30 June 1890 and 30 June 1911, the company charged depreciation of £33,365 at a very uniform rate; in the same period net additions to fixed assets amounted to £9,920.

⁴³ Farnie, 'John Rylands', p. 67.

⁴⁴ Chapman, *Merchant enterprise*, p. 68.

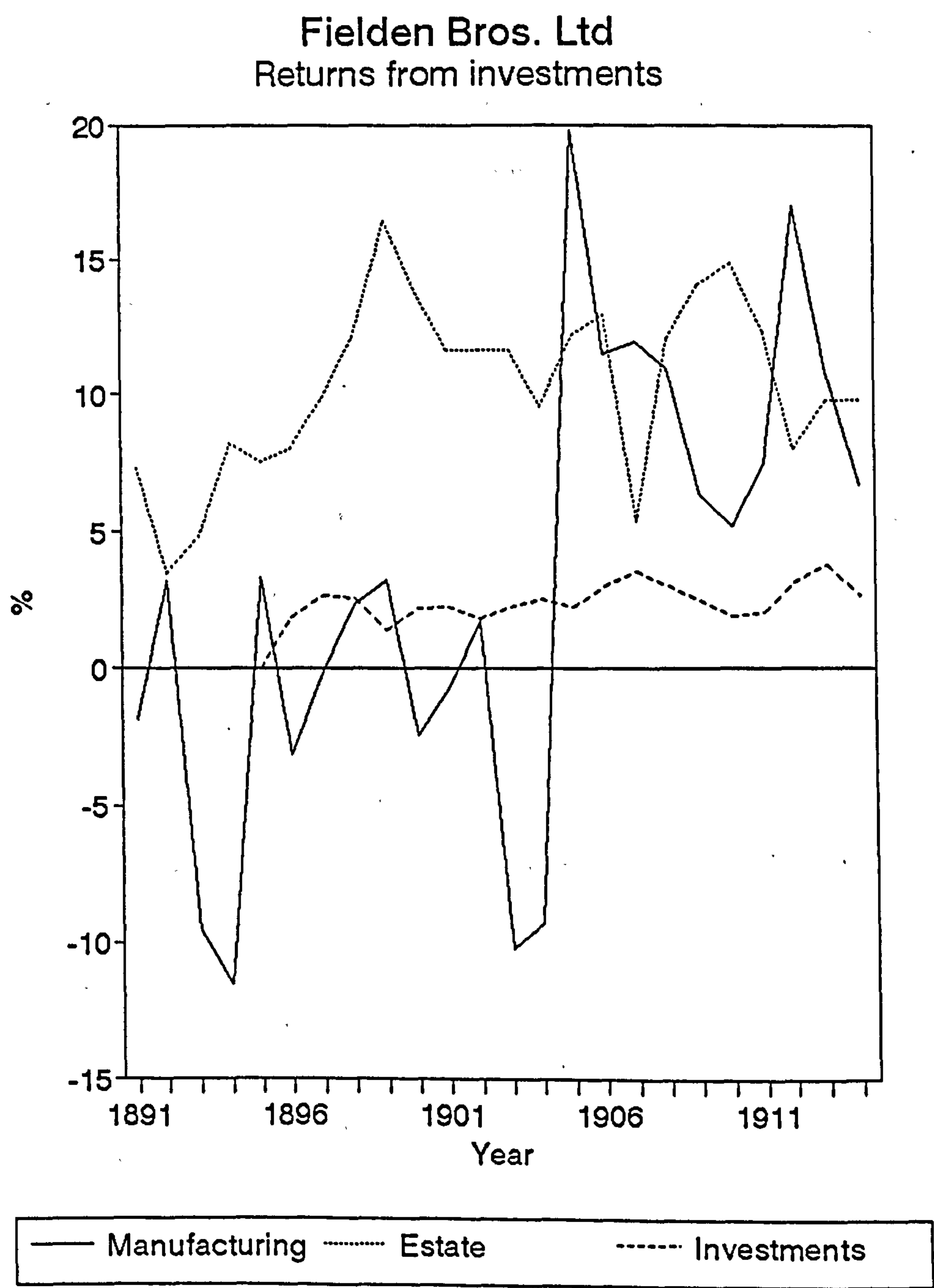
⁴⁵ EB Fielden diary, 22nd December 1897; WYRO, C353/475, Detailed accounts.

growth of this investment portfolio beyond cotton manufacture.⁴⁶ An accusation of refusal to invest and to expand the company could thus be levelled at the management. However, it would only be valid if to do so if alternatives appeared to give a reasonable prospect of return.

The investment decisions that were taken do appear irrational if the actual rates of return are compared. Figure 7.2 shows the return on financial and estate investment compared with the return on manufacturing assets. Return is calculated by taking investment income, rent and profit as proportions of capital employed in each particular activity.

⁴⁶ WYRO 353/475, Detailed Accounts. By 1903, the largest single investment was in the Lancashire and Yorkshire Railway, with a combination of ordinary, preference shares, and debentures totalling £19,823. A further 16,906 was invested in the Great Central and Midland Railways. Other smaller amounts were invested in the shares of *inter alia*, Bolckow Vaughan, Cammell Laird, and the Bleachers' Association.

Figure 7.2: Fielden, returns on investment



Sources: Calculated from WYRO, C353/475, detailed accounts.

As figure 7.2 shows, the best returns were from renting property, not from manufacturing cotton. Under such circumstances, it is not surprising that E.B. Fielden considered selling the manufacturing side of the business in December 1894.⁴⁷ After consulting J.A. Fielden,⁴⁸ he chose to dismiss Wrigley⁴⁹ instead, and perhaps hoped for a turnaround under new management. Investment in railway stocks and some industrial companies meant risk was therefore lower than cotton, and the returns may have appeared satisfactory in the form of steady dividends.

Horrockses was another company that invested in railways, in this case the Central African Railway Company.⁵⁰ For the most part, however, Horrockses pursued a policy of investing in other cotton companies and cotton based organisations such as the Manchester Ship Canal and the British Cotton Growing Association. Again, these reflected the business connections of the directors, and included the British Northrop Loom Company and the Cliff Spinning Company.⁵¹ Likewise, Tootals held investments in the English Sewing Cotton company.⁵² Despite some differences, the investments of all these companies were either part of larger portfolios or represented small proportions of the total capital invested.

Oldham companies made similar investments, but on a rather more incestuous

⁴⁷ EBF diaries, 6th December, 1894.

⁴⁸ John Ashton Fielden (1859-1942), son of Samuel Fielden, played a generally inactive role in the management of the business, offering only occasional advice to E. B. Fielden.

⁴⁹ Wrigley, machinery inventor (see above pp. 173-4) and mill manager, epitomised the problems encountered when family owners needed trustworthy agents to carry out functions of this sort.

⁵⁰ LCRO, DDHs/53, Balance sheet April 1914, the investment accounted for almost half the total of £49,000.

⁵¹ LCRO, DDHs/53, Balance sheets, 1908.

⁵² MCRL, M.461, Board minutes, Minute book no. 3.

basis. Sun Mill used its spare cash to build up a large, but relatively undiversified portfolio of investments. In 1909, over half the investments of £34,000 were invested in Swan Lane Spinning Company. Thomas Coates, a director of the latter, was also a director of the Sun Mill.⁵³ The remaining investments were prominently in other Oldham district spinning mills. In common with other Oldham companies, and those in the rest of Lancashire, Sun Mill was cash rich by the mid 1900s.

A mutual interdependence, with cross investments and directorships thus increasingly characterised the industry. Yet few firms used this cash to expand their productive capacity. Even Horrockses, which grew by leaps and bounds in the 1890s, made no new investments, other than in financial assets, after 1905. Ashton Brothers, as noted above, was the only genuine exception to the trend. One might be tempted to conclude that Lancashire entrepreneurs, although good at making money, had either little idea on how, or few opportunities, to reinvest it productively.

Yet investment was the most important feature of emergent companies on the international stage in the 1890s and 1900s. The companies of the second industrial revolution achieved competitive advantage through scale economies by investment in production, administrative and distribution functions.⁵⁴ Integration of functions in the large corporate enterprise facilitated the reduction of unit cost.⁵⁵ But such functional investments presuppose an accumulation of capital under the corporate umbrella, or a class of entrepreneurs with the ability to quickly mobilise such capital. In cotton, whereas certain companies were growing as might be expected, and in line with overseas competitors, and were therefore able to develop large corporate organisation structures, a significant proportion of the industry, the joint stock Oldham section,

⁵³ Tyson, 'Sun Mill', p. 301.

⁵⁴ Chandler, *Scale and scope*, p. 286.

⁵⁵ Lazonick, *Business organization*, p. 25.

was somehow constrained from pursuing a similar strategy. If a constraint could be suggested at this stage, share ownership by the local cotton investing public would appear the obvious explanation. Certainly share ownership was a very important determinant of entrepreneurial behaviour, and the issues are explored more fully in chapter eight. However, other influences were also at work and these are considered next in the ensuing empirical analysis of dividend policy.

Dividend policy: (1) Individual companies

Table 7.2 shows the average percentage of available profits paid out as dividend by specific companies together with those firms in the sample regularly included in the *Economist*. A ratio greater than one indicates that the company on average over distributed profits by depleting previously accumulated reserves.

Table 7.2: Dividend pay out policies

(1) Individual companies

	Average ratio of dividend to distributable profit (pay out ratio)		
	(1) 1884-1913	(2) 1884-1899	(3) 1900-1913
Oldham quoted			
Dowry	1.03	0.87	1.26
Haugh	0.87	0.95	0.81
New Ladyhouse	0.81	0.87	0.76
New Hey	0.85	0.81	0.89
Moorfield	0.97	0.95	1.03
Sun Mill	0.67	6.95	0.52
Werneth	0.76	2.13	0.61
Private			
Fielden	0.75	2.03	0.67
Horrockses	0.57	0.87	0.51
Osborne	0.95	0.91	0.98
Tootals	0.49	0.56	0.51
T.R Eccles	0.38	n/a*	n/a*
Whiteley	0.53	n/a*	n/a*
London quoted			
Ashton Brothers	0.72	n/a*	n/a*
Barlow and Jones	0.73	n/a*	n/a*
Rylands and Sons	0.87	0.79	0.98
(2) Average, <i>Economist</i> sample	0.94	1.13	0.96

* in these cases, data was available only from the late 1890s, further analysis by period was therefore not possible.

Sources: (1) As for table 1.2. (2) Compiled from 'Annual review of the cotton trade', per *Economist*, and the *Oldham Chronicle*. Ratios calculated by taking the dividend paid for each year by the amount of profit available to ordinary shareholders. The average was then calculated for each period by reference to the individual ratio for each year.

As a matter of general policy for the companies considered, profits were paid as dividends to shareholders rather than reinvested for growth. Such behaviour was more typical of Oldham district companies than elsewhere, more typical of public companies than for private companies, and more typical in earlier years rather than later. However, these trends are scarcely discernable without further reference to the particular circumstances of each company.

In Oldham, the dividend propensities of limited companies reached the status of folklore. There was a local perception that the companies existed primarily for the purpose of paying dividends and nothing more, earning Oldham the nickname of 'Diviborough'⁵⁶ Blatant examples of this were well publicised and attracted critical comment from contemporary observers. A correspondent to the *Oldham Chronicle* wrote:

I thought all limited companies had at last got a lesson for life. I was wrong. Evidently they will not learn. Leesbrook declares thirty per cent. dividend. To do so now seems to me insanity. If they *show* thirty per cent. when their mill is brand new, and weft exceptionally good, why not *pay* 10 per cent. and depreciate the rest? By declaring 30 per cent they deceive the public and, I think, themselves, for at their start they are going into the old error of not depreciating enough and paying away every available farthing in dividend. Every shareholder should surely know by now that depreciating more, and dividing less, makes any concern richer.⁵⁷

In table 7.2, such behaviour was best typified by the Dowry and Moorfield spinning companies. The former paid on average 103% of its available profits as dividends each year.⁵⁸ In practice, this meant it was capable of accumulating only small

⁵⁶ Farnie, *English Cotton*, p. 263.

⁵⁷ *Oldham Chronicle*, 4th April, 1887

⁵⁸ See table 7.2, column (1).

amounts of capital.⁵⁹ In one sense the similar behaviour of the these two companies was not to be expected as there were some differences in their share ownership structures. Eighty five percent of Moorfield shareholders in 1874, a total of 629 predominantly middle class and small businessmen, held less than 80 shares each. At the Dowry, ten years later, the equivalent percentage of shareholders owning less than 80 shares was twenty two.⁶⁰ Nonetheless both were relatively widely controlled and both conformed to Oldham norms. The Rochdale ring spinners of Milnrow were only slightly less generous than their Oldham competitors. All of these companies persisted with the policy of paying out as much as possible in dividends.

For others in the Oldham district, a change of policy occurred. The Sun Mill and Werneth companies were as generous to their shareholders as any other company in the earlier years. Indeed, prior to 1900, both frequently paid dividends from non-existent profits, as the high ratios in table 7.2, column (2) testify.⁶¹ When profits returned to the industry after that date, however, there was an apparent reticence to distribute too much largesse to the shareholders. A possible reason was that there were fewer of them, and that ownership concentrated around management and promotional groups. For example at the Sun Mill company, many small shareholders sold out under pressure from calls during the depressed years of the 1890s, thereby paving the way for the creation of a managerial oligarchy by 1905.⁶² Like the Sun

⁵⁹ CAD, Dow.1, nominal ledger; reserves as at 30th June 1887 stood at £580, and by 30th June 1912 had accumulated to only £7,256. During the period between those dates the total profit available for dividend was £39,950.

⁶⁰ Smith, 'A history of the Lancashire cotton industry', pp. 188 and 194. Further analysis of the Borough share register suggested there was no tendency for share ownership to concentrate in this period, p. 188.

⁶¹ In some cases, the effect of paying a dividend greater than the available profit was to produce an average pay out ratio of greater than one.

⁶² Tyson, 'Sun Mill', p. 294.

Mill, the Werneth had effectively transformed itself into a private company by 1913. Reductions of capital facilitated the exercise of management control as shareholders were effectively bought out.⁶³ Ownership was thus important and ownership changes were reflected in changes in policies towards the accumulation and distribution of profits.

Above, it has been demonstrated that the privately owned limited liability section of the industry was the most important engine of capital accumulation, as confirmed again here by the statistics in table 7.2. Despite some exceptions, the ratios were generally lower than for the quoted companies. Horrockses and Tootals were content to retain about half the available profits, thus providing funds for expansion of their activities. Two other companies in the sample, G. Whiteley and Co. Ltd. (Whiteley) and T and R Eccles (Eccles), were owned by William Birtwistle (1855-1936) of Blackburn.⁶⁴ Birtwistle was above all a salesman, and like all good salesmen collected a handsome income in the form of a one and a half percent commission on the sales of Eccles.⁶⁵ Despite a personal majority share ownership,⁶⁶ dividends from the company were a less important source of remuneration. He also collected a director's commission from Whiteley, which, again was much larger than his dividend entitlement from a significant shareholding.⁶⁷ Both companies accumulated capital and, unlike Ashtons, Horrockses, and Tootals, the cash was used

⁶³ OLSL, Misc/42/18, Quarterly reports to members; capital was reduced in 1908 from £84,000 to £48,000 and again in 1913, to £36,000 (extraordinary general meeting, 9th December 1913) the latter being the occasion of the transformation to private company status.

⁶⁴ Birtwistle's companies should be distinguished from those belonging to the other important Blackburn firm of Birtwistle and Fielden Ltd.

⁶⁵ LCRO, DDX/868/7/1, profit and loss accounts and balance sheets.

⁶⁶ LCRO, DDX/868/20/1, Directors minutes, p. 3.

⁶⁷ LCRO, DDX/21/5, ledger and register of members.

to fund expansion in working capital rather than new plant and premises. In particular, as the companies expanded their customer base and product ranges, large investments were made in stocks and work in progress. In another respect, Birtwistle reinvested his drawings by buying the capital of other companies.⁶⁸ Between 1895 and 1910, he had assembled personal control of seven companies in the Blackburn area.⁶⁹ High rates of capital withdrawal from established businesses did not preclude the expansion of capital under such personal control.

By contrast, in closely controlled companies such as Osborne the profit retention rate was also very low, suggesting that conflict between managerial groups and shareholders was not the only factor at work. Generosity may have simply reflected conformance to the norms of business practice in the Oldham area. Again, as with other Oldham companies, management took very little in the form of directors remuneration and still preferred an to hold wealth as individuals rather than allow capital to accumulate within the corporation. The directors of Osborne received a total of £17,200 in dividends between 1889 and 1903.⁷⁰ This represented 107.5% of the original equity capital invested, thus allowing the promoter/directors to more than recoup the initial investment.⁷¹ It is probable that they used some of this money for reinvestment in other concerns. Their flotation of Gresham Mill Spinning Co. Ltd. to take over an existing concern in 1903 at a capital of £30,000 may have

⁶⁸ William had a fondness for moving house; he lived in 35 different ones during his lifetime, the *Times*, 15th June 1936, p. 17d, but did not accumulate much in personal wealth, leaving an estate of only £13,171 (*The Times*, 1st August, 1936, p. 15c).

⁶⁹ Birtwistle Group, *The William Birtwistle group*, np.

⁷⁰ LCRO, DDX/869/3/1, Trade, capital and profit and loss accounts.

⁷¹ LCRO, DDX/869/3/1, Trade, capital and profit and loss accounts; total called up share capital when flotation was complete in June 1890 amounted to £16,000.

absorbed past profits from Osborne and helped to cement cross directorships. Although a separate company, the directors were essentially the same.⁷² The power of such elites, as groups of individuals, tended to cut across the development of a concentrated corporate identity. Although there was no pressure to pay large dividends, limited companies were not seen as engines of accumulation, implying that the continued growth of the industry was dependent on the reinvestment of profits by individuals, such as William Birtwistle or the Osborne directors.

One company which differed markedly from the rest of the sample was Tootals. Whereas the general trend was to move from public to private, especially after 1900, Tootals sought additional capital by extending its share ownership. This may have had some influence on the pattern of dividend payment, as illustrated in table 7.3. Only eight shareholders were present at the first annual general meeting in 1888, with the Broadhursts and Lees between them in a majority.⁷³ Later meetings became much larger. At the general meeting of 7th September 1909, thirty nine shareholders and two press reporters attended.⁷⁴ None of this seems to have compromised the control of the dominant families; H Brooks Broadhurst was elected as a director at the same meeting. Edward Tootal Broadhurst benefited financially from the increased liquidity of more widely owned shares, making large disposals of shares through a large number of small transactions.⁷⁵ Newer shareholders may have been attracted by the dividend record of the company, including the bonus issue of

⁷² LCRO, DDX/869/1/4, Memorandum and articles, 1906; DDX/869/10/2, Memorandum and amendments, 1903.

⁷³ MCRL, M461/1, minute book no. 1, p. 146.

⁷⁴ MCRL, M461/1, minute book no. 4, 7th September, 1909.

⁷⁵ MCRL, M461/1, minute book no. 4, 8th October, 1908 and 22nd November 1910. These two meetings registered the sale of 1,708 shares in 47 individual transactions. Tootal Broadhurst's proceeds from these sales would have been in excess of £10,000.

1907⁷⁶ and the prospect of the record dividends the company was able to pay in the period 1910-3, despite only average profits (table 7.3). For example, following the creation of new shareholders, the company dramatically increased its dividend in 1910 despite poor trading results. Tootal Broadhurst was widening his interests at this time, taking a seat on the board of the London and North Western Railway in 1905, and becoming more involved the promotion of Free Trade political organisation.⁷⁷ Similarly, Sir Frank Hollins of Horrockses began to divert his attention to such affairs via involvement and support of the Preston and Old Blackpool Liberal Associations.⁷⁸ In the case of Tootal Broadhurst, perhaps to finance these activities intended to benefit Lancashire in general, he diluted his control in the company through the sale of shares. At about the same time, Horrockses dramatically slowed down its previously rapid investment in buildings and fixed plant.⁷⁹

⁷⁶ MCRL, M461/1, minute book no. 4, directors' report 3rd September, 1907. A bonus was of £60,452 was paid by way of a call of £1 per share, raising the amount paid from £5 to £6.

⁷⁷ MCRL, M461/1, minute book no. 3, board meeting, 21st November 1905; Clarke, *Lancashire and the new liberalism*, p. 288-9.

⁷⁸ The *Times*, 28th January 1924, p. 15d.

⁷⁹ CVR, Machine Book; Horrockses made no new investment in spinning or weaving plant after 1905. See also tables 6.3 and 6.5 above.

Table 7.3: Profits and dividends, Tootals 1888-1913

	Profit	Dividend	Pay out ratio
1888	5926	0	0
1889	21435	0	0
1890	14185	7367	0.51
1891	1505	7367	4.89
1892	-4865	7367	-1.51
1893	47380	14703	0.31
1894	-19651	0	0
1895	-806	0	0
1896	-89	0	0
1897	12503	0	0
1898	-12454	0	0
1899	-36	0	0
1900	36401	14357	0.39
1901	-5739	14232	-2.47
1902	14480	14168	0.97
1903	44493	17304	0.38
1904	-960	14420	-15.02
1905	9121	14357	1.57
1906	48616	17228	0.35
1907	140802	17228	0.12
1908	20128	15257	0.75
1909	23130	9452	0.40
1910	-20971	28356	-1.35
1911	90229	28356	0.31
1912	66819	28356	0.42
1913	68301	28356	0.41
Average	23072	11470	0.49

Sources: Profits distributable to shareholders calculated from, MCRL, M461/1 general meetings, minute books 1, 2, 3, and 4.

Table 7.4: Profits and dividends, Horrockses 1887-1913

	Profit	Dividend	Pay out ratio
1887	28315	35007	1.23
1888	60498	56011	0.92
1889	43156	61262	1.41
1890	70055	49009	0.69
1891	72190	70014	0.96
1892	92510	70014	0.75
1893	76356	78766	1.03
1894	50113	78766	1.57
1895	148620	70014	0.47
1896	69193	87517	1.26
1897	44019	70014	1.59
1898	135746	70014	0.51
1899	145180	105021	0.72
1900	64455	105021	1.62
1901	44308	78765	1.77
1902	98321	70014	0.71
1903	42214	78766	1.86
1904	19163	52510	2.74
1905	249328	35006	0.14
1906	144527	71414	0.49
1907	211663	71414	0.33
1908	131165	62487	0.47
1909	255326	62487	0.24
1910	251074	71414	0.28
1911	119251	71414	0.59
1912	263780	71414	0.27
1913	379423	71414	0.18
Average	122590	69443	0.56

Sources: Profits distributable to shareholders and dividends taken from CVR, detailed accounts, LCRO, DDHs/53, balance sheets.

Table 7.5 shows the directors remuneration for a selection of companies in different years. In cases where companies were controlled by directors, an alternative to dividend payment was for management to simply award themselves directors' remuneration instead. Such companies might be expected to substitute directors' remuneration and dividends for one another. Thus there was an apparently inverse relationship between dividend payments and directors remuneration at Horrockses. The dividend pay out ratio (tables 7.2 and 7.4) demonstrated a small but steady decline throughout the period.⁸⁰ In particular, there was a noticeable drop after 1905, when increased profits were not matched by higher pay outs, less than half the available profit being distributed in most years (table 7.4). Meanwhile, the remuneration of the directors, and of the managing director especially, regularly increased. Although always generous, in some years Sir Frank Hollins allowed the company to pay him very well indeed.⁸¹ The contrast between, the basic figure in 1912 and the much larger 1913 payment (table 7.5) was typical of this sort of occasional large bonus.

Another private company where profit appropriation took the form of directors' remuneration was Fielden. Between 1906 and 1914 in particular, the Fielden family managed to withdraw around £91,000 in the form of dividends and directors emoluments.⁸² Although the accounts do not allow dividends and directors salaries to be distinguished, to do so is not important as both methods performed the

⁸⁰ See also, Toms, 'The profitability of the first Lancashire merger', table 1, p. 130.

⁸¹ Sir Frank spent much of his wealth outside the cotton industry; like Edward Fielden, he spent much of his time in Shropshire and had a second family home at Oldbury Grove, Bridgnorth; three of his four sons were educated at Eton, the *Times*, 28th January, 1924, p. 15d. On his death in 1924, his estate was valued at £315,357, 'Cotton Manufacturer's large fortune', the *Times*, 21st March, 1924, p. 15d.

⁸² WYRO, C353/475, Detailed accounts.

same function; to provide an income to support the burgeoning Fielden landed estate and family dependents.⁸³ Like Tootal Broadhurst, Edward Fielden viewed the business as a means of providing income for wider activities. In the Fielden case, as with Tootal Broadhurst's disposal of shares, capital receipts were used to supplement income. The figures in tables 7.2, column (2) and 7.5 were distorted by a one off dividend payment out of a capital receipt, following the sale of the Gas works to the Todmorden municipality.⁸⁴ As noted above, Fielden Bros. Ltd. did accumulate in the form of an investment portfolio, but the broad purpose was to provide a steady profit stream as a source of family income.

For private companies, directors' remuneration was thus an important feature of the circulation and accumulation of capital. Dividends were an adjunct of this process and thereby less important. Conversely, for Oldham style public companies, dividends were much more significant and contrasted with the relative pittance paid to directors.⁸⁵ At the Werneth Spinning company directors were poorly rewarded compared to the rest of the industry. For Oldham, it must be assumed that they were paid competitive rates.⁸⁶ Low remuneration was perhaps in part due to the low esteem in which directors were held. On the other hand, generous dividend policies reflected shareholder power and confirmed a lack of trust in the directors (tables 7.2 and 7.6). If all available profits were paid out as dividends, it would be much more

⁸³ EB Fielden diaries, *passim*.

⁸⁴ WYRO, C353/475, Detailed accounts, 1893 and 1894. The profit recorded on the sale of the gas works was £10,795, of which £5,200 was paid as a dividend in the year ended 31st December 1893.

⁸⁵ Potter, *The Co-operative movement in Great Britain*, pp. 126, 132.

⁸⁶ Other Oldham companies resisted large payments to directors, for example, Tyson, 'Sun Mill', p. 294; Osborne, directors paid themselves the Oldham style salary of £120 per annum in the 1890s, LCRO, DDX/869/3/1, Trade, capital, and profit and loss accounts.

difficult for directors to use corporate capital for any purpose other than that ratified by the shareholders.

Table 7.5: The remuneration of cotton company directors

Company	Year	Sales £	Directors' remuneration £	%
Fielden	1912	130,000*	9,294	7.15
Horrockses	1890	993,895	8,339	0.84
	1912	1,585,672	19,231	1.22
	1913	1,634,108	45,807	2.80
Osborne	1890	42,862	120	0.28
T & R Eccles	1912	105,207	2078	1.98
Werneth	1890	62,648	70	0.11
	1912	85,800	290	0.34
Whiteley	1912	81,867	1,478	1.80

* estimate based on sales in earlier years and the ratio of sales to balance sheet net assets.

Sources: as for table 1.2. for each company that made any disclosure of directors' remuneration and sales.

**Table 7.6: Profits and dividends, Oldham companies
1884 - 1913**

	Earnings per co.	Dividend per co.	Pay out ratio
1884	2083	2519	1.21
1885	-31	862	-27.47
1886	-686	1152	-1.68
1887	986	1824	1.85
1888	2952	1989	0.67
1889	2565	1981	0.77
1890	4267	2778	0.65
1891	417	2615	6.27
1892	-1054	466	-0.44
1893	-650	400	-0.62
1894	47	610	12.97
1895	589	570	0.97
1896	533	767	1.44
1897	1680	1175	0.70
1898	3156	1879	0.60
1899	4288	2501	0.58
1900	4191	2954	0.70
1901	3531	2984	0.85
1902	-17	1888	-111.77
1903	-504	1182	-2.35
1904	353	944	2.68
1905	7701	2811	0.37
1906	6556	3709	0.57
1907	13212	5910	0.45
1908	5865	4301	0.73
1909	-2721	2698	-0.99
1910	-3860	2037	-0.53
1911	298	1771	5.94
1912	5585	2683	0.48
1913	5366	2683	0.50
Average	2223	2088	0.94

Sources: (1) As for table 1.2. (2) Compiled from 'Annual review of the cotton trade', per *Economist*, and the *Oldham Chronicle*.

Shareholder pressure in Oldham produced dividend pay outs somewhat above those experienced by shareholders elsewhere in the industry (tables 7.2 and 7.6). For example those companies with Manchester and London quotations, and hence perhaps with more distant and less active shareholders. Table 7.2 shows the pay out ratios of these companies to be rather lower than for Oldham companies. Too much inference would be dangerous here, given that we have used data for only three companies. Nonetheless the pay out ratios of Ashtons and Barlow and Jones were a steady three quarters of available profits; both profits and dividends being less erratic than for the Oldham companies (tables 7.6 and 7.7). Rylands, it would appear, belied the trend, and became much more generous with its dividends in later years (table 7.8). Ownership of the company widened during this period, and, as we have seen, spare cash was used for investment in financial rather than productive assets. This may have increased the certainty of cash flow together with the predictability of dividends (see table 7.8). Such assets would have been indicative of surplus cash, and management may have thus felt pressured to pay higher dividends instead of accumulating within the company. However, in considering the time trend for the whole sample in table 7.2, Rylands was something of an exception.

Table 7.7: Profits and dividends, Ashtons and Barlow and Jones, 1899 - 1913

(1) Ashton Brothers

	Profit	Dividend	Pay out Ratio
1899	8640	8640	1.00
1900	9508	7560	0.79
1901	26441	12960	0.49
1902	17965	17280	0.96
1903	15056	10800	0.71
1904	3942	10800	2.73
1905	28929	21600	0.74
1906	62651	21600	0.34
1907	40644	21600	0.53
1908	47496	21600	0.45
1909	19793	21600	1.09
1910	7163	10800	1.50
1911	13559	21600	1.59
1912	29298	32400	1.10
1913	47884	32400	0.67
Average	25264	18216	0.72

(2) Barlow and Jones

1900	47508	37508	0.78
1901	24822	25280	1.01
1902	32479	31600	0.97
1903	40112	31600	0.78
1904	3742	10533	2.81
1905	12048	10533	0.87
1906	30779	21067	0.68
1907	37463	21067	0.56
1908	21197	14746	0.69
1909	49272	16853	0.34
1910	19272	16853	0.87
1911	28173	16853	0.59
Average	28906	21208	0.73

Sources: LGL, Commercial reports, 1899-1913.

Table 7.8: Profits and dividends, Rylands and Sons, 1884 - 1913

	Profit	Dividend	Pay out Ratio
1884	102720	75000	0.73
1885	91869	75000	0.81
1886	124595	75000	0.60
1887	102086	75000	0.73
1888	117218	90000	0.76
1889	139033	90000	0.64
1890	148957	95625	0.64
1891	158351	108750	0.68
1892	170911	127500	0.74
1893	167660	150000	0.89
1894	173116	150000	0.86
1895	230790	187500	0.81
1896	220964	187500	0.84
1897	186219	187500	1.00
1898	218787	187500	0.85
1899	263770	198750	0.75
1900	237551	187500	0.78
1901	179926	187500	1.04
1902	235548	187500	0.79
1903	188792	187500	0.99
1904	146447	187500	1.28
1905	218030	187500	0.85
1906	192039	187500	0.97
1907	197995	187500	0.94
1908	101661	168750	1.65
1909	164589	150000	0.91
1910	147943	150000	1.01
1911	152044	150000	0.98
1912	186837	150000	0.80
1913	163931	150000	0.91
Average	171012	149312	0.87

Sources: LGL, Commercial reports, 1884-1913.

Dividend policy: (2) the industry

Thus far we have concentrated on contrasts between the behaviour of different types of company and have examined tables of individual company data in order to do so. However, the sample of individual companies used was too small to support more formal methods of statistical comparison. In the next section, such a method is introduced to examine the causes of changes in dividend behaviour for the industry as a whole through time. The main data used here are the aggregates of individual company results represented by the *Economist* sample, together with aggregated data for private companies and non Oldham companies taken from the main sample. Returning to the unusual patterns of capital accumulation identified at the beginning of this chapter in figure 7.1, we now examine the extent to which differences in rates of capital accumulation can be attributed to the patterns of divestment associated with different ownership structures. The models tested below explore the extent to which dividends were a function of the industry sector and ownership. First, the overall effect of changing tax structures, especially the impact of the reforms of the 1906-1914 Liberal government, are examined. Within the industry, it is expected that the publicly controlled companies of the Oldham district with their weak directorates and active, knowledgeable, shareholders, would pay out more in dividend than those companies which were privately controlled and this is the next area considered. Furthermore, given the greater vulnerability of specialised companies to the trade cycle, it might be expected that the dividends of Oldham companies might be more closely associated with profit levels than with the precedent established by the prior year dividend.

For the industry as a whole, the possibility that alterations in national taxation rates may have caused dividend levels to change over time is explored. Overall, in the 1900s the industry was more profitable but also less generous to its shareholders

than in previous decades. A possible explanation might have been changes in the system of taxation. The election of the Liberal government ushered in dramatic changes in the period 1906-9. In particular, the principle of gradation was introduced in the form of a super tax and a distinction made between earned and unearned income.⁸⁷ There was also a culmination of a steadily rising trend of income tax rates used to finance social expenditure and the arms race with Germany. In the absence of any capital tax other than death duties, the combined effect of these circumstances would be to discourage the payment of dividends. A rich shareholder would find unearned dividend income taxed at high rates, whereas if profit was retained within the company, there would be improved possibilities for selling holdings in the future, thereby realising an untaxed capital gain. Much of the evidence in support of such a contention is anecdotal. The companies in the sample marginally rather than dramatically reduced their pay out ratios. The super tax was in force for only five years before 1914 and it was thus difficult to draw any conclusions from statistical inference. Nonetheless the distinction between earned and unearned income may have encouraged private companies, where possible, to reclassify dividends as directors' remuneration.

To examine all of these relationships formally, a series of statistical tests were carried out. Tables 7.9 and 7.10 show, respectively for Oldham and non Oldham companies, results from time series regression models which seek to explain a dependent variable, current year dividend, in terms of current year profit and prior year dividend. The regressions are summarised by reference to four models in which explanatory variables were selected for presentation in permutations which give the best summary of the impact of each major factor are then listed in terms of coefficient and statistical significance. Additional variables were added for income tax,

⁸⁷ Seligman, *The income tax*, pp. 196-213.

and super tax using a dummy variable for the years in force. As these factors might be expected to co-vary through time, a time trend variable was also added. The table presents results from unlogged data; the use of logarithms did not significantly change any of the main outcomes. It should be noted, however, that the co-efficients as a result are much larger for the non Oldham companies, reflecting their larger size.

Table 7.9: Determinants of dividend distributions for Oldham companies

Model	(7.1)	(7.2)	(7.3)	(7.4)
Constant	470.25	364.21	460.66	465.31
Current year profit	0.2304 (8.917)	0.2246 (8.522)	0.2272 (8.887)	0.2482 (7.959)
Prior year dividend	0.5270 (7.197)	0.4951 (6.257)	0.4823 (6.064)	0.4789 (5.955)
Time trend		12.334 (1.054)		-25.99 (0.853)
Tax			39.908 (1.335)	68.899 (1.005)
Super tax				419.66 (1.193)
R ²	0.8695	0.875	0.8781	0.886
F	86.58	58.34	60.05	35.61
DW-H	0.3843	0.4370	0.5542	0.7017

(t statistics in parentheses)

Sources: Current year profit and prior year dividend, compiled from the *Economist* and *Oldham Chronicle*; tax, rate in the pound per Mallett, *British budgets*, table VII, p. 484.

Table 7.10: Determinants of dividend distributions for non - Oldham companies

Model	(7.5)	(7.6)	(7.7)	(7.8)
Constant	30838.31	16029.13	37782.1	24355.9
Current year profit	0.0891 (2.457)	0.1449 (3.010)	0.387 (2.872)	0.138 (2.681)
Prior year dividend	0.7789 (11.518)	0.8964 (9.398)	0.8654 (9.665)	0.862 (5.844)
Time trend		-2178.25 (1.690)		-1062.56 (0.455)
Tax			-3593.7 (1.436)	-1280.37 (0.372)
Super tax				-8807.36 (0.397)
R ²	0.920	0.923	0.926	0.929
F	150.37	108.36	105.02	60.79
DW- H	0.6234	0.7049	0.1805	0.5499

(t statistics in parentheses)

Sources: Current year profit and prior year dividend, from the accounting records of all non- Oldham companies as listed in table 1.2; tax, rate in the pound per Mallett, *British budgets*, table VII, p. 484.

For non-Oldham companies, prior year dividend was a much stronger explanator of current year dividend policy. This variable was strongly significant in models 7.5, 7.6, 7.7, and 7.8 (per table 7.10), and much more so than for the corresponding variables in the Oldham company models (table 7.9). Non - Oldham companies tended to be larger and vertically integrated and had less vulnerability to the trade cycle,⁸⁸ and as predicted, were able to maintain steadier dividends.

In the Oldham district, the trade cycle meant the risk of a missed or reduced dividend was much higher. Dividend precedents were therefore important in keeping and promoting the company as one which could be relied upon to pay steady dividends. It was the dividend payment record which was used to judge the performance of Oldham companies in a series of retrospective press articles in 1907.⁸⁹ In chapter four, it was shown how the exemplary dividend record of the Milnrow companies might have helped create their low risk reputation among the investment community. However, for Oldham district companies, the most important consideration of all, was the variability of profit caused by the trade cycle. Unlike the private and vertically integrated companies, the strongest explanator of current year dividend was the reported profit of the company in that year. Ability to pay, independently of accumulated reserves, was in all cases more important than the precedent of the previous years dividend. The crash in share values in the period 1892-5 (chapter 4) and the extraordinary boom of 1907,⁹⁰ were examples of the fundamental importance of the trade cycle to the fortunes of Lancashire and her investors. Relative to the rest of the cotton sector, Oldham companies were perceived

⁸⁸ See chapter 6 above, especially figure 6.1.

⁸⁹ *Oldham Standard*, see for example comments on the dividend record of the Empire and Fern Cotton Spinning Companies, 14th (p. 14v) and 21st (p. 14iii) September, 1907.

⁹⁰ Jones, 'The cotton spinning industry', pp. 10-11.

as high risk.⁹¹

For all types of company, profits and prior year dividend were the only important determinants of dividend policy. Where other variables were added, for time trend or for tax effects, marginal improvements in R^2 were cancelled out by declines in the significance of the total regression (f statistic), and were typified by insignificant t ratios. It is perhaps not surprising that taxation did not have a significant influence on the distribution of profits given the small number of observations and the dramatic changes that occurred in the 1906-11 period. In every model tested, co-efficients for income tax and super tax were insignificant. The previous section offered anecdotal evidence of how dividend behaviour changed for some companies such as Horrockses, but is impossible to attribute this to changes in the taxation system for any type of company.

To what extent however, were their genuine institutional differences between Oldham stock exchange quoted companies and those operating elsewhere in Lancashire under different ownership structures? Where net profits, and their cyclical movement, are thought to be a significant determinant of company dividend policies, the model proposed by Lintner may be useful for testing the apparent relationship.⁹² The proposed model rests on a behavioural assumption of a minimum dividend (constant a) plus a gradual adjustment (at a certain rate, c) to a pre-set target (r) dividend payment as a proportion of available profits.⁹³

⁹¹ Smith, History of the Lancashire cotton industry, p. 238; evidence of S Andrew to the Manchester Chamber of Commerce Enquiry, 1886; 5% was considered too low a return on Oldham capital, and 8 to 10% more reasonable, given the risk.

⁹² Lintner, 'Distribution of income', pp. 97-113.

⁹³ The current dividend is explained in terms of r, a target proportion of current year profits, and c, the fraction of the gap between the prior year dividend and the target dividend based on current earnings that the company would aim to make up in one year. Consider a company which aims to pay out 50%

$$D_{it} - D_{i(t-1)} = a + c [(r P_{it}) - D_{i(t-1)}] \quad (7.1)$$

Equation (7.1) above can be tested by transformation into a statistical regression model (7.2).

$$D_{it} = a + b P_{it} + d D_{i(t-1)} + u_{it} \quad (7.2)$$

The equation resembles the model tested above in tables 7.9 and 7.10 (models (7.1) and (7.5)). Current year dividend D_{it} , is explained in terms of current year profits, P_{it} , and the previous year's dividend, $D_{i(t-1)}$. The subscript i denotes the application to an individual firm in the original model, but denotes the Oldham section of the industry, or the aggregate of non Oldham companies, for current purposes. This creates the possibility of aggregation errors, although given the tendency of Oldham company profits to converge around trade cycle determined norms which has already been established,⁹⁴ it is unlikely to cause any serious inaccuracies.⁹⁵ For non Oldham companies, there was greater divergence in the individual firm and therefore the model was tested for each in addition to the sample aggregate. The model is stochastic, i.e. the identified variables will not fully explain dividend behaviour and there will also be unidentified, random variables. Thus there is an error term, u_{it} , to

of its available profits as dividends with an adjustment rate of 40%. If the profit in the first year of operation is £100, the dividend is £50. If in the following year profit increases to £180, the new target dividend would become £90, a gap of £40 between the existing dividend and the target. At an adjustment rate of 40%, the dividend increase would be £40 x 40% = £16, and the dividend actually paid, £66, and so on each year until the target of £90 is actually reached.

⁹⁴ Chapter 4; compare the trends in figures 4.5 and 4.6.

⁹⁵ See also McGouldrick, *New England textiles*, p. 128, which followed the same method.

reflect this. The required values for r and c can be derived by reference to the coefficients for each of the two independent variables:

$$b = cr; \text{ and} \tag{7.3}$$

$$d = (1 - c). \tag{7.4}$$

Where used in time series analysis, potential problems with the Lintner model are autocorrelation and the endogeneity of the lagged variable. In this case some comfort may be drawn from the low significance attributable to the time co-efficient. However, the presence of serial correlation suggested by the DW-H statistics in all models tested above (tables 7.9 and 7.10), means that not all possible variables have been identified. A further behavioural assumption implicit in the Lintner model is that managers seek to pay a constant dividend each year plus a target proportion of the remaining profit.⁹⁶ Nonetheless these problems would apply to all types of company, and our main purpose here is to contrast the two different groups identified above. The results are presented in table 7.11.

⁹⁶ Statistically the inclusion of a constant term is important as a correction for bias and it is not possible to test the ideal target pay out ratio unambiguously, Fisher, 'Survey of some problems', pp. 90-1.

Table 7.11: Dividend behaviour in Lancashire companies

Summary statistics

	Oldham district	Other
Target pay out ratio	49%	37%
Speed of adjustment	47%	22%

Sources: as for table 7.9 and 7.10.

Interpretation of the statistics in table 7.11 suggests that Oldham managers sought to pay out a higher proportion (49%) of available profits as dividends, than for managers elsewhere (37%). If the figures appear low in contrast to actual pay out ratios (table 7.2), the likely reason is in the *ex ante* statistical problems with the model identified above. The figures are also low when contrasted with the very limited number of examples where this model has been tested elsewhere.⁹⁷ However, the contrast between our two sample groups is not invalidated, and, as expected, the Oldham directors felt it incumbent upon themselves to aim to pay higher dividends than elsewhere in the industry. As the model tested provides a measure of the behavioural objectives of managers in terms of a percentage of profits, the differences in that target percentage cannot be attributed to the greater variability of profit resulting from specialisation. More likely, the difference was attributable to institutional and ownership differences. In the Oldham district, there was entrenched shareholder activism, elsewhere, share ownership was more dispersed or companies were privately controlled. To investigate this result further, it is necessary to examine the social and economic aspects of share ownership in Oldham in more detail. This will be the subject of chapter eight.

As profit levels fluctuated more dramatically in Oldham, managers were also intent on adjusting dividend levels much faster. The speed of adjustment ratio for Oldham was 47% compared to 22% elsewhere (table 7.11). In a year of low profits or losses, Oldham managers would be more likely to pay no dividend at all. In the severe depression of the 1890s, many Oldham firms, best exemplified by the Werneth and the Sun Mill companies, accumulated large debit balances on reserve and did not

⁹⁷ These are the Consett Iron company, which, during a similar period achieved a target pay out of 90%, and the New England textile industry, which in the period 1866-1886 had a target pay out of 95%. See Church *et al*, 'Accounting for profitability', p. 711, and McGouldrick, *New England textiles*, p. 131.

resume dividend payment until well into the 1900s when, with 'true grit' and 'perseverence, economy and rigid discipline'⁹⁸ these balances had been paid off after several years of profitable trading.⁹⁹ Under circumstances where shareholders expected certain levels of dividends, where accumulated losses prevented them from being paid, and where it was important to the prestige of the company that they were resumed, it was unsurprising that the trend for Oldham companies in figure 7.1 exhibited its downward characteristic. In years of profit they would be more likely to adjust quickly to higher levels of profit distribution, thereby precluding the creation of reserves. Vertically integrated companies outside Oldham enjoyed more stable levels of profits and reflected this in less hasty adjustments to the level of dividend, and as seen in figure 7.1, were more successful as engines of capital accumulation.

Hitherto our analysis has concentrated exclusively on dividend policy, but there are further related aspects which explain the apparent inconsistency of that downward trend with the growth of spinning in the Oldham area. A particular trend, alluded to in chapter 4, which tended to accentuate further the haemorrhaging of capital from established quoted Oldham companies, was the series of capital reductions, repayments and reconstructions affecting the industry in the early 1900s. So much money was made in the boom of 1907 by the existing mills that shareholders benefited from a bonanza of divested funds. Record dividends were to be expected during a record boom and the boom was far more pronounced in textiles than the rest of the economy.¹⁰⁰ Paradoxically record profits also signalled a wave of

⁹⁸ *Oldham Standard*, 13th July, 1907.

⁹⁹ Werneth, OLSL, Misc/42/17 and 18, quarterly reports to members, in 1900 the company re-established a credit balance on reserve and paid its first dividend since 1891; Sun mill, Tyson, 'Sun Mill', p. 294, back in the black, the company paid its first dividend for fourteen and a half years.

¹⁰⁰ Jones, 'The cotton spinning industry', pp. 10-11.

capital reductions throughout the limited liability sector. Capital was repaid in large bonus dividends, and a series of conversions to private companies were made. Thus Windsor Mill Spinning Company Ltd. and Oldham Twist Co. Ltd. were granted permission by the court to reduce capital in 1907, and Moorfield made a repayment to its shareholders of £1 per £5 share.¹⁰¹ Werneth made a series of capital reductions. The first, in 1899, allowed the large debit balance on reserve arising from fraud and poor trading to be written off against share capital. Further reductions in 1909 and 1913 were responses to large profits and constituted straight cash repayments to shareholders, making up for the low dividends of the previous decade,¹⁰² but also, as noted above, facilitating the transformation to private company status in 1913. For established companies, there was thus a clear pattern of divestment.

High dividend pay out ratios prevented directors from amassing free cash flow to fund discretionary expenditure. In the cotton industry there is no evidence that dividends were associated with creative accounting. Depreciation was over provided when the actual rates used, for example seven and a half per cent on plant and machinery, are contrasted with the average thirty year life of those assets.¹⁰³ In practice excess depreciation was not used to fund directors' discretionary expenditure or the purchase of new fixed assets, and was applied instead to the repayment of loans, so that on average the both assets and liabilities declined over time.¹⁰⁴ Much of the capital divested from existing concerns was reinvested in new flotations. High

¹⁰¹ *Oldham Standard*, for each company respectively; 31st August, 1907, 15(iii); 27 November, 1907, 15(ii); 26 October, 1907, 14(v).

¹⁰² OLSL, Misc/42/18, quarterly reports to members.

¹⁰³ Ryan, 'Machinery Replacement in the Cotton Trade', p. 569.

¹⁰⁴ Toms, 'Financial constraints', p. 372.

dividends provided confidence for lenders and shareholders, thereby facilitating the raising of new capital, and ensuring its circulation via a rising class of wealthy individuals.¹⁰⁵ As the market was narrow and not fully efficient in the modern sense, shareholders sought to protect themselves by minimising agency costs and the hazard of directors acting against their interests.¹⁰⁶ High dividends, as described above, and full accounting disclosure, as discussed in more detail in the next chapter, provided the means of achieving this.

The trend in figure 7.1 of declining capital for some firms in an industry still experiencing overall growth was also explained by the willingness of local promoters to launch new concerns. When capacity was expanded, typically existing companies were not enlarged through the plough back of profits. Instead, new companies were floated, usually with a heavy dependence on fixed interest loan finance. As these companies traded profitably, surplus cash flow was used to repay loans rather than invest in new equipment. Established companies could therefore be expected to show a decline in capital employed as equipment depreciated and loans were repaid. New share issues were rare for companies not being newly promoted. Takeovers and mergers using holding company and subsidiary relationships were equally scarce. Limitations were placed upon the emergence of the large, diversified organisation, since the diversification function was left to the individual accumulator of distributed profits. These individuals had emerged as a result of promotional, rather than functional management, expertise. Their ranks notably included John Bunting T.E. Gartside and J. B. Tattersall.¹⁰⁷ By 1900, they commanded a power over the

¹⁰⁵ Thomas, *The Provincial Stock Exchanges*, p. 155-6.

¹⁰⁶ As predicted in the model provided in Rozeff, 'Growth, beta, and agency costs', p. 252.

¹⁰⁷ Farnie, 'John Bunting' *DBB*, pp. 506-9; Jeremy, 'T.E. Gartside', *DBB*, pp. 495-8; McIvor, 'J.B. Tattersall', *DBB*, p. 444.

accumulation and distribution of capital which had been much less evident in the days of shareholder dominance of the 1890s. They may have looked to the impressive rates of capital accumulation achievable by concerns such as Horrockses, the empire building strategy of William Birtwistle, or even the daring expansion through investment in new technology embarked upon at Ashton Brothers. Their emergence in Oldham as a new entrepreneurial class did not occur until the 1900s; prior to that, as we have seen, the publicly quoted company had essentially failed as an engine of capital accumulation.

The data published in the *Economist*, upon which the index of capital in figure 7.1 depends, was derived from only those companies publishing balance sheets and those companies tended to be established rather than newly floated. Significantly, many of the new companies floated in the 1904-7 boom tended to be private, showing a reluctance to disclose financial data to the public, presumably including the *Economist*. Newer companies would have accounted for a significant proportion of the new capital invested in the industry, but were excluded from the *Economist* samples. The trends in figure 7.1 do not therefore give a fully representative view of the industry as a whole. The emergence of these newer companies, whilst accounting for some of the differences in rates of industry growth and capital accumulation in existing firms, also raises wider issues of industry structure which will be explored in further detail in the next chapter.

Overall, table 7.1 tended to confirm that growth in capital accumulation was below potential growth suggested by the rate of profitability of the industry highlighted in other chapters. Capital therefore must have left the industry during this period in preference to reinvestment. The question thus remains as to why entrepreneurs in some established companies took the seemingly irrational decision to allow their capital bases to decline at a time of apparent optimism and expansion;

whilst others chose not to fully reinvest available surpluses back into profitable concerns.

How important was the dividend issue for Lancashire capitalism?

From the above analysis it is suggested that differences in dividend policy mirrored industry structure, or more specifically the degree of specialisation and the impact of the trade cycle on profits. Such an association of structure and divestment has not been recognised in previous debates which have concentrated only on the first variable. A further and possibly more important cause of differences in dividend policy was ownership. This matter requires further investigation and will be dealt with in later chapters. For now, it is possible to draw some interim conclusions on the nature of capital accumulation and circulation, and its implications for business history.

The modern argument of 'dividend irrelevance' as founded on the assumptions of diversified investment portfolios in efficient capital markets¹⁰⁸ was not applicable in nineteenth century Lancashire. In the Lancashire quoted section, shareholders preferred high and frequent dividends, possibly as compensation for their undiversified risk and out of a reluctance to incur the agency costs of giving the directors too much of a free hand. To investigate this point further, the social composition of Lancashire shareholders will be considered in the next chapter. If true, the cost of new capital to existing firms might have been raised and perhaps thereby encouraged the divestment behaviour we have noted. Once the firm was established, the onus was on capital reduction rather than capital accumulation, and there were few instances of companies to raising new finance through second or

¹⁰⁸ Miller and Modigliani, 'Dividend policy, growth and the valuation of shares', pp. 411-33.

subsequent share and rights issues. The high levels of divestment noted above thus appears to have been motivated by the demands of powerful shareholder groups. Even in the privately controlled companies, divestment levels were still high, even if in the form of directors' salaries rather than dividends. If this tended to delay the emergence of managerial elites, and left financial power concentrated in the hands of the wealthier shareholders, or if the industry simply remained short of cash for reinvestment, it is perhaps unsurprising that the custodians of the industry have been left open to accusations of failure to make innovative investments, or to utilise and develop productive resources.¹⁰⁹

These seeds of ultimate failure to do this were detectable by reference to patterns of profit distribution. The tendency of Lancashire firms to over distribute profits was also marked in the interwar period, but attributed to poor profitability rather than over generosity.¹¹⁰ However, the above survey has shown that in periods of record profit there was a marked tendency to distribute rather than accumulate profit.

Much of the divested wealth was reinvested locally; there was no apparent integration with London capital markets;¹¹¹ the three companies studied in the sample above which had London quotations were a distinct minority. Structurally, the framework of ownership and control of manufacturing assets tended to encourage individual rather than corporate capital accumulation. The powerful individual, contrasted with weak corporate organisation, provides interesting evidence for some of the hypotheses advanced recently to explain the pattern of Britain's industrial

¹⁰⁹ Mass and Lazonick, 'The British Cotton industry', p. 9.

¹¹⁰ Hart, *Studies in profit*, p. 122.

¹¹¹ Lavington, *The English capital market*, p. 208.

dominance and decline. Lazonick ¹¹² has pointed out an important gulf between generalist and specialist managerial groups. The prevalence of small organisation structures in cotton textiles would indeed have prevented the emergence of specialist managers in personnel, marketing and finance, with the preparation of product cost and management accounting information for decision makers limited accordingly. Financial accounting, with its concern for the monitoring of capital circulation between corporate and individual sectors of the economy, remained dominant.¹¹³

As the fate of the industry depended upon individuals and not management hierarchies, it is not surprising that cotton has been selected as an example for those seeking to blame British economic decline on the failings of its entrepreneurs and fragmented industry structure. The cotton industry was indeed characterised by an individual capitalism, as identified by Chandler,¹¹⁴ with family enterprises dominating older dynastic firms such as Fieldens, but also significantly, personal enterprises, that is organisations operating without managerial hierarchies, dominating the emergent specialised companies in the Oldham area.

All of this contrasted with emerging corporate concentration in overseas economies. In the British textile industry such concentration that did occur was clearly under the control of the private company. Although these companies did accumulate capital, they also divested significant amounts. In the spinning section divestment was even more prevalent and had an important influence in the evolution of the industry. For the private companies, business strategy was based on the investment and divestment priorities of individuals; in the quoted sector, management

¹¹² Lazonick, *Business Organization*, pp. 44-5.

¹¹³ The accounting implications of these issues are discussed in Johnson and Kaplan, *Relevance lost*.

¹¹⁴ Chandler, *Scale and scope*, p. 240.

lacked the cash flow to plan differentiation or new investment, and active shareholder monitoring dictated short term least cost solutions.

Divested profits, accumulating to private individuals, meant reinvestment depended upon the correct market signals. Increasing dependency of the industry on rich individuals for future investment returns the debate to the entrepreneurial failure hypothesis, albeit from a different perspective. Sensible investment decisions were taken on the basis of the profit signals that would have been received. However, Lazonick has argued that there was a failure to remove constraints such as vertical specialisation,¹¹⁵ and earlier chapters have revealed the extent to which such constraints were genuine. If, under whatever circumstances, vertical integration was desirable, the large capital under managerial control that might have provided the impetus to such an expansion, had simply not been allowed to accumulate in a large number of Lancashire companies. The instrument for such a strategy, the centralised corporation, could not be created due to the way in which the profits were spent. The lack of institutional capital accumulation in the industry was at least in part a function of the institutional development of the British economy as a whole. It became an important constraint on the development of the industry, and as such is worthy of greater recognition in the debates that have taken place hitherto. For now, it will be explored in more detail in the next chapter.

Increasingly able to mobilise capital as individuals, and using the private company as their vehicle, a new class of financial capitalist emerged in the Oldham district. These new entrepreneurs had much more in common with Edward Tootal Broadhurst, William Birtwistle, Henry Philips Greg, and Sir Frank Hollins, than the typical middle and working class shareholder of Oldham in the 1880s and 1890s. Before concluding on the highly individual character of Lancashire capitalism, the

¹¹⁵ Lazonick, 'Industrial organization' pp. 204-5.

story of how the respective power of these important social groups and individual entrepreneurs was transformed will be told in the following two chapters.

Chapter 8: Ownership, shareholder democracy and personal capitalism.

As the preceding chapter has shown, certain aspects of the development of managerial capitalism and the emergence of modern capital markets which characterised other industries, especially overseas competitors, is open to question as far as the British cotton industry was concerned. As we have seen, managerial hierarchies were slow to emerge; the agency variable of dividend policy prevented the accumulation of capital, thereby influencing the social pattern of industry growth. The preceding discussion has suggested that the character of Lancashire capitalism was determined by the rise of the private company and by the unusual characteristics, in terms of the pattern of capital accumulation, of the Oldham district where the public joint stock company had dominated since the 1860s. The next chapter will examine the entrepreneurship characteristics of private companies. Our current concern is with the character of the Lancashire stock market and how it influenced the development of the corporate form in the six decades before World War One.

Introducing a second agency variable, financial accountability, to complement the dividend behaviour issue already discussed, this chapter will examine the rise and fall of the market for Lancashire cotton shares. In the following discussion, the stewardship relation of managers and shareholders is examined, and the hypothesis addressed that, *ceteris paribus*, the degree of accounting disclosure is positively related to the social and economic power of the shareholder group. The historical importance of this variable is underscored by the sudden emergence of voluntary financial disclosure in a climate of no regulation, a unique event, yet hitherto

neglected by financial and other historians. In the context of the wider economy, there follows an assessment of its individualistic attributes and its continued domination by 'personal capitalism'; the latter is understood, as in chapter 7, to be the management of a corporation without the use of a management hierarchy.

Whilst the purpose of this chapter is to continue the analysis of the agency variables isolated in the last, there are some important differences in approach. Dividend policy, as a quantitative variable, has been analysed as such and reviewed empirically via the use of standard models and ratios. With financial reporting, the linkage with theory is more problematic. The observed variables tend to be qualitative and behavioural. At the same time, the theoretical tools of investigation have been developed from the analysis of modern financial markets, not those of a hundred years ago. It is therefore important to be clear on how the analysis of financial reporting differs between modern and historical situations, and a section prefacing the historical analysis addresses the issues accordingly below.

Financial reporting and the extent of its regulation is an important question in all capitalist economies, of whatever period. The cotton industry of the late Victorian period, as a successful export industry, based on small firms, competitive markets, and free trade, idealised by some and condemned by others, represents a model of one particular type of economy relevant to many modern debates. Extended to financial reporting, such debates are mirrored by arguments about state regulation versus self regulation. In the absence of regulation, other than the permissive Companies Act of 1862, the financial reporting practices of Lancashire cotton mills displayed many interesting attributes. With the legal recognition of limited liability from 1856 and the continuing development of the cotton export trade, preparers of accounting reports, cotton mill managers, as well as paying out large dividends, also provided large amounts of voluntary disclosures, thereby indulging in what might be

described as an 'overproduction' of information.

The first section of the chapter discusses, in general terms, those factors which, in the absence of regulation, are likely to create pressure for accounting disclosure, thereby providing justification for the method adopted. In the second section, specific causes of the unusual pattern of financial reporting are then identified based on historical analysis of the cotton industry. Three institutional variables, all of which are relevant to the growth and finance of the cotton industry, are then introduced to explain the changes in accounting practice. These are first, the role of capital markets, efficient or otherwise; second, the related issue of changing patterns of share ownership; and third, the structure of industrial relations. The third section examines the changes in accounting practice and considers the impact of regulation in the form of the Companies Acts of 1900 and 1907, which is then reviewed in conjunction with the first three non-regulatory variables. Finally, accounting disclosure and dividend policies are reassessed in their context as agency variables governing relationships between important social groups.

Historical analysis of financial accountability; assumptions and method.

Because of the significance and uniqueness of the development of capitalism in Lancashire, its analysis contains valuable lessons not just for the historian, but also potential policy guidance for the present day legislator. In pursuing the historical analysis of financial reporting it is important to treat with caution the dominant assumptions of much modern theory and practice. One such is that the purpose of financial reporting is to aid shareholder decision making.¹ The research problems associated with investigating financial reporting on the basis of this presumption are threefold. First, empirical research into the private decisions of shareholders lacks a

¹ Edwards and Bell, *Theory and measurement of business income*.

theoretical structure against which to evaluate its findings.² Second, shareholders are not a homogeneous group; their decision making characteristics change over time and from economy to economy. Third, there is the problem of bias in favour of one particular social class. Given these problems, historical analysis, which can provide concrete examples of the determinants of shareholder decisions, which can document their evolution over time, and which can position them in the wider social context, is particularly well justified. As will be shown, evidence from the accounts of Lancashire cotton companies amply satisfies these criteria, and allows the pre-determinants of financial reporting practices under specific antecedent conditions to be identified.

Analysis of the growth and development of capitalism introduces the agency relationship between owners and managers as a historical variable. An important determinant of accounting disclosure, or lack of it, which has been identified by many present day commentators, is management monopoly of information.³ According to some, managerial choice was an important determinant of the financial reporting mechanism in the period under review.⁴ More broadly, the origins of modern financial reporting, namely the use of accruals based audited accounts, have been explained in terms of the emergence of a professional managerial class.⁵ The socialisation of capital, or the emergence of the diversified passive investor, has been cited as another important determinant of financial reporting practice.⁶ Similarly the

² Cooper, and Sherer, 'The value of corporate accounting reports', pp. 207-232.

³ Leftwich, 'Market failure fallacies', pp. 193-211.

⁴ Edwards, *A History of financial accounting*.

⁵ Yamey, 'Some topics in the history of financial accounting', p. 39; Chatfield, *A history of accounting thought*.

⁶ Bryer, 'The late nineteenth century revolution', p. 649.

demand for audit arose from the growing separation of ownership and control and the absolute growth in the size of the British capital market.⁷ All of these views are consistent with, and to some extent derived from, the assumed rise of professional managerial classes. Although not directly challenged to date by accounting historians, such an interpretation sits uncomfortably with the views of those economists who believe that Britain remained wedded to an individual capitalism with strong craft control⁸ and was slow to adopt managerial capitalism on the American model, with its professional managerial class.⁹ By contrast, individualism and resistance to the joint stock company itself as a manifestation of collectivism were well articulated by influential contemporaries such as Dicey.¹⁰ The apparent association of modern financial reporting and managerial capitalism is tested in the historical analysis below by reference to the emergence of managerial groups and the accounting practices adopted.

That relationship currently underpins the generally accepted interpretation of the formative years of modern financial reporting in Britain. However, the evidence upon which it is based has been taken from only a selective number of industries. Heavily represented during this period are railways, coal, combined coal and iron companies and regulated utilities.¹¹ Cotton company accounts by contrast have

⁷ Watts, and Zimmerman, 'Agency problems, auditing, and the theory of the firm' p. 630.

⁸ Elbaum, and Lazonick, *The decline of the British economy*.

⁹ Lazonick, *Competitive advantage on the shop floor*; Chandler, *Scale and scope*, p. 239.

¹⁰ Dicey, *Lectures on the relation between law and public opinion*, p. 245.

¹¹ Respectively, Pollins, 'Aspects of railway accounting before 1868', pp. 332-55, and Edwards, 'Depreciation and fixed asset valuation in railway company accounts', pp. 251-63; Wale, 'How reliable were reported profits', pp. 253-68; Baldwin, Berry, and Church, 'The accounts of the Consett Iron Company', pp. 99-110, and Baldwin, 'Management aspiration and audit

received very little attention. The omission is significant, since, as will be shown below, the reporting practices of cotton companies differed markedly from those industries which have hitherto influenced our understanding of the development of financial reporting.

In addition to the above debates, it is useful to use historical evidence to examine the effects of increased regulation on industry structure and growth. With the abolition of compulsory accounting and audit provision in the 1856 Joint Stock Companies Act, the period up to 1900 was marked by a complete absence of statutory regulation under general company law.¹² Absence of regulation allows market based explanations of accounting disclosure to be more closely examined. Some have argued¹³ that market failure explanations of the need for regulation; the public good, the signalling, and the speculation problems, provide insufficient justification for the regulation of corporate disclosure. Their interpretation of British developments in the 1844-1900 period reinforces this view in seeking market forces explanations of changes in accounting and audit practice.¹⁴ Historical evidence reviewed below is particularly useful in examining the first two of these issues. The free public disclosure of accounting information in the United States prior to the regulatory intervention of 1933¹⁵ is cited as evidence of the absence of a public good problem and thus lack of market failure. If anything, the disclosures of cotton companies in

opinion', pp. 3-12; Edwards, 'Companies, corporations and accounting change', pp. 59-73.

¹² Taylor and Turley, *The regulation of accounting*, p. 34.

¹³ Watts, and Zimmerman, *Positive accounting theory*, p. 178.

¹⁴ Watts, and Zimmerman, 'Agency problems, auditing, and the theory of the firm' pp. 630-4.

¹⁵ Benston, 'The value of the SEC's accounting disclosure requirements', pp. 515-32.

the unregulated period were more generous than those companies surveyed by Benston. The problem of the 'free rider', costlessly consuming accounting information as a public good, is traced economically and socially through historical analysis in the discussion below. For the signalling problem, it is useful to investigate the origins of information asymmetry historically, rather than presuppose it.

Problems with the efficient market paradigm

The assumption of an efficient market has formed the basis of much modern accounting research,¹⁶ but the necessity of making such an assumption is arguably a weakness of this method. Moreover, where *a priori* deductive assumptions concerning managerial behaviour form hypotheses which are then tested against accounting reports whose content was determined by those assumptions, the positivist approach becomes tautological.¹⁷ An obvious advantage of the political economy method, especially where historically rooted, is that the starting point is necessarily an inefficient market, and the behavioural dispositions of management groups likewise exogenously determinable. As the economy develops and efficiency perhaps therefore increases, the impact on financial reporting practices can be observed and quantified. The task is an important one, as contradictory assertions have been made. Market efficiency in the late nineteenth century has been argued by some as a historical fact.¹⁸ On the other hand, Kennedy¹⁹ concluded that the market was inefficient and

¹⁶ Watts, and Zimmerman, *Positive accounting theory*.

¹⁷ Williams, 'The logic of positive accounting research', pp. 464-6.

¹⁸ Bryer, 'The late nineteenth century revolution', pp. 649-90.

¹⁹ Kennedy, *Industrial structure, capital markets and the origin of British economic decline*, p.126.

that inadequate financial reporting was an important cause. Inefficiency was due to lack of rules re disclosure and lack of rules was a function of the excess power of directors. Such hypotheses can be tested by reference to the history of emerging financial markets. Either way, instead of presupposing an efficient market, it is surely more constructive to analyse accounting disclosures in terms of responses to the evolution of markets in their social and political contexts.

The assumption of an efficient market causes other problems. For example, it is often made with no reference to social processes, such as habit and emulation,²⁰ and historical antecedents,²¹ which can influence the evolution of that market. Whereas market processes themselves might be described as ahistorical, market institutions possess social and historical specificity. Even market processes may require context, for example where characterised by processes of disequilibrium over time.²² The current analysis therefore pays careful attention to the social and economic origins of the capital market investigated.

Institutionally, financial markets are set up by specific individuals in response to economic need. It is also possible that certain individuals or groups within a market exercise a disproportionate influence. As noted earlier, the assumption of shareholder homogeneity, with, it might be added, assumed exogenously determined informational needs, is a restrictive one in accounting research. It can be argued that different *ex ante* resource endowments can lead to differing positions being taken by groups on accounting disclosure.²³ Such propositions are ideally tested in a historical

²⁰ Polanyi, *The great transformation*; White, 'Where do markets come from?' p. 518.

²¹ Mitchell, *Business cycles*, p. 86.

²² Putterman, *The economic nature of the firm*, p.16.

²³ Hakansson, 'On the politics of accounting disclosure and measurement', pp.1-42.

context, since the power of vested interest groups can be examined without reference to political pressures, as may be the case with research based on the present day economy.²⁴ The recognition of unequally distributed resources, especially capital, and that there might be a resultant influence on accounting disclosure, is the opposite of starting by presupposing an efficient market.

The above discussion has sought to justify the adopted approach by reference to wider debates on financial reporting and economic structure and by showing how the historical perspective can avoid the restrictive assumptions of other methods. Before examining the historical evidence, the general hypotheses that might be advanced are that changing patterns of disclosure were a function of economic and social changes, with reference to the positions of shareholders and managers, and the pattern of capital accumulation and therefore the financing requirements of the reporting organisations. The alternative hypothesis is that changes were a response to the transition from an unregulated to a regulated framework of financial reporting.

Joint stock organisation and financial reporting in cotton textiles

Before these hypotheses are explored in detail, it is important to examine the evidence by which they are tested. Much of the following discussion is based on evidence drawn from the surviving business and published records of spinning firms of south east Lancashire. Analysis of this evidence is important for three broad reasons; the general importance of the industry, contrasts with London based financial institutions, and the unusual character of financial reporting.

The cotton industry had played a leading role in the early stages of the industrial revolution, and for the period of this study, 1856-1914, remained a leading

²⁴ Solomons, 'The political implications of accounting and accounting standard setting', pp. 114-5.

export sector, constituting almost one quarter of total British exports as late as 1913.²⁵ Despite being a very significant industry, Lancashire cotton had little to do with London and its financial institutions.²⁶ However, the industry was heterogenous. The weaving and fine spinning sectors remained dominated, as in previous history, by the small, secretive, private unlimited liability company. Such companies are excluded from the analysis below. By contrast, in south east Lancashire, where coarse spinning tended to predominate, the larger public company was the main vehicle of business activity. Geographically, as we have seen in previous chapters, the public limited company was therefore confined to the 'Oldham District', or south east Lancashire, consisting of Oldham itself, Rochdale, and Ashton under Lyne. The district was significant in its own right, accounting for a significant proportion of the British cotton spinning industry (26%) and of the world (12%) in 1890.²⁷ Nonetheless, its methods of business practice were unique in relation to the known history of the rest of the economy.

The characteristics of the London financial markets add to the importance of south east Lancashire as a case study. Specifically, the evolution of the London stock market was governed by the propensity for accumulated capital to be invested abroad from 1870 onwards.²⁸ There was thus a dominance of quotations for overseas and non-industrial securities. As Pollard puts it, 'the London capital market was simply not interested in industry in Britain', adding that in 1914 only a very small proportion of total transactions on the London stock market were accounted for by the shares of

²⁵ Sandberg, *Lancashire in decline*, p.6.

²⁶ Share prices in London and Lancashire were governed by different and opposite influences, see chapter 11 below.

²⁷ Farnie, 'The emergence of Victorian Oldham', p. 42.

²⁸ Edelstein, 'Foreign investment and empire', pp. 70-98.

home industrial companies.²⁹ The market accounted for only a tiny fraction of the total number of joint stock companies, and new issues were rare, with issues to the general public rarer still.³⁰ Prior to 1870, very little use was made of limited liability generally except for the railway companies, whose accounting practices in the 1840s and 1850s are well documented.³¹ Elsewhere capital needs were sufficiently small to be funded through private savings.³² These trends might have been reflected in the evolution of financial reporting during the period for London based companies, and thereby influenced general conclusions on the evolution of accounting and reporting practice. For example, in discussing depreciation accounting, it was noted that apart from the public utilities, there were very few 'corporations' which were widely held, professionally managed, listed companies.³³

By contrast, from around 1860 onwards these were precisely the sort of companies predominating in south east Lancashire. The Lancashire stock market, centred around the Oldham district, had 71 quoted companies in 1886, rising to over 100 quoted companies prior to 1900,³⁴ and was therefore the third largest provincial exchange in the country after Glasgow and Liverpool in terms of number of quoted companies.³⁵ Unlike the Glasgow, Liverpool, and London markets, all the quoted companies were manufacturers, representing a substantial proportion of the local

²⁹ Pollard, *Britain's prime and Britain's decline*, p. 93

³⁰ Cottrell, *Industrial finance 1830-1914*, p. 184.

³¹ For example, Pollins, 'Aspects of railway accounting before 1868', pp 332-355.

³² Shannon, 'The limited companies of 1866-1883', pp. 290-316.

³³ Bryer, 'The late nineteenth century revolution', p. 657.

³⁴ After the weekly listing in the *Oldham Chronicle*.

³⁵ When compared with the collation in Edelstein 'Rigidity and bias', pp. 90-1.

economy, as dominated by cotton spinning companies.

Besides its general economic and financial significance, the crucial characteristic of this particular sector of the industry was that for over thirty years, between approximately 1860 and the late 1890s a very significant proportion of its companies engaged in a policy of full and public disclosure of accounting data. Although the issue of compulsory balance sheet publication frequently exercised the minds of London based legislators, few appreciated the extent of voluntary disclosure in the north. When a parliamentary commissioner asked an Oldham witness if he thought balance sheet publication would be a good idea, he hastily pointed out that it was already common practice:

They are published every quarter. They are published almost broadcast, and I dare say that if you, as an outsider, wanted shares in almost any limited liability company in Oldham that they might be got. I do not think there is any secrecy as regards the accounts of companies at all...³⁶

The witness added: 'There is not much fault to be found with the limited liability companies in the way of withholding information from their shareholders'.³⁷

Widespread balance sheet publication was supplemented by extensive press analysis. Local newspapers devoted perhaps a quarter of their space to analysing balance sheets, reporting shareholders meetings and criticising managements.³⁸ The publication of balance sheets and widespread quotation of manufacturing stocks on local share listings in South East Lancashire thus preceded the adoption of such practices in London by several decades. The reasons for this pattern of development are now examined.

³⁶ BPP, *Royal commission on the depression of trade and industry*, minute 4336.

³⁷ BPP, *Royal commission on the depression of trade and industry*, minute 4586.

³⁸ *CWS Annual*, 1884, quoted in Ellison, *The cotton trade*, p. 138.

'Popular' capitalism; causes and consequences

If a 'share owning democracy' ever existed, it did so in south east Lancashire in the 1860s and 1870s. The popularity of share ownership was rooted in the co-operative principle upon which many Lancashire business organisations had been founded since the 1840s, and the subsequent development of 'working class limiteds'.³⁹ Rochdale, the town which had seen pioneering developments in distributive co-operatives, was also the location of the first such venture in the field of production. The Rochdale Co-operative Manufacturing Society, which became known as the Mitchell Hey mill was formed on orthodox co-operative principles in 1854. All the promoters were members of the Society.⁴⁰ In Oldham, a similar development six years later was the Sun Mill Company. Founded by the members of the Oldham Industrial Co-operative Society, it was given a democratic structure by its founders, although an important difference was that it was established from the start on limited liability principles.⁴¹ William Marcroft as one of the original promoters, in particular, was idealistically committed to the ideal of producer co-operation and employee control.⁴² Management of the company was by means of elected committees, for example along the lines of responsibility for different parts of the balance sheet, namely the 'Fixed Stock' and 'Saleable Stock' committees.⁴³ At the Mitchell Hey, all employees were shareholders

³⁹ Ellison, *The cotton trade*, p. 134; Potter (Webb), *The Co-operative movement in Great Britain*, pp. 126-133.

⁴⁰ 'Rise and progress of the Rochdale limiteds', *Rochdale Observer*, 10th May, 1890.

⁴¹ Tyson, 'William Marcroft', *DBB*, p. 121.

⁴² Tyson, 'William Marcroft', *DBB*, p. 121.

⁴³ Tyson, 'Sun Mill', p. 230.

and surpluses were paid as a bonus to labour.⁴⁴ Formation of co-operative enterprises in Lancashire had tended to precede the evolution of joint stock legislation, and although the Sun Mill Company followed the Act of 1856, the limited liability principle was seen only as an adjunct of co-operation⁴⁵ and the Act was regarded as a means of reinforcing such working class investment.⁴⁶

The expansion of the 1873-5 mill building boom, when sixty new mills were floated,⁴⁷ tended to reinforce these social trends. In 1873 75% of shares in these mills were owned by working class investors.⁴⁸ A couple of years later total investors in Oldham numbered 10,000, or one in five of the population.⁴⁹ Although by this time few workers owned shares in their own companies, cotton operatives were significant contributors to the share lists of other companies floated under the limited liability acts.⁵⁰ Characteristically, there was wide public participation at company meetings, in new issues, and in the buying and selling of existing shares. Active participation at meetings was an important feature of the co-operative movement,⁵¹ which the early working class limiteds emulated. Democratic structure was another inheritance from the co-operative tradition. Quarterly meetings were on a 'one member one vote' basis, and directors' salaries kept to about one tenth of

⁴⁴ 'Rise and progress of the Rochdale limiteds', *Rochdale Observer*, 10th May, 1890.

⁴⁵ Farnie, *English cotton*, p. 249.

⁴⁶ Tyson, 'William Marcroft', *DBB*, p. 121.

⁴⁷ Ellison, *The cotton trade*, p. 135.

⁴⁸ Farnie, *English cotton*, p. 250.

⁴⁹ Tyson, 'Sun Mill', pp. 221-2.

⁵⁰ Chapman, *The Lancashire cotton industry*, p. 231.

⁵¹ Foster, *Class struggle and the Industrial Revolution*, p. 222.

those earned in other industries in companies owned by 'upper class' shareholders.⁵² Democratic norms were enforced by mechanisms such as limits on maximum shareholdings, proxy holdings, and institutional anonymous or nominee investors.⁵³ Meetings were on a 'one member one vote' basis. The expertise and scrutiny of shareholders over their businesses was thought by some to contribute towards improved efficiency⁵⁴ and contrasted with the poor management of other companies which were run as 'investment unions' and owned by those who 'know nothing of the business carried on'.⁵⁵ Adult education was another important prop of the co-operative movement⁵⁶ and in the 1880s Lancashire had a dominant lead in the provision of City and Guilds technical education.⁵⁷ Such factors undoubtedly discouraged the emergence of passive, or 'naive', investor groups. Shareholder activism, and attendance at quarterly meetings, tends to reinforce the view that few shareholders held fully diversified investment portfolios,⁵⁸ and this would have increased their concern with the management of specific companies. Also, the practice of calling up only a proportion of the nominal value of share capital removed some of the protection of limited liability and created the risk of additional calls, thereby adding to shareholder vigilance. Where directors posed the threat of calls, the

⁵² Potter, *The Co-operative movement in Great Britain*, pp. 126, 132..

⁵³ Smith, 'An Oldham limited liability company, 1875-1896', p.41. Shareholder participation and democracy were evidenced by the strong resistance to proxy voting, for example there was a heated debate on this issue at a quarterly meeting of Leesbrook Spinning Co. Ltd, *Oldham Chronicle*, 19th January, 1889.

⁵⁴ Ellison, *The cotton trade*, p. 138.

⁵⁵ BPP, *Royal commission on the depression of trade and industry*, q. 5275.

⁵⁶ Foster, *Class struggle and the Industrial Revolution*, p.223.

⁵⁷ Argles, *South Kensington to Robbins*.

⁵⁸ As discussed in chapter four.

shareholder response was often hostile.⁵⁹

By more recent standards, and by contrast with other industries, the lot of the typical director was thus an unhappy one. Remuneration was low, shareholder criticism intense, and accountability high. Despite adverse employment conditions, replacement managers were readily available from at least two identifiable sources; existing directors from other firms who had perhaps fallen foul of their shareholders⁶⁰ and from the growing pool of technically educated skilled operatives.⁶¹ Technical education and the rise of skilled labour groups explain the pool of potential replacement directors and the weak bargaining power of the fledgling managerial class, the former reflecting the co-operative tradition, the latter changes in factory organisation. Directorships were therefore often hotly contested.⁶² However, as predicted by Putterman,⁶³ where management itself is less of a scarce resource, the success of participatory organisations tends to be promoted.

Although Lancashire limiteds conventionally used accruals accounting and modern auditing methods, the co-operative tradition, and its associated democratic membership and share ownership, had interesting implications. The usual split between ownership and control of company assets, common to most public corporations, emerged only partially. Shareholder influence manifested itself at the Werneth Spinning company, for example, through votes on significant purchases of

⁵⁹ For example, *Oldham Chronicle*, 28 December 1895, p.8, iv-v.

⁶⁰ Tyson, 'Sun Mill', pp. 219-21.

⁶¹ Chapman, and Marquis, 'The recruiting of the employing class from the ranks of the wage earners', p. 306.

⁶² A contest at a meeting at the Higginshaw Spinning Company was likened to 'a miniature Waterloo' (*Oldham Chronicle*, 30 December, 1893, p. 8(vii))

⁶³ Putterman, 'Some behavioural perspectives on the dominance of hierarchical over democratic forms of enterprise' p. 157.

fixed assets, and the setting up of a shareholders' committee of investigation into a fraud.⁶⁴ Anywhere else, the former fixed asset decision would have been taken by directors and the fraud investigation conducted by auditors. Shareholders were very active in policing the directors and were generally intolerant of creative accounting mechanisms such as the manipulation of depreciation. To use one of many examples as a detailed illustration, at the Albany Spinning Company, the directors suspended the usual £700 depreciation charge for two quarters during a period of bad results. If the intention was to disguise the poor trading position from the shareholders, they were unsuccessful. A motion was put to the meeting suggesting that the £1400 missing depreciation be written off reserves and that depreciation be allowed in future at the old rate. The proposer of the motion described under-depreciation as bad business policy. The meeting then agreed to resume depreciation but without the proposed write off from the reserve. The stock valuation was also disputed and the directors accused of hiding losses. Attended by over one hundred and twenty shareholders, the meeting was punctuated by periods of uproar as these issues were debated, and the chairman then removed from office by a simple majority vote.⁶⁵ Shareholder activism was thus vitiated by an acute sense of moral hazard; with the recognition that directors had to be allowed to conduct day to day management came intense scrutiny from the members. Accounting information thus played an important role in the close monitoring of the managerial group.

Along with generous disclosure, there emerged a uniformity of accounting practice. Accounting expertise was rapidly transferred and emulated from mill to mill.⁶⁶ As the above example has shown, departure from an accepted accounting

⁶⁴ Toms, 'Financial constraints' pp. 368-9.

⁶⁵ *Oldham Chronicle*, December 28, 1895, 8, iv-v.

⁶⁶ Smith, 'An Oldham limited liability company', p. 37.

base attracted criticism. Depreciation of seven and a half percent reducing balance on plant and machinery was standard to most companies.⁶⁷ That consistency was imposed without regulation is testimony to the power of shareholders to prevent the opportunistic behaviour by directors.

In the above discussion, the significance of the co-operative tradition has been stressed. From the 1870s, co-operation was subsumed by the limited liability principle. Although earlier influences were of continuing importance, the growth of the industry brought new pressures which tended to change financial reporting practices. The most important were, the changing pattern of share ownership, the functioning of the capital market, and the structure of industrial relations. These are now examined in turn.

Transitional influences (1): The changing pattern of share ownership

From the 1870s onwards, and especially after 1900, the earlier principle of co-operation declined. The super-imposition of limited liability status on co-operatives created an illusion of democratic structure which changes in share ownership subsequently undermined. In the process, much confusion of principles arose. The following statement, as addressed to a parliamentary committee member, by a witness illustrates the point:

(The mills are worked)... on what you call the co-operative principle, except that you have some special meaning in the words co-operative principle. They are all on the limited liability principle, but of course all the co-operators are party to it, so that is co-operation.⁶⁸

Shareholders' meetings at Sun Mill also debated the issue of whether or not the limited companies could actually be considered co-operative. One co-operative

⁶⁷ Moss, *Cotton spinning companies' accounts*, p.34.

⁶⁸ BPP, *Royal commission on the depression of trade and industry*, q. 4400.

principle definitely sacrificed was that of the worker/shareholder. Gladstone visited the company in 1867 to be told that only 4 out of 1,000 shareholders were also employees. He pointed out '... this company is not really a co-operative one, but an association of small capitalists'.⁶⁹ At Mitchell Hey, the co-operative principle also lost its dominance in the 1860s; ironically as a result of success. In 1860, new capital was required for a new mill and this brought about a new class of shareholders who objected to the payment of dividends to labour. As workers at other mills, they contended that they had no similar right to these bonuses, and in 1862, after two previous unsuccessful votes, succeeded in abolishing the labour bonus principle.⁷⁰ Thus these associations became a passing legacy of the co-operative movement to the Lancashire limiteds.

In subsequent decades the main issue for shareholder groups was the power and increasing lack of accountability of certain directors. Changes at Sun Mill provide useful examples of this point. Prior to shareholders being aware of the potential threat, Sun Mill had altered its articles so that a director with a seat on the board of another company could assume office. In the early 1890s the directors engaged in a £30,000 speculation in futures using borrowed money, first without the knowledge, and then to the dismay of, the shareholders. Meanwhile the increased alienation of the operatives led to a strike in 1889. The resulting conflict spread to other mills and was enthusiastically pursued by the directors through recruitment of new workers from the ranks of the unemployed.⁷¹ When the directors staged their final coup against shareholder interference in 1906, they did so on the basis of an

⁶⁹ Tyson, 'William Marcroft', *DBB*, p. 121.

⁷⁰ 'Rise and progress of the Rochdale limiteds', *Rochdale Observer*, 10th May, 1890.

⁷¹ Tyson, 'Sun Mill', pp. 256, 267-70, 275.

increased concentration of share ownership. Many working class investors, unable to meet the threat of calls in the depressed 1890s, had sold their shares as values fell.⁷² The directors used a new set of articles to vote through the necessary political realignment in board room control. Their provisions included minimum share ownership qualifications, increases in share transfer fees, reduction in quorum for general meetings, which now became half yearly instead of quarterly, provisions for proxy voting and increased director's borrowing powers. To celebrate their success, they also secured a vote of a £500 directors' bonus.⁷³ Such changes were typical of the developing trend in the Oldham district, particularly in the final decade before 1914.

Co-operative capitalism was replaced by individual rather than corporate capitalism. The co-operative tradition had always emphasised dividends. As noted above, capital thus circulated and accumulated with individuals, via dividend payments, rather than corporations, as accumulated reserves. The new class of individuals created financial empires through the flotation of new mills rather than the profitable exploitation of existing ones and began to use accounting information in new, but more familiar ways. At an early stage of their activities, these individuals were blamed by many for the depressed condition of the industry in the 1880s and for using laudatory prospectuses to guarantee high initial share prices and then selling their own holdings soon after flotation, which tended to defraud the longer term investor, making large profits for themselves in the process.⁷⁴ Activities of this sort meant that accounting information performed a signalling function but in reinforcing

⁷² See chapter four and figure 11.2.

⁷³ Tyson, 'Sun Mill', pp. 294-5.

⁷⁴ BPP, *Royal commission on the depression of trade and industry*, qq. 5041, 5117.

incorrect perceptions of value, enabled unscrupulous promoters to exploit the tradition of open disclosure, as combined with an inefficient market, and amass new fortunes. Increasingly, as their own wealth accumulated and the need to attract long term outside finance declined, their methods became associated with the private company and the selective disclosure of accounting information. Accumulated individual capital formed the basis for these new, more narrowly controlled concerns.⁷⁵ A good example was John Bunting and his loose federation of companies referred to as the 'Bunting group'.⁷⁶ He was outstanding in the range of his promotional activities, but his method of business empire building was replicated by other successful managers who were able to accumulate private capital.⁷⁷ The growing influence of such individuals manifested itself in the concentration of shareholder wealth and the emergence of multiple directorships.

The structure and ownership of capital was an important constraint and has not been fully considered in the debate on Lancashire textiles to date. As the industry evolved, the earlier principles of co-operation and working class participation⁷⁸ began to disappear and the accumulation of individual wealth became more important. Financial restructurings of the early twentieth century and the large bequests of corporate wealth in favour of individuals underlined this trend. Wealthy individuals became vital middlemen between the earned profits of existing firms and investment in new concerns. Unlike the former, the latter were closely controlled and

⁷⁵ Jones, *Accountancy and the British economy*, pp. 56-7.

⁷⁶ Farnie, 'John Bunting', *DBB*, pp. 506-9.

⁷⁷ See chapter 7 above. Other examples in Oldham included Thomas Henthorn (1850-1913), Harry Dixon (1880-1947), William Hopwood (1862-1936), Ralph Morton (1875-1942), T.E. Gartside (1857-1941), John S. Hammersley (1863-1933), and Sam Firth Mellor (1873-1938), see Gurr and Hunt, *The cotton mills of Oldham*, pp. 9-10.

⁷⁸ Farnie, *English cotton*, pp. 255-6

independent of equity markets and other financial institutions. Promoters operated freelance and took their own chances on new issues, with no assistance from the banks.⁷⁹ Bunting epitomised this new class of individual. He became the leading share broker in the area and ploughed the dividends and profits of his activities back into the promotion of new mills. Of the fourteen or so promotions Bunting is known to have been involved with,⁸⁰ three were notable and innovative for different reasons. He assisted the Palm, promoted in 1884, then the largest ring mill in Lancashire.⁸¹ Iris, built in 1907 at the height of the boom, typified the apparently extravagant financial arrangements of many flotations with a very high degree of dependence on loan finance.⁸² Such borrowings were out of all proportion to the asset base of the new company and it seems highly probable that it was the financial standing of Bunting himself responsible for attracting the loan finance. The final flotation of note came in 1907 with Times No. 2. This attracted an enormous amount of publicity at the time, at 160,000 spindles being half as large again as its nearest competitors. The capital requirement was large at £1 per spindle but Bunting was again able to attract loan finance on the strength of his wider empire.⁸³

The activities of individuals such as Bunting were facilitated by the structure of local capital markets, which gave ready access to cheap capital. Transaction costs associated with the issue of new capital were low. Share dealing was on the basis of cash only deals and an absence of contract notes and official regulation. Loan finance, raised directly from the via press advertisements, independently of the banks, was

⁷⁹ Thomas, *The provincial stock exchanges*, pp. 154-5.

⁸⁰ Farnie, 'John Bunting', *DBB*, p. 508.

⁸¹ See chapter three, p. 56.

⁸² Thomas, *The provincial stock exchanges*, p. 155

⁸³ Jones, 'The cotton spinning industry', pp. 87-8.

generated similarly on the basis of low transaction cost.⁸⁴ High dividends provided confidence for lenders and shareholders, thereby facilitating the raising of new capital,⁸⁵ and ensuring its circulation via a rising class of wealthy individuals.

Bunting was outstanding as a beneficiary of the system and performed a crucial function in the circulation of divested and reinvested capital. His method of business empire building was replicated by other successful managers.⁸⁶ The growth of the influence of such individuals manifested itself simultaneously in the concentration of shareholder wealth and the emergence of multiple directorships. The earlier predominance of active but diverse shareholder groups was in terminal decline by 1900. A Shareholders' Protection Association was formed in 1889⁸⁷ to orchestrate opposition against the rising power of multiple directors, but the practice gradually became more prevalent from then on. Other methods of reducing shareholder power were explored in the newer companies set up in the 1890s and 1900s. These tended to issue less marketable higher denomination shareholdings, had limited shareholding, and did not publish their balance sheets. The Werneth Spinning Company ceased to publish its balance sheets from 1912.⁸⁸ Bunting adopted a policy of minimum disclosure with his companies at about this time,⁸⁹ Such retreats from shareholder scrutiny helped reduce dependency on external financial stakeholders, and may have removed constraints on decision making for powerful individual directors and promoters. Diversification of risk may have been a motive, but from the point

⁸⁴ Farnie, *English cotton*, pp. 253-5.

⁸⁵ Thomas, *The provincial stock exchanges*, pp. 155-6.

⁸⁶ See above, p. 273.

⁸⁷ *Oldham Chronicle*, 9th Feb, 1889, p. 8

⁸⁸ OLSL, Misc/42/18, quarterly reports to members.

⁸⁹ Farnie, 'John Bunting', *DBB*, p. 507.

of view of managerial elites rather than investors. Thus these individuals failed to utilise the corporate form to concentrate financial resources but left their individual wealth scattered across otherwise independent companies.

By 1900 their power contrasted with the days of working and middle class shareholder dominance of the 1870, 1880s and 1890s and was a far cry from the days of 'democratic investment'. Reduced shareholder power was evidenced by apparently sub optimal financial policies from the point of view of the investor. For example, the *Oldham Chronicle* commented:

It looks foolish for a spinning company to owe £15,542 to a bank and yet have £14,299 on loan to other spinning companies. In the old days shareholders would have kicked against this method of finance.⁹⁰

However, shareholder power was not supplanted by a new managerial elite in the conventional sense. Rather it represented a series of examples of an early form of management 'buy in'.⁹¹ Bunting *et al* used their concentration of voting power to appoint and control the managements of the firms in their group. Important features of this form of organisation were the monitoring of management by active investors, usually the original promoters, and commitments to service external funding, in the form of high levels of debt for newly floated companies. In this sense, local directors were still dominated by the needs of shareholders. These were no longer the working class people with traditions of co-operation, but an emergent millionaire class.⁹² At

⁹⁰ *Oldham Chronicle*, 15th July, 1911, p. 12, (iv).

⁹¹ A 'buy in' is here defined as the purchase of the share capital of a company by an external management group with a view to changing its management structure. A feature might be that some outside managers are imported by the investor (Thompson, *et al*, 'Management equity ownership', p. 417), in this case individuals rather than banks. Bunting was a promoter first and foremost and used a holding company structure to control his individual management teams.

⁹² Bunting actually left an estate of £742,940, but by the time he died in 1923 the First World War and its detrimental impact on the cotton industry had reduced his fortune (Farnie, 'John Bunting', *DBB*, p. 508).

a the level of the smaller company, the tendency to use the private company as the unit of business organisation was equally pronounced. Other forms of 'buy ins', were instances of private companies buying up the share capital of hitherto publicly quoted companies. Examples included Industry Spinning Company, taken over in 1888, the Higginshaw Spinning Company (1898), the Bankside Spinning Company (1900), Cambridge Spinning Company (1907).⁹³ In the latter case, through poor trading results the share price of the company had declined to virtually zero. 'Buy ins' were paralleled by 'buy outs' where the term is used to imply transfers to private company status.⁹⁴ As noted in chapter seven, *inter alia*, the Werneth, the Windsor, and the Sun Mill Spinning Companies used profits made in the 1907 boom to reduce capital, and a few years later withdrew their quotations and ceased balance sheet publication. In all these, and many other cases, the stock market quotation was withdrawn and the practice of balance sheet publication abandoned. One event clearly exemplifies the impact of changed ownership on financial reporting practice. The Hathershaw Spinning Company, a quoted, balance sheet publishing company, was destroyed by fire in 1907. Its site was bought by Bunting and the company replaced by the newly floated Iris Spinning Company. Very little share capital was issued by this company and the majority of the assets were financed by loans, creating an astonishing level of gearing.⁹⁵ Otherwise the company remained closely controlled, unquoted, and did not publish its balance sheets.

It is this crucial change in ownership structure that explained the changing character of financial reporting. Bunting adopted a policy of minimum disclosure for

⁹³ The examples discussed in this section were identified from the *Oldham Chronicle* lists and Gurr and Hunt 'The cotton mills of Oldham'.

⁹⁴ For an explanation of this type of buy out, see Samuels *et al*, *The management of company finance*, p. 918.

⁹⁵ Thomas, *The provincial stock exchanges*, p. 155.

his companies.⁹⁶ Likewise, many of the new companies floated in the 1904-7 boom tended to be private, issuing less marketable higher denomination shareholdings, and reluctant to disclose financial data to the public. Despite a substantial growth in the industry, a much smaller proportion of companies saw fit to publish balance sheets even though a significant majority maintained share list quotations (table 8.1). Such retreats from shareholder scrutiny constituted part of a strategy of reduced dependence on external financial stakeholders, and may have helped remove constraints on decision making for powerful individual proprietors and promoters.

⁹⁶ Farnie, 'John Bunting', *DBB*, p. 507.

Table 8.1 The Changing Pattern of Disclosure

Year	A	B	TOTAL	A as % of total
1885	69	27	96	72
1902	72	29	101	71
1907	71	54	125	57
1913	65	94	159	41

A = Companies quoted and publishing balance sheets

B = Companies quoted but not publishing balance sheets

Source: Compiled from the *Oldham Chronicle* (various issues).

Changes in ownership structure noted above help to explain why the practice of balance sheet publication began to decline. Of 68 mills floated independently between 1890-1913, 72% sought share listings.⁹⁷ Yet none adopted the practice of publishing balance sheets. Unlike the co-operative venturers of the 1860s, the newer promoters geared their activity more towards placing equity capital, rather than attempting to attract a wide public participation.

Part of the reason was that the industry was awash with surplus cash, especially following the boom of 1907.⁹⁸ As published balance sheets had been used hitherto to attract loan capital and retain investor confidence, they now became superfluous. The emergent class of promoters had no need to offer accounting information in return for new capital. Share issues to expand existing companies were rare. Takeovers and mergers, apart from the restructurings referred to above, were also scarce. Therefore promoters with wealthy contacts for placing new issues had no need to remain dependent upon the groups that had once contributed substantially to venture capital, such as the skilled working class, once the new concern was launched. Quotations ensured liquidity and convenient exit routes for the big promotional shareholders. With these changes, accounting data tended to be increasingly regarded as a private rather than public good by those responsible for its preparation. Balance sheets could be circulated privately to the now more concentrated private groupings of shareholders without the expense of publication or the need to trouble the press. Thus the signalling function of accounting information was also in decline. The wealth and standing of the promoter, rather than the balance

⁹⁷ Calculated from the collation in Jones, 'The cotton spinning industry', pp. 221-3, in conjunction with the quotation and balance sheet company lists in the *Oldham Chronicle*. Where existing companies built additional mills, these were excluded.

⁹⁸ Toms, 'Financial constraints', p. 375, and chapter seven above, p. 211.

sheet, became the chief mechanism of ensuring the confidence of financial stakeholders.

Transitional influences (2): capital markets and financial reporting

It has been recognised that modern equity markets in the UK and the USA are characterised by passive and dispersed share ownership, which creates an incentive for individual shareholders to 'free ride' rather than participate in decision making.⁹⁹ In turn this has been imputed to a lowering of costs associated with the disposal of shares and a discouragement of active participation at meetings.¹⁰⁰ These tendencies are reinforced by increasing market breadth and liquidity.¹⁰¹ In its early years, the Oldham stock market was characterised by opposite tendencies. Company membership had much in common with co-operative traditions, creating a reluctance to dispose of holdings, whilst simultaneously encouraging participation at meetings. Investors were overwhelmingly local, although this became less true as the century progressed.¹⁰² Each subsequent flotation boom encouraged promotional cliques which tended to use proprietary information at the expense of smaller shareholders. Nonetheless the influence of the latter remained important into the 1890s, until the crash in share values and the inability of small investors to meet calls, fundamentally altered the character of the market. As noted above, in the new circumstances of the 1900s, the position of promotional and management groups became much stronger.

In the Oldham case, there was no apparent relationship between these changes and changes in stock market efficiency. The market was narrow and investments were

⁹⁹ Berle and Means, *The modern corporation*.

¹⁰⁰ Hirschman, *Exit, voice and loyalty*.

¹⁰¹ Bhidé, 'The hidden costs of stock market liquidity', pp. 31-51.

¹⁰² Smith, 'An Oldham limited liability company', p. 41.

not based on diversified portfolios,¹⁰³ and neither attribute was altered over time as small shareholders were replaced by promotional and managerial interests. In the former case, the narrowness of the market was reinforced by the activism of the shareholders, and in the latter, by the establishment of block shareholdings.

Chapter four showed that the market was efficient throughout in the weak form informational sense, that is share prices reflected promptly all publicly available information. Opportunities to profit from financial information, once published, are rare in a modern efficient market¹⁰⁴ and given the access to, and understanding of, published accounting information on a reasonably equal basis across a large number of active shareholders, it might be supposed that this was also the case in Oldham. It would also explain the resentment felt towards the rising class of promoters who might have used their position to profit from private information.¹⁰⁵

In the early years especially, accounting reports were used as a policing mechanism through which shareholders were able to voice their concerns. Full accounting disclosure arose from the risk associated with lack of diversification which in turn was a function of the activism of the co-operative tradition. It is thus unlikely that accounting disclosures contributed to the allocative efficiency of the market, as they were just as likely to result in the removal of inefficient managements as to lead shareholders to exit their investment in favour of a more efficient concern. For promotional interests, the function of the market for promoters was liquidity to exit their investment. This would have led to the transfer of wealth from one shareholder group, but again, without necessarily ensuring the efficient allocation of capital. For

¹⁰³ See above, p. 79.

¹⁰⁴ Ball, and Brown, 'An empirical evaluation of accounting information numbers', p. 174.

¹⁰⁵ BPP, *Royal commission on the depression of trade and industry*, pp. 404-7, 415, 427.

this group, quotation was important for exit liquidity, but published accounting reports were of no real consequence. Overall, therefore, changes in accounting disclosure were unrelated to the degree of market efficiency, since in the informational and allocative sense, these remained reasonably constant, whilst accounting disclosure declined. That decline is more convincingly explained by changes in the social and economic structure of share ownership documented above.

Transitional influences (3): The Structure of Industrial Relations

Concentration of ownership was reinforced by the steady withdrawal of the wider population from investment in the cotton companies. Industrial disputes in previously democratically managed companies were symptomatic of this retreat of the cotton spinning working class from share ownership and the associated rise of trade unionism. In 1886 several witnesses to the parliamentary Royal Commission on the Depression of Trade and Industry pointed out that there were very few operatives who owned shares, particularly in their own companies.¹⁰⁶ The effects of the American Civil War and the depression of the late 1870s had increased the perceived riskiness of the trade. Trade union membership increased, and worker-shareholders were treated with suspicion on the shop floor.¹⁰⁷

Growth in trade union organisation was an important reason for the increased secrecy with which company managements began to treat accounting disclosure. The 1870s and 1880s saw a rapid growth in union membership.¹⁰⁸ Increasingly tempestuous industrial relations culminated in the 'Brooklands Lockout' and the

¹⁰⁶ For example, BPP, *Royal commission on the depression of trade and industry*, q. 5131.

¹⁰⁷ BPP, *Royal commission on labour*, Group C, Textiles', qq. 190-3.

¹⁰⁸ White, 'Lancashire cotton textiles', p. 216.

subsequent agreement of 1893. The settlement had an important impact on accounting disclosure. Across the industry, employers were allowed to move for up to a five percent reduction in wages; conversely up to a five percent increase could be requested by employees. Such demands tended to follow the economic cycle.¹⁰⁹ Accounting information therefore became a potentially vital weapon in the bargaining process. For example, an abortive negotiation to link wages to profits in 1899 broke down over the issue of accounting disclosure. James Mawdsley, the union leader, proposed a conciliation board which could adjust wages automatically in line with changes in the standard rate of profit. The employers' representatives rejected the suggestion on the ground that it would require inspection of the books by persons other than the mill owners and their representatives.¹¹⁰ The union side then refused the compromise option of verification of the figures by audit, arguing that they could not trust the figures prepared by managements of the limited companies, nor those of 'ignorant accountants'.¹¹¹ Under these circumstances, the management response of increasing resistance to public disclosure of balance sheet information appeared reasonable. Open publication of results in the local press, and especially the detailed analysis of accounts, died out during the 1890s. From then on, the press confined itself to profits, dividend percentages and tables of summary comparatives for those data items.

Industrial relations, together with changes in share ownership and the nature of the capital market, help to explain the reasons for the shift from open and voluntary financial reporting to more restricted disclosure practices. The above discussion has attempted to establish why balance sheet publication occurred in the

¹⁰⁹ Burgess, *The origins of British industrial relations*, p. 233.

¹¹⁰ Burgess, *The origins of British industrial relations*, p. 289.

¹¹¹ Porter, 'Industrial peace in the cotton trade, 1875-1913', p. 54.

absence of the compulsion of regulation. It is clear that circumstances were already changing prior to the first legislative intervention in 1900 and that government policy cannot therefore fully explain changes in business organisation. However, it is important to attempt to quantify its impact before reaching overall conclusions.

Regulation and accounting practice

In general, the effect of the Acts of 1844, 1856, and 1862 was that, although there was no legal requirement to prepare accounts for the shareholders or the public, the articles of association invariably imposed an obligation to the former.¹¹² As we have noted, public provision of accounting data by cotton companies was thus a voluntary extension of shareholder power. The 1900 Companies Act made auditing compulsory for all companies.¹¹³ A balance sheet had to be produced, but there was no requirement for an accompanying profit and loss account. Directors were debarred from being auditors of the company.¹¹⁴ Yet all of this and more had been standard practice for cotton spinning mills for many decades. It is not surprising that the Act had little effect on the public disclosure of balance sheets. The proportion of quoted companies also issuing balance sheets to the public was about the same in 1902 as in 1885 (table 8.1).

In the wider economy, the provisions of the 1900 Companies Act were perceived as onerous, especially for the small closely controlled company. Thus the Companies Act 1907 gave auditing and financial reporting exemptions to private

¹¹² Edwards, and Webb, 'The influence of company law on corporate reporting', p. 260.

¹¹³ Jones, *Accountancy and the British economy*, p. 100.

¹¹⁴ Stacey, *English accountancy, 1800-1954*, p. 79.

companies.¹¹⁵ The 1907 Act was particularly significant for business organisation in Britain. By 1914 about 15,000 of the total 48,492 registered under the Act had transferred from public to private status under the provisions of the Act.¹¹⁶ In south east Lancashire the institutional force of forty years' practice meant the traditional quoted, balance sheet publishing, company did remain important. Indeed the number of companies maintaining stock market listings rose between 1907 and 1913 (table 8.1) and more companies were quoted in 1913 than ever before. However, as noted above, many companies with a long history of quotation and balance sheet publication began to cease the practice and convert to private concerns through capital reductions.

The local press implicitly acknowledged the rising importance of the private company. Such companies did not publish full accounts, but in many cases disclosed the dividend payment. From 1907 onwards the *Oldham Chronicle* began to publish a list of companies (list 'C') which were neither quoted nor issued published balance sheets, but which were listed by reference to their dividends. Between December 1907 and December 1913 the number of companies covered by this list increased from 72 to 107. The vast majority of these were newly promoted companies.¹¹⁷ Private companies, as contrasted with the popular flotations of the 1870s, undoubtedly became an increasingly useful vehicle for Lancashire entrepreneurs. However, the legislation followed rather than initiated changes in accounting practice. In the example of the cotton mills, social change and capital ownership patterns were more

¹¹⁵ Cornish, and Clark, *Law and society in England, 1750-1950*, p. 262.

¹¹⁶ Jones and Pool, *A hundred years of economic development in Great Britain*, p. 168.

¹¹⁷ For a list of all the newly floated companies, see Jones, 'The cotton spinning industry' pp. 221-3; for a list of those which were included in list C 'non balance sheet companies, see 'The cotton trade in 1907', *Oldham Chronicle*, 28th December 1907, and subsequent annual reviews of the trade.

important than, and their impact thus pre-dated, the effects of regulatory initiatives on accounting disclosure.

Shareholder power and social change

The evidence considered has suggested that the principle of co-operation, where assimilated into joint stock organisational forms and coupled with a large number of relatively equal and active members, tended to produce a self regulating and widespread pattern of financial disclosure. Accumulation of capital and business power by dominant groups of individuals, and reduced dependency on the capital markets, subsequently eroded the public supply of financial information. At the same time, the working classes ceased to be active shareholders, and instead looked to the growing protection and influence afforded by their trade union organisations.

These social and economic transitions were well under way before the 1907 Companies Act provided a convenient vehicle of financial secrecy to promotional and ownership groups in the form of the private company. Nonetheless shareholder power, as represented first by the skilled working class, then by the middle classes, and finally by groups of individual venture capitalists, was the driving force in the development of the joint stock section of the cotton industry.

The implications, for the history of the economy as a whole and the perspectives that have been used to interpret it hitherto, are several. First there is some need to reinterpret the accounting history of the period, second, to readdress the 'personal capitalism' issue, and finally, on the basis of the evidence presented in this and the previous chapter, to draw further conclusions on the finance on growth of the cotton industry.

Accounting practice and disclosure was not determined simply by a rising class of professional managers. Contrasts with other parts of the economy, where a

more managerial style capitalism did emerge, underline the importance of the lessons from Lancashire. Modern financial reporting gained an early and firm foothold there, but tended to move in the opposite direction to the managerialist tendencies identified elsewhere. However, to argue that managerial capitalism was a precondition for modern financial reporting would be incorrect on the basis of the evidence of the cotton mills. Accruals accounting and audit emerged before managerial capitalism developed elsewhere and they continued to be practised, regardless of the changes in industry structure that occurred. However, the more individualistic capitalism that emerged placed a strong break on accounting disclosure. The evidence therefore suggests that shareholder power in itself is not a sufficient guarantee of full disclosure in the absence of regulation. In the case considered above, the co-operative principle and the encouragement of working class participation in share flotations mitigated the perception of the 'free rider' failing to contribute towards the cost of published accounting information. Hence shareholders must be powerful as a collective force, but without domination of individuals or sectional interests.

Shareholder activism was an important driver of financial disclosure, and this issue may be of some relevance to modern problems of regulation and corporate control. In the cotton industry case, close involvement of shareholders in management decisions was made effective by their degree of financial and technical knowledge. In the modern context, as the technical division of labour between industries and firms proceeds, shareholder knowledge of the specific issues facing a particular company becomes far more difficult to guarantee. Nonetheless the more knowledgeable the shareholder class in general, the lower the premium associated with management skills and the more accountable to their shareholders the managers of a company will be. The relationships identified are of wider significance, even though the actual barriers to shareholder activism and technical education may vary

through time and from economy to economy. The precondition identified in the case study of the need for shareholders to have a risk seeking attitude in order to concentrate on the issues facing a single company, and to avoid the passive luxury of portfolio based returns, may also be seen as impractical. However, the diversified investor relying on an efficient market to secure owner and manager goal congruence, is only one possible model of actual practice as reflected by current international comparisons.¹¹⁸

The conventional model of interpretation, of the development of modern financial reporting being linked to the emergence of corporate, or managerial capitalism, is not supported by the evidence above. Accounting practice had little to do with rising power of a new managerial class, and it is therefore difficult to support the generalised hypothesis of the dependence of modern financial reporting upon it. Rather, if Lazonick's¹¹⁹ view of the cotton industry representing the classic example of British adherence to craft production and resistance to managerial professionalism is accepted, it should come as no surprise to find that financial reporting practices also reflected these attitudes. To the extent that Lancashire cotton was stereotypical of the individualistic ownership of the British economy, some reappraisal of the emergence of financial reporting practices is also called for.

Throughout the period 1860 to 1914, Lancashire could be described as stereotypical of the 'personal capitalism'. However, during that time, the character of capitalism altered decisively, implying, as Chandler does, that there might be more than one category of this form of business organisation.¹²⁰ The categories noted

¹¹⁸ Hutton, *The state we're in*, ch. 10.

¹¹⁹ Lazonick, *Competitive advantage on the shop floor*.

¹²⁰ Chandler, *Scale and scope*, p. 240; the types of non managerial company are, the personal enterprise where companies are administered without a managerial hierarchy, the family enterprise, where the founders establish a

above were threefold. First, co-operative capitalism; in its purest form, as in the early days of Sun Mill and Mitchell Hey, characterised by active and equal involvement of the members, and in pure form, akin to the utopian socialist experiments of New Lanark. Second, popular capitalism; in which share ownership is diverse, but managerial behaviour constrained by the activism of the equity group. Third, venture capitalism; where individuals with large personal financial resources are able to construct financial empires to the negation of the institutional influences of banks and equity markets. All three, for one reason or another, prevented the emergence of professional managerial hierarchies, and were therefore forms of Chandlerian personal capitalism. In the case of the cotton industry, each form preceded the other historically, and the industry thereby provides a useful exemplification of how business history can be examined from an institutional evolutionary perspective.

In terms of the competitive position of the British economy, the institutional dynamics of this emergent ownership structure meant that, at a time of growing overseas industrial concentration, the basic unit of British enterprise in a leading export sector became the smaller private company, capable of raising capital only from restricted sources, instead of the public company with much greater potential for growth. It has been argued elsewhere that pre war commitments to traditional technologies were the principal cause of the post war collapse of the industry.¹²¹ Part Two has shown that hypothesis to be a difficult one to sustain, but the above analysis has suggested that constraints on growth, development, and investment, were financial rather than the technical. Furthermore, it could be said that the financial dimension represents a framework for the analysis of the technical. Entrepreneurs were unsurprisingly happy to invest in traditional technology as long as it was

hierarchy but retain a major equity stake.

¹²¹ For an explanation of these arguments, see chapter two.

profitable for them to do so. As we have seen, investing in mule spindles was at least as profitable as investing in vertically integrated companies before 1914 (figure 6.1). By 1920 investment was more problematic as entrepreneurs were without the concentrated corporate financial power necessary to restructure the industry, regardless of market signals hinting at its profitability. Without the guarantee of profits and dividends in a stable expanding market, share issues and new loan finance were ruled out. The only potential source of funding left to entrepreneurs wishing to reposition the industry through investment in new, cost reducing technology, would be to draw on accumulated reserves from previously profitable trading or as individuals, to draw on private savings. As the former were minimal, the fate of the industry depended on the willingness of individuals to reinvest previously accrued profits at a time when there was insufficient certainty to guarantee such investment.

However, to make such a conclusion at this stage is to presuppose much about the impact of forces in the economic environment beyond the control of the entrepreneur. The next chapter investigates further the characteristics of Lancashire entrepreneurship. Part Four then goes on to consider the performance of the industry as a whole in the context of that environment. Only after that will it be possible to finally conclude on the role of classes and individuals and to evaluate the considerations that encouraged and constrained their actions.

Chapter 9: The characteristics of Lancashire entrepreneurship

In the previous two chapters we have seen how dependence on external financial stakeholders militated against the accumulation of capital by Lancashire cotton corporations. Such an inverse relationship was the opposite to that hitherto suggested by those criticising 'individual' or 'family' capitalism. Above, evidence on entrepreneurship has been dealt with only in passing, for example as a variable affecting issues such as technology and financial policy. Companies such as Horrockses and Tootals provided valuable case studies of these issues, and useful contrasts with the role of the entrepreneurs responsible for marshalling the economic power of the Oldham Limiteds. In this chapter, specific cases of individual capitalism associated with family business connections are given particular prominence; the Birtwistle group of Blackburn, the Fieldens of Todmorden, together with examples of small firms, the Osborne Spinning Company of Oldham and the Healey Wood Mill of Burnley. These are contrasted with other companies in the main sample where appropriate. Performances and financial structures of individually controlled businesses are then contrasted with those dependent on stock markets. Finally, integrating all the comparative analysis to date, conclusions are drawn on the causes and consequences of differences in performance for individual companies. Throughout the chapter a simple average index of return on capital employed for all the companies listed in table 1.2 was used as a comparative yardstick.

Individual and family capitalism

In considering Lancashire entrepreneurship, there were a number of possible working

definitions that could have been used. The one chosen was that offered by Casson, as the process of taking a position 'against the prevailing view'. Because such an individual must either share secret information in order to gain financial backing, or have capital already to hand, access to financial resources is effectively an entry barrier to entrepreneurship.¹ Since a primary objective of the current enquiry is to examine the process of capital accumulation, such a definition was thought to be particularly suitable.

As noted elsewhere it has been suggested that for Britain as a whole, failure to invest in production, distribution, and management, and resulting poor performance from the 1890s onwards, was caused by the family priorities of entrepreneurs, or the dictates of so-called 'personal capitalism'.² For the purposes of the following discussion, we identify two types of personal capitalism; individual capitalism and family capitalism.

The former has been dealt with already. As we have seen in chapters seven and eight, the typical Lancashire entrepreneur became a financial capitalist, defined here as one who organised loose coalitions of companies via individual control of assets or through a dominant role in the flotation of new companies, and as typified by John Bunting. In the context of chapter six, it should be reiterated that it was this type of entrepreneur that possessed the financial resources to develop integrated businesses, had they chosen to do so. Furthermore, there arose a reluctance to depend upon external shareholders to finance expansion, and the experience of some of the Oldham companies in chapters seven and eight suggested why this might have been the case. At the same time, there was a reluctance to delegate responsibilities to managerial hierarchies within the firm, and this in turn created a predominance of

¹ Casson, *The entrepreneur- an economic theory*, p. 14.

² Chandler, *Scale and scope*.

specialised companies. Although increasingly controlled by cross directorships and share holdings, each mill was structured by the necessary activities to fulfil the specialised productive task; hierarchy within the work force, exemplified by the minder- piecer system helped guarantee a narrow span of control.³ At the strategic apex, the financial capitalist had little need for management hierarchy *per se*. For these reasons, a special type of individual capitalism had emerged in parts of Lancashire by the early 1900s.

Yet the family controlled company remained an important feature of the business landscape. Those firms that sought to retain family control and avoid dependence on outside creditors and shareholders have been blamed for the pursuit of non expansionary strategies.⁴ Family control might also therefore have been expected to reinforce the predominance of the small firm. The alleged relationship between the gentrified social objectives of entrepreneurs and industrial decline has been the subject of wider discussion.⁵ Under certain conditions, it has been argued that firms dominated by family groups or individuals with good business connections can function extremely well. Based on trust, involvement in local communities, and infrastructural networks, such connections can significantly contribute to sustained competitive advantage.⁶ In contrast to the classical view of the development of the large corporation, which equates expansion in demand, labour specialisation and mass production, and as most recently exemplified by Chandler, the efficient survival of non-mass production types of industrial organisation has been argued to be especially

³ See chapter five, p. 128.

⁴ Lazonick, *Business organization*, pp. 45-9.

⁵ Rubinstein, *Capitalism, culture and decline*; Wiener, *English culture and the decline of the industrial spirit*.

⁶ Jones and Rose, 'Family Capitalism', *Business History*, pp. 1-15.

likely where flexibility in response to sudden changes in demand is an important feature.⁷ As we have seen in previous chapters, flexibility was an important feature of Lancashire textiles, especially in the case of specialised firms. In particular, it has been suggested that flexibility tends to support three variants of non - mass production capitalism; the municipality; paternal capitalism, and the federated family firm.⁸ Examples of these types of capitalism are considered below.

So far (chapter eight), the discussion has concentrated on the publicly controlled companies of the Oldham district. Chapter seven showed that these publicly quoted companies in the Oldham section of the industry were also the slowest to expand. In this chapter we concentrate on the various models of personal capitalism which existed beyond that sector, and the constraints imposed upon these companies are contrasted with those which existed for firms elsewhere in the industry. Chapter eight outlined some reasons for the emergence of a special class of entrepreneur in the Oldham area; the discussion below uses a case study approach to provide some contrast with entrepreneurs elsewhere in the industry.

A financial capitalist: William Birtwistle

William Birtwistle (1855-1936) and his emergent group of companies (hereafter the Birtwistle group) provided a good example of the type of empire building associated with entrepreneurs prepared to take over existing businesses as going concerns, thereby pulling together a loose federation of companies. Assembled in the late 1890s, these companies shared the proprietorship of William Birtwistle, a Blackburn based entrepreneur, but little else, remaining a loose association of relatively small and independent operating companies (table 9.1). Although the managements of these

⁷ Sabel and Zeitlin, 'Historical alternatives to mass production', pp. 134-147.

⁸ Sabel and Zeitlin, 'Historical alternatives to mass production', p. 147.

companies often overlapped, and were under the day to day control of Birtwistle himself, there were no apparent transfers of goods or cash from one business to the other and no other signs of mutual interdependence.⁹ Any integration was within the business units, for example at Whiteley, rather than for the enterprise as a whole. At neither business unit level, nor for the group as a whole, were the spindleages consistent with the number of looms, Birtwistle group being a predominantly a weaving based organisation, and individual companies would have needed to buy in a substantial proportion of their yarn requirements.

⁹ Eccles, LCRO, DDX/868/7/1, Profit and loss accounts and balance sheets; Whiteley, DDX/868/21/5, Balance sheets.

Table 9.1: Birtwistle Group Mills

Company	Location	Date acquired	Mule sp.	Ring Looms sp.
John Hawkins & Sons Ltd	Woodfold Mill, Darwen	1895		945
	Greenbank Mills & Hartford Mill, Preston	1898 1910	52,688	27,868 1,755
	Abbey Mill, Withnell	1898	4,500	13,000 700
T and R Eccles	Lower Darwen Mill, Blackburn	1897		1,070
George Whiteley	Albion Works, Blackburn	1899	21,400	13,720 600
John Fish Ltd	Waterfall Mills, Blackburn	1906	29,000	42,000 880
	Primrose Mill, Blackburn	1906		770
Totals			107,588	96,588 6,720

Sources: Compiled from, *The William Birtwistle group of mills*, and Worrall, *The cotton spinners and manufacturers directory*, 1913.

The remarkable feature of the Birtwistle 'empire' was the rapidity with which it was constructed. Treated collectively, the business in 1913 was on a par with the largest Lancashire enterprises,¹⁰ and Birtwistle was recognised by his contemporaries as a significant entrepreneur:

William was a notability on the Manchester Royal Exchange, where his constantly growing group of spinning and weaving mills made him, by the beginning of World War One, one of the most powerful men in the trade.¹¹

Although a self congratulatory statement from a far from independent source, the group deserves a more widespread recognition.¹² Lack of attention from historians has perhaps reflected that, individually, the businesses were typical of the median organisation in this part of Lancashire.

Although Birtwistle provided some parallel with Bunting, the latter was more dependent on the promotional and share broking aspects of the trade.¹³ Birtwistle, by contrast, drew his expertise from merchanting and familiarity with the markets of Liverpool and Manchester. Directors of the companies in the group were drawn by and large from cotton broking interests.¹⁴ Geo. Whiteley Ltd (hereafter Whiteley) and T and R. Eccles Ltd (hereafter Eccles) were both conversions from partnerships

¹⁰ The company was approximately the same size as Horrockses, having slightly less spinning capacity, but slightly more weaving, c/f table 9.1 and Worrall, *The cotton spinners and manufacturers directory*, 1913.

¹¹ *The William Birtwistle Group of Mills*, np.

¹² Elsewhere, William was recognised as a significant figure. He continued his acquisitive strategy into the 1920s, for example with the acquisition of Ewood mills in 1928 (the *Times*, 17th December, 1928 p. 11g), and by the time of his death in 1936, controlled 16 mills, 'forming one of the largest combinations under the same management in Lancashire', the *Times*, 15th June, 1936, p. 17d.

¹³ Farnie, 'John Bunting', *DBB*, pp. 506-9; Oldham entrepreneurs were examined in more detail in chapters 7 and 8.

¹⁴ Whiteley, LCRO, DDX/868/21/1, and Eccles, DDX/868/20/1, ledgers and registers of members.

in the late 1890s, and Liverpool cotton brokers, such as Henry Eccles, continued to be significant shareholders.¹⁵ The establishment of the Birtwistle group constituted, through business connections as represented by shareholdings, a commitment to forward integration by the Liverpool firm of Eccles and Eccles. Like Horrockses, Birtwistle entrepreneurs played to their strengths on the merchanting side of the business.

The two Birtwistle companies, Whiteley and Eccles, feature in table 9.5, and a summary of the performances of these two companies vis a vis the rest of the industry is shown in figure 9.1. The former, a vertically integrated company, performed indifferently, and like Horrockses, Tootal, Ashtons, Barlow and Jones, and Rylands, missed out on the very high returns of the 1907 boom uniformly enjoyed by the Oldham companies, including those of the Bunting group. The other, Eccles, was the best performing company in the whole sample (table 9.5). That the companies performance was markedly different, given they had the same management, was perhaps the result of wider factors other than entrepreneurship.

What is clear, however, was that the dynamism of Birtwistle as an individual was the most important driving force behind the rapid emergence of the group. By the standards discussed in chapter seven, the growth of the entity if considered collectively was quite remarkable, with spinning growing at a rate of 250% and weaving at over 700% in the years 1895-1913.¹⁶ Yet the businesses, once acquired, as typified by Whiteley and Eccles, did not expand their productive capacity.¹⁷ As in

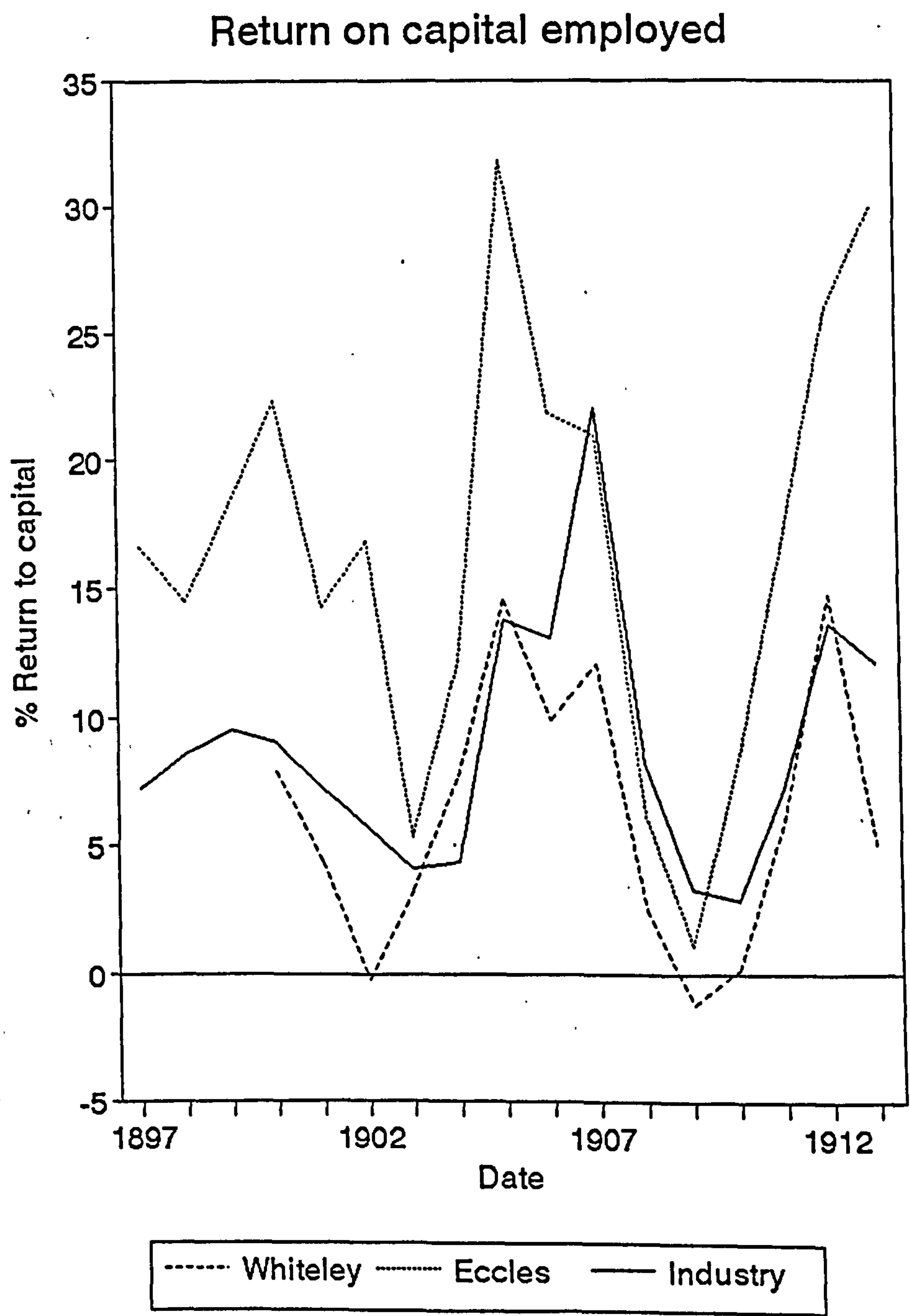
¹⁵ Whiteley, LCRO, DDX/868/21/1, minute book; Eccles, DDX/868/20/1, directors' minutes.

¹⁶ Calculated from *The William Birtwistle group of mills*, and Worrall, *The cotton spinners' and manufacturers' directory*, 1913.

¹⁷ Eccles, LCRO, DDX/868/7/1, Eccles, Profit and loss accounts and balance sheets; Whiteley, DDX/868/21/5, balance sheets.

Oldham, the domain of the publicly quoted company, real capital growth and accumulation accrued to the individual, not to the jointly controlled hierarchical organisation. Such holding company structures, as typified by Birtwistle's companies, were quite sufficient as guarantors of profit.

Figure 9.1: Rates of return, British cotton and William Birtwistle companies



Sources: Calculated for individual companies from sources listed in table 1.2. British cotton industry calculated as a simple average of all main sample companies for each year.

Certain special factors help account for the profitability of Eccles, a specialised manufacturing company. Very little was spent on replacement of fixed assets and depreciation charges slightly exceeded plant replacement, which, as we have seen, was also a feature of Oldham companies.¹⁸ As a result the fixed capital of the company declined slowly during the period. Working capital by contrast increased substantially, suggesting that a greatly increased throughput was possible on a relatively small fixed capital base. For example, in the 1912 balance sheet stocks stood at 110% of fixed assets, compared to only 37% in 1897.¹⁹ With its own buildings at Lower Darwen Mill, more was invested in fixed assets than the typical 'room and power' weaving company. Lower capital bases meant that small firms with low fixed costs would not experience steeply rising unit costs noted elsewhere in periods of short time working.²⁰ Other companies with small capitals showed exceptional returns; the Haugh and New Hey Spinning Companies and Healey Wood Mill all achieved over 35% in 1907,²¹ and are examples of where relatively low interest and depreciation charges might tend to exaggerate apparent success.

However, any problems in this respect cannot distort the strength of significant trends. The decisive factor for Eccles was that in the period 1897-1914 the company trebled its sales turnover, mainly for the Indian market, in the form of shirtings and 'dhooties', without needing to increase its capital. Other than in the 1908/9 recession, margins remained relatively constant, but throughput increased dramatically, and it was the latter factor which accounted for the rise in return on capital (table 9.2). The contradiction between production efficiency and marketing

¹⁸ See table 7.1 above.

¹⁹ Eccles, LCRO, DDX/868/7/1, profit and loss accounts and balance sheets.

²⁰ Winterbottom, *Cotton spinning calculations*, p. 255-7.

²¹ See appendix 1.

was noted earlier for companies such as Horrockses.²² By contrast, Horrockses had chosen an opposite strategy, using branding, increased product range, and market power to widen its margins at the expense of productive efficiency.²³ Only in the recession of 1908-9 was there a decline in return on capital associated with low margins - a phenomenon experienced by the rest of the industry as well.²⁴ Unlike Horrockses, Birtwistle made no attempt to integrate the operations of his mills, and Eccles was able to reap the benefit of efficient production runs associated with undifferentiated commodity output. Given its price, cost and capital base structure, it was unlikely that Eccles would have been tempted to switch to the British Northrop Loom company as a capital equipment supplier after 1903. For this company at least, the recovery of the Indian market after 1896, together with the connections of William Birtwistle on the Manchester exchange, which had the effect of increasing the volume of business, were the decisive success criteria.

²² Chapter 6, p. 132.

²³ See above, table, 6.2.

²⁴ Robson, *The cotton industry*, p. 336.

Table 9.2: T and R Eccles; profitability, margins, and efficiency

Year	Asset turnover	Profit margin	Return to capital
1898	2.71	5.32	14.47
1899	3.33	5.52	18.40
1900	3.64	6.13	22.34
1901	3.75	3.80	14.27
1902	3.29	5.11	16.85
1903	3.43	1.53	5.28
1904	3.78	3.22	12.20
1905	3.77	8.41	31.78
1906	3.95	5.52	21.82
1907	4.21	4.96	20.93
1908	4.02	1.52	6.13
1909	3.45	0.32	1.11
1910	4.33	1.86	8.09
1911	4.80	3.47	16.72
1912	4.18	6.21	26.00
1913	5.32	5.63	30.00
1914	5.14	2.92	15.01

Sources: Calculated from LCRO, DDX/868/7/1, profit and loss accounts and balance sheets. For definitions of ratios used, see table 6.2, p. 155 above.

Like Bunting of Oldham, Birtwistle used the profits of his mills to finance further acquisitions. In contrast, however, he did not use his entrepreneurial skills to amass a personal fortune. The small estate he left on his death (£13,171) was only a fraction of that left by Bunting (£742,940), Hollins (£315,357), and the millions of the third generation Fieldens.²⁵ One reason was that he used the corporate form to pass on wealth to his sons. For example, when Abbey, Carr and Woodfold Mills were restructured as William Birtwistle Ltd. in 1925, the overwhelming majority of the shares were placed in the hands of his sons, Arthur and Frederick.²⁶ However, William was not a 'family' capitalist, as most of his earnings were reinvested in the industry and not in country houses and so on. Like Hollins and Tootal Broadhurst, he took a wider view of the needs of the industry and its employees. The involvement of his son Arthur as a Brigadier General in the First World War, may have motivated the great efforts of his father to secure War Loan finance for tank building. Like the earlier Fielden's, William's public spiritedness extended to concern for his employees, including the provision of special accommodation,²⁷ and the donation of land for the unemployed.²⁸ These concerns aside, during the focal period of this study, before 1914, growth rather than personal enrichment was the principal objective of the company, and this dynamism helped create a significant and enduring association of cotton enterprises.

²⁵ The *Times*, 1st August, 1936, p. 15c, Farnie, 'John Bunting', *DBB*, p. 508, The *Times*, 21st March, 1924, p. 15d, below, p. 308.

²⁶ UTR, credit ratings, Abbey, Carr and Woodfold Mills, 1st November 1927.

²⁷ The *Times*, 15th June, 1936, p. 17d.

²⁸ The *Times*, 24th April, 1934, p. 11g.

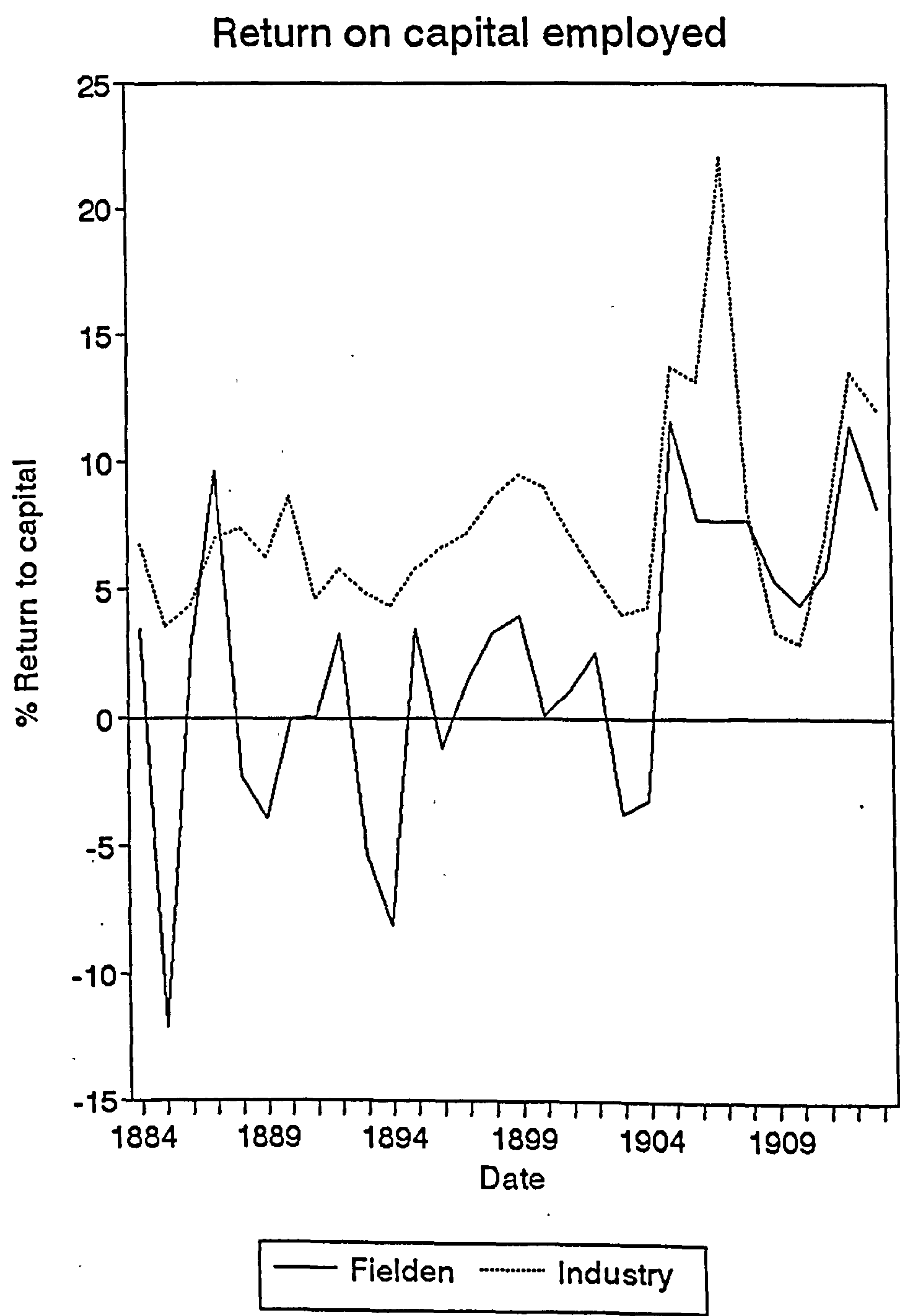
A family capitalist: Edward Brocklehurst Fielden

The Manchester based textile elite,²⁹ of which Birtwistle later became an important member, had always formed an important part of the activities of several generations of the Fielden brothers. In this respect, what works well for one company or generation might not work for another. For the Fieldens of the late nineteenth century, our next comparative case study concern, these connections appeared to detract from business profitability more than they contributed towards it.

Like many Oldham companies, the overall performance of Fielden was dismal in the 1890s. Although there was a recovery in the 1900s, it was not as strongly felt when compared with specialised competitors. After 1908, however, the company managed appeared to have been turned around to an extent (figure 9.2).

²⁹ Pearson, 'Collective diversification', pp. 379-414.

Figure 9.2: Rates of return, British cotton and Fielden Brothers Ltd



Sources: Calculated from WYRO, C353/475, Detailed accounts. British cotton industry calculated as a simple average of all main sample companies for each year.

Fielden Brothers Ltd performed significantly worse than all the comparator companies whether smaller or larger (table 9.5). Yet all were less innovative than Fielden, given its experimentation in automatic looms and weft ring spinning.³⁰ There were many possible reasons why the company performed badly.

Unlike other entrepreneurs, such as Birtwistle, the Lees and Edward Tootal Broadhurst, the Hollins's and the Gregs, there was a certain disinterestedness in the new generation of Fielden entrepreneurs. John Ashton Fielden, the son of Samuel Fielden, inherited the bulk of his father's estate of £1.16 million.³¹ He showed little interest in the business that had earned his fortune, other than as a major shareholder.³² As chairman, E.B. Fielden had responsibility for the management of the company. However, his main concern was to live as a country gentleman. As many others have done, he defined a gentlemanly lifestyle in terms of commitment to rural activities, particularly farming and hunting. His diary provided clear evidence of these priorities. As a businessman, E.B. Fielden recorded many of his concerns, but issues of land management and country sport were typically better documented and given far greater prominence. The division of time can also be ascertained from diary entries and although he paid frequent visits to Todmorden, he was present for only five days in a typical month.³³ In addition, he exercised control via periodic

³⁰ See chapter 6, pp. 185-92.

³¹ *Todmorden Advertiser*, 14 February, 1890.

³² WYRO 353/1 Directors' minutes. J.A. Fielden held 40 shares, E.B. Fielden, 80 shares.

³³ EBF diaries, *passim*. Although Board meetings were monthly, EB Fielden normally made a second journey to Todmorden in the average month, or managed Fielden affairs from Norfolk Street Manchester. He normally visited at least one, and sometimes all three, of the manufacturing sites. Although he clearly took his business responsibilities very seriously, with some exceptions, country sport prowess, such as the number of animals killed, normally accounted for the most detailed diary content.

scrutiny of financial reports sent to him through the post, and monitored the position and cover of the company in the futures market very carefully.³⁴ It is significant in the context of recent discussions of the cotton industry, as examined above in chapters two and six that, the key to controlling a profitable business was seen as knowledge of the markets, rather than technical developments.

The distance of the Fielden family from the business at this time is consistent with the view that the commitment to Todmorden and the employment of its people at the Fielden mills owed much to the events of the past and feelings of continued obligations of loyalty to the town. The Fielden family had historically regarded themselves as providers of work for the local populace, being deliberately labour intensive and refusing to lay workers off during recessions, but expecting deference in return.³⁵ E. B. Fielden continued this tradition, but was more distant than his family predecessors. When a hand was killed in an accident at Robinwood, he noted the concern of his uncle Samuel Fielden, who unlike Edward, wanted to put the question of new boilers and gearing on hold until he had got over the accident.³⁶ Although perhaps lacking the paternalistic attitude of his forebears, Edward nonetheless was a serious taskmaster and continued the tradition of instilling fear and respect in his employees.³⁷

³⁴ According to Mr. J. Hirst, two returns per week were sent for yarn produced and cloth sold. On the basis of the extent of over or under cover, E.B. Fielden would then decide whether to go longer or shorter. The accounts and production cost data for the mills were also sent at less frequent intervals, (eg RMA, 1895-1914).

³⁵ Weaver, *John Fielden*, p. 25; Fielden, 'Autobiography of Samuel Fielden', p. 144.

³⁶ EBF diaries, Wednesday 10th and Thursday 11th April, 1889. EB Fielden wanted to discuss the question of the gearing and boilers, but on learning that Samuel Fielden was too preoccupied with the accident to be able to concentrate on the matter, he returned to Dobroyd Castle for dinner.

³⁷ Note from a conversation with Mr. J. Hirst.

Nonetheless, the commitment to, and interdependence of the Fielden family with the Todmorden community was not what it had been in earlier decades. In part this reflected legislation and changing local authority responsibilities as much as family management style. Thus E.B. Fielden presided over the sale of the gas works (1892) and the closure of the of the previously Fielden sponsored schools at Robinwood and Centre Vale in 1889.³⁸ The increased secrecy which clouded the business activities of the company from 1890 onwards arose partly from a desire to conceal the extent to which the new management team were prepared to allow the company to decline. Figures appearing in Worrall's directory in the period 1889-1914 showed 100,000 spindles and 1,600 looms.³⁹ Consistency with what was known publicly about the company in 1889 was thereby achieved.⁴⁰ Yet the evidence from the accounts suggests these figures were deliberately overstated. The output of Robinwood averaged around 2,500,000lbs of 20s twist per annum.⁴¹ This represented the productive capacity of around 18,900 rings or 30,300 mules.⁴² A return completed at Waterside counting house in 1886, prior to full conversion to rings, showed that Robinwood had 22,028 throstle and 452 ring spindles. The same return showed Lumbutts to have 5,344 ring spindles and 8,568 mule spindles at Jumb.⁴³ Taking into account other mills still open at this time, total spinning capacity was around 60,000 mule equivalent. The publicly disclosed figures for looms appear

³⁸ EBF diaries, 1889 and 1892.

³⁹ Worrall, *The cotton spinners' and manufacturers' directory*, 1891 and 1913.

⁴⁰ *Todmorden Advertiser*, 9 November, 1889.

⁴¹ Accounts of Robinwood and Lumbutts mills, WYRO/353/421, 480 and 481. Also RMA, 1895-1914.

⁴² Calculated using the production per pound data in Taggart, *Cotton mill management*, p. 202.

⁴³ Machinery analysis by mill, Waterside Counting House, 1886.

more consistent, the board minutes showing 1501 in 1896.⁴⁴ Although the company significantly modernised its operations through a programme of ring frame purchases and loom widening in the 1890s, this did not compensate for the decline in the total scale of the business in terms of mill closures prior to 1891 (figure 6.5). In the reorganised company, spinning capacity was therefore insufficient to keep the weaving shed going and the company would have needed to buy some of its yarn, especially weft, from other local spinning firms.

As the Fielden family sought to reduce their commitment to Todmorden, the problem arose of finding local people with whom day to day management of the mills could be entrusted. The innovative drive of the first general manager, Thomas Wrigley, has already been noted in chapter six. However, his stewardship coincided with a period of poor financial performance. It is true that the efficient specialised spinners of Oldham also suffered until 1895, but even by their standards the Fielden losses were serious, particularly in 1894. To the Fielden family, which by this time was extended and with many of its members enjoying extravagant lifestyles, financial results came before innovation and Wrigley was dismissed in 1895. In a letter to E.B. Fielden, John Ashton wrote that Wrigley's ideas as to cotton spinning were 'far too antiquated to be of any use at the present time'.⁴⁵ It was inconceivable that anyone conversant with the cotton industry press and the technical issues facing the industry could hold such a view. There was some evidence that Edward Fielden did not share the opinion of his cousin and appreciated Wrigley's innovative talents, given that he

⁴⁴ WYRO C353/1, Board Minutes and WYRO C353/140 Details of new (Butterworth and Dickenson) looms, 1896-7.

⁴⁵ John Ashton Fielden to E.B. Fielden, January 13th 1895. He went on to point out that results were unsatisfactory and he should be replaced with a 'modern man'.

had taken steps in 1892 to support a patent law suit in which the latter was involved.⁴⁶ However, Edward became impatient, suspecting manipulation of accounts and noting the inability of Wrigley to control his juniors.⁴⁷ The need for a scapegoat for the poor financial performance of the business thus took precedence. The dismissal of Wrigley placed a question mark over the willingness of top management to consider the long run position and to continue to support innovation.

The problem of vertical integration from a technical viewpoint was examined in chapter six; from the perspective of the family firm there were further dilemmas. First, there was the problem of only a partly integration and there were external markets for the outputs of Robinwood and Lumbutts and Waterside also bought some of its yarn from local spinning companies.⁴⁸ Under such circumstances, the management of the vertically integrated organisation becomes problematic, since management co-ordination replaces the market as the mechanism for transfer between different processes of production. For Fielden Bros. Ltd. management, the co-ordination problem would have also manifested itself at the interface of spinning and weaving technologies, both of which were in flux and both of which demanded different types of specialist knowledge. The difficulties faced in this respect were generally not shared by cotton entrepreneurs in the emergent specialist spinning and weaving centres. As with the Gregs the solution might have been to move into specialised weaving, or as with Birtwistle, to run the companies as independent units. Edward Fielden had a sympathy towards the local communities around Robinwood

⁴⁶ EBF diaries, 2nd December, 1892.

⁴⁷ EBF diaries, 2nd and 3rd October 1894. The pretext for Wrigley's dismissal was his failure to prevent the theft of tools from the works by a junior manager.

⁴⁸ WYRO, C353/421, 480 and 481 Lumbutts and Robinwood mill accounts, 1890-1914; RMA, 1895-1914.

and Lumbutts, but also had the pressing matters of his country estate to attend and thus far less time available to devote to management, could follow neither course.

At local level, E.B. Fielden needed trust to guarantee efficiency and profit. As shown in chapter 6,⁴⁹ he did nothing to encourage independent action from his managers, even though some of his earlier lieutenants were dynamic and innovative. Cost control, imposed out of the needs of family circumstance, secured finance for the estates, but did not translate into competitive advantage.

Nonetheless at certain times, the Fieldens were willing to take risk in less innovative ways. A particular focus of Edward Fielden's entrepreneurial activity was dealing in futures markets.⁵⁰ With the family background in mercantile activities, Fielden Bros. Ltd. might have been expected to benefit from the expertise of its management and connections in such markets. However, this was not the case. Although futures were used as hedges against price fluctuations for both cotton and yarn, the point can be illustrated by a review of the evidence as to the success of the buying policy of the company. A cotton spinner buying cotton for future delivery would require insurance against the risk that the price would rise between the date of the contract and the date of delivery. This was achieved by taking out a contract to sell futures on the delivery date. Cover could thus be comprehensive or partial, depending on the buyers' attitude to risk and ability to judge the market. A strategy of comprehensive cover would produce the same average cost of cotton as that available to the market. A speculative strategy would produce gains or losses relative to the market in terms of cheaper or more expensive cotton.⁵¹ There was some

⁴⁹ See above, pp. 165-170.

⁵⁰ WYRO C353/1 Directors' Board Minutes, p. 280, all futures transactions had to be approved at Board level.

⁵¹ Thornley, *Modern cotton economics*, p. 82.

evidence that Fielden management chose to speculate on some occasions, although E.B. Fielden sometimes reprimanded his managers for taking an uncovered position.⁵² The overall outcome appeared to accentuate the loss making position of the company in the 1890s. The average cost per lb of cotton at Robinwood, based on invoice price, for the period 1895-1914 was 5.855d. For the same period the cost in the market as a whole was 5.5625d.⁵³ This is quite a serious gap, since the first figure is based on the production of 20s yarns from American cotton and the second on 32s. Furthermore, the calculation ignores a series of net losses on futures recorded in the accounts.⁵⁴ A loss on a futures contract would have been directly counterbalanced by a gain in the main trading account via cheaper raw cotton costs in the spot market. Even without the additional losses, however, Fielden was still paying more for its spot cotton than the market average. As already noted, E.B. Fielden regarded ability to judge the markets as the most important aspect of cotton mill management and was aware of the difficulties involved. He considered delegating the function to brokers, but was dissuaded from doing so by one of his trusted advisers.⁵⁵

Despite the losses on futures, it is difficult to attribute the competitive

⁵² EBF diaries, *passim*.

⁵³ Calculated from Robson, *The cotton industry*, p. 336.

⁵⁴ The total net losses on futures for the years 1891-1894 inclusive were £18,965. Assuming a covered position and falling cloth and/or yarn prices this would have improved trading profit in roughly the same proportion. However, as losses on the trading account were also high, and much worse than elsewhere in the industry (figure 9.2) it is likely that some of the loss arose from an uncovered speculative position. The net profits/losses from futures in other periods were as follows:

1895-1899	£5,123 (profit)
-----------	-----------------

1900-1904	£13,436 (loss)
-----------	----------------

1905-1914	£4,352 (loss)
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Calculated from WYRO C353/475, 'Detailed Accounts'

⁵⁵ *Coates to Fielden*, July 28th 1910.

disadvantage in cotton input costs purely to E. B. Fielden the entrepreneur. The explanation may simply lie with difficult communications and expensive transport costs. Geographical location, and the remoteness of Todmorden from Manchester and Liverpool, undoubtedly increased the costs of delivered raw cotton at Robinwood and Lumbutts and would account for the differences noted above. The decline of mills away from the main centres of Burnley and Oldham would have been accentuated by such costs. Enjoying transport cost advantages, the latter may have been the first to benefit from any up turn in trade. In at least one year during the 1890s, the company suffered as a result of its location. As a correspondent noted:

At Waterside, there are a large number of looms at a standstill ... and others in the district ... Burnley is working at 'full swing'.⁵⁶

This formed one example of how commitment to an increasingly peripheral local community imposed a constraint, made worse, as noted in chapter three, by the need to persevere with out of date buildings. Perhaps the Fielden's could have used their connections in the Lancashire and Yorkshire railway to overcome the problem, but as figure 6.3 illustrates, the Robinwood, Lumbutts and Waterside sites were not ideally located in relation to one another.

Less charitably, in terms of the ability of Fielden management, the trends may reflect a policy of needless exposure and losses on uncovered purchases. Alternatively, the company was dependent on the markets of India and China, and may have suffered disproportionately during the period of silver devaluation and the temporary rise of the Indian cotton industry.⁵⁷ Finally, relationships with suppliers and agents may have been poor. Whichever of these, the earlier Fieldens would have overcome the problems, given their ability as merchants. The consequence of poor

⁵⁶ *Textile Mercury*, 5 August, 1893, p.110.

⁵⁷ Chapman, *Report of the tariff commission*, pp. 420-7; see also chapter 11 below.

buying was the loss of some of the competitive advantage which the company had enjoyed via its merchanting activities prior to 1889.

Edward Fielden and his representatives remained active participants in the Manchester markets. The company office at Norfolk Street was used as a base for frequent company meetings, negotiations with agents and important customers such as Rylands.⁵⁸ However, the scale of the business was far less than it had been in former years. In 1865, the capital invested in the Manchester arm of the Fielden operation had amounted to £706,000. Significant divestments were made since then and reflected in the estates of the third generation partners.⁵⁹ The Manchester operation henceforth was a shadow of its former self. In 1895, the Manchester office maintained only 40 customer accounts with a total value of £8,700.⁶⁰ The causes of the restructuring were connected with the deaths of the previous generation Fieldens and the distribution of their estates. The consequence for the Todmorden successor company was increased manufacturing specialisation through the loss of its distribution network and this was consistent with the increasing rarity of the merchant-manufacturer.⁶¹ Another consequence may have been lower profits through more difficult access to markets, albeit with the compensation of a lower risk profile for the company.

Overall the Fieldens of the 1890s and 1900s lacked the entrepreneurial drive of their predecessors. The mills became a function of their private priorities and

⁵⁸ EBF diaries, much business was transacted in Manchester by EB Fielden, usually in conjunction with his adviser, Thomas Lodge.

⁵⁹ The combined estates of John Fielden and Samuel Fielden were £1.64m, *Textile Mercury*, 5 August 1893, p. 110; *Todmorden Advertiser*, 14 February, 1890. This was over twelve times the capitalised value of the successor company at £130,000.

⁶⁰ WYRO C353/257, Manchester Accounts.

⁶¹ Chapman, *Merchant enterprise*, p. 303.

family commitments. J.A. Fielden tended to ignore the business, whilst E.B. Fielden attempted to simultaneously live the life of a country gentleman and with some success, turned around an old manufacturing business badly in need of modernisation. In the early 1890s at least, innovation tended to occur in spite of and not because of the attitude of senior management. There was some loyalty to the people of Todmorden and the traditions of the past, but these had provided capital to dispose of and they were determined to spend rather than invest, even if that meant reducing the scale of the manufacturing business.

Personal capitalism: Small firm examples

Many companies in Lancashire combined the key attributes of Birtwistle and Fielden. Their owners and managers were often dominated by business connections with other companies or markets and family relationships. For both the expanding Birtwistle empire and the contracting Fielden concern, the fundamental unit of business organisation remained the small firm. Lack of concentration was an important feature of the industry and appeared to become more so as specialisation intensified.

One such small firm was the Osborne Spinning Company. Based in Oldham, it was floated in 1889 to take over the running of a mill originally established in 1853,⁶² but was completely refitted with 45,000 Platt Bros. mule spindles.⁶³ The company was thus about half average size for mills of this time. It remained under the control of the small group of promoters and directors, and unlike the typical Oldham company considered in chapter eight, did not issue its shares to the local public. These individuals were perhaps wealthier than the average Oldham shareholder, requiring a down payment of £5 for each £100 share in contrast to 70s

⁶² Gurr and Hunt, *The cotton mills of Oldham*, p. 43.

⁶³ LCRO, DDX/869/9/1, plans and tenders.

for each £5 share on a typical quoted company. Its strategy was to spin a range of counts with a bias towards higher quality Egyptian cotton at 60s and 70s counts, again unusual for an Oldham company.⁶⁴ It was a successful policy, and Osborne outperformed both the industry and larger companies such as Dowry, Sun Mill and Werneth in terms of return to capital (figure 9.3).

The policy of the Osborne management suggested that increasing returns to scale were not the only way to secure profits for Lancashire entrepreneurs. Specialisation in the higher quality market on the basis of a small capital commitment produced relatively high profits. Apart from one minor refit, the directors made no significant investment in new equipment. As a result the capital employed declined through the repayment of loan finance and the depreciation of fixed assets throughout the period.⁶⁵ The variability of ROCE for Osborne compared to Werneth and the industry as a whole is partly explained by the very low capital denominator exaggerating the impact of fluctuations in absolute profit and loss. There is thus some evidence here of Lancashire entrepreneurs doing what they have often been accused of, continuing to run machinery long after it was written off for accounting purposes and resisting pressure to scrap and replace machinery in existing mills.⁶⁶ Osborne made good profits which could have been used to finance new investment, for example in ring spindles. The evidence suggests its management deliberately chose not to, and not that they were constrained from doing so through lack of finance. Credence is thus given to the view of Saxonhouse and Wright that mules were a

⁶⁴ LCRO, DDX/869/9/1, plans and tenders.

⁶⁵ LCRO, DDX/869/3/1, trade, capital and profit and loss accounts; see also the decline in net book value of company assets in table 7.1.

⁶⁶ Ryan, 'Machinery Replacement', p. 569.

positive choice in their own right,⁶⁷ albeit from a financial, rather than industry structural, point of view.

Another highly successful small private company was Healey Wood Mill. Based on a very small capital, the company typified small business dominated north east Lancashire. Defined as vertically integrated for its simultaneous presence in spinning and weaving operations, the company actually controlled two separate factories, a shed of 170 looms producing towellings and a spinning mill of 6000 weft spindles, spinning waste.⁶⁸ As with many other examples already considered, no attempt was made by management to enlarge either of the premises or to increase productive capacity. The purpose of the company was to produce profit and hence dividend to its shareholders. A very small proportion of the very small capital of the company was kept undivided in reserve, and the company also remained independent of any external borrowings.⁶⁹ The return to capital thus corresponded closely to the annual percentage declared dividend and this was used to estimate the former for the years 1885 to 1905.⁷⁰ Throughout the period, the company was relatively profitable, for example achieving a return of 42% in the boom of 1907.⁷¹ Unlike the Blackburn companies of Birtwistle, Healey Wood's product range of waste, crapes, plains and towels⁷² was not overtly dependent on the Indian market. The independence of the spinning and weaving branches of the business would also have helped keep profits

⁶⁷ Saxonhouse and Wright, 'Stubborn Mules', p. 90.

⁶⁸ Worrall, *The cotton spinners' and manufacturers' directory*, 1913.

⁶⁹ For example at 31st January 1913, at the end of an average quarter, the balance on reserve was £1,362 out of a total capital of £12,372; RM, BB637, Private ledger.

⁷⁰ See appendix 1.

⁷¹ See appendix 1.

⁷² Worrall, *The cotton spinners' and manufacturers' directory*, 1913.

more consistent as spinning and weaving tended to lead and lag respectively in the trade cycle.⁷³ To a company such as this, the benefits of vertical integration, in terms of more efficient throughput, were not obvious.

Nor was there any apparent need for the another avowed benefit of vertical integration, the development of a professional managerial hierarchy.⁷⁴ The importance of dividends reflected the characteristics of share ownership. Of the eighteen individual shareholders, two were widows. A further block of shares was held by will executors. Between them these had effective control of the company.⁷⁵ Like Fielden, the concern was thus run partly for the benefit of inheritors of earlier entrepreneurs, in this case John Cronkshaw of Blackburn, whose widow, Ellen, served as company chairman. For this type of shareholder, the important function of the business was to provide income for estates.

Another significant stakeholder, with different priorities, was the entrepreneur, Thomas Burrows (1839-1906). Although the companies he floated were on a far smaller scale, Burrows was a Burnley equivalent of Oldham's John Bunting. Thomas Burrows and Company Ltd was the most important successor to the Haggate Joint Stock Commercial Company, which like Mitchell Hey at Rochdale and Sun Mill at Oldham had been an attempt at co-operative manufacturing in the 1850s.⁷⁶ Between 1887 and 1905 the company acquired control of mills at Calder Vale, Gannow, Queensgate, and Westgate. None of these were significant in their own

⁷³ See chapter 11.

⁷⁴ Chandler, *Scale and scope*,

⁷⁵ RM, BB 647, share registers.

⁷⁶ Frost, *A Lancashire township*, p. 65.

right, but their combined size added to Burrows's significance as an entrepreneur.⁷⁷ Burrows also became chairman of the Calder Vale Room and Power Company and of Healey Wood Mill. Like Edward Fielden, he also pursued a career in local politics and on the bench.⁷⁸ As a Liberal, he was immensely active in Burnley municipal politics, becoming Mayor in 1891.⁷⁹ However, Burrows's activities resembled closest those of William Birtwistle. Again capital accumulation occurred at an individual rather than corporate level; none of the individual businesses such as Healey Wood Mill expanded whereas the holdings of Burrows did. Like Bunting, Birtwistle, and other such individuals, this type of entrepreneur needed to see profits distributed as dividends rather than accumulated. Previously distributed personal wealth could then be used to reinvest in new concerns. For Healey Wood Mill, all the shareholders, for different reasons, preferred to receive dividends and keep the company roughly at the same size.

Absence of single family control might have explained the style of management adopted. Despite the small scale of Healey Wood Mill, its management deliberately shunned paternalism in favour of a hostile and distant attitude to its workers. In May 1912 when the workpeople requested a picnic be organised for the forthcoming fair week, management resolved instead simply to pay 2/6 per head.⁸⁰ Sense of identity amongst the workforce could not have been high and many left the company voluntarily when management refused to raise wages at a time of labour

⁷⁷ Britannia and Belle Vue Mills at Westgate had 1527 looms; Worrall, *The cotton spinners' and manufacturers' directory*, 1913.

⁷⁸ Frost, *A Lancashire township*, p. 66.

⁷⁹ *Burnley Express*, 27th June, 1906.

⁸⁰ RM, BB 648, Minute books, 27th May, 1912.

scarcity.⁸¹ As at Milnrow and Oldham, conformance with the requests of employers' federations became the dominant principle of labour management. Healey Wood directors were always quick to follow the local associations on short time working and alterations of wage rates.⁸² Increasingly, paternalism became peripheral and confined only to firms like Fielden where such attitudes were well entrenched over several generations. Elsewhere, federal structures, at the level of the financial capitalist style entrepreneur, and at the level of industry employer associations, were important reasons for the decline of paternalism in an industry still characterised by the small firm.

Individual and collective capitalism: impacts on performance

Case studies, whilst important in the analysis of individual decisions and their constraints, only support tentative conclusions on the performance of Lancashire capitalism and the role of the entrepreneur. In this section, examining a larger cross section of companies, the discussion is widened to show contrasts between public and privately controlled companies.

Throughout the period, with the exception of the boom of 1907, publicly quoted companies were out-performed by those whose capital was in private hands. Earlier chapters have shown that diverse shareholder control and stock market quotation did not promote organic growth through reinvestment of profits, and in general it appeared not to support the generation of superior profitability either. Figure 9.2 and table 9.4 contrast the profitability of privately controlled businesses with those whose shares were traded by the public. The latter class included Ashtons,

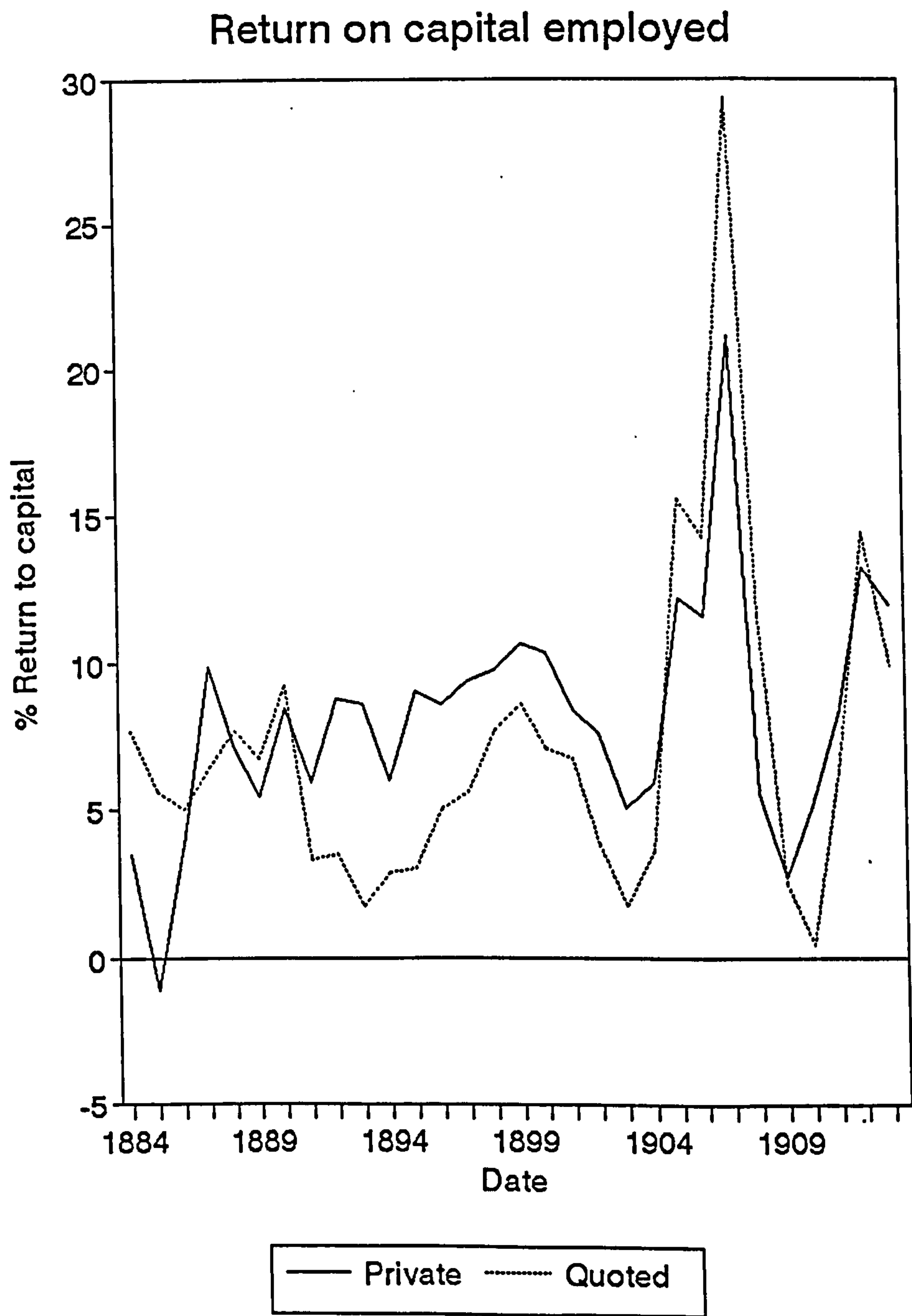
⁸¹ RM, BB 648, Minute books, 28th January 1907.

⁸² RM, BB 648, Minute books; for example, 21st and 28th January, 17th June 1907, 1 June 1908, 1 March 1909.

Barlow and Jones, and Rylands, which had their shares quoted in London and Manchester, together with companies quoted at Oldham.

After 1905, the performances of both type of company were very similar, with a slight accentuation of the trade cycle effects for the publicly quoted companies (figure 9.2). Before that date, there was a clear advantage for the privately owned company. The discrepancy in the 1890s was due largely to the slump which affected the specialised spinning firms in the Oldham area. Rylands, being more diversified, enjoyed consistent if unspectacular levels of profit during the 1890s and 1900s. Only the Oldham companies experienced a roller coaster of return to capital fluctuations in these two decades. Ashtons and Barlow and Jones, both earned profits at a much steadier rate. The apparent contrast in performance suggested in figure 9.2 was therefore a function of specialisation, and hence of issues explored in previous chapters, as it was of ownership *per se*. Although the differences between average returns for the period as a whole were not statistically significant, the apparent divergence of profitability in the 1890s especially drew the age of the dominance of the Oldham Limiteds to a close and reinforced the emergence of the individual cotton financial capitalist.

Figure 9.3: Average Returns on Capital, quoted and private companies



Sources: Calculated for individual companies from the sources listed in table 1.2. Public and private company averages calculated as a simple average of main sample companies of each category for each year.

Table 9.3: Average Returns on Capital, quoted and private companies

	Quoted %	Private %
Average:		
1884-1896	5.35	6.90
1897-1913	8.32	9.56
1884-1913	7.03	8.41
Std Dev (whole period)	4.36	3.74

Sources: As for figure 9.3.

Oldham, as in many cases considered already, was very much a special case. Prior to 1900, for the institutional reasons explored in chapter eight, the majority of larger companies were publicly quoted. Even those floated in the 1905-7 boom, although more closely controlled by individuals, continued to have stock market quotations. Patterns of ROCE were replicated for individual companies within the industry.

A problem which affected many companies in the early 1890s was a wave of speculative losses in the futures markets. The experience of Fielden in the futures markets has been noted above, and it would be unfair to conclude that the problem was confined to any one type of company. However, speculative losses were in all cases attributable to incomplete stakeholder scrutiny over management. In the Oldham companies the losses that were incurred at the Werneth and the Sun Mill were symptomatic of the increasing tendency of directors to engage in unauthorised transactions and to lose money at the shareholders' expense. Also, in the sample companies, losses on futures accentuated the poor performance of the publicly quoted companies in the 1890s. Even by the dismal standards of Oldham, the Werneth performed very badly in the 1890s, and this was attributable specifically to the additional fiduciary dimension of the director shareholder relationship. The year 1893 was particularly disastrous although the subsequent decade marked a gradual recovery (figure 9.3). In addition to losses on futures, along with most of the industry, Werneth suffered a nineteen week closure during the 'Brooklands' dispute in the early part of 1893.⁸³ Problems were compounded later in the year following the perpetration of a major fraud against the company which added to losses from futures speculations. The profit and loss account for the quarter ended 31 October 1893

⁸³ OLSL, Misc/42/17, quarterly reports to members.

showed an amount of £14,557 written off.⁸⁴ Such frauds, associated with the lack of shareholder control which also allowed futures speculation, were a common problem at this time. Shareholders at Sun Mill, and at the Eagle Spinning Company in Rochdale, changed their indoor rules to prevent directors making unauthorised dealings in futures.⁸⁵ One person who would have felt these shareholder director conflicts of interest keenly was Samuel Ogden Ward. One of the early large shareholders at Sun Mill, he floated a succession of companies before becoming chairman at Werneth.⁸⁶ For the latter company, the fraud case attracted considerable local publicity,⁸⁷ with the result that a manager, a Mr. G. Ashton, was prosecuted. Intervention of the shareholders, their concern with policing the activities of company officials, and the falsifying of the books of account by the latter, were noteworthy features of the incident. Despite the success of the prosecution there is no evidence that any of the loss was recovered.⁸⁸ Added to the impact of the general depression of the mid 1890s, these incidents ensured the financial results were below average.

⁸⁴ OLSL, Misc/42/17, quarterly reports to members.

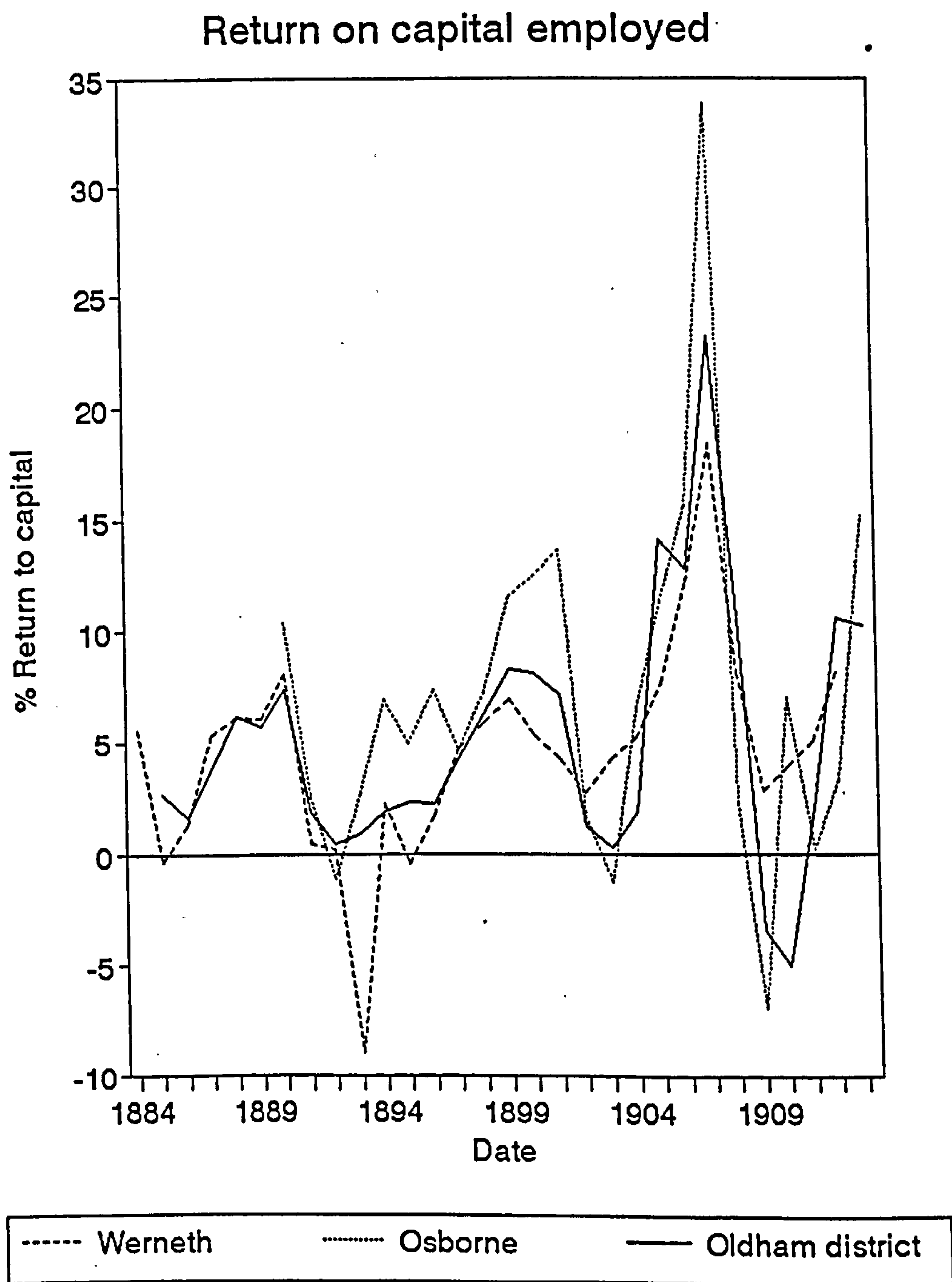
⁸⁵ Tyson, 'Sun Mill' p. 275; *Rochdale Observer*, 9th April, 1892.

⁸⁶ Tyson, 'Sun Mill', p. 219; OLSL, Misc/42/2, Werneth board minutes.

⁸⁷ *Oldham Chronicle*, 30th December, 1893 and *passim*.

⁸⁸ OLSL, Misc/42/2, board minutes, 28th November, 1893.

Figure 9.4: Average Returns on Capital, Oldham companies



Sources: Calculated for each company from the sources listed in table 1.2; Oldham district is the *Economist* sample average.

At Werneth the strong recovery from the weak position of the 1890s deserves further comment. Effects of the trade cycle were less pronounced for the company than for the industry as a whole in the later years. The likely reason was that the company had expanded capacity by building the second mill. Size, and expanded product range would have constituted a useful hedge against the effects of the trade cycle, fire hazards and breakdown.⁸⁹ The investment in the second mill proved particularly worthwhile when No.1 mill was destroyed by fire in 1899 and not reconstituted until 1901.⁹⁰ As with the vertically integrated companies and those outside the specialised Oldham area, the fluctuations in return to capital became less dramatic for this company after 1900, and by comparison with its competitors missed out on the boom of 1907. However, as can be seen in figure 9.4, the dampening effect on profit in that year was negligible, No.2 mill presumably providing some reserve capacity for orders. The performance of the company vis a vis Oldham competitors was interesting, given its increased specialisation in Egyptian yarns, and that virtually all other companies in the area specialised in American counts.⁹¹

Financing strategies

Public and private companies also provided interesting contrasts in their financial structures (table 9.4). Traditionally, the publicly quoted Oldham companies had drawn their capital from a wide range of sources. Typically all raised finance from loan accounts and these served the savings needs of the local population in much the same way as a modern building society. Anyone holding a loan account with an

⁸⁹ Jones, 'The cotton spinning industry', p. 91.

⁹⁰ Gurr and Hunt, *The cotton mills of Oldham*, p. 54

⁹¹ Worrall, *The cotton spinners' and manufacturers' directory*, 1913, showed only two other mills in Oldham, Gem and Cairo, to be spinning Egyptian cotton.

Oldham spinning company would earn a fixed rate of interest, usually 4% from the 1890s onwards, although the rate would be raised for new mills in order to discount risk, and would be able to make deposits and withdrawals on demand at the company office. In addition to facilitating shareholder control, an important purpose of the published balance sheet, reflecting dependence on external financial stakeholders, was to maintain the confidence of the loan holders. In line with the concentration of share ownership noted in chapter eight, table 9.4 shows that dependence on loan finance also reduced for established companies such as Dowry, Moorfield, Sun Mill, and Werneth. New companies, when floated by individuals such as Bunting were often backed by disproportionate amounts of loan finance,⁹² and in such cases it was the standing of the promoter that provided the required confidence to prospective lenders.

⁹² For example, Iris Mill, chapter eight, p. 271.

Table 9.4 : Sources of long term finance

	Ratio of debt to total long term finance	
	1890 %	1906 %
Public companies		
Barlow and Jones	10.9	65.2
Rylands	21.6	18.9
Dowry	54.1	nil
Haugh	45.0	35.8
Moorfield	26.3	nil
New Hey	48.2	nil
New Ladyhouse	48.4	37.7
Sun Mill	38.4	24.6
Werneth	37.4	28.7
Average (Oldham district)	42.5	18.1
Average (public companies)	36.7	23.4
Private companies		
Fielden	nil	nil
Horrockses	46.1	55.7
Osborne	60.2	5.9
Tootals	62.6	60.0
Average	42.2	30.4

Sources: Calculated for each company from the sources listed in table 1.2 (1890 data for Barlow and Jones taken from 'Commercial reports', LGL, for that year); loan, debenture and preference share capital taken as a percentage of total long term finance.

What was very surprising about the use of finance was the absence of class differences, preference shares and debentures among the Oldham section of quoted companies. By contrast, companies with London quotations made substantial use of these fixed interest instruments.⁹³ Extensive use of debentures was made by Ashtons, Barlow and Jones, and Rylands, and the former two also used preference shares to widen their capital base. Such were the importance of these new financial instruments to those companies using national capital markets. In Oldham the culture of raising finance, as described above, was entirely different.

Another surprising feature was that private companies, particularly Horrockses and Tootal, also made use of formal instruments of debt finance. Tootals used quoted debentures and also issued preference shares; Horrockses used both types of financial instrument, and as with Oldham companies, a depositors loan account.⁹⁴ As with the established Oldham companies, the latter account had declined in relative significance by the early 1900s. As noted in chapter seven, much of the expansion at Horrockses and Tootals was financed from reserves, but additions to equity were occasionally matched by new issues of debentures and preference shares. Use of the capital base to enhance growth might be more usually expected of a public company which would be indifferent to dependence on additional external stakeholders. In contrast to the norm, Lancashire manifested its rising dependence on the personal capitalism through the growth of privately controlled companies and the associated use of secured debt finance.

The financing of cotton and the character of capital accumulation were important had important implications for the banking sector of the economy. The local capital market was an important source of finance through new share issues

⁹³ Cottrell, *Industrial finance*, p. 167.

⁹⁴ CVR, Balance sheets and detailed accounts, 1887-1905.

almost always for newly floated companies; the banks played no role in the process. None of the companies in the sample, regardless of ownership used the banks for anything other than the temporary overdraft financing of working capital. In this respect, cotton conformed with the wider economy where the stock market was preoccupied with overseas, transport and utility sectors and the commercial banks with the provision of working capital, leaving the majority of industrial fixed capital finance coming from private sources and profit retentions.⁹⁵ British banking responded to this in its own evolution. For example it concentrated rapidly, providing a uniform service and lacked the adaptation to the needs of specific industries typified by French and German banks.⁹⁶ Ironically, cotton entrepreneurs only resorted to the banks for long term finance when the industry plunged into its post war crisis.⁹⁷

Differential rates of profit: Causes and consequences

Parts two and three of the current work have commented upon and analysed the important technical and financial decision variables which confronted cotton entrepreneurs before 1914. Before going on to consider the macro environment in which those decisions were taken, below, as a concluding and summary evaluation, a comparison of relative performances of all the companies in the sample is undertaken. Table 9.5 provides a summary of the returns to capital employed for all the sample companies.

⁹⁵ Cairncross, *Home and foreign investment, 1870-1913*.

⁹⁶ Lavington, *The English capital market*, p. 127.

⁹⁷ Bamberg, 'The rationalization of the British cotton industry', pp. 83-102.

Table 9.5: Average Returns on Capital, by company and by period

		Average Return on Capital (%)		
Company	Description	1884-1914	1884-1896	1897-1914
Ashton Bros	VI;M,R,AL;Q;Ma	7.41	N/A	7.41
Barlow&Jones	VI;M,PL;Q;Bo	5.53	N/A	5.53
Dowry	VSS;M;Q;Ol	4.81	3.89	5.44
Fielden	VI;R,PL,AL;P;To	3.06	-1.28	4.51
Haugh	VSS;R;Q;Ro	8.36	6.06	10.03
Healey Wood*	VI;M,PL;P;Bu	12.78	14.58	11.57
Horrockses	VI;M,R,PL;P;Pr&Bo	12.33	14.41	11.23
New Hey	VSS;R;Q;Ro	9.37	6.52	11.05
New Ladyhouse	VSS;R;Q;Ro	13.79	12.94	14.95
Osborne	VSS;M;P;Ol	7.19	4.84	8.16
Rylands	VI;M,PL;Q;Ma	4.28	3.96	4.49
Sun Mill	VSS;M;Q;Ol	4.60	0.95	7.75
Tootals	VI;M,R PL;P;Ma,Bo	4.67	3.15	5.47
TR Eccles	VSW;PL;Bl	16.57	N/A	16.66
Werneth	VSS;M;Q;Ol	4.60	2.10	6.63
Whiteley	VI;M,R,PL;P;Bl	6.27	N/A	6.27
Averages:				
Sample companies		7.61	5.88	8.92
Vertically integrated		6.26	5.15	7.10
Quoted companies		7.03	5.35	8.32
Private companies		8.51	6.80	9.82
Economist sample (Oldham quoted)		5.20	3.09	6.69

* years 1884-1906 based on estimates only.

N/A no data available for these years.

Key

Structure: VSS, vertically specialised, spinning company; VSW, vertically specialised, weaving company; VI, vertically integrated company.
 Technology: M, mule spindles; R, ring spindles; PL, plain looms; AL, automatic looms.
 Ownership: Q, quoted; P, private.
 Location: Ol, Oldham district; Ro, Rochdale district; Bl, Blackburn district; Pr, Preston; Bo, Bolton; Ma, Manchester; To, Todmorden; Bu, Burnley.

Sources: Calculated for each company from the sources listed in table 1.2.

Until 1896, vertically integrated companies tended to be more profitable than specialised companies. Integration might have been useful insurance against the risks posed by the endemic recessions of the 1880s and 1890s. As seen in chapter four, the dedicated spinning companies of Oldham suffered particularly in the depression years of 1892-5. Contemporaries found scapegoats in trade unions, the system of joint stock ownership prevalent in Oldham, and foreign competition.⁹⁸ As pointed out in chapter four, the market capitalisations of specialised Oldham mule spinners collapsed, but few advocated a restructuring of the industry. In contrast, specialised ring spinners such as the Haugh, the New Hey, and especially the New Ladyhouse performed better, although their profits were only impressive when compared with Oldham mule spinners, and not necessarily when compared with other firms in the industry. Integrated concerns such as Horrockses and Tootals were less spectacular in terms of return to capital, but were the only corporate growth engines of the cotton economy. The former company was especially impressive in that it earned large rates of return and expanded operations significantly.⁹⁹

Integration, ring spinning and automatic looms were not panacea for poorly performing firms. This was true even in the 1890s as the results of Fielden Brothers Limited and John Rylands suggested. Even those companies which nominally were integrated, such as Fielden, chose to allow individual businesses to run independently of one another, and often at large distances. As we have seen in chapter six, Fielden abandoned integrated production at their main site, prior to the scrapping of mule spindles and the introduction of rings and automatic looms. Significantly, Rylands, Horrockses and Healey Wood performed better in the 1890s than in the 1900s, despite the latter decade being a far more profitable period for the industry as a

⁹⁸ *Textile Mercury*, 16 November, 1895; pp. 385-6.

⁹⁹ Toms, 'The Profitability of the First Lancashire Merger', pp. 134-6.

whole. Horrockses remained more profitable than Rylands, but both exhibited a much lower deviation of returns than the specialised spinners of Oldham. The rewards for the Oldham companies were the spectacular returns of the 1904-7 period. The Sun Mill, the Dowry, and Osborne Spinning companies, all earned returns of more than 20% in at least one of those years. Except Healey Wood, which was a small concern and only nominally integrated, the vertically integrated companies missed out on these rewards. These results no doubt further encouraged the expansion of specialised spinning capacity in the form of new mills in the Oldham district immediately prior to the First World War.

The ostensible benefits of vertical integration were therefore not made apparent to decision makers by market signals in the period prior to 1914. The reduced risk associated with diverse operations was outweighed by the advantages of specialisation. Bankruptcies were very scarce in the first decade of the century, despite the tendency towards specialisation.¹⁰⁰ Diversification became an increasingly unpopular strategy. Oldham companies began to find niches in particular count specialisms, with most shifting to lower counts.¹⁰¹ Dowry and Sun Mill reflected this trend by lowering their average counts in the period 1891-1913 and narrowing the range of counts produced. None did so as dramatically as their neighbour, the Shiloh Spinning Co., which was rewarded with massive profits and growth after 1897.¹⁰² The Werneth and Osborne Spinning companies went in the opposite direction by moving into finer counts and a broader product range. Neither company benefited in terms of higher returns, but nonetheless both established satisfactory niches.

Although the profits earned by Oldham companies fluctuated dramatically,

¹⁰⁰ Hobsbawm, *Industry and empire*, p. 155.

¹⁰¹ See figure 3.1 and table 3.1.

¹⁰² Jeremy, 'T.E. Gartside', *DBB*, p. 497.

the results of individual companies correlated remarkably with the industry average. If the spinning economy was doing well, each concern tended to earn commensurately high profits. Conversely, in a downturn, there were few hiding places and all companies took losses. Narrowing of product range may have been a response to this. However, such vulnerability to the trade cycle was accepted as normal. In good years, cash was saved in order to avoid abandoning dividend payments in bad years.¹⁰³

Entrepreneurship evolved in the period; diverse control of small shareholders in Oldham was replaced by the rising financial capitalist. Flexible, rather than mass production, on the basis of the mule and the power loom remained appropriate and, in terms of the Sabel and Zeitlin taxonomy,¹⁰⁴ it was the use of federal structures which facilitated the combination of factory organisation and artisan production methods; the municipal and welfare modes of capitalism were increasingly marginalised by these developments. Such organisers of loose federations of companies were prevalent elsewhere in the industry and the federal structure of the industry was reinforced by entrepreneurial collaborations with the dictats of the masters' federations. For this reason, along with the increased marginalisation of family capitalism, the managerial paternalism associated with the company town of the middle years of the century was also in decline.

Overall, commitment to specialisation and traditional technologies appeared to produce the requisite level of profits for most companies in pre 1914 Lancashire. Reinforcing these developments was the changing character of entrepreneurship. With the decline of the Oldham public company and family capitalism elsewhere, a new breed of financial capitalist emerged whose main skill was the appropriation and

¹⁰³ Toms, 'Financial Constraints', p. 374.

¹⁰⁴ Sabel and Zeitlin, 'Historical alternatives to mass production', p. 147.

reinvestment of profits around financially, but not technically, integrated holding company style structures. Independent operating units would not be interfered with provided they produced profits and the combined effects of plant depreciation and dividends reduced the capital bases of the units whilst enriching and enlarging the personal domain of the entrepreneur.

Part 4

Profitability, efficiency, and the world market

Chapter 10: The economic analysis of return on capital employed

The objective of the next two chapters is to examine the history of the Lancashire cotton textile industry between the years 1880 and 1914 by reference to its performance in first in financial, then in economic, terms and then to examine the impacts of wider macro economic forces. In doing so, a bridge will be established between the micro historical perspective considered thus far, which has concerned itself with investment and financial management issues associated with specific decision making groups, and the wider macro economic framework of those decisions. Chapter 10 below therefore analyses the financial and economic performance of the industry collectively in terms of relative profitability and efficiency, whilst chapter 11 goes on to discuss the opportunities and constraints imposed by wider market conditions.

The most comprehensive survey of productivity in the cotton industry to date ends in 1886.¹ This is unfortunate, as interesting things apparently happened after that date. Many commentators on the growth performance of the British economy have contended that something went wrong around 1900. Coinciding with the rise of international competition and the development of new techniques, there was an apparent structural break in the long run trend rate of growth since the industrial revolution. This so-called 'climacteric' has occasioned much debate, mainly over whether it was a highly significant mid ² or late Victorian phenomenon,³ or a

¹ Blaug, 'The productivity of capital', pp. 358-81.

² Coppock, 'The climacteric of the 1890s', pp. 1-31.

relatively insignificant Edwardian one.⁴ As a leading export industry, cotton has often figured prominently in these discussions, especially for those who have sought to attribute the structural break to slower export growth.⁵ More generally, cotton has been one of those industries which have usually been included in surveys,⁶ and also being an industry thought to conform strongly to the climacteric hypothesis. For example, one survey of statistical evidence for the cotton industry showed no apparent efficiency gain between 1885-1910.⁷ By contrast the efficiency of the Massachusetts industry increased by 17% in the same period.⁸ A more recent collation of the evidence on labour productivity tended to confirm this view.⁹

Some have suggested that the structural break was associated with a change in trend of real wages. The levelling of previously rising living standards was associated with the stagnation of British industry.¹⁰ Recent statistical estimates have suggested that whereas real wage growth did not decline by as much as previously thought, there was nonetheless a significant slow down in the 1900s.¹¹ For cotton,

³ Phelps Brown and Handfield-Jones, 'The climacteric of the 1890s', pp. 266-307; Crafts, Leybourne, and Mills, 'The climacteric of late Victorian Britain', p. 103.

⁴ McCloskey, 'Did Victorian Britain fail?', pp. 446-59.

⁵ Coppock, 'The climacteric of the 1890s', pp. 1-31; Lewis, *Growth and fluctuations*.

⁶ Jones, *Increasing return*, Phelps Brown and Handfield-Jones, 'The climacteric of the 1890s', pp. 266-307; Feinstein, 'What really happened to real wages', pp. 329-355.

⁷ Jones, *Increasing Return*, p. 51.

⁸ Jones, *Increasing Return*, p. 55.

⁹ Lazonick and Mass 'The performance of the British cotton industry' p. 21 (reproduced as table 10.7 below).

¹⁰ Lewis, *Economic survey*, pp. 74-5.

¹¹ Feinstein, 'What really happened to real wages', pp. 351-2.

we have derived an index of return on capital employed (ROCE) in earlier chapters which below is used for further analysis in conjunction with trends in real wages.

In attempting to further our understanding of the climacteric, many have used total factor productivity (TFP) type indices.¹² The question of what really happened to the cotton industry is as unclearly resolved as for the rest of the economy. An attempt to do this for cotton by means of a 'real cost', or inverse TFP, index has been criticised for failing to deal adequately with varying, as opposed to 'normal', levels of profit.¹³ Elsewhere the absence of any aggregate profit measure has been cited as a reason for difficulties associated with productivity measurement for cotton other than for labour based indicators.¹⁴ Below, equipped with such a measure we present an analysis of the behaviour of return to capital in its own right, then of productivity from the point of view of labour and capital, and then for the two combined.

Another important argument concerning the economy during, alluded to and commented upon in previous chapters, was that a fundamental weakness of the British economy in the period 1890 to 1914 was its failure to divert capital from older industries such as cotton, into the newer industries of the second industrial revolution such as motor cars and consumer durables.¹⁵ Part Three above showed that although capital was divested by established cotton companies, the resulting circulation passed through very specific and increasingly individualistic channels, typically reforming as venture capital and typically being reinvested locally in new cotton textile ventures. An institutional explanation of this pattern of circulation was offered. Putting aside

¹² McCloskey, 'Did Victorian Britain fail?', p. 459.

¹³ Sandberg, *Lancashire in decline*, p. 104.

¹⁴ Lazonick and Mass, 'Performance of British cotton', p. 34.

¹⁵ Chandler, *Scale and scope*, p. 250.

institutional constraints, a further dimension explaining entrepreneurial behaviour can now also be advanced, and this forms a hypothesis for the next section; that reinvestment in cotton was preferred to other industries because cotton offered the prospect of higher returns.

Aims and methods

As in previous chapters, we rely on data from the sources in table 1.2. In this case we use an index for the simple weighted average of all the companies in the sample. Although the number of observations is smaller than for the *Economist* sample, firms included in that index were heavily biased towards coarse spinners of American cotton, and excluded vertically integrated and weaving companies entirely. The index used, therefore was more representative of the industry as a whole. For comparative purposes and for economic analysis return on capital series calculated elsewhere are used together with the conveniently collated statistical sources, primarily by Jones and Robson.¹⁶

ROCE has been used hitherto broadly as a proxy for the relative success of the strategies pursued by individual businesses.¹⁷ A collation of return to capital statistics also provides the opportunity for a reappraisal of the overall efficiency of the industry. Methodological and other issues associated with the use of accounting based rates of return have been discussed in previous chapters; in the context of the current examination, two further issues regarding the use and importance of ROCE need to be stressed. First, it provides a yardstick of success against which the performance of entrepreneurs and their organisations can be judged. Second, it allows

¹⁶ Jones, *Increasing return*, appendix II; Robson, *The cotton industry in Britain*, pp. 331-9.

¹⁷ ROCE is used here as defined previously; see chapter 1, pp. 18-19.

the allocative decisions of individuals and institutions to be assessed in the context of a market economy. Both justifications are particularly significant where, as in the case of Lancashire cotton companies, there is documentary evidence that the measure used by the historian was also used by the decision makers themselves.¹⁸ As our purpose is to judge the decisions made by entrepreneurs and investors, actual signals sent to decision makers are therefore used, and the distortive effects of error and bias recognised as historical fact rather than amended.

Whereas ROCE would have been a real signal transmitted in historical time, the Cobb Douglas production function, and its TFP variant, involve more meticulous and retrospective calculation. In particular it would allow the overall performance of the economy to be measured in terms of increasing or declining returns to scale and of measures of changing rates of output growth. Initially the technique was used to justify a revision of the earlier dismal interpretation of the performance of the late Victorian Economy as a whole.¹⁹ More recently, criticisms of the TFP approach itself have placed new question marks on the performance of the economy its entrepreneurs.²⁰ Problems are likely to be experienced especially with the Cobb Douglas technique since the indices used ignore market imperfections, are insensitive to inaccuracies of growth rates of inputs (capital, labour and output), and are based on possibly false assumptions regarding the definition of capital.²¹ Furthermore,

¹⁸ As guidance for investors, the local press produced league tables of companies by rate of return on capital. For an example see *Oldham Chronicle*, 2nd October 1888.

¹⁹ McCloskey, 'Did Victorian Britain fail?', pp. 446-59; McCloskey and Sandberg, 'From damnation to redemption: judgements on the late Victorian entrepreneur', pp. 89-108.

²⁰ Nicholas, 'British economic performance and total factor productivity Growth', pp. 576- 82.

²¹ McClelland, *Causal explanation and model building*, pp. 194-201.

when attempting to measure entrepreneurial performance in terms of residuals, there are problems of definition and interpretation.²² Although these criticisms are accepted when attempting to measure entrepreneurship, that is not the main purpose of our analysis below, which is concerned more with production efficiency *per se*. Elsewhere it has been argued that the importance of market imperfections has been overemphasised.²³ In any case, cotton, with its low entry barriers, homogenous products, and large numbers of small firms, conformed more accurately than most industries to the assumptions of perfect competition.

A final difficulty in applying the TFP technique to textiles has been the absence of data. For example insufficient data has so far been gathered to allow return to capital calculations to be made. Without this, the relative shares of factor inputs cannot be directly ascertained. Below this problem is addressed by the incorporation of the ROCE series into the analysis.

To overcome specific objections associated with any one method, we use below several different ones to assess industry performance. Overall averages of industry financial performance by reference to ROCE are used to provide contrast with other sectors of the economy. Having analysed the time series trend of ROCE we then go on to examine economic measures of factor productivity. This is achieved first of all by reference to labour and capital inputs separately, then by the application of economic production functions, both in Cobb Douglas and TFP forms. Return on capital employed in conjunction with data on net output is of specific use for the latter. As noted above, previous studies have in general not used return to capital data. In the analysis below, with the benefit of such a measure for cotton, their conclusions are revisited. This allows us to re-examine the issue raised in chapter two

²² Geary, 'Accounting for entrepreneurship', pp. 283-7.

²³ Thomas, 'Accounting for Growth, 1870-1914', pp. 568-74.

of whether or not the industry really did 'fail'²⁴ in terms of profitability and productive efficiency, and thereby to rationalise the investment decisions taken.

Comparative financial performance of the Lancashire cotton industry

Below we examine the overall trend in ROCE for Lancashire textiles through time (table 10.1). We then go on to make comparisons with similar measures and benchmarks for other industries and for the economy as a whole. In commenting on the financial performance of Lancashire in its wider context it is of interest not merely to compare cotton textiles with the returns available in the wider economy, but also with other, newer, sectors of the economy which might have demanded capital resources at the expense of mature industries during this period. In both areas of potential comparison, however, there is little readily useable data. The main comparators used are an index for British industry as a whole, and motor vehicles as representing a newer industry.

Table 10.1 shows the average return to capital and the standard deviation of the return in three periods. To control for trade cycle effects, the periods used were calculated from corresponding troughs. As can be seen from table 10.1, the history of profitability in the industry fell into distinct periods. The 1890s characteristically were years of low return and low risk. During this period the rate of profit was scarcely above the average official London discount rate.²⁵ In the period immediately preceding the First World War, by contrast, the risks to investors were greater, but the premium over the risk free rate was commensurately higher.

²⁴ Jones, *Increasing Return*.

²⁵ Williams, 'The rate of discount', pp 380-400.

Table 10.1: The rising trend of return to capital, 1886-1910

	Average ROCE	Standard Deviation
1886-1892	3.85	2.46
1893-1903	3.92	2.89
1904-1910	7.89	9.53

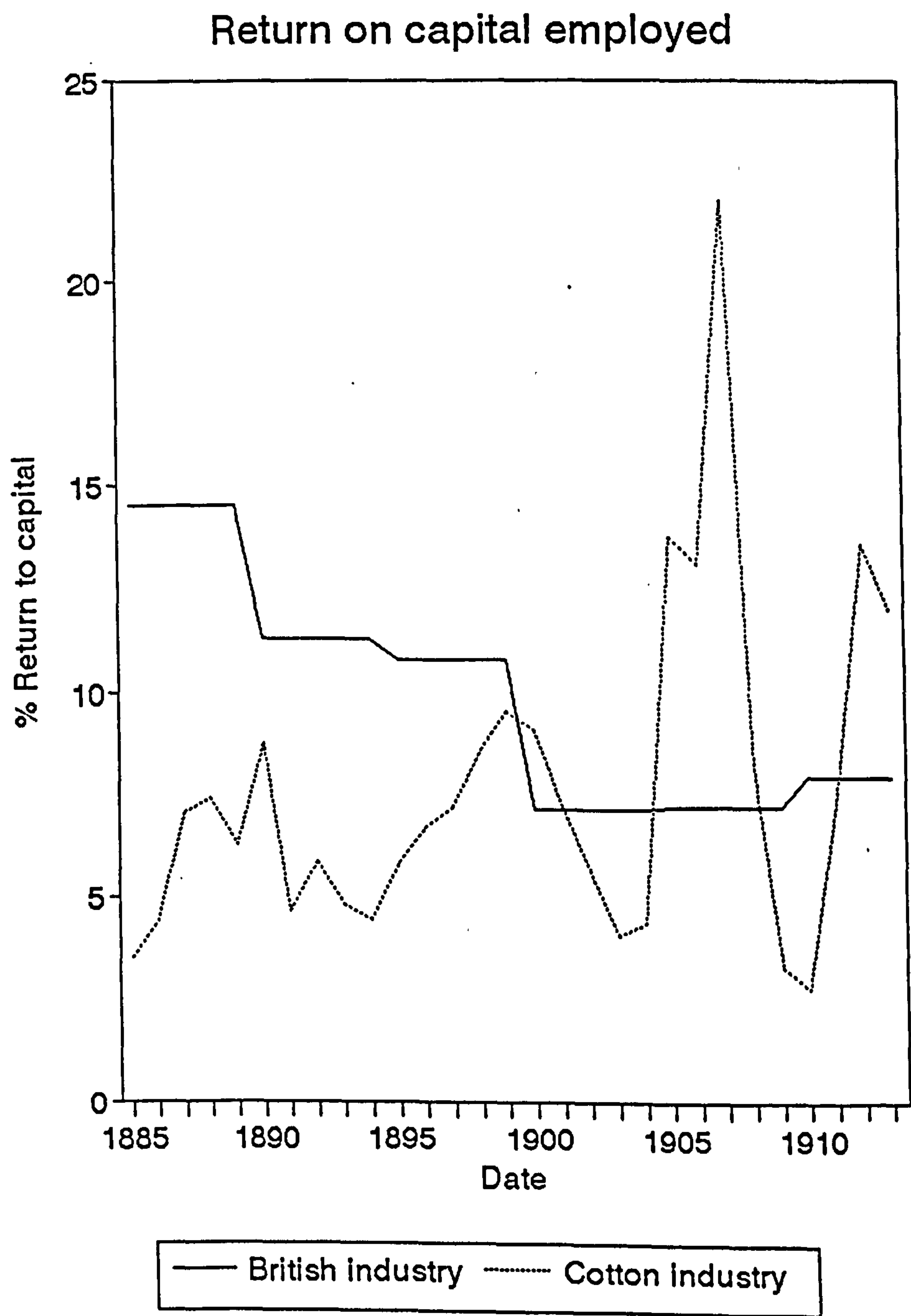
Sources: As for table 1.2; average return to capital for all companies in the sample. See also appendix 1.

The hypothesis of increasing returns, and, with increasingly violent fluctuations in profits, increasing risk, is suggested by the figures. Risk was high from an investors' point of view, the industry being very vulnerable to the trade cycle. The impact of the 1904-7 boom was particularly pronounced, and the industry clearly outperformed the previous peaks of 1890 and 1900. Given the orientation of the average producer to the manufacture of undiversified goods, such vulnerability to the trade cycle was partly to be expected.

To what extent were these improved fortunes experienced elsewhere in the economy? Our starting point for the analysis was a comparison between an industry average for cotton, as computed from the total average return for the main sample companies, and rates of return for British manufacturing industry (figure 10.1). Unfortunately, and perhaps surprisingly, there was no readily accessible data which allowed an annual ROCE series to be computed for British manufacturing industry. However, one survey, compiled for a large sample of companies from similar data sources to the cotton company sample, presented results based on five year averages.²⁶ In addition to figure 10.1, table 10.2 compares the cotton industry to British manufacturing on that basis.

²⁶ Davis and Huttenback, *Mammon and the pursuit of empire*, p. 117.

Figure 10.1: Rates of return to capital, British cotton and manufacturing industry



Sources: Cotton, as per table 10.1; manufacturing industry, Davis and Huttenback, *Mammon and the pursuit of empire*, p. 117.

Table 10.2: Rates of return to capital, British cotton and manufacturing industry

	% Five year average return to capital	
	British industry	Cotton
1885-89	14.50	5.74
1890-94	11.30	5.70
1895-99	10.80	7.56
1900-1904	7.10	6.13
1905-9	7.20	11.72
1910-13	7.90	8.63
Whole period	9.87	7.61
Std dev	2.68	3.96

Sources: As for figure 10.1.

As can be seen from figure 10.1 and table 10.2, British industry as a whole experienced a gradual decline during the observed period. Cotton, by contrast, performed badly in both absolute and relative terms, but only up until 1896. However, as the decline persisted for the rest of the manufacturing economy, cotton recovered very strongly in the 1900s. Precisely at the time of Chandler's 'window of opportunity'²⁷ to invest in new industries, cotton, a traditional staple industry suddenly began to offer dramatically attractive returns compared to continuing declines elsewhere.

In previous discussions of the trade cycle, much has been made of the great depression of 1873 to 1896. However, perhaps not enough has been made of the boom of 1905-7. For cotton, unlike other sectors by and large, especially in its dramatic climax of 1907, returns were quite spectacular²⁸ and must have had a profound influence on the cotton investor. Anyone with an awareness of the trade would have appreciated its cyclical nature and would surely have tolerated low returns during recessions if they felt that each recurrent boom would produce such splendid rewards. Psychological explanations are often neglected in economic analysis and are difficult to support with either quantitative or archival evidence, but it is tempting to infer that the experience of 1907 must have had a lasting impact on investor expectations and reinforced the commitment of large amounts of capital to the cotton textile sector.

In comparing the textile sector with an index for the economy as a whole, we have not fully addressed the issue of the specific attractiveness of newer industries. One such industry, motor vehicles, required a large capital base, and would only have

²⁷ Chandler, *Scale and scope*, p. 286.

²⁸ 'All records broken: Unprecedented profits', was the headline of the review of 1907, *Oldham Chronicle*, 28th December 1907.

succeeded in obtaining that capital if potential investors could be convinced of the relative attractiveness of expected returns. Actual returns, which are not the same thing, but which would have represented the nearest available benchmark signal for a contemporary investor, were compared for cotton textiles and motor vehicles (table 10.3).

Table 10.3: Rates of return to capital, British cotton and the motor vehicle industry

Year	% rate of return to capital	
	Motor vehicles	Cotton
1906	10.00	13.09
1907	7.20	22.03
1908	5.30	8.14
1909	6.20	3.31
1910	10.60	2.82
1911	11.50	7.27
1912	12.30	13.57
1913	12.50	12.03
Average	9.45	10.28
Standard deviation	2.65	5.89

Sources: Cotton, as for figure 10.1; motor vehicles, Lewchuk, 'The British motor vehicle industry', table 5, p. 17.

As the data in table 10.3 suggest, the motor vehicle industry had more in common with the wider British economy than with cotton textiles. In that sense its performance was strange, in that cotton was an established industry whereas motor vehicles were not. The latter industry might therefore have been expected to have followed the rest of the economy less closely. Moreover, motor vehicles as a new industry might have been expected to be more risky to the potential investor. Yet cotton produced far more volatile returns. Even though motor vehicles was in the growth phase of the product life cycle, whereas Lancashire textiles might be said to be a mature industry, the returns to the latter were on average much better. All this, together with the data for manufacturing as a whole, leads to the conclusion that it was the trade cycle rather than the product life cycle that determined the development of the economy during the pre 1914 period. As a result, profits in cotton, an export industry, offered much more promise to investors than motor vehicles, an industry of the second industrial revolution which, in the earlier phases of growth at least, depended upon demand from the domestic market.

But what of the actual causes of the shift in profitability after 1896? The turning point is significant as it appears to link the fate of Lancashire with other debates as to the nature of cyclical impacts British economic performance.²⁹ As an export industry, cotton textiles was inevitably affected by factors which did not necessarily have the same impact on other British trades. These influences were the relative fall in the value of gold, an associated general rise in prices, and rising incomes in export markets.³⁰ Rising prices would have created gains as a result of

²⁹ Coppock, 'The causes of the great depression, 1873-1896', pp. 205-32; Saul, *The Myth of the Great Depression*.

³⁰ Federation of Master Cotton Spinners' Associations, *Measures for the Revival*, p. 10; see also chapter 11 below.

stock increasing in value during the period held,³¹ and, depending on positions taken in futures markets, may have favoured some cotton companies and distorted ROCE upwards. However, the effects were marginal. Taking the example of one sample company, the Werneth Spinning Company, the stock holding gain in 1907, a year in which coarse yarn prices advanced more than 15%, accounted for only 2.55% of total profits.³² Moreover, input prices rose more than output prices for spinning companies.³³ Much more important therefore was the sheer volume of business available and this was a result of the second factor, rising incomes in export markets.

Another possible cause of upward divergence of ROCE in cotton might have been access to cheap sources of finance. Local interest rates tended to be above the London discount rate before 1896 when the yield on consols fell; after that date Lancashire entrepreneurs received another bonus in cheap finance, as London interest rates rose. In any case, at a typical rate of 4 to 5%, Lancashire loan deposits were lower than the average rate of profit on total capital invested. High dependence on loan finance characteristic of newly floated concerns³⁴ meant the return to share capital increased to an even greater extent than the return on total capital during a boom. For example, whereas the ROCE for 1907 was 23.6% (per figure 10.1), the return on the share capital employed was 35.2%.³⁵ Conversely recessions

³¹ Such effects are ignored in calculations of return to capital based on book values, thereby tending to overstate profitability.

³² Calculated from OLSL, Misc/42/18, quarterly reports to members. Estimated by taking a holding period price increase in yarn based on the yarn price and the averages days' sales held in stock, applied to the average value of stock held.

³³ See the price series for cotton and yarn in Robson, *The Cotton Industry*, p. 336.

³⁴ See above, chapters eight and nine.

³⁵ Campion, 'Pre war fluctuations', p. 627.

accentuated losses, but the general effect was beneficial given the underlying positive trend in ROCE and must have encouraged further equity investment.

Thus, according to this measure, Lancashire was performing well vis a vis the rest of the economy, and had entered a period of buoyancy and optimism. The picture of depression and decline, as painted elsewhere and perhaps as indicated by other measures,³⁶ is therefore not fully justified. Previous chapters have shown that returns on capital varied significantly from company to company (table 9.5), and above it has been shown that was a strong variation over time for the sample as a whole (figure 10.1). Particularly striking, as noted above, was the recovery in profit after 1896, and the scale of the boom of 1904-7. Moreover, the recovery in profitability occurred during a period when entrepreneurs allegedly made their most fateful mistakes, particularly in terms of their reluctance to adopt new methods,³⁷ and in association, their failure to restructure the industry.³⁸ The tendency was toward a vertically specialised structure relying on the tried and tested production methods of mule spindle and plain loom. Such strategies were rewarded by high returns (figure 10.1), with the especially pronounced boom of 1904-7 tending to benefit specialised companies. It is difficult to blame entrepreneurs as individuals or as a class for following market signals, particularly when so pronounced. Nostalgia in later years had little to do with attachments to obsolete techniques and much more to do with the long anticipated return of these days of 'easy money'.³⁹ However, returns to the investor do not of course tell the full story of industry performance.

³⁶ Jones, *Increasing Return*, p. 117; Lazonick and Mass, 'The Performance of the British Cotton Industry', p.24.

³⁷ Young, *The American Cotton Industry*, p. 137.

³⁸ Lazonick, 'The Cotton Industry', p. 20.

³⁹ Bowker, *Lancashire Under the Hammer*, p.23.

Economic performance and efficiency (1): labour and capital productivity

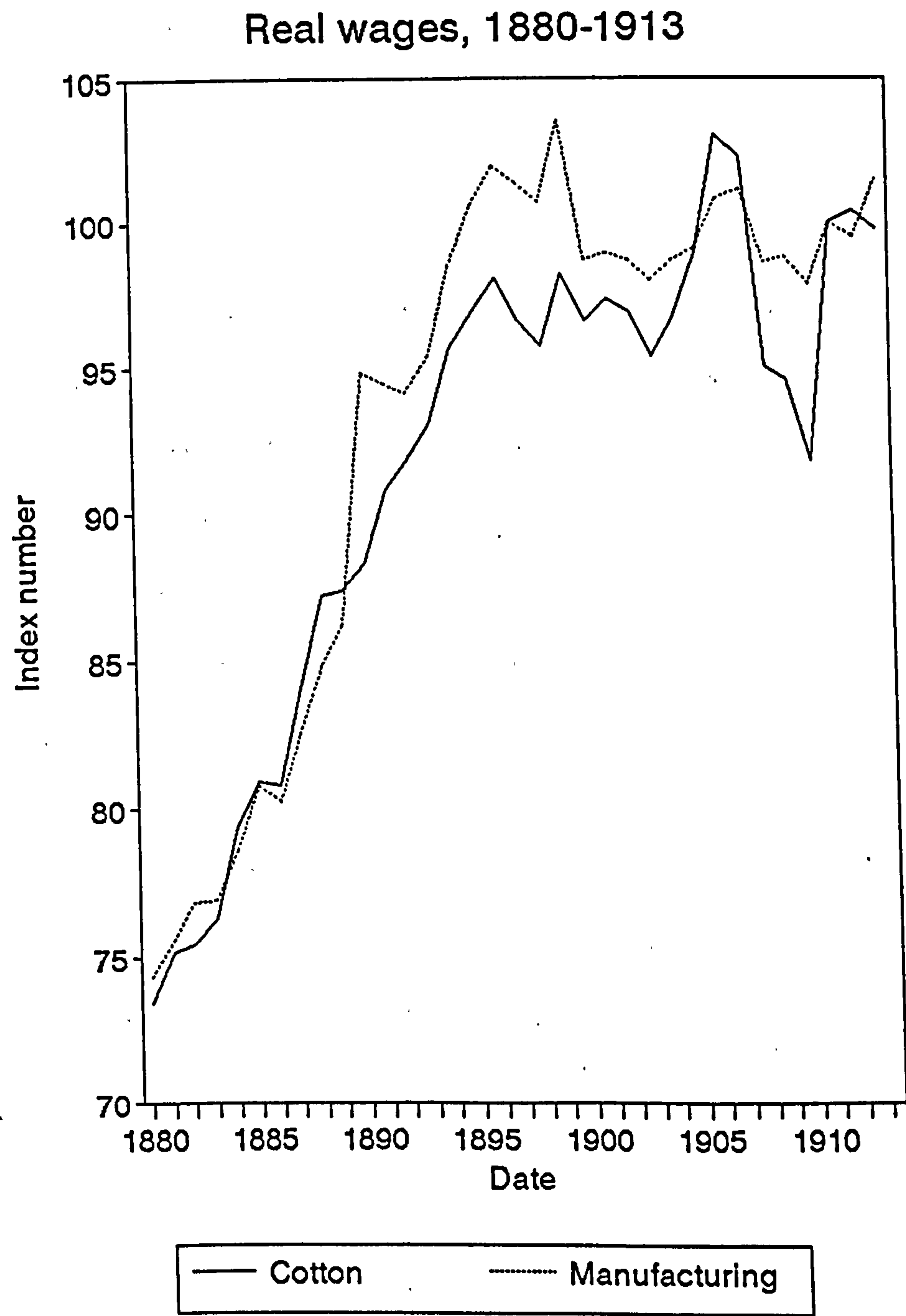
Whereas cotton investors were rewarded by far better returns after 1896, the picture for employees was more ambivalent. As for the rest of the economy, the upward trend in real wages, defined in terms of the difference between money wages and the cost of living, which had begun with the industrial revolution, came to an apparent end after 1900 (table 10.4 and figure 10.2). Any check to real wages, if it existed would be important, as it has been associated also with a check to labour productivity. Using cotton as a case study, these trends will now be re-examined.

Table 10.4: Real wages, 1880-1913

	Percentage annual growth rate		
	Cotton	Manufacturing	UK Economy
1882-1899	1.48	1.67	1.71
1900-1913	0.23	0.19	0.58

Sources: Cotton and manufacturing, calculated from Feinstein, ‘New estimates of earnings’ table 4, pp. 608-11 and ‘A new look at the cost of living’, table 4 pp. 170-1; UK economy, Feinstein, ‘What really happened to real wages’, table 4, p. 344.

Figure 10.2: Real wages, 1880-1913



Sources: as for table 10.4.

The trend in figure 10.2 had important implications for the evolution of industrial relations. Especially in the spinning section, cotton trade unions have been considered a good example of a craft based labour aristocracy.⁴⁰ However, the evidence in table 10.4 and figure 10.2 suggested that cotton workers were poorly rewarded relative to the manufacturing sector as a whole and the economy in general. Manufacturing was affected as much by the spread of general unionism as it was by the retention of craft control,⁴¹ whereas the general economy included a growing class of professional and salaried workers hitherto unrecognised in the construction of real wages indices.⁴² Although the breaks in trend occurred for both cotton and manufacturing around 1900, cotton had been lagging behind for about a decade. We have commented elsewhere that cotton suffered badly in the depression of the early 1890s, and it is evident from figure 10.2 that contemporaries were incorrect to blame the trade unions for the plight of the industry and the crash in share values,⁴³ as relative wages were falling, albeit perhaps not as steeply as the employers would have liked.

If the Brooklands agreement had stabilised industrial relations,⁴⁴ it did so at the expense the stability of wages themselves. By implicitly linking wage advances and reductions to the trade cycle, but at the same time limiting them to one per year and to a maximum of five per cent,⁴⁵ the agreement helped ensure that wages

⁴⁰ Fowler and Wyke, *The barefoot aristocrats*; Lazonick, *Industrial relations*, 231-62.

⁴¹ Clapham, *An economic history*, p. 322.

⁴² Feinstein, 'What really happened to real wages?', p. 339.

⁴³ *Textile Mercury*, 15th April and 2nd November, 1895.

⁴⁴ See chapter eight, pp. 277-8; Porter, 'Industrial peace', pp. 49-61.

⁴⁵ BPP, *Board of trade report on wages*, q. 7567.

fluctuated, but with nothing like the variation in profits. Thus cotton wages raced ahead in the boom of 1904-7 relative to other groups, but then fell dramatically again in the slump of 1909-10. However, in relation to generally improving profits, the share of extra wealth accruing to labour was low, and adjusted only slowly so that the benefit of the 5% advance of June 1907 was shortlived and by July 1908 the employers were already pushing for a reduction.⁴⁶ For employers, some of the benefits of supporting trade federations were discussed earlier in relation to case study companies, and collective action on wages must have contributed towards higher profits for the rising class of cotton financial capitalists, and as concluded in chapter nine, probably outweighed the benefits of the paternalistic management style. In so far that this was a deliberate and forced response to an apparent increase in the bargaining power of the operatives,⁴⁷ the Brooklands agreement would appear to have been an effective management response for the maintenance of profitability. The decline of the 'company town' and paternalism suggested earlier to be a result of the attractiveness employer solidarity and its associated industry wide conditions appear to be re confirmed by the evidence on relative real wage trends.

For cotton workers, craft unionism and its industry wide accommodation with employers' federations at Brooklands, appeared to offer little benefit. The Leninist argument of 'embourgeoisification',⁴⁸ the rising wealth of the working class creating a mood for the acceptance of reformist ideas, did not apply in the strict sense. Election of reformist trade union officials before 1890, according to one view, was

⁴⁶ 'Cotton trade wages', *Oldham Chronicle*, 4th July 1908.

⁴⁷ Burgess, *The origins of British industrial relations*, p. 232.

⁴⁸ Lenin, *Imperialism*; as an example of 'reformism', Mawdsley, the spinners' union leader was a Conservative party supporter. As a mouthpiece of the senior minders, the *Cotton Factory Times* represented the views of moderate trade unionism, Burgess, *The origins of British industrial relations*, p. 249.

the result of narrowing margins after 1873 and the need felt by employers for an industrial *detente*.⁴⁹ Mutual interest policies culminated in the compromise at Brooklands when Macara and Mawdsley, representing the two sides, struck up a lasting friendship, and an agreement which, 'pointed the way...to that industrial harmony which arises from wise statesmanship and eschews the weapon of force'.⁵⁰ However, the union leaders' policies of employer collaboration subsequently created conditions which led a relative fall in real wages for cotton operatives in the 1900s at a time of rising profits for the employers. Yet as the conditions which had led to the rise of collaboration went into reverse, there was no return to increased militancy. From 1893 the characteristic mood was of 'industrial peace';⁵¹ even the boom of 1907 failed to produce strikes associated with wage demands, and signs of growing disaffection were only apparent in the very last years before the war.⁵²

Although generalisation about trends is difficult where the trade cycle played such an important role, the real wages trend is suggestive of a shift to profits at the expense of wages. The rising trend of ROCE and of cotton share prices (see figure 4.2), in conjunction with figure 10.2 suggested that capital gained at labour's expense in the 1900s. Evidence from the accounting records of cotton companies provides only tentative support for this hypothesis (table 10.5). Using profit and loss account data, the proportions of net value added⁵³ shared by capital (measured by profit, interest and depreciation) and labour (wages and salaries) were calculated and

⁴⁹ Burgess, *The origins of British industrial relations*, p. 248.

⁵⁰ Macara, *Recollections*, p. 27.

⁵¹ Porter, 'Industrial peace', pp. 49-61.

⁵² White, *Lancashire cotton textiles*, pp. 222-5.

⁵³ Defined here as the difference between the sales value of output and all non capital and labour based costs.

compared for two dates, 1898 and 1912.⁵⁴ Between these dates the real wage trend was relatively flat (figure 10.2). Averaging calculations for the six years before 1898 and 1912 suggested that the figures were representative. The results of these calculations are shown in table 10.5.

⁵⁴ The companies for which such data was available for the years between these dates were Osborne, Eccles, Sun Mill, Werneth, and Whiteley; see table 1.2 for source documents.

Table 10.5: Capital, labour, and value added, 1898-1912.

	Spinning		Weaving	
	1898	1912	1898	1912
(1) Percentage shares of value added				
Wages	55.7	54.4	79.7	75.4
Capital	44.3	45.6	20.3	24.6
	-----	-----	-----	-----
	100.0	100.0	100.0	100.0
	-----	-----	-----	-----
(2) Percentages to sales				
Wages	15.1	10.8	23.2	15.4
Capital	11.8	8.8	5.9	5.1
Material	65.1	73.1	62.3	75.1
Other expenses	8.0	7.3	8.6	4.4
	-----	-----	-----	-----
	100.0	100.0	100.0	100.0
	-----	-----	-----	-----

Sources: Calculated from company accounts, sources per table 1.2. (1) For each company and for each year, material and non wage expenses (excluding profits, interest, and depreciation) were subtracted from sales to obtain value added. Wages calculated as percentage of value added with capital share treated as the residual. (2) Each profit and loss expense item calculated as a percentage of sales. Capital defined as the total of profits, interest and depreciation.

Data presented in table 10.5 confirm the hypothesis of a shift to capital. However, the shift was very slight, and since evidence was available for only five companies in total, it would be wrong to attempt to read too much into the figures. The safest interpretation might be that there was at least a stability in the respective shares of value added but more likely a shift to capital. At a national level the shift to capital hypothesis has been supported by considering the rising trend in interest rates along in conjunction with the flat trend in real wages.⁵⁵ Use of new data has called this interpretation into question, and it has been argued that nominal GDP per worker was rising in the Edwardian period.⁵⁶ However, the likelihood of sectoral variation was also suggested, in particular cotton, which might have experienced a shift to profits on the basis of its export boom.⁵⁷ In support of this hypothesis we add here the trends of strongly rising share prices in Lancashire and the performance of the ROCE index noted above.

To what extent, however, were rising profits also associated with rising efficiency? Table 10.6 shows a compilation of labour efficiency data from the most recent examination of this issue.

⁵⁵ Layton, *The relations of capital and labour*, pp. 34-6.

⁵⁶ Feinstein, 'What really happened to real wages?', p. 347.

⁵⁷ Feinstein, 'What really happened to real wages?', p. 351; Feinstein's conclusion on cotton rested on the Smith and Horne 'An index number', which only included companies with London quotations. Lancashire companies with local quotations enjoyed more equally if not more spectacular return to profit during the 1900s (see chapter 9, table 9.5)

Table 10.6: Annual percentage changes in output per operative, 1870-1913.

	Spinning	Weaving	Whole Industry
1870-1878	1.91	0.62	1.30
1878-1890	3.02	1.14	1.99
1890-1901	0.46	-0.03	0.12
1901-1913	-0.13	0.61	0.30

Source: Lazonick and Mass 'Performance of British Cotton', p. 21.

The labour productivity figures in table 10.6 tend to suggest stagnating efficiency, which is the intention of the authors. However, the impression suggested by such statistics can easily be changed if the periodisations are altered. During upswings the industry apparently became much more efficient as full capacity was approached. This can be confirmed from the detailed figures for spinning presented by Lazonick and Mass,⁵⁸ which show a 10.2%⁵⁹ increase during the upswing years of 1904-7 on the basis of their single year output data and 5.3%⁶⁰ when calculated on the basis of three year average output. Corresponding declines occurred in the troughs of recessions, but over a longer period the increase in productivity is still apparent. Again using the detailed data from the same source,⁶¹ productivity still shows an increase of 4% between 1901 and 1912.⁶² On the output per operative basis steep increases in productivity occurred during the upswing of the trade cycle, as acknowledged by Sandberg.⁶³ For example in upswing years of 1904-7, based on the figures of Phelps Brown and Handfield-Jones there was a steep apparent annual

⁵⁸ Lazonick and Mass, 'The Performance of British Cotton', appendix 1, table A1, p. 40.

⁵⁹ Output per operative, 1904, 7316 lbs; 1907, 8061 lbs; percentage increase 10.2%.

⁶⁰ Output per operative, 1904, 7220 lbs; 1907, 7604 lbs; percentage increase 10.2%.

⁶¹ Lazonick and Mass, 'The Performance of British Cotton', appendix 1, table A1, p. 40.

⁶² Lazonick and Mass, 'The Performance of British Cotton', appendix 1, table A1, p. 40. Using the same data a decline of 1.51% in output per operative for the period 1901-13 was calculated (table 8, p. 21). Conclusions depend thus heavily on the year selected for measurement.

⁶³ Sandberg, *Lancashire in Decline*, p. 97.

average increase of 5.8%.⁶⁴ The use of labour productivity evidence from this period to prove stagnation in the industry is thus questionable, particularly given that the denominator in output per operative calculations is based on intermittent census data.⁶⁵ Indeed, when used in conjunction with return to capital the opposite conclusion may be drawn; that in the last uninterrupted boom before the decisive discontinuity of 1914, there was the highest level of investment and the largest increase in productivity recorded since the 1870s.

Output in relation to labour input, however measured, gives only one restricted view. The productivity of capital should also be considered. Again, there are measurement problems. Where output was measured purely on a per spindle basis there was no clear trend for capital output ratio (figure 10.3) and therefore no apparent improvement in productivity.⁶⁶ However, this is too simplistic, as it ignores both factory layout and economies of scale associated with putting more mules or looms into larger factories, as well as any effective slowing down of machines associated with increased quality.⁶⁷ Where output was calculated in relation to the number of factories, the resulting capital output ratio declined steeply (figure 10.3). Furthermore, if output quality is taken into account, there was a further decline in the capital output ratio. Overall, the line which tends to slope downwards most prominently from left to right in figure 10.3 is that which shows the combined effects

⁶⁴ Phelps Brown and Handfield-Jones, 'The Climacteric of the 1890s', appendix B, table II, column 17. Calculated by taking the compounded annual increase of ratio of index numbers for 1904 and 1907 (117 and 98) respectively.

⁶⁵ Lazonick and Mass, 'The Performance of British Cotton', p. 40.

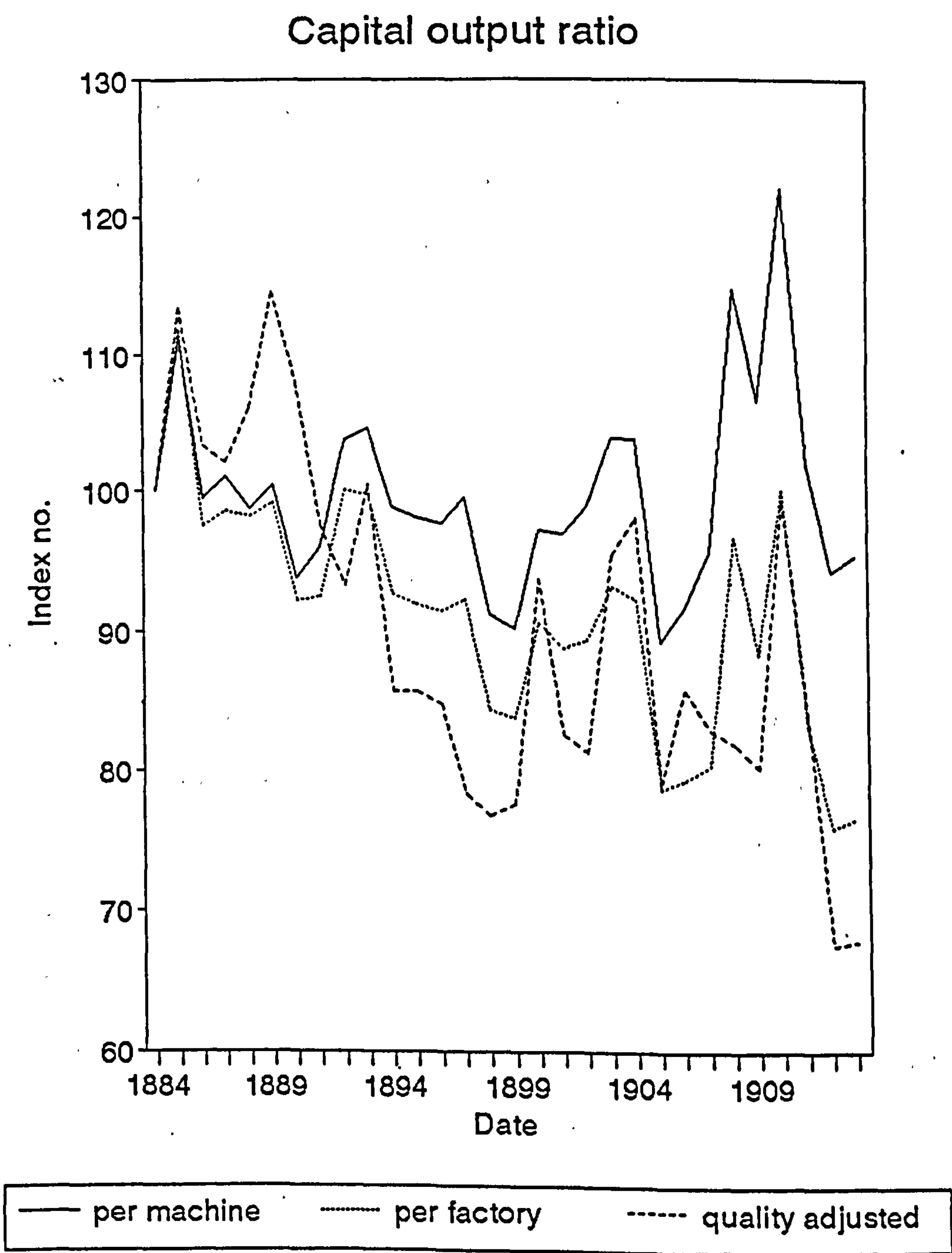
⁶⁶ Lazonick and Mass, 'Performance of British cotton', table 1, p. 6.

⁶⁷ The number of firms was used as a surrogate for the number of factories; the multi plant firm was a rarity, and even where the owners were the same, new factories were usually floated separately, thereby acquiring the status of an independent firm (see above, especially chapters eight and nine).

of quality and larger factories.

All three measures in figure 10.3 show downward slopes and cyclical effects of varying degrees. Factors such as machine speed ups, mule lengthening, factory layout, and quality shifts created the opportunities for marginal improvements in capital productivity. The next stage of our analysis is to consider these and labour productivity effects simultaneously via an examination of total factor productivity.

Figure 10.3: Capital/output ratios, 1880-1913



Sources: Capital/output ratios based on yarn produced and consumed, capital inputs based on machines using a combined index of spindles and looms with 1 loom weighted at 60 spindles, and number of firms per Jones, *Increasing return*, p. 277; output index adjusted for yarn and cloth quality per Sandberg, 'Movements in the quality', pp. 10-11.

Economic performance and efficiency (2): Total factor productivity.

So far several trends have been noted which we must now attempt to reconcile. After 1900 there was a levelling off in the growth of real wages; meanwhile profits recovered and achieved high levels up to 1914, and there is some evidence that capital was being more efficiently employed. Total factor productivity (TFP) measures attempt to provide a holistic view of industry efficiency by comparing output changes with the combined effect of changes in factor inputs.

In the context of recent debates on the cotton industry, these rising trends are significant and contrast with some of the pessimistic interpretations referred to earlier. One reason for the difference is methodological. The only previous survey which has attempted a total factor product type exercise assumed a constant 'normal' rate of profit throughout the period considered.⁶⁸ This in spite of the dramatic fluctuations caused by the trade cycle. It has been demonstrated that efficiency gains measured by the real cost index and the profitability of the industry were inversely related and the method thereby flawed.⁶⁹ Rising returns to capital noted here may also therefore suggest rising returns to scale.

To test the hypothesis further, we now examine the performance of the industry by reference to labour and capital as factor inputs in respect to output. First we apply a general Cobb Douglas model (table 10.7), followed by the TFP model variant (table 10.8). For the Cobb Douglas model, the output of the industry (Q) is explained in terms of the supply of inputs; capital and labour. The result is thus expressed in terms of the pattern of returns to scale. This can be achieved using a capital/ labour production function. In its stochastic form the Cobb Douglas

⁶⁸ Jones, *Increasing return*; for a fuller critique of this point see Sandberg, *Lancashire in decline*, p. 104.

⁶⁹ Sandberg, *Lancashire in Decline*, p. 104.

production function can be written as:

$$Q = A K^{\beta_1} L^{\beta_2} e^u \quad (10.1)$$

where A is a constant, K and L are measures of capital and labour input respectively and β_1 and β_2 are measures of the parameters to be estimated, u is a stochastic disturbance term and e is the base of natural logarithm. To apply the model to empirical data it is necessary to conduct a log linear transformation:

$$\ln Q = \beta_0 + \beta_1 \ln K + \beta_2 \ln L + u \quad (10.2)$$

The properties of the model are that β_1 is the partial elasticity of output with respect to capital. In other words, it measures the percentage change in output for a 1% change in capital input holding labour input constant. Similarly β_2 measures the partial elasticity of labour. The sum of β_1 and β_2 provide a measure of returns to scale. If the two add to one, there are constant returns to scale, increasing returns if greater than one, and decreasing returns if less than one.

Bearing in mind the trend in figure 10.3, output was adjusted for quality. Yarn produced and consumed was used as the output measure, as inputs were based on aggregates for spinning and weaving. Numbers employed, adjusted for hours worked, was used for labour employment, and the number of factories as a measure for capital employed. The Cobb- Douglas model has been widely used in empirical analysis,⁷⁰ but not specifically applied to the Lancashire textile industry. Modifications of the Cobb- Douglas function allow the performance of individual

⁷⁰ Thomas, *Introductory econometrics*, p. 212.

industries to be tested.⁷¹ Table 10.7 shows the results for three models; an ordinary production function (1) as in equation (10.2) above, a production function with an added variable for time trend (2):

$$\ln Q = \beta_0 + \beta_1 \ln K + \beta_2 \ln L + \beta_3 t + u \quad (10.3)$$

and a model which shows the time trend alone (3)

$$\ln Q = \beta_0 + \beta_3 t + u \quad (10.4)$$

In all cases, quality adjusted output is the dependent variable.

⁷¹ Thomas, *Introductory econometrics*, pp. 221- 225.

Table 10.7 Factor productivity and output growth, 1884-1913

	(1)	(2)	(3)
Constant	-9.92	5.52	7.66
K	2.18 (3.29)	-0.64 (0.87)	
L	0.33 (0.31)	1.57 (1.92)	
time trend		0.02 (5.05)	0.015 (7.63)
R Squared	0.44	0.72	0.68
F	10.61	22.01	58.20
DW	0.82	1.38	1.21

(t statistics in parentheses)

Sources: Output based on yarn produced and consumed, per Jones, *Increasing return*, table II p. 275, adjusted by the yarn quality index in Sandberg, 'Movements in the quality, tables 2 and 4, pp. 10-11; capital input, spindles and looms per Robson, *The British cotton industry*, table 5, p. 340, using a weight of 60 spindles to one loom; labour, based on total hours worked, per Lazonick and Mass, 'The performance of British cotton', table A1, p. 40.

The result in equation (1), by reference to the sum of the capital and labour co-efficients, implies dramatically increasing returns. However, in statistical terms, given the low labour t ratio, F statistic and r squared, the model has low explanatory power. Furthermore, the low Durbin Watson ratio suggests some autocorrelation in the error terms and that the model therefore has failed to identify one or more other significant explanatory variables. Addition of a time trend variable in (2) improved the overall performance of the model, but reduced the capital and labour co-efficients to insignificance. It is thereby suggested simply that output, capital and labour all varied with time. In other words, as confirmed by model (3), the time series regression adds very little to a simple comparison of trends through time. Even where the time trend variable was included, the DW ratio did not improve sufficiently to reject a hypothesis of uncorrelated error terms. In this sense, putting productive efficiency *per se* to one side for a moment, we provide some tentative confirmation that economies of scale were external rather than internal during this period, as manifested in the improvement of transportation, communication, marketing and banking.⁷²

The trend growth of output during the period 1884 to 1913 was about 1.5% per year. Unlike industries elsewhere, there was no apparent 'climacteric'; growth for cotton between 1884 and 1899 was around 1.3% compound, but accelerated to just over 2% in the period 1900-13.⁷³ Again, the export boom of 1905-7 accounted for most of this increase. Although the time trend is of interest, the results in table 10.7 tell us little about production efficiency and the relationship of output to inputs, and because of the time trend effect, do not constitute the true parameters of a

⁷² Farnie, *English cotton*, p. 319.

⁷³ For the economy as whole, the corresponding figures were c2.2% in the first period, falling to between 1.2 and 1.6 in the second; Feinstein, Matthews and Odling-Smee 'The timing of the climacteric' (table 8.3).

production function.

As a variant of the Cobb- Douglas production function, we therefore now turn to the TFP method. In applying this technique, similar data were used, but instead of attempting to derive factor shares in the production function from a regression result, we use predetermined weights for the share of labour (S_l), and capital (S_k), in the production function represented by equation 10.2.

$$A^* = Q^* - s_k K^* - s_l L^* \quad (10.2)$$

This provides a useful link with the analysis in earlier chapters since accounting data can be used to determine what these weights should be. A summary of the results of the accounting exercise is provided in table 10.5 above. Analysis of profit and loss account data for specialised spinning and weaving companies suggested that although the share of value added shifted from capital to labour during slumps there was an opposite effect during booms.⁷⁴ On average the proportion of value added accounted for by labour and capital remained reasonably constant, and although there was a small aggregate shift from labour to capital, the percentage was too small to be material to the figures presented in table 10.8. Following table 10.5, weights of 55% labour, 45% capital were used for spinning, and correspondingly 75% and 25% for weaving. As previously, the output data were adjusted for quality, this time using specific series for yarn output and cotton cloth exports.⁷⁵ For capital, due to the need to separate spinning and weaving, spindle and loom measures were used instead of the number of factories, hence the figures in table 10.8 ignore any economies of

⁷⁴ For example, OLSL, Misc.42/17 and 18, Werneth Spinning Company, quarterly reports to members, during the slump years of 1892-5, wages represented a disproportionately large fraction of value added (86%).

⁷⁵ Sandberg, 'Movements in the quality', tables 2 and 4, pp. 10-11.

scale associated with larger plants.

Table 10.8: Cotton industry; total factor productivity, 1884-1913.

(1) TFP analysis - spinning

	Output	Labour	Capital	Residual
1884-1899	1.18	0.52	0.47	0.19
1900-1913	1.56	0.52	0.46	0.58
Overall	1.58	0.48	0.49	0.61

(2) TFP analysis - weaving

	Output	Labour	Capital	Residual
1884-1899	1.34	0.62	0.30	0.42
1900-1913	1.39	0.61	0.30	0.48
Overall	1.67	0.57	0.28	0.62

(3) Annual compounded growth rates (%)

Spinning

	Output	Labour	Capital
1884-1899	1.04	-0.39	0.25
1900-1913	3.23	1.07	2.27
Overall	1.54	0.29	1.22

Weaving

	Output	Labour	Capital
1884-1899	1.85	-1.16	1.15
1900-1913	2.38	3.04	1.37
Overall	1.74	0.77	1.29

Sources: Output, spinning yarn production per Jones, *Increasing return*, table II, p. 275, weaving, cotton piece goods exports per Robson, *The cotton industry in Britain*, table A1, p. 331. and as adjusted by the yarn and cloth quality indices respectively, per Sandberg, 'Movements in the quality', tables 2 and 4, pp. 10-11; capital based on index of total capital employed sources as per figure 10.3; capital and labour weights in (1) per table 10.5; labour data as per table 10.7.

The statistics in table 10.8 differ from those previously published in two respects; the adjustment of output for quality, and the weighting of the input measure to simultaneously include capital and labour. The first aspect is relatively insubstantial as output and quality trends have long been well known, although the computation of the latter has been subject to some criticism, suggesting that the cloth index was too narrowly based on grey cloth, which was becoming a smaller proportion of more highly finished exports.⁷⁶ However, such criticisms could only be indirectly extended to yarn quality. Also, given their concentration on cloth content alone, they ignore any value added from developments in finishing. Notwithstanding these issues, the quality adjustment had only a minimal impact on the most important trends suggested by the data in table 10.8. On the quality adjusted basis, the growth rate for spinning between 1884 and 1913 was 1.69% per annum. Without such an adjustment, the rate falls to 1.42%. In the period 1884-1899 the rate correspond very closely, at 1.3% respectively and 1.25%. Only in the period 1900 to 1913 was there an important difference with the rate of growth rising from 2% to 3.23% when adjusted for quality. In weaving the differences were much smaller, with quality adjusted output growing more slowly than the standard series in the period after 1900, but somewhat faster before that date.⁷⁷ In short, weaving gained in productivity through quality shifts in the 1890s, whilst spinning gained in the 1900s. The 'fine counts' theory, which had been advocated in the 1890s,⁷⁸ had been associated with an

⁷⁶ Lazonick and Mass, 'Performance of British cotton', pp. 12-3.

⁷⁷ These calculations are based on compound growth rates calculated from, for spinning, yarn produced and consumed in 1913 to 1884 per Jones, *Increasing return*, table II, p. 275, and for weaving, cotton piece goods exports per Robson, *The cotton industry in Britain*, table A1, p. 331., and as adjusted by the yarn and cloth quality indices respectively, per Sandberg, 'Movements in the quality', tables 2 and 4, pp. 10-11.

⁷⁸ 'Finer counts in Oldham and what they are indicative of', *Textile Mercury*, 16th August 1890, p. 104.

underlying rise in yarn quality up till 1894, but thereafter, as the Indian market was recovered, there was an overall decline through to 1907.⁷⁹ In general, however, movements in quality did not have a particularly important influence on trends of production efficiency.

Much more significant was the way in which capital and labour resources were added to the rising output. Table 10.8, by reference to the positive residuals, suggests that there were still increasing returns to scale, in approximately equal proportion, for both the spinning and the weaving branches of the industry. These were even for weaving throughout the period, but much more pronounced for spinning after 1900 (table 10.8 (1)). Rising returns to scale would be consistent with the rate of technical development and the improvements associated with the spinning mule discussed in chapter five. They would also be consistent with increased external economies such as improved infrastructure and access to financial resources.⁸⁰ Finally they would be consistent with the trends noted above; evidence of apparent increases in efficiency suggested by the data in table 10.8 is complemented by the declining capital output ratio in figure 10.3. They would also be consistent with and added to by the evidence of rising financial returns to capital and the absence of any clear decline in either labour productivity or real wages.

Although rising returns to scale should be recognised, they were perhaps not the most important trend noticeable from table 10.8. The possibility of a shift from labour to capital was suggested above in connection with the flat trend of real wages in conjunction with rising returns to capital. That shifts between factor inputs occurred is confirmed by the statistics in table 10.8. In spinning, capital was very rapidly attracted into the 1900s in response, no doubt to increasing levels of

⁷⁹ See chapter 11, figure 11.1.

⁸⁰ Farnie, *English Cotton*, pp. 213-15; 244-51.

profitability and output, but also perhaps to an industry with regulated wages and labour cost hence effectively removed from the competitive equation, and slow to rise in periods of rising prosperity. Labour input meanwhile grew only slowly for the period as a whole, and declined somewhat in the 1890s. In weaving there was also a loss of labour input during the years of depression. However, when the recovery came, it was this section of the industry, with its predominantly female labour force,⁸¹ which saw a major expansion in numbers employed. In the unprecedented export booms of 1905-7 and 1911-13, there was an over commitment of capital in the case of spinning, and labour in the case of weaving.

Perhaps to an extent such entrepreneurial behaviour is to be expected for industries whose output is cyclical around an upward secular trend, as cotton was in the 1900s. Confident expectation of a new and greater boom would no doubt have alleviated the worries of entrepreneurs whose new mills came on stream in 1908 just after the close of the greatest trade boom in history. With the benefit of hindsight, the commitment of extra capital in the Oldham district was more serious than the increases in the mainly female weavers of north east Lancashire. In the event the former created a damaging legacy of overcapacity which caused unforeseen problems later. Investments had been made for the best possible reasons, but cotton was unfortunately not living in the best of possible worlds.

Did Lancashire become more efficient before 1914?

Above we have considered financial and economic measures of performance in an attempt to reach a judgement as to whether the efficiency of Lancashire cotton stagnated before the first world war. The ROCE statistics have allowed a wider triangulation of the evidence on performance than presented in previous studies. In

⁸¹ Chapman, *The Lancashire cotton industry*, p. 158.

view of the evidence above, it seems that the hypothesis of constant or decreasing industry efficiency can only be accepted, if, unlike elsewhere in the economy, there was a shift to capital at the expense of labour. Otherwise rising profits and constant real wages would be suggestive of rising industry productivity. Both of these views are consistent with the rising trend of industry profitability. The evidence presented above suggested that both trends were important and mutually compatible.

If the shift to profits hypothesis is stressed, there would have been two significant consequences. First, union inability to defend real wages and seek major advances in buoyant trading conditions may have meant that trade unions were weaker than hitherto recognised, that the Brooklands agreement was generally favourable to the employers, and that unions would not have been able to mount any serious challenge to a determined employers' bid to replace mules and power looms with alternative technologies. For industrial relations, this was the opposite to what happened in the period 1867 to 1885, when there was a shift from capital to labour.⁸² According to one view, this put pressure on employers and forced them into industry wide bargaining at Brooklands.⁸³ If shifts in the balance of one factor of production to another are to be used as proxies for power and influence, then it would be difficult to blame unions for failure to make investments in alternative technology since their power to resist was low and, notwithstanding arguments presented elsewhere about the lack of urgency for the acquisition of ring spindles and automatic looms, responsibility should instead be laid at the door of employers. Secondly, and perhaps more importantly, the shift to profits would have contrasted with many other industries, which suffered large share price declines, such as iron

⁸² Blaug, 'The productivity of capital', appendix C, p. 379.

⁸³ Burgess, *The origins of British industrial relations*, p. 232.

and steel, engineering, food and drink, and electricity and gas.⁸⁴ To a rational investor, after a decade in the doldrums, cotton would suddenly have appeared an attractive prospect. The promoters of the new flotations in Oldham would not have needed to look far for risk capital, whilst in other industries which were perhaps becoming more important in the arena of international competition, investment that might have otherwise taken place did not.

The shift to profits was probably a more important determinant of investment behaviour than rising returns to scale, although the latter continued to play a role, despite the smoke screen of the trade cycle. If we accept that investors were at least to some extent rational in response to market signals, either trend would provide an explanation of investor behaviour. The relative profitability of cotton before 1914 provided a strong rationale for the attraction of new investment capital and accounts for its continued disproportionate importance as an export industry. It is to the dynamics of that export market that we must now finally turn.

⁸⁴ Feinstein, 'What really happened to real wages?', p. 351.

Chapter 11: World markets, the gold standard, and the cotton investor, 1870-1914

Earlier chapters have concentrated on firm specific and micro economic variables associated with entrepreneurial decisions. It is important, however, to set those decisions in a wider context. Fluctuations in investment levels were just as likely to have been caused by the general level of confidence in the industry as by specific opportunities presented by technical improvement. In Oldham especially, with its high proportion of joint stock public companies, share values were an important barometer for the industry as a whole. Threats to confidence might have arisen from various sources, including the rise of foreign competition, and the purpose here is to quantify and assess these impacts.

The world market for cotton has been dealt with extensively elsewhere in its own right; the purpose of the present work is to quantify the effects of the changing macro economic environment in order to assess the impact on industry profitability and decision making on issues such as technology and divestment, and the interrelationship between product and capital markets. The share price index (figures 4.2, and figure 11.1 below) suggested that 1896 might be an important turning point for the cotton industry, as indeed some have argued it was for the wider economy.¹ Returns to the cotton investor and to capital invested (figures 4.1 and 4.3) tended to support this view and also implied differential performances within the sector.

The apparent turning point of 1896 was historically important. Before 1914,

¹ As noted in chapter 10, there has been much debate on this subject; see *inter alia*, Coppock, 'The causes of the great depression' pp. 205-32; and Saul, *The Myth of the Great Depression*.

cotton continued to represent a large proportion of British export activity;² the market forces which influenced returns to capital in the cotton industry are likely to be important for the wider economic history of the period, either because the cyclical effects of the cotton industry influenced other sectors, or because, if sufficiently high, as they apparently were after 1896, they may have prevented the redistribution of capital to the newer industries of the second industrial revolution. Given the significance of cotton during this period to the process of economic growth and development, as noted in chapter two, the industry has also therefore been the subject of important academic debates. Incorporating additional evidence by which the performance of the industry can be measured, this chapter will re-examine the key quantitative interrelationships upon which existing interpretations have depended.

Economic determinants of industry profitability

Through an examination of macroeconomic interrelationships, besides considerations such as technological choice and industry structure, additional variables, not considered in previous chapters and less subject to entrepreneurial influence, can be incorporated. These are primarily the influences of price and the international monetary system, product quality, and capital market integration.

One survey sought to test North's hypothesis that prices are the principal cause of economic change, and examined the demand for and supply of Lancashire cotton goods for the period 1830-60.³ Both were found to be inelastic with respect to price; a series of adjustments to equilibrium at different but higher levels of output was offered as an alternative hypothesis. Having covered an earlier period no attempt

² Cotton manufactures represented 35.8% of all exports in 1870 and 24.1% in 1913; Robson, *The cotton industry*, p. 334.

³ Wright, 'An econometric study of cotton production and trade', pp. 111-120; North, *The economic growth of the United States*.

was made to extend these conclusions for price behaviour for subsequent decades. Using similar data sources (table 11.1), these relationships are reconsidered below for the period 1884-1914.

Another important aspect of the price based argument, advanced primarily by contemporaries seeking to defend the industry and its entrepreneurs, was that the industry was critically governed by international monetary policy.⁴ The overseas value of the pound, as determined by the workings of the gold standard before 1914, was deemed to be of critical importance since the key export market, India, used silver currency. In practice, the gold standard was effectively a system of fixed exchange rates, which meant that rises and falls in the value of gold led directly to changes in domestic price levels.⁵ The rise in the value of gold against silver up to 1896, and the reversal of that trend from 1896-1914, thereby first depressed the industry and then gave way to extraordinary boom conditions. Dependence on international exchange translated into political pressures, in the form of the bimetallic movement, and was reinforced by the attempts of the Indian government to introduce duties on cotton imports.⁶ Its ultimate failure to introduce them helped the revival of Lancashire exports to the Indian market after 1896.

In the pre-1914 period, a second effect of the supply, and hence value of gold, was on the incomes of customers in export markets. Such rises in incomes, it was argued, tended to be complementary to British exports in this period and outweigh the competitive impact of associated growth of overseas production.⁷ As

⁴ FMCSA, *Measures for the revival*, pp. 7-10.

⁵ Whale, 'The working of the pre war gold standard', pp. 18-19.

⁶ Green, 'Rentiers versus producers', pp. 588-612, and 'The bimetallic controversy' pp. 673-683; Howe, 'Bimetallism', pp. 377-91; Harnetty, 'The Indian cotton duties controversy', pp. 684-702.

⁷ FMCSA, *Measures for the revival*, p. 10

incomes rose after 1896, so did the export markets for Lancashire's goods. Using previously collated series of industry statistics (table 11.1), together with the series for share prices and returns to capital presented above in chapter 4 and fully tabulated in appendices 1 and 2, the currency hypothesis is fully analysed below.

If trends in world monetary conditions were important to Lancashire, then so too for the rest of the British economy. The trade cycle characterised the cotton industry, like the economy as a whole. Given the importance of the industry in terms of exports, and that there is evidence that exports were a significant determinant of the trade cycle,⁸ examination of the demand conditions for cotton goods is particularly important. On the other hand, those disputing the export-trade cycle relationship have tended to stress monetary conditions as an alternative hypothesis,⁹ but as noted above, money was also a vital issue as far as Lancashire was concerned. Our analysis will therefore readdress the uncertainties in these areas.

A second broad area of debate has stemmed from the argument that the decline of the industry in the 1920s and 1930s was explicable in terms of the decisions taken by managers on how to produce and sell cloth prior to 1914.¹⁰ These points have been dealt with extensively in earlier chapters, but it is important to add at this stage one particular aspect broadly relevant to a consideration of world market conditions. Trends in product quality have been held to be an important determining influence on the structure of the industry; a symbiosis between world markets, product quality and technological choice has been advocated.¹¹ The main points of

⁸ Ford, 'The trade cycle in Britain', pp. 27-49.

⁹ Eichengreen, 'The causes of British economic cycles', pp. 145-61.

¹⁰ Lazonick and Mass, 'The performance of the British cotton industry', p. 2.

¹¹ Lazonick, and Mass, 'The Performance of the British Cotton Industry,' pp. 4-9. For the purposes of the analysis in this chapter, yarn and cloth quality are defined according to the measure used by Sandberg, 'Movements in the

this argument were that there was an increase in demand for highly finished, but low quality goods in response to higher incomes in poorer countries such as India. There was thus higher demand for style rather than quality. Merchants responded to orders by securing the lowest quality cloth technically compatible with the requisite finishing process, which implied the use of low grade cotton in spinning and heavy sizing in weaving. Hence the marketing strategies of Lancashire firms provided a further justification for claimed 'technological backwardness' and adherence to the 'old' technologies of mule spinning and powerloom weaving. Strict limitations were thereby placed on labour productivity increases. Unit labour costs rose, but cheaper cotton inputs meant total cost could be cut.¹² There is no problem here with consistency vis a vis the above monetary explanation of the fall and rise of Lancashire fortunes prior to 1914. Earlier chapters have questioned the alleged 'backwardness' of investment decisions. The extent to which Lancashire in fact competed on price and the role of product quality in its marketing strategy are reassessed below.

Finally, it is useful to consider the degree of integration between product and capital markets, and between conditions faced by investors in the cotton industry and those in the economy generally. The argument noted above, that the trade cycle was driven by exports, if accepted presupposes a degree of integration between the national economy and its leading export industry. However, before 1870, and especially in the early days of the industrial revolution, although highly significant, the Lancashire cotton industry was characterised by its relative regional isolation. Transport and communications were initially poor, although they improved rapidly

quality', pp. 4-5, the ratio of declared value of exports to physical quantity. The resulting index is then deflated by a composite price index to reflect quality changes.

¹² Lazonick and Mass, 'The performance of the British cotton industry', pp. 2-5.

between the cities of Liverpool and Manchester and the main manufacturing towns. What is less certain is the extent to which the regional cotton economy began to integrate with the financial centre of the economy in London. The last decades of the nineteenth century saw large capital flows between London and the rest of the world.¹³ Circulation of capital into and out of cotton investments might also have been important, since, as some have suggested, the relative returns may have been a disincentive to investments in the industries of the second industrial revolution.¹⁴ Whilst recognising that in the 1770s early Lancashire enterprises were dependent on local payment systems, it has been argued that by 1820 the combined effects of war finance, the industrial revolution in the North, and the financial revolution in the south, had created an integrated capital market.¹⁵ Thus by the late Victorian period, differences in returns, investor confidence and wealth accumulation between Lancashire and the wider economy may simply have reflected that, as a significant sub-sector of the economy, cotton was subject to different cyclical circumstances in the macro economic environment. On the other hand, it has been suggested by some, that as in the days of the industrial revolution, Lancashire remained essentially a separate economy, much poorer, and implicitly relatively unintegrated with the wider financial and mercantile activities of London and the home counties.¹⁶ Aspects of these alternative possibilities are investigated further below.

¹³ Hall, *The export of capital from Britain, 1870-1914*.

¹⁴ Chandler, *Scale and scope*, p. 284.

¹⁵ Buchinsky and Polak, 'The emergence of a national capital market in England, 1710-1880', p. 18.

¹⁶ Rubinstein, *Capitalism, culture and decline*, p. 30.

Data and method

Collations of data from various sources were used in conjunction with the series presented in other chapters, principally chapter 4 (see table 11.1). With a view to minimising the impact of time trends, logged data was used for all series. Independent variables were assumed to be exogenous, and in the first instance, uncorrelated. Throughout the analysis, we concentrate exclusively on the export of manufactured cotton goods, which represented about 75% to 85% of the industry;¹⁷ yarn exports and production for the domestic market, which accounted for the remainder, are assumed to have been relatively insignificant throughout the period under consideration.

As a precursor to examining stock market interrelationships with macro-economic variables, the demand and supply conditions of the cotton market were examined by reference to various measures of price, income, and product quality. As part of a broader analysis of the determinants of investor confidence in Lancashire, demand and supply variables, such as prices, quantity, quality and incomes were then tested against the stock market index. Prices of cotton and yarn at Liverpool and Manchester attracted much comment from market reporters and appeared to have been linked to market sentiment.¹⁸ If one accepts the argument that the industry was driven primarily by margin, and not by production efficiency, price, volume and investor returns would be closely related. Similarly supply might also be expected to vary proportionately with realisable prices for output, and capital investment in the industry might thereby reflect confidence as to anticipated future prices. In turn this would lead to an expected association between the level of capital investment and

¹⁷ In 1907, 83.6% of cotton production was exported; Kahn, *Great Britain and the world economy*, p. 189.

¹⁸ *Oldham Chronicle*, *passim*.

investor confidence, as reflected in the stock market index.

Also, as with a modern stock market, it was expected that the performance of the share price index might be related to three main variables; inflation, interest rates and corporate profits. The apparent importance of inflation and monetary policy to Lancashire has been stressed in the foregoing discussion. Specific price levels, for raw cotton, yarn, and cloth, might also be expected to influence the index, particularly given the importance of margin noted above. Likewise a variable for world trade was added to represent export demand, and gross national product by expenditure to represent domestic demand. Interest rates are also a potentially useful variable as a measure of the risk free opportunity cost investment. Three possible measures were selected; the yield on consols, the prices of a portfolio of fixed interest securities, and the yield on railway debenture stocks. Investment in railway shares was a common outlet for surplus individual and corporate cash in Lancashire, as the investment policies of Fielden Brothers and Horrockses Crewdson testify.¹⁹ It might be expected that where railway stocks were high in price and low in yield, the opposite might be true for cotton shares. In addition to these measures, an index of the shares of industrial and commercial companies quoted in London was used to represent the extent to which cotton equity investor confidence was influenced by confidence in the performance of other similar British investments. A further use for the London index was to compare the relative importance of explanatory variables for companies quoted on Lancashire and London exchanges. Finally, share prices might be expected to encapsulate profitability, and the return to capital series for quoted companies, as discussed in chapter 9 (see also appendix 1) was used in conjunction with the other identified variables.

¹⁹ Fielden, WYRO, C353/475 balance sheets; Horrockses, LCRO, DDHs/53 and CVR, balance sheets.

Table 11.1: Data and Data Sources

Observation	Source
Cotton piece goods exports	Robson, <i>The cotton industry in Britain</i> , table A1, p. 331.
Share price index	As for figure 4.2, 4th quarter observations.
Retail price index	Capie and Webber, <i>Monetary History</i> , table III (12) col. IV; December observations.
Yield on consols	<i>ibid</i> , table III (10) col. VIII. December observations.
Yield on railway debentures	Harley, 'Goschen's conversion', p.106
Price of fixed interest securities	Smith and Horne, 'An index number', table, III, p. 5.
Index of London share quotations	<i>ibid</i> , index numbers for industrial and commercial companies, pp. 13-19.
Profit rate	Overall average return on capital employed for quoted companies, appendix 1.
Gross national product	Feinstein, <i>National Income</i> , T8, col. 10.
Prices of piece goods exports	Mitchell and Jones, <i>Second abstract</i> , table 8, p. 195.
Relative price cloth exports	Mitchell and Jones series above adjusted by an equally weighted index and per the method used by Hatton, 'The demand for British exports', p. 592; for France and Germany, Kindleberger, <i>The terms of trade</i> , pp. 22-3, and the USA, Lipsey, <i>Price and quantity trends</i> , p. 413
Yarn margins	Robson, <i>The cotton industry</i> , p. 336.
No. of spindles/looms	<i>ibid</i> , p. 340.
World production and trade	Lewis, 'World production', table 1 A1 and A6, average weighted at 1913 proportions.
Cloth quality	Sandberg, 'Movements in the quality', table 2, p. 10, column (3).
Yarn produced and consumed	Jones, <i>Increasing return</i> , table 2 pp. 275-7.

The demand for manufactured cotton goods

Demand conditions have been considered in econometric analyses elsewhere,²⁰ and these are replicated and compared with models specific to the time period 1884-1914 in table 11.2. In each, we seek to establish the relationship between quantity demanded and price, income and quality variables.²¹ These are labelled models 11.1, 11.2, 11.3 and 11.4, and were selected from the many tests conducted to provide the best overall summaries of relationships. In all cases the quantity of cloth demanded is the dependent variable. Although previous econometric models are included in table 11.2, our main purpose is not direct comparison, as there are some differences in data and method, but to establish in broad terms, following the discussion in the preceding section, the relative importance of price, world incomes (proxied by an index of world production and trade) and product quality as determinants of demand.

An important feature of all the equations was price inelasticity. Equation (11.2), which reapplied the same model used by Wright (equation 11.1) to justify the conclusion of price inelasticity in the 1830-1860 period, showed a similar result. As with Wright's model, the price co-efficient has the wrong sign and, although more significant statistically, is near zero. The probable reason was that prices and demand fell and then rose again simultaneously through time in line with the economic cycle, as confirmed by the significance of the time trend in models (11.1) and (11.2). Prices were therefore an unstable variable, and selection of start and end dates for the time

²⁰ Wright, 'An econometric survey', pp. 111-120, and Hatton, 'The demand for British exports', pp. 576-594.

²¹ Two additional variables, overseas issues and lagged exports, were also considered. The former was used by Hatton, 'The demand for British exports', p. 584, to simulate the impact of capital export, and the latter to assess the effect of the time lag between the determinants of demand and the shipping of goods (p. 584). No further analysis was done on the first variable, given the relatively low significance of the variable in the original model (table 11.2).

series analysis was therefore crucial. Thus whilst Hatton's price coefficient was statistically significant for the period 1871-1914 (equation 11.3), it becomes insignificant for the shorter period of 1884-1914 (equation 11.4). Low price coefficients were a feature of all models tested for this period, for both actual and relative price indices.

Table 11.2: determinants of the demand for cloth, 1871-1914.

	1830-1860 (11.1)	1884-1913 (11.2)	1871-1913 (11.3)	1884-1913 (11.4)
Constant	7.39	9.55	1.56	3.85
Grey cloth price	0.10 (0.59)	0.02 (4.67)		
Cloth quality	-0.52 (1.58)	-0.66 (2.65)		-0.60 (3.55)
Time trend	0.06 (8.57)	0.01 (7.30)		
World trade			0.35 (3.89)	0.34 (5.66)
Relative export price			-0.38 (1.73)	-0.002 (0.04)
Overseas issues			0.03 (1.50)	
Lagged exports			0.23 (1.35)	0.21 (1.28)
R ²	0.99	0.87	0.95	0.90
Durbin Watson	1.90	1.66	n/a*	2.07

(t statistics in parentheses)

* statistic not available

Sources: Equations (11.2) and (11.4) calculated from data per table 11.1; equation (11.1), Wright, 'An econometric survey', p. 118; equation (11.3) Hatton, 'The demand for British exports', p. 588.

Caution must be exercised in this type of analysis due to the risk of collinearity between price and income variables. For example if world incomes rose, the associated rise in demand could lead to rising prices, rather than the latter being independently determined. In the case of equation (11.4), the diagnostic statistics suggested strong multicollinearity between the variables.²² To address the issue of price and income interdependencies, pooled data was used based on the subtraction of the income from the demand variable.²³ However, this failed to eliminate interdependencies among the remaining variables.²⁴ Thus to confirm the relative importance of each variable, individual price and income variables were regressed against demand. This did not change the result compared with the overall model (11.4).²⁵ Nor did a further test based on first differences, where although the overall significance of the model declined, the income variable remained significant, and the price variable insignificant.²⁶

Thus whilst price was relatively insignificant, high income elasticity was clearly the important feature of demand conditions. World production and trade was a robust variable in all models tested, regardless of time period. Indeed, the time trend variable was always insignificant when used with a model also incorporating world production and trade. The growth in overseas markets and foreign production was, as Sayers would have put it,²⁷ 'complementary' to Lancashire, rather than a

²² The condition index (CI) ratio of the highest and lowest eigenvalues was 561.102.

²³ After Tobin, 'A statistical demand function for food', pp. 113-141.

²⁴ CI = 277.183.

²⁵ Price: $R^2 = 0.34$, t statistic = 4.02; income: $R^2 = 0.81$, t statistic = 10.98.

²⁶ $R^2 = 0.39$; income co-efficient = 0.9 (2.87); price coefficient 0.008 (0.065) (t statistics in parentheses).

²⁷ Sayers, *The vicissitudes of an export economy*, p. 5.

'competitive' threat. Continued growth of exports occurred because the growth in total demand outstripped growth in alternative sources of supply, not because Lancashire entrepreneurs cut their prices. However, a situation of complementarity was unlikely to prevail in the long run. Dependency on world incomes linked the industry to a decisive hand of fate. In the 1930s, industry lobbyists were keen to blame a repetition of the adverse monetary conditions which had prevailed before 1896 as being responsible for the fate of cotton.²⁸ Growth of income in external markets was an exogenous variable and if it worked in Lancashire's favour before 1914, the likelihood was that the impact was conversely negative after 1920.

Another aspect of demand conditions which may have helped Lancashire exporters in the pre 1914 period was the alleged decline in quality. Demand and quality were significantly but negatively related (equations 11.1, 11.2 and 11.4). The quality coefficient was sensitive to the selection of the period analysed and tended to be more significant for later years. That conclusion was confirmed by equation 11.1, where the cloth quality coefficient was not statistically significant for the period before 1860. An index of the quality of cotton manufactures showed a small rise between 1898 and 1902, and, excluding a one off rise in 1907/8, followed by a slight but steady decline until 1914 (figure 11.1). Trends in quality have been attributed primarily to the proportion of goods exported to the Indian market, which tended to demand low quality cloth.²⁹ Hence changes in the quality of exports reflected falling sales to India prior to 1902 and rising sales thereafter.

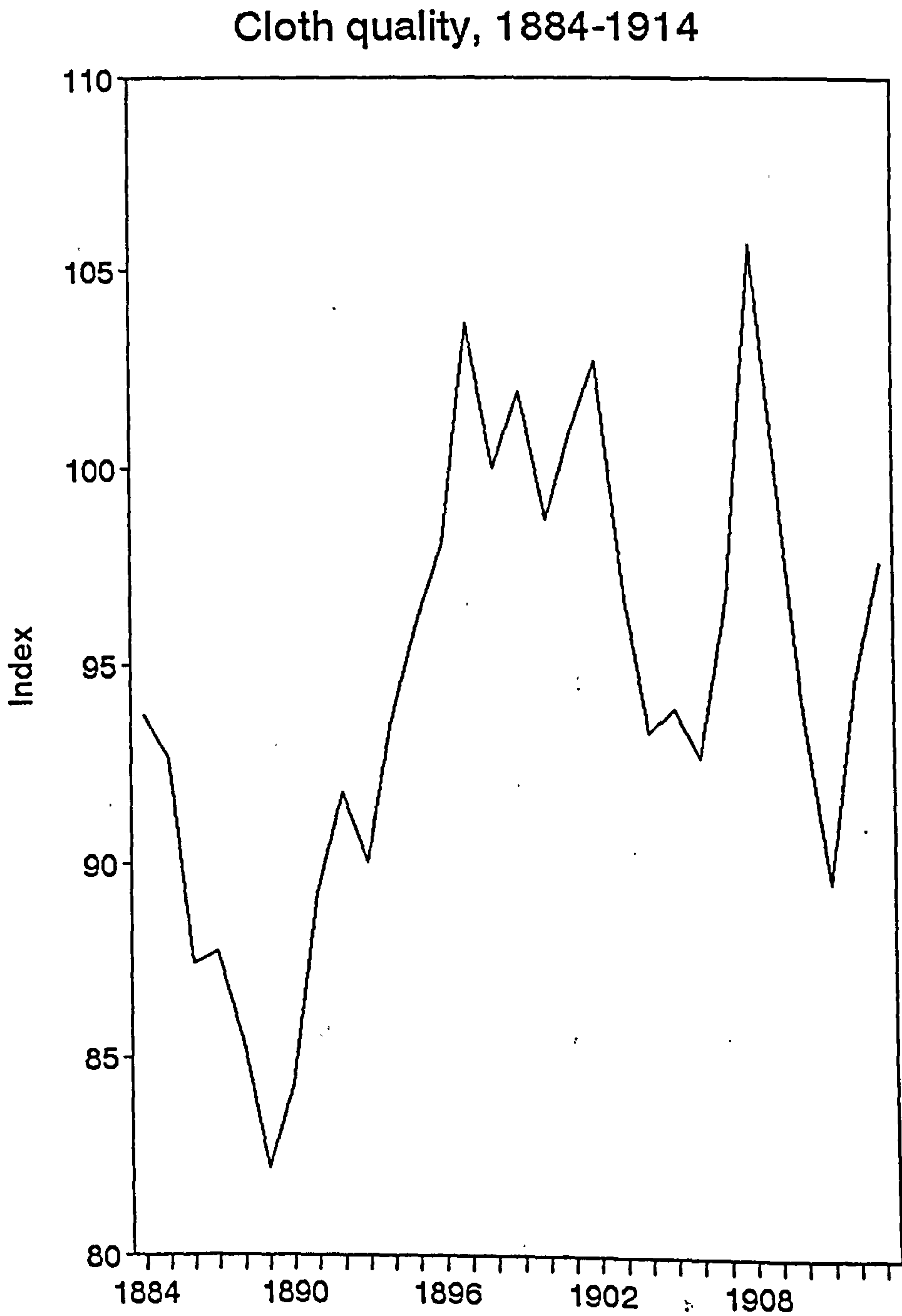
There is thus support for the argument, as put forward by Lazonick, that Lancashire relied on the use of low quality raw material input to increase its sales to

²⁸ FMCSA, *Measures for the revival*, p. 11

²⁹ Sandberg, 'Movements in the quality of British cotton' pp. 15-19; Lazonick and Mass, 'The performance of the British cotton industry', p. 4.

low income markets in the period 1898-1914. Inverse correlation between the expansion of output and the quality of exports was strong for this period. However, this should not be exaggerated. The inverse relationship was less significant prior to the 1890s; the marketing of low quality cloth was a function of the recovery of the Indian market, very much a short run phenomenon of the decade before the First World War.

Figure 11.1: the quality of British cotton goods, 1884-1914



Source: Sandberg, 'Movements in the quality', table 2, column 1 and table 4, column 2, pp 10-11.

Supply conditions

In this section we consider the determinants of supply. One conclusion from chapter 10 was that there was an apparent tendency for entrepreneurs to respond to increased profitability in the spinning industry with significant capital investment in the 1900s and this relationship is re-examined below. Interest rates, representing the opportunity cost of investment were also considered, together with lagged output as a measure of production anticipated from the previous period. The determinants of the supply of cloth are shown in table 11.3, in models 11.5, 11.6 11.7 and 11.8. In all cases the dependent variable is the quantity of cloth produced.

There was a positive, if not very strong relationship between the supply of cloth to the export market and profit margins and the rate of profit. Prior to 1860, on the basis of equations (11.5) and (11.7), Wright concluded that British manufacturers were more responsive than their North American counterparts to changes in profitability, adjusting production levels accordingly.³⁰ By contrast, American companies tended to produce at full output all the time. In both periods, lagged output and interest rates had low explanatory power. Indeed, as will be seen below, financial decisions taken in Lancashire were to a large extent de-coupled from interest rates in the national economy.

Generally as far as supply was concerned, the conclusions for the earlier period would appear to be equally valid for the later period, and the models above showed strong similarities regarding the influence of profit in all periods tested. For the later period, profit rate performed slightly better than profit margin. The time coefficient became less influential than in the earlier period, perhaps reflecting a less clear trend in terms of export growth. A possible weakness of the model was that cotton piece exports were a potentially inaccurate proxy for cotton supplied.

³⁰ Wright, 'An econometric survey', p. 118.

However, a calculation substituting yarn produced and consumed for cotton piece exports, showed very similar results.

Relatively small responses to changes in profit suggest a generally inelastic supply curve; a view supported by practical instances of entrepreneurs attempting to shift the supply function. For example, although the mill building boom of 1905-8 reflected a response in part to increased profit opportunities, construction lead times in many cases were quite slow. New capacity ordered at the height of the boom in 1907 did not come on stream until the following year, by which time profits and profit margins had slumped.³¹

³¹ Examples of mills commenced in 1907 and not completed until the following year, included, Orme (62,000 spindles), Marlborough No. 2 (110,000), and Trent (120,000); see *Oldham Chronicle* and Gurr and Hunt, *The Cotton Mills of Oldham. passim*.

Table 11.3: determinants of the supply of cloth, 1830-1914.

	1830-1860 (11.5)	1884-1914 (11.6)	1830-1860 (11.7)	1884-1914 (11.8)
Constant	4.13	8.31	4.03	7.68
Profit margin	0.25 (3.13)		0.23 (2.30)	
Profit rate		0.05 (3.59)		0.05 (2.78)
Time trend	0.07 (23.33)	0.01 (11.1)	0.07 (7.00)	0.01 (4.41)
Interest rates			-0.01 (0.16)	0.23 (1.83)
Lagged output			0.04 (0.22)	0.05 (0.24)
R ²	0.97	0.85	0.98	0.87
Durbin Watson	1.90	1.07	1.90	1.36

(t statistics in parentheses)

Sources: equations (11.6) and (11.8) calculated from data per table 11.1; equation (11.5) and (11.7), Wright, 'An econometric survey', p. 118.

Trends in the Lancashire stock market

The main variables and hypotheses for the explanation of stock market trends were discussed earlier in the chapter.³² Following that discussion we next examine the impact on two stock market indices, Lancashire and London, of financial, monetary and other economic variables. Our objective is to establish, and evaluate in terms of relative importance, the determinants of share prices, and in doing so, to examine the extent to which the export economy of Lancashire had become integrated with the national economy as a whole.

Five models, equations 11.9, 11.10, 11.11, 11.12 and 11.13, which provided the best summary of the relationships investigated, are presented in table 11.4. In all cases the dependent variable is the index of Lancashire share prices. The explanatory variables listed are intended as measures for the monetary conditions, especially the overseas value of the pound (Retail Price Index), corporate profitability, the level of national economic activity (Gross National Product) and various measures of the opportunity cost of investment (yield on consols, railway debenture yields and fixed interest security prices). To provide contrast, the tests were repeated with an index of London share prices as the dependent variable, and these differences are reported on in the narrative below. The behaviour of the London and Lancashire share indices are contrasted in figure 11.2.

Analysis of the determinants of Lancashire share prices suggested interesting results. As expected, the interrelationship of share prices with inflation and company profits and was well supported. Retail price index (RPI) and profit rate, in that order, were consistently robust and significant variables. RPI performed better as a variable than prices for cloth manufactures and prices for cloth manufactures relative to world competitors, as well as raw material input prices, yarn prices, yarn margins, and total

³² See pp. 382-3.

industry value added per unit. It is therefore shown in preference to these variables in the models presented in table 11.4. Given the vertical specialisation of the industry, and that the vast majority of share investment was in cotton spinning companies, it is perhaps surprising that cloth margins performed better than yarn margins as explanations of investor confidence. A linkage between industry performance and aggregate value added would have encouraged co-operation and feelings of interdependence along the supply chain. However, in contrast to RPI, neither of these variables were highly significant in their own right. Cotton investors, it is suggested, therefore took little notice of the Liverpool and Manchester markets and any indications of future profits that might have been contained in the futures indices.

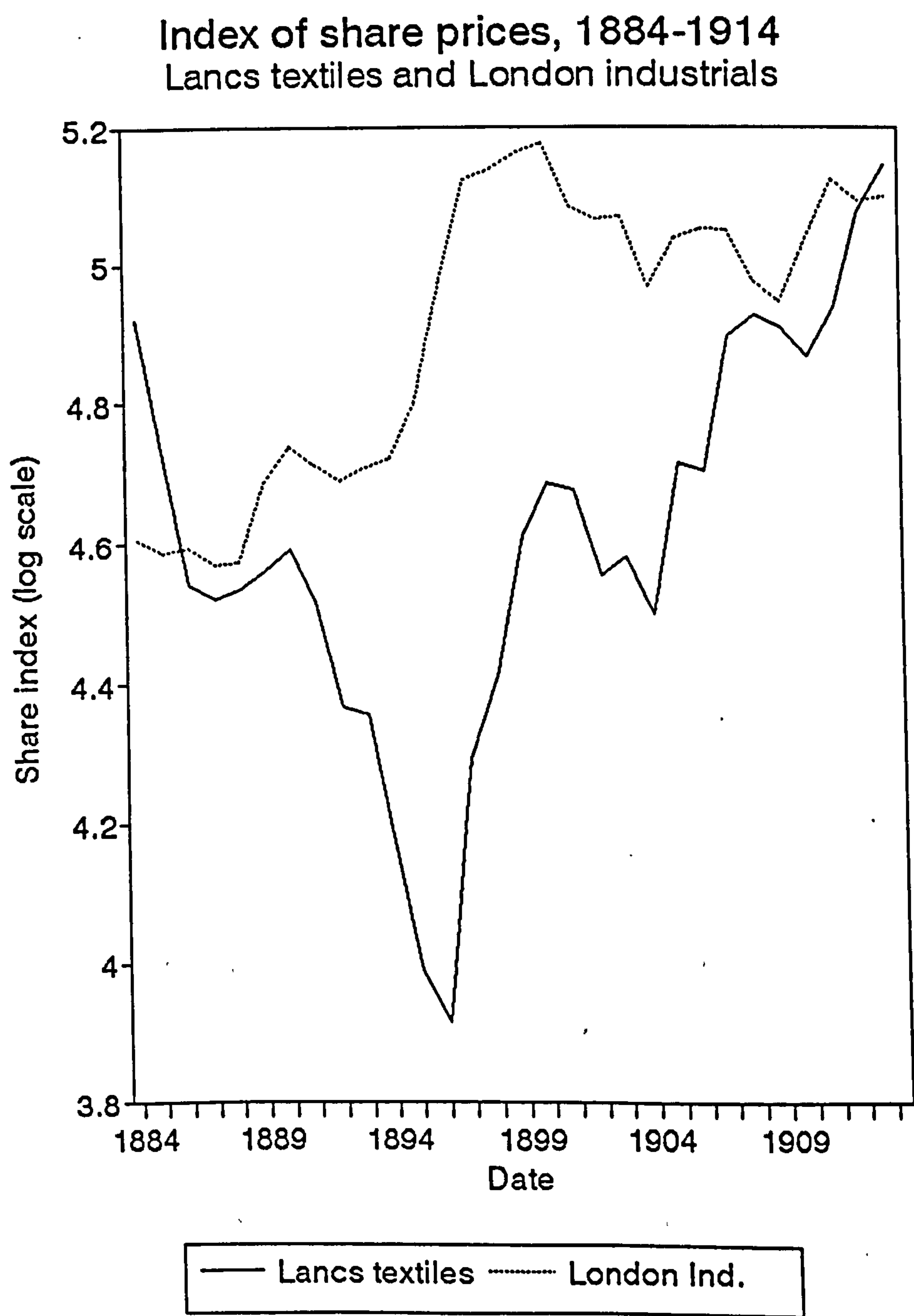
Table 11.4: Share price determinants for Lancashire textile companies, 1884-1913.

	(11.9)	(11.10)	(11.11)	(11.12)	(11.13)
Constant	-11.87	-18.02	-12.01	-17.8	-18.34
RPI	3.31 (3.39)	5.01 (11.75)	3.41 (3.48)	4.95 (10.05)	5.12 (9.88)
Yield on consols	1.11 (2.08)		1.10 (2.02)		
Profit rate	0.07 (2.12)	0.06 (1.76)	0.07 (2.13)	0.06 (1.70)	0.06 (1.75)
Gross National Product	0.04 (0.35)				
World Prodn and trade			0.01 (0.14)		
Railway debenture yields				0.02 (0.31)	
Fixed int. security prices					-0.03 (0.35)
R ²	0.882	0.862	0.881	0.871	0.870
DW	1.169	1.324	1.175	1.301	1.355
F	46.703	83.973	46.455	54.140	54.196

(t statistics in parentheses)

Sources: per table 11.1.

Figure 11.2: Share prices in London and Lancashire



Sources: Lancashire, as for figure 4.2; London, Smith and Horne, 'An index number', table 3, p. 5.

The real motives for investment may have been, first, a hedge against inflation after 1896, and second, to participate in the corporate profits which resulted from the reversal in international monetary trends. Conversely, deflation prior to 1896 sapped confidence; the association of falling prices and falling share values can only have been the result of international monetary conditions so often bemoaned by the Lancashire supporters of bimetallism.³³ Share price falls were particularly steep for those mills which could not pay dividends, generally the mule mills, and as noted in chapter 8, the crash in values of the early 1890s brought about the demise of the working class investor. It also led to the creation of 'penny' share investment opportunities accompanied by spectacular gains for those able to hang on until the revival of 1896-9.³⁴

A curious feature of the Lancashire index, unlike London share prices, was that it did not respond in the normal way to changes in interest rates. The Lancashire share index was positively correlated to both measures of yield on risk free investment; the surrogates for national and local interest rates, yield on consols and yield on railway debentures. It was inversely correlated to an index of fixed interest security prices (table 11.4). The normal theoretical relationship is that a cut in interest rates, causes share prices to rise. All the coefficients for all variables used had the wrong sign for the Lancashire share index, but were correctly related to the London index.³⁵ In equation 11.9, yield on consols was strongly co-linear³⁶ with RPI and

³³ 'Bimetallism' was advocacy of silver based currencies in addition to gold. The use of silver currency by India, and the dependence of Lancashire on India as an export market, had important political ramifications (see below, pp. 411-2).

³⁴ See chapter 4, p. 89.

³⁵ Without an index of profit rate for London quoted companies, it was not possible to apply exactly the same models to the London index. Without a profit variable, equation 11.9 produced the following coefficients for the London share index: RPI, -0.04 (0.07); yield on consols, -1.1 (2.79); gross

the rate of profit, and thus by dropping the former variable from the model (equation 11.10), little explanatory power was lost. This odd relationship may have reflected local circumstances, for example the raising of fixed rate deposit style loan finance by cotton companies independently of regional and national banking infrastructure meant many investors had a steady opportunity return of 4% throughout the 1890s and 1900s, and may have meant changes in the discount rate had little effect in Lancashire.

Other implications of the behaviour of share prices and interest rates are also important. Yield on consols had a significant negative relationship with the London index, a more expected result which reflected the dependence of London based companies on different economic influences. In contrast to Lancashire, the RPI coefficient did not perform as a robust variable in all models for the London index. For example, as noted above, the RPI variable had an insignificant t ratio when used in conjunction with gross national product and yield on consols. This must reflect, unsurprisingly, the unique dependence of Lancashire on export markets, as for reasons noted earlier, RPI changes were a direct function of the operation of the gold standard. Such dependence partly explains the divergence of shareholder wealth suggested in figure 11.2.

Further explanation is provided additional analysis of the movements of London share prices. For the London index, using RPI and yield on consols alone as explanatory variables, each was significant individually but jointly produced a low R^2 ,

national product, 1.06 (11.46). $R^2 = 0.87$ (t statistics in parentheses).

³⁶ Multicollinearity was tested for via CI indices and found to be a feature in most models. As with the demand analysis, its implications were examined by dropping variables, pooling data, regressing each variable individually and using first differenced data. In all cases, the relative importance of each variable was the same as presented in table 11.4.

due to the offsetting effect of the negative co-efficient for yield on consols.³⁷ An alternative model using real yield, that is nominal yield plus or minus the deflation or inflation rate, still offered only a partial explanation. Another variable, Gross National Product (GNP) was an insignificant influence for Lancashire (equation 11.9), again reflecting the export dependence of cotton, but was *the* most important determinant of share prices for industrial and commercial companies quoted in London.³⁸ The growth in the national economy did not benefit Lancashire, with, as we have seen, the possible exception of some of the combines such as Tootal, Broadhurst, and Lee, and Horrockses, Crewdson. In contrast, it provided a powerful impetus to London and another explanatory factor for the divergences between shares quoted on the London and Lancashire exchanges. Uniquely, exports were not thought to have played a leading role in the boom of the late 1890s,³⁹ and this may have been reflected by the apparent disaggregation of Lancashire from the rest of the economy.

Most of the divergence occurred in the 1890s. It was an important decade for the cotton industry, during which it witnessed a decline in its fortunes, followed by a revival which lasted until 1914. Associated with the reversal were changes in world market conditions, investment, and share market confidence. So when was the turning point and what were the precise causes? Lancashire was characterised by economic depression for most of the 1890s. However, share prices and returns to mill investors rose sharply after 1896 (figures 4.1, 4.2 and 11.2). But trade reports and annual

³⁷ $R^2 = 0.21$; coefficients, RPI = 3.99 (2.693), yield on consols = -2.088 (2.237); t statistics shown in parentheses.

³⁸ vis the highly significant GNP t ratio noted above (11.46) and much better R^2 (0.87) when used regressed in conjunction with RPI and consol yield variables.

³⁹ Sigsworth and Blackman, 'The home boom of the 1890s', pp. 75-97.

surveys pointed to no obvious overall improvement. For cloth manufacturers, 1896 opened with a 'discouraging state of affairs' and a recovery in some of the finer sectors was undermined in August with a further rise in cotton and a decline in orders from merchants overseas.⁴⁰ 1897 was a 'record year' for weaving losses.⁴¹ It was not until 1898 that the long deflation in cotton prices, which had persisted since 1873, finally reversed;⁴² it is perhaps therefore appropriate to date the recovery here rather than two years earlier.⁴³ However, it is noteworthy that cotton share prices, being only available to investors in the spinning section, represented a proxy for a sustained recovery in that section of the industry alone from 1896. That year saw a genuine recovery in demand for direct yarn sales to the Indian market, whilst English investors, having been frightened off foreign stock after the Baring crisis and faced with lowered yields on consols, could pick up cotton securities at very low values.⁴⁴ When, in 1897, the spinning employers called for a reduction in wages under the Brooklands agreement due to the poor state of trade, the Union resisted strongly, maintaining that they had ignored recent improvements and were basing their claims on out of date information. The trade improvement was genuine, and was the main reason for the collapse in unity of the Employers on 8 December 1897.⁴⁵ It was true that the weaving section did not feel the benefit until 1898, but spinning companies did so earlier, the recovery process having commenced in 1896.

⁴⁰ *Economist*, Feb 20th, 1897, p. 25.

⁴¹ *Economist*, Feb 19, 1898.

⁴² Farnie, *English Cotton*, p. 171.

⁴³ Sigsworth and Blackman, 'The home boom', p. 89.

⁴⁴ *Economist*, 1897, p. 25; Sigsworth and Blackman, 'The home boom' pp. 92-3.

⁴⁵ *The Times*, 9th December 1897, p. 12(iii).

Nonetheless, as noted above, the permanent impact of the price trend reversal appeared to be an important underpinning factor for share values after 1898. The improvement of the 1900s was attributable externally to inflation and the decline of gold values. Strategically Lancashire responded by shifting to finer counts and sewing cottons, and from grey to dyed and fancy goods. By 1903, the combined effect was that important export markets had been recovered, especially India.⁴⁶

Lancashire as a great manufacturing industry never really danced in step with the rest of the economy. Few other sectors of the economy quite shared the misery of Lancashire in the deflation of the early 1890s. Conversely, at the zenith of the cotton industry, the great boom of 1907, cotton investors' returns were far superior to those earned by investors elsewhere.⁴⁷ Again, these returns were driven by the same influences in reverse which brought bad fortune in the 1890s. For Lancashire, there really was a great depression and it did end in 1896. For the rest of the economy, subject to different economic forces, it is more correct to indeed regard the great depression as a myth.

The bimetallism debate

Within forty miles of Manchester, as Macara put it, everyone depended on cotton in one way or another.⁴⁸ It would be surprising therefore if the economic chasm that separated Lancashire and London in the 1890s were not reflected in a parallel political dichotomy. The assertion that the politics of that decade were characterised by a 'rentiers versus producers' divide,⁴⁹ has attracted some controversy among

⁴⁶ Chapman, 'The report of the tariff commission', p. 426.

⁴⁷ See chapter 10, pp. 309-10.

⁴⁸ Quoted in Clarke, *Lancashire and the new liberalism*, p. 76.

⁴⁹ Green, 'Rentiers versus producers' p. 588.

historians, with some arguing this to be an oversimplification.⁵⁰ A new focus is given to this debate by figure 11.2 which clearly shows that whilst significant fortunes must have been lost by Lancashire investors in the early 1890s, no such difficulties were suffered by those with broader portfolios. In wealth terms at least, the 'all too neat' distinction between Lancashire producers, and if not 'rentiers', the wider economy is confirmed by the relative performances of the two indices in the 1890s. The divergence between the London and Lancashire indices after 1885 provided a test gauge of the strength of support for the bimetallic movement. However, this did not translate into straightforward political advantage for one side or the other. In the 1895 general election, the influential trade unions and their mouthpiece, the *Cotton Factory Times*, imposed a bimetallic test on all candidates, including Liberals.⁵¹ Furthermore they combined the campaign against the gold standard with support for free trade in the face of threatened protectionist measures by the Indian government.⁵² Hence the difficulty for historians in terms of quantifying the apparent opposition of certain Lancashire industrialists to some of the fundamental tenets of the Manchester School.⁵³ Politically, bimetallicism failed to produce a broad consistent body of support centred either in Lancashire or London, or unity in the support of either main party.⁵⁴ However, what clearly did unite Lancashire was the need to do something about the Indian market. Examples of support for monometallism amongst leading cotton entrepreneurs, such as Henry Lee,

⁵⁰ Howe, 'Bimetallism' p. 390.

⁵¹ Green, 'The bimetallic controversy', p. 676.

⁵² Clarke, *Lancashire and the new liberalism*, p. 86.

⁵³ See the debate in Howe, 'Bimetallism,' pp. 377-91. and Green, 'The bimetallic controversy', pp. 673-83.

⁵⁴ Howe, 'Bimetallism,' pp. 389-90.

have been cited as examples of lack of unity.⁵⁵ However, not all cotton producers were uniquely dependent on the Indian market, and Tootal Broadhurst and Lee were a good example of a company keen to exploit marketing opportunities through diversification in the 1890s, especially in the Americas, continental Europe, and the home market.⁵⁶ The ultimate failure of the bimetallic movement was not due to political fragmentation, as Howe asserted, but the economic panacea of rising prices and the recovery of cotton profits. It is beyond the scope of the present work to enter into a fuller discussion of this debate, but by providing an index of the wealth of Lancashire cotton producers, figure 11.2 provides support for the proposed consensus view that 'bimetallic opinion in Lancashire rose and fell with the business cycle'.⁵⁷

Money: the decisive influence

The overseas value of the pound has been identified above as the most important determinant of Lancashire's destiny in the period 1884-1914. Unlike other sections of the economy, monetary conditions contributed to the ebb of industry fortunes before 1896. In turn, they created the business cycle which, as we have seen, was so significant as a determinant of investment behaviour. Despite their implications for the cotton economy of Lancashire, cycles in the rest of the economy, although far from fully investigated above, at least had an opposite behaviour. That the national economy and its leading manufacturing export industry were subject to different macro economic influences was perhaps symptomatic of a wider and continuing conflict between the interests of manufacturing and finance capital.

⁵⁵ Howe, 'Bimetallism', p. 380.

⁵⁶ MCRL M461, Finance Committee minutes, Minute book no. 1; analysis of customer ledgers, 30 November, 1890.

⁵⁷ Green, 'The bimetallic controversy', p. 674.

There were few major changes in the structure of supply and demand conditions facing the industry 1830-1914, these remaining highly price inelastic throughout the period. On the other hand, high income elasticity of demand was consistently significant. In this respect, the growth in world trade was important to Lancashire. However, investor confidence was governed by a linked but different motive; the rate of inflation and the overseas value of the pound, and, to a lesser extent, the profitability of cotton enterprises.

It has been noted already that the shares of ring spinning companies suffered relatively little loss in value during the early 1890s (chapter 4). The question might be asked, given that this was the case, that sales were being lost primarily to the low quality Indian market, and that Lancashire remained unintegrated with the wider economy in terms of the perceived availability of alternative investment opportunities, why did investors fail to support new ring spinning concerns during this period? The answer must be, in part, connected with lack of confidence in the future of the industry and the apparent riskiness of the alternative technology. Like mule spinners, ring spinners were selling into a commodity market and were thereby subjected to the same negative influences in the early 1890s. Vertical integration was only important in the sense that lack of confidence in export markets fed back down the value chain, stifling investment in all areas. Had large sections of the cotton industry vertical integrated in the 1890s it would not have solved the problem of overseas markets and might have lacked the volume necessary to achieve efficient throughput and economies of scale. In the 1900s world conditions would have guaranteed the throughput necessary, but enough profits were generated in any case to keep investors happy on the basis of vertical specialisation.

Technology and industry structure, which can be modified where necessary, have never been significant as long run determinants of competitive advantage in the

textile industry. As seen in chapter 10, some improvements in efficiency did occur before 1914, but the economies of scale realised at that time must have been at least in part a result of the higher throughput possible where demand guaranteed high levels of output. The shift from labour to capital was as important as rising efficiency in creating the profit boom, and in any case this was only in part compensation for the high risk associated with earnings variability. Monetary and demand conditions therefore remain the dominant explanatory condition. Modern multinationals, in taking decisions on the location of production, consider exchange rates in much the same way as the constraints and opportunities previously imposed by the gold standard.⁵⁸ Monetary conditions as an explanation of firm behaviour hint at a long run constant in textile history; international exchange rates as a determinant of industry location. As Britain's initial competitive advantages, associated with location and climate, were undermined by technology, this became an increasingly important factor. As entry barriers have remained low and cost conditions have become more similar, exchange rates have been important from 1880 and have become more so since.

⁵⁸ John Ashton, the former Finance Director of Coats Viyella, points out that echoes of dependence on international exchange rates are found in the modern cotton industry. Multi-national companies such as Coats Viyella and Courtaulds tend to move production back into the UK if the international value of the pound falls below a certain level.

Part 5

Conclusions

Chapter 12: Conclusions

Epilogue

As boom in the 1900s had followed the slump in the 1890s, a similar story unfolded after 1918. This time, as with many other industries, the short boom of 1919-20 was small compensation for the long slump which lasted until the mid 1930s. Pre-war investments, motivated as we have seen by rising profits and a shift from labour to capital, especially in the large new Oldham mills, contributed to a major problem of overcapacity in the 1920s and 1930s. As a result, Lancashire went first 'under the hammer' in the late 1920s, and by the 1950s was 'on the scrapheap'.¹ As demonstrated in earlier chapters, it was during the years of transition from the hammer to the scrapheap that the second wave of technical improvements began to supplant the methods adopted and entrenched since the first wave of change in the industrial revolution.

In a world of growing protection and falling world demand, Lancashire cotton was bound to suffer more than most industries.² But such conditions had been faced in the past, especially in the 1890s, when, as in the 1920s with the re-establishment of the gold standard, the pound was believed by many exporters to be overvalued. If cotton investors learned from history, no doubt many held back their capital in the 1920s and 1930s until they could anticipate favourable changes in world trading conditions.

The joint effects of these conditions accentuated the problems of the industry. Overcapacity created a surplus of fixed capital which when combined with technical

¹ Bowker, *Lancashire under the hammer*; Singleton, *Lancashire on the scrapheap*.

² Wolcott, 'British myopia', pp. 367-84.

developments meant realisable values reached very low levels. Simultaneously, adverse profit signals created a scarcity of the equity finance capital on which Lancashire had traditionally depended, as provided by the company promoter and local investor. Intervention, in the form of the Bank of England therefore became necessary.³ In short, Lancashire could no longer survive as a self regulating local economy.

The above comments represent a brief and perhaps over simplistic outline of the decline of the cotton industry. This is as it should be, since the main purpose of the research presented has been to examine conditions before 1914. However, each sentence points out a condition which, depending upon how it exerted its influence, was critical to an understanding of the profitability and growth of the industry. The sketch of the post 1918 period involves a reconsideration of these dynamic operators but with changed assumptions as to their direction. Nonetheless, further research is needed in this area before extrapolation can be taken any further.

A brief resume

Below conclusions are presented in the approximate order in which the issues which are commented upon were first introduced in the above chapter structure. Issues of technology and industry structure, which were presented in part two, have attracted a great deal of comment. These are re-addressed first. Having presented our conclusions, given the amount of interest these matters have attracted, we then pause to review the economic literature in the light of the research findings. Conclusions are then extended to cover further aspects of the industry which have previously been neglected, namely the social processes of capital accumulation with reference to those evolving relationships between managers and shareholders which, in the context of

³ Bamberg, 'The rationalization of the British cotton industry', pp. 83-102.

broader economic change, helped forge the special characteristics of Lancashire capitalism. The broader issues of relative profitability, efficiency and the world market are then addressed. Finally the importance of all individual aspects are assessed and re-evaluated.

The technological illusion

Based on a review of previous studies of Lancashire cotton, it was first established that the historiography of the industry became dominated by certain assumptions. Chief among these were that entrepreneurs were indifferent or antipathetic to 'new' technology. In Lancashire at the turn of the century it was said that:

'the average small manufacturer regarded anyone who approached him to urge the adoption of a new kind of machine with pity. He looked at you as a person with a "bee in his bonnet"'⁴

In fact, the diffusion of ring spinning was found to be associated with product and geographical specialisation, and it was thus embraced enthusiastically in some districts, notably Rochdale, but not in others, notably Oldham. Traditions of throstle spinning, and the role of capital equipment suppliers and their acquisition of patents, reinforced the tendency towards specialisation.

Geographical diversity and product specialisation were not, however, sufficient to guarantee the simultaneous introduction of ring spindles and automatic looms, despite their apparent compatibility. Although compatibility was established by 1930s, before then the crucial feature was technical asymmetry. Competition between continuous and intermittent methods of spinning had been a feature of the industry since the origin of factory production. The adoption of the ring reflected the tradition, and supplantation, of throstle spinning in certain districts. By contrast, in weaving the automatic loom was a step improvement, and a potentially far more

⁴ Young, *The American cotton industry*, p. 137.

efficient machine than its power loom predecessor. Unlike spinning, capital equipment manufacture of automatic looms was monopolised by the overseas controller of the patent rights and was hence less supportive of manufacturers. Furthermore, the automatic loom was not available in Britain for thirty years after innovations led to the first British commercial ring spinning experiments. An important consequence of technical asymmetry was that innovation did not create an impetus for change in industry structure. Instead, innovation was directed piecemeal and incrementally down existing channels of specialisation.

Thus although ring spinning was carried out in a significant and increasing minority of establishments in the 1889-1914 period, in other districts as well as Rochdale, in virtually all cases it was in vertically specialised mills producing warp yarn. Vertically integrated firms, albeit unconstrained regarding the deployment of machinery in spinning and weaving branches, did not adopt the ring spindle and automatic loom simultaneously, mainly because there were few commercial or technical reasons for doing so.

Many discussions have presupposed that ring spindles and automatic looms were more efficient than mules and power looms. Needless to say, many of these observers were writing with reference to hindsight and the subsequent self fulfilling prophecy of mule obsolescence. Before 1914, the ring spindle was actually the more labour intensive of the two methods, a feature not normally associated with current or impending technical superiority. There was little evidence that the ring spindle possessed any such superiority in the years before 1914 and was unlikely to have had any great appeal to employers seeking to cut labour costs or circumvent institutionalised labour relations.

In 1914 the ring spindle would require further improvements and adaptation before its superiority became obvious in British conditions. Its ultimate triumph arose

from its compatibility with new efficiencies in before and after spinning processes, not from any inherent superiority in spinning itself. By the 1920s these advantages were becoming more apparent and were obvious by the 1930s. But by this time, conditions facing Lancashire entrepreneurs had changed dramatically. Before 1914, it was true that the ring was more efficient in terms of its faster speed but this only provided compensation for higher labour cost. The ring spinning companies surveyed in chapters 4 and 5 gained from savings on raw material inputs, an advantage that would have been shared by other ring spinning companies. Although not all succeeded in translating this into superior profitability, generally the ring spinners were the best performing companies in the whole of the Lancashire cotton industry.

Despite their success, there were surprisingly few emulators. Lack of confidence in the future of the industry in the 1890s and the apparent riskiness of the alternative technology may well have acted as a deterrent. Like mule spinners, ring spinners were selling into a commodity market and were thereby subjected to the same negative influences in the early 1890s. Thus, although the profits were good, abnormal returns to ring investors were confined to a small group of companies and cannot be taken as proof that ring spinning had developed a decisive and permanent superiority over the mule. However, when compared with vertically integrated companies which also used ring spinning, the advantages of the specialised ring spinners was more pronounced. This suggests that ring spinning was introduced by the latter companies as an extension of the processes of specialisation already taking place in Lancashire; an explanation consistent with the traditions of Rochdale, which would also account for the general reluctance of other companies to introduce ring spindles for the warp side of their product ranges, where, in terms of rewinding costs, no constraints existed. There was every incentive for entrepreneurs to switch to rings for warp yarn since the profits of specialised ring spinners were better than

mule spinners despite the latter having the advantage of cheaper transport costs to the weaving shed. To a varying extent, rewinding and transport costs were avoidable by vertically integrated companies, yet savings in these areas could not be translated into superior profits.

As has been widely acknowledged, industry organisation was not a constraint on the diffusion or the profitability of ring spinning in pre 1914 Lancashire. Vertical specialisation promoted competitive advantage before 1914. Without specialisation, it was still unlikely that ring spinning would have diffused more rapidly. Vertically integrated companies did adopt ring spindles, but this did nothing to enhance their financial performance vis a vis their specialised competitors; an unsurprising finding given the technical barriers which still existed for fully automated throughput production. This was particularly noteworthy as far as experiments with automatic weaving were concerned, which, whatever their technical advantages, failed to translate into superior profits for the vertically integrated companies responsible for their adoption. These companies were faced with additional problems, especially when markets were uncertain. For example, integrated companies such as Horrockses and Tootals tended to find that efficient marketing and efficient production worked in opposite directions. Taken with evidence on spinning, external economies and flexibility associated with vertical specialisation were thus confirmed as continuing to outweigh those of integrated throughput production.

The principle message of part two was thus that industry organisation and technology were perhaps less important variables than previously asserted and provided few answers in the search for the ingredients of competitive advantage. Parts three and four therefore concerned themselves with attempting to identify alternative aspects of the industry that might have been important in this respect. Different routes to profitability existed which were not predicated on technology and

organisation, although both might be important where other influences were also present.

A brief digression: Some general lessons for the historian and the economist

Institutional constraints and entrepreneurial failure are two competing hypotheses which have been advanced to explain the development of Lancashire textiles. Realised profitability, the main empirical ingredient of earlier chapters provides the means to reconcile them. Return to capital both measures competitive advantage and sends signals to investors, thereby influencing diffusion, but also creating a positive feedback loop of signal, action and response. Such are the dynamics of a market economy. Entrepreneurs perform a duty to the economy in two ways; first, by responding correctly to signals sent by the market about the relative profitability of different investment decisions, or alternatively, by correctly ignoring the signals sent by the market in the above sense when the market misinterprets the truth about the profitability of competing investment decisions. The second case may arise because there is a short term/ long term dichotomy, or perhaps because a constraint exists which, due to its current non problematic nature, the market fails to recognise. To follow the second course is difficult and involves high risk, which is why it is perhaps more akin to entrepreneurship than plain management.

Yet it is impossible to judge entrepreneurs in an industry which became the victim of long run decline by such a definition using historical method. To argue, as Lazonick does, that structure and labour relations were simultaneously a constraint and non problematic is a historical tautology. Necessary remedial action is definable by the hindsight blessed historian and not by the entrepreneur. If, at the time the entrepreneur is supposed to realise a constraint exists, the historian also defines the constraint as non- problematic, it is difficult to see how the entrepreneur can escape

the opprobrium that has been applied in the case of Lancashire cotton.

There are two possible ways around the problem. The first is to subject the constraints to historical analysis and make them 'disappear'. To an extent the above analysis has done that by showing that the constraint was technical, not organisational, and that technological transformation especially on the basis of vertical integration was not possible before 1930. The response to such an argument of the school of thought that seeks to explain economic development in terms of entrepreneurs and constraints might be to reinvolve the constraint of specialisation but to argue that before 1930 it was non problematic. To disprove such an assertion is difficult, by historical method or any other, since the constraint is only redefined as problematic when the decline it is seeking to explain actually occurs.

An alternative response, if one seeks blame, is to blame the market for sending the wrong signals in the first place. If one was seeking evidence for the mis-allocation of resources through market inefficiency one might well look to examples from Lancashire cotton in the period 1900-13, when a large amount of new capital was attracted to the industry at a time when arguably it was required elsewhere. Armed with cheap fresh capital entrepreneurs had the means to overcome the constraints had they wanted to, but deliberately chose not to. This was because different routes to profitability existed which were not predicated entirely on technology and organisation. Nonetheless, the mis-allocation of capital is an important hypothesis and discussed further below.

Did ownership matter?

A transformation of the industry occurred in terms of the ownership of certain sections during this period. In the earlier years, especially in the Oldham district, ownership was diffuse and individualistic, and in some areas based on the

participative traditions of co-operation. Family capitalism and paternalism was also important, and dominated in certain 'company' towns. Gradually these traditions weakened and new ownership interests emerged based on promoters, cross directorships, and industry wide federations. Previously influential small shareholders were forced to abdicate control to this rising class of financial capitalists. The trend was accentuated by the slump in share values in the 1890s, the pattern of profit distribution, and the increased institutionalisation of labour relations. Shifting industry value added from labour to capital and rising profits after 1900 attracted capital into cotton and also reinforced the position of the newer owners of the industry.

Their entrepreneurial behaviour had several interesting features. Perhaps the most significant was their creation of business empires through personal shareholdings and ability to personally manage relatively large numbers of similar firms. Conversely they were reluctant to establish professional management hierarchies, which, although increasingly common elsewhere, were compromised in Lancashire by preference for individual, and not corporate, accumulation.

Individualism manifested itself in a marked tendency to distribute rather than accumulate profit. In the Oldham and Rochdale areas, shareholders preferred high and frequent dividends, reflecting the co-operative tradition, continuing individual dominance of share ownership structures and the consequent undiversified risk of close individual involvement. For established concerns, the onus was on capital reduction through depreciation and repayment of loan accounts, rather than capital accumulation. This function was in the hands of the individual, not the corporation. Instances of companies raising new finance through second or subsequent share and rights issues were very rare. In the privately controlled companies, divestment levels were also high, even if in some cases in the form of directors' salaries rather than dividends. Dominance of promotional groups prevented the emergence of a specialist

managerial class. Whilst individuals used cross shareholdings and directorships to achieve considerable power and wealth, few corporations achieved the scale required to justify significant investment in the personnel, marketing and finance specialisms, characteristic of the managerial classes. Preparation of management accounting information for decision makers, was strictly limited. Financial accounting, and the monitoring of capital circulation between corporate and individual sectors of the economy, remained a dominant concern. Lancashire became dependent on the circulation of capital via the individual between previously established companies and the newly floated. For these reasons, levels of reported profit, upon which this survey has relied, were of the utmost importance to the contemporary investor.

They were also of importance for the historian, facilitating comment on two crucial areas of British business history. These are first, the question of when and why capital was allocated (mis- allocated) in Lancashire, and the consequences for the structure of the economy as a whole. The apparent over commitment to cotton in the decade before 1914 was arguably a weakness, regardless of the profitability and success of the industry. Second, the contrast of the powerful individual with weak corporate organisation, generalist owner/ managers with the professional specialist, and loose associations of companies with fully integrated concerns, provides interesting evidence in the context of arguments advanced recently to explain the pattern of Britain's industrial dominance and decline. As the fate of the industry depended upon individuals and not management hierarchies, it is not surprising that cotton has been selected as an example for those seeking to blame British economic decline on the failings of its entrepreneurs and fragmented industry structure.

Lancashire textiles thus contrasted with emerging corporate concentration in many industries in overseas economies. Such concentration that did occur tended to be under the control of the private rather than public company, thereby reinforcing

the entrepreneurial role of individual capitalists. Nonetheless all companies, however controlled, made significant divestment of profits which accumulated to private individuals. Reinvestment depended upon market signals and the willingness of rich individuals to commit personally accumulated funds. From the perspective of the entrepreneurial failure hypothesis, it was the character of capital accumulation, rather than the failure of a class of individuals that was important. Investment decisions were apparently sensible on the basis of the profit signals received, but because of its individualistic ownership, the industry could not be expanded on the basis of integrated, professionally managed, organisation structures. Under whatever circumstances, if any, vertical integration was desirable, the large amounts of capital under the control of a professional managerial hierarchies, that might have provided the impetus to such investments, had not accumulated in Lancashire companies. The strategic instrument, the centralised corporation, could not be created due to the way in which the profits had been spent. The lack of institutional capital accumulation in the industry was at least in part a function of the separate development of Lancashire, as an export led manufacturing sector from the institutional and investment priorities of the British economy as a whole. Ownership of capital thereby became crucial to the development of the industry, with profitability an important determinant of its deployment.

The wider context

Relative profitability was determined by demand in product markets, the allocative signals of the capital market, and the investment decisions taken by entrepreneurs. Profit signals sent to investors by capital markets, as confirmed by accounting profits, played an important role in determining the future of Lancashire cotton. The trade cycle introduced a dynamic perspective to these relationships. Thus when demand was

weak, especially before 1896, the profits of companies were depressed and the industry attracted no new investment. During these periods there were otherwise good opportunities for ring spinning and the profit signals from ring companies were relatively positive. Confidence, underpinned by share values on the Oldham exchange and by the ability of companies to sustain dividends, was undermined during this vital window of opportunity. In the upswing which followed in the 1896-1914 period, pressure was placed on capacity and all sections of the industry were able to record strong profit performances. Demand for Lancashire products grew rapidly in response to rising incomes in export markets. The period tended to coincide with superior share price signals for mule spinning and more of a profit parity between the two different types of spinning company. Whatever the circumstances of the trade cycle, but for different reasons at different points in time, opportunities for investment in rings were limited. The role of historical accident must be thus acknowledged. Having said that, cyclical impacts, especially demand in overseas product markets, would have caused problems for entrepreneurs whichever technology they adopted.

Some improvements in factor efficiency were realised in the thirty years before 1914. In part, this must have been attributable to the higher throughput possible in certain years where demand could sustain high levels of output. However, the shift from wages to profits was as important as rising efficiency in creating the 1904-7 boom, and the high risk associated with earnings variability meant that only high profits would have attracted the investment in spinning on the scale that actually occurred. Cotton profits were higher than elsewhere, for example motor vehicles, and hence attracted more investment. Efficiency gains, although slower than in earlier periods, were still similar to the economy as a whole.

Supply and demand conditions remained constant throughout the period in terms of price inelasticity. On the other hand, high income elasticity of demand was

consistently important. In this respect, the growth in world trade was critical to Lancashire. However, investor confidence was governed by linked but different motives; the rate of inflation and the overseas value of the pound, and, to a lesser extent, the profitability of cotton enterprises.

In the context of the world market, the vertically specialised structure of the industry was only important in the sense that lack of confidence in export markets fed back down the value chain, stifling investment in all areas. Had large sections of the cotton industry vertically integrated in the 1890s it would not have solved the problem of overseas markets and they might have lacked the volume necessary to achieve efficient throughput and economies of scale. In the 1900s world conditions would have guaranteed the throughput necessary, but enough profits were generated in any case to keep investors happy on the basis of vertical specialisation.

In addition to the volume of production, monetary and demand conditions explained the trade cycle and were therefore a dominant cause in the development of the industry. The long run constant in textile history, commented upon in chapter 11, is the importance of international exchange rates as a determinant of industry location. At the time of writing, one large textile company stands ready to re-open four long dormant Oldham mills if and when the UK exchange rate falls below a certain level. Britain's initial competitive advantages, associated with location and climate, were ultimately undermined by technology diffusion after 1920 and later by capital mobility. As entry barriers have remained low and cost conditions have become more similar, in the modern world this relationship has perhaps therefore become an increasingly important factor. Nonetheless, as we have seen, the nineteenth century parallels of the British commitment to free trade and the gold standard were capable of exercising a dominant influence on the destiny of the industry.

The overseas value of the pound uniquely contributed to the trough of industry fortunes in 1896, and differentiated cotton from other sections of the economy. In that sense, the primary cause of the business cycle for cotton was monetary; changes in international money values caused changes in export demand. Whether or not this contributed towards cycles in the rest of the economy has not been fully investigated, but on the basis of the opposite behaviour of the national economy and its leading export industry, the answer is probably that it did not.

Overall conclusions

The analysis presented above calls for a reappraisal of the history of the Lancashire cotton industry in the thirty years prior to 1914. An exemplification has been provided of the circumstances where an export industry based on relatively small, specialised business units can work successfully where the necessary conditions are met; most importantly rising incomes in export markets, but also technical parity and the avoidance of currency overvaluation. In 1914, the industry was intact as a world leader, based on the experience of a century and a half, and a technology that appeared perfectly satisfactory for the purposes of sustaining that position. The pattern of development in the pre 1914 period suggests earlier interpretations have perhaps exaggerated the length and the gradualness of Lancashire's decline, in the sense that there were few symptoms of future difficulty present before the First World War.

The signals the market sent to entrepreneurs confirmed the adequacy of their strategies of shunning alternative technology and vertical integration, no doubt reinforcing both aspects. That alternative technologies ultimately became superior could not have been foreseen, but vertically specialised production was not in any case a barrier to its introduction. The problem for Lancashire ultimately lay in

markets, not in terms of the accurate signals they sent, but in their propensity to suddenly and decisively alter trading conditions.

Whatever the technical merits, profitable industries are rarely restructured, and Lancashire cotton would have been a surprise exception had entrepreneurs done so at this stage. Certainly the commercial and technical signals could not have suggested that such action would be appropriate. If the industry could have been restructured before 1914, then so it could have been after the First World War when it arguably became more necessary. Pre 1914 technical constraints have been identified and it was also noted that it was in the inter-war period that the means to remove them were fully developed. Decision making priorities of historical actors were understandable under such circumstances. However, their ability to control events was limited, and the importance of demand and the trade cycle requires emphasis once again *vis a vis* more manageable factors such as machinery investment choices and industry structure.

Characterised as they were by their easy access to financial resources, emergent groups of capitalists might well have made sweeping changes to industry structure had they chosen to do so. However, although ring spinning was found to be in general more profitable, the basis of that superiority was an extension of the process of increased specialisation. All specialised companies, whether ring spinners, mule spinners, or weavers, tended to do much better than their vertically integrated counterparts in the period after 1900.

However, considering technical issues in conjunction with characteristics of capital ownership, it is concluded that as the industry failed to attract investment when profit signals turned negative, for example in the 1890s, and attracted a lot of capital in the booms of the early 1900s, and that if any constraint did exist to prevent restructuring it was financial rather than organisational.

In short, the established financial, technical, and organisational structure, when combined with buoyant overseas monetary and trading conditions, created the synthesis of a profitable industry; when external conditions changed, financial and social ownership, technical, and organisational aspects of the history of the industry became important but in that strict and steeply descending order. Lancashire was highly vulnerable to the world market; that vulnerability was accentuated by the way in which capital was created and divested. In the above analysis, an attempt has been made to link the development of an industry with the process of capital accumulation. Generally, the social nature of capital accumulation is crucial to our understanding of the progress of an industry which brought prosperity on the back of the First Industrial Revolution, but which ultimately failed to respond to the challenges of the Second.

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AAPENDIX 1: RATES OF RETURN ON CAPITAL EMPLOYED

OLDHAM COMPANIES					VERTICALLY INTEGRATED					ROCHDALE RING SPINNERS					OTHERS		Economist Series
Sun Mill	Werneth	Dowry	Moor field	Osborne	Ashdon	Barlow & J Rylands	Whitely	Horrocks	Tootal	Falsten	Hesley Wood	Haugh	New L'house	New Hey	Centenary T & R (Horrocks) Eccles		
1884	6.13	5.53	4.07				6.06			3.50		7.16	14.94				2.62
1885	0.59	-0.32	4.08				5.45			-12.10	10.00	8.42	14.08				1.80
1886	0.12	1.35	0.65				6.94			2.70	5.00	6.38	13.70				3.78
1887	3.72	5.32	6.14	2.81			5.75			9.70	10.00	5.49	13.15	8.54			6.21
1888	5.82	6.13	6.14	5.40			6.40	14.34	1.45	-2.30	15.00	7.60	14.36	6.68			5.74
1889	5.31	6.02	6.30				6.12	10.75	4.96	-3.90	10.00	5.77	10.93	6.31			7.40
1890	6.34	6.03	7.99				6.79	12.41	4.19	-0.03	15.50	8.51	16.99	8.51			1.87
1891	-8.45	0.46	3.11	10.36			7.01	13.80	3.42	0.03	10.00	6.96	14.11	7.90			0.43
1892	-1.91	0.20	1.07	2.58			7.34	16.61	2.68	3.31	22.50	4.82	11.86	5.94			0.95
1893	1.16	-9.00	1.22	-1.09			7.18	17.87	8.07	-5.32	20.00	4.16	9.36	3.14			1.91
1894	-2.86	2.23	2.46	2.74			7.30	11.11	0.11	-8.07	20.00	1.29	11.43	3.13			2.34
1895	-5.21	-0.43	3.13	6.94			8.15	20.11	1.88	3.51	15.00	6.35	10.36	5.08	6.22		2.25
1896	1.44	1.75	2.85	4.87			8.72	12.88	1.76	-1.16	22.00	5.55	12.82	6.99	5.13	16.88	4.23
1897	-0.36	4.74	3.11	7.39			7.45	8.40	3.24	1.43	22.00	8.90	12.96	8.04	7.17	14.48	6.31
1898	5.26	5.89	3.13	4.65			8.48	16.18	0.17	3.32	17.50	8.16	14.95	8.80	14.08	18.41	8.30
1899	9.16	7.00	4.82	7.34			8.84	10.20	1.77	3.98	10.00	7.91	13.73	9.80	18.94	22.34	8.13
1900	3.05	5.40	7.16	11.59		7.53	8.75	11.67	7.05	0.15	10.75	6.15	12.03	8.28	0.12	14.28	7.15
1901	5.89	4.26	6.10	12.48		5.31	7.04	6.52	2.08	1.09	17.00	3.86	10.94	7.01	0.79	16.85	1.24
1902	-0.12	2.73	1.75	1.84		6.18	6.69	11.25	4.56	2.57	16.50	5.48	11.75	7.44	3.54	5.26	0.29
1903	-0.07	4.30	-1.54	-1.26		5.48	7.21	9.93	7.94	-3.79	14.00	1.81	6.77	2.40	-0.30	12.20	1.91
1904	6.00	5.22	-2.82	6.84		3.07	5.95	7.77	5.36	-3.16	9.75	2.84	9.68	2.83	32.86	31.78	14.14
1905	22.43	7.83	10.12	11.34		3.78	8.16	14.59	3.91	11.58	0.00	13.48	20.83	17.84	26.72	21.82	12.85
1906	15.93	12.25	8.46	15.88		5.89	7.33	10.00	8.28	7.82	7.50	14.08	19.99	16.84	19.09	20.93	23.22
1907	21.02	18.41	27.84	33.85		9.82	6.51	14.36	16.53	7.76	42.77	36.27	33.68	41.39	7.12	6.14	11.32
1908	10.94	8.17	16.00	2.20		10.62	4.55	5.47	4.14	7.73	10.42	14.11	16.81	14.21	3.63	1.12	-3.51
1909	2.76	2.82	-1.08	-8.87		5.50	7.44	16.33	4.38	5.39	-0.06	6.11	10.26	5.09	-1.82	8.09	-4.94
1910	4.96	3.94	-1.30	7.91		3.17	4.21	9.40	0.94	4.44	6.04	8.47	8.31	-0.04	13.26	16.73	2.11
1911	13.47	5.07	-1.95	8.22		4.43	5.08	6.40	9.79	5.75	10.83	7.51	10.76	7.10	21.07	26.01	10.55
1912		8.27	13.86	3.39		7.47	7.18	14.73	7.76	11.42	14.88	14.89	17.96	19.25	19.68	30.01	10.20
1913			7.33	15.16	10.71		6.42	12.86	7.74	6.21	5.02	13.45	14.10	12.79			
Avg	6.80	4.60	4.96	7.19	7.41	5.53	7.12	12.33	4.67	2.19	13.44	6.07	13.79	9.37	10.83	14.88	5.20
1890-1899	6.08	2.09	3.58	5.74			7.83	14.74	2.71	6.10	17.45	6.06	12.87	6.84	7.79	16.52	3.60
1900-1912	8.85	6.80	6.34	7.70	7.34	5.53	7.00	10.41	6.16	4.52	12.34	9.78	14.81	11.41	11.33	15.68	6.51
1894-1896	6.95	2.16	3.38	4.84			6.94	14.41	3.15	-6.78	14.58	6.04	12.94	6.52	6.25	16.68	3.09
1897-1913	7.75	6.83	5.44	6.16	7.41	5.53	7.25	11.23	5.47	4.45	12.64	9.62	14.45	11.05	11.37		6.68
S Dev	6.82	4.60	7.44	6.11	3.21	1.43	1.17	3.80	3.60	3.51	6.13	6.40	4.88	7.70	9.60	8.26	5.64
1896-92	2.14	4.56	5.51	6.47			6.50	12.83	3.51	1.03	10.82	6.79	13.88	8.19	7.34	17.17	4.43
1903-1903	1.06	2.25	3.87	6.57	6.91	6.35	8.16	13.69	3.08	6.44	17.57	5.52	12.03	6.71	12.50	17.17	3.93
1904-1916	12.81	8.26	9.34	8.18	7.91	9.64	6.56	10.46	5.94	5.94	10.82	12.48	17.10	13.88	12.50	14.58	7.89

Appendix 2: Lancashire share price index

1884	100 97.6 88.1 92.4	1894	47.4 43.5 37.8 39.2	1904	65.7 69.1 70.8 81.1
1885	83.0 77.5 73.7 73.5	1895	39.5 42.7 40.1 38.3	1905	81.4 84.5 81.3 80.3
1886	68.5 62.9 62.2 68.1	1896	36.6 38.8 39.0 48.8	1906	80.5 81.9 87.3 91.6
1887	67.0 60.9 61.1 67.2	1897	53.4 53.9 53.1 55.2	1907	97.7 102.8 110.5 113.5
1888	68.0 68.0 67.4 68.4	1898	60.0 64.2 65.1 73.3	1908	100.8 100.3 100.9 101.9
1889	69.7 66.2 66.8 75.3	1899	73.5 78.7 79.5 76.7	1909	99.1 98.4 99.6 98.0
1890	72.1 73.0 74.6 72.2	1900	79.0 75.4 74.6 80.6	1910	95.0 96.8 98.0 102.1
1891	66.8 61.2 61.6 61.2	1901	78.5 76.1 75.0 72.7	1911	101.6 100.2 101.5 109.9
1892	57.4 56.4 54.2 54.6	1902	69.4 69.4 67.6 70.6	1912	116.9 119.9 122.8 123.9
1893	56.9 53.5 50.5 48.9	1903	71.3 69.5 71.4 69.3	1913	125.0 127.1 128.3 127.4
				1914	131.0 129.2

