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Network preferences and the growth of the British cotton textile industry, c.1780-1914

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Abstract

The paper considers the dual aspect of social networks in terms of 1) product innovators and developers and 2) the providers of finance. The growth of networks can be explained as a function of incumbents and entrants' *preferences* to link with specific nodes defined according to the underlying duality. Such preferences can be used to explain network evolution and growth dynamics in the cotton textile industry, from being the first sector to develop in the industrial revolution through to its maturity. The network preference approach potentially explains several features of the long run industry life cycle:

1. The early combination of innovators with access to extensive credit networks, protected by entry barriers determined by pre-existing network structures, leading to lower capital costs for incumbents and rapid productivity growth, c.1780-1830.
2. The spread of innovation and productivity through value chain linkages during the nineteenth century.
3. The trust movement, joint stock and personal capitalism: the emergence of large firms and a preference for regional financial markets in Lancashire and Scotland.
4. The consolidation of regional instead of national business groups which help explain the decline of the industry.

The paper uses case studies of firms, networks, and market institutions based on a mixture of archival evidence, drawn mainly from the financial records of a large sample of cotton firms, and contemporary publications. It stresses *human interactions* (as opposed to population ecology mechanisms) as determinants of the character, scale and scope of network evolution. *Intergenerational* features of the networks are identified and classified by these characteristics. Networks were typically bounded in terms of product innovators and less bounded in terms of finance providers. Consequently, finance providers tend to provide the impetus for the rate of network growth in expansion, maturity and contraction phases.

Network preferences and the growth of the British cotton textile industry, c.1780-1914

Introduction

The cotton textile industry in Britain emerged from regional financial and trading networks. At the onset of manufacturing, capital requirements were small and could be easily satisfied from established local and regional credit markets. As the industry grew, capital requirements also increased, creating options for entrepreneurs in terms of accessing finance. The financial requirements of larger second-generation mills were substantial, and textile firms were therefore increasingly reliant on alternative networks to secure finance. For Lancashire based networks, Manchester was the most important centre for accessing merchant and later finance capital¹ through regional stock exchanges. Although a larger financial centre, London apparently had little to offer in terms of financial resources for further expansion in subsequent waves of industrial development. As the nineteenth century progressed, Lancashire and London remained on separate trajectories of development. Manufacturers were excluded from the expansion of the Empire in favour of the interests of the City of London.² Consequently the City increasingly specialised in bonds and overseas issues, where the proceeds, and associated fees, were much larger than the average industrial flotation in Lancashire.³ Towards the end of the nineteenth century, as some sections of the cotton industry formed large trusts,⁴ London finance was nonetheless a viable option for these new larger firms. However, as the paper demonstrates, most of these very large firms shunned London in favour of regional networks. The paper aims to explain why this was the case.

¹ Pressnell notes that the majority of private banks in Liverpool emerged from wholesalers. Pressnell, *Country Banking in the Industrial Revolution*, p.49.

² Cain and Hopkins, *Gentlemanly capitalism*.

³ Kynaston, *City of London*, Cottrell, *Industrial Finance*.

⁴ For sketches of the main transactions, see Macrosty, *The Trust Movement*.

This short historical sketch suggests that City of London's separation from the industrial economy in the north of England, that has characterised the twentieth century, and remains an issue today, has deep historical roots. A crucial consequence of separation is that the historical process of London's evolution as the major, and now dominant, financial centre in the United Kingdom, by definition excluded certain parts of the economy, thereby limiting and continuing to limit its key function: to redistribute funds to where they will find the greatest social return.⁵

It was not the case that London investors found industrial ventures too risky. Michie notes that London investors' overseas portfolios shifted significantly from less risky government issues to more risky plantations, factories and mining between 1895 and 1914. Established manufacturing firms did not necessarily need new finance, as they could rely on previous generations of accumulated capital.⁶ However, the longstanding nature of textile production by 1870 did not stop the new larger mills in Oldham and Bolton seeking stock exchange finance, nor did it inhibit the trust movement of the 1890s.⁷ Both of these developments deviated significantly from the inter-generational model of personal capitalism stressed in previous histories of the textile industry.⁸

What then are the specific reasons for the separation between first industrial, and then corporate capital in textiles and the financiers of the City of London? How did the separation come about? The paper argues that the industry developed network relationships such that it became self-sufficient financially in the take off and initial growth phases. In the maturity phase, larger mills were financed mostly through regional pools of capital, but the preference for such capital was fixed by network inter-relationships established in earlier phases of

⁵ The key function as described by Goldsmith, *Financial Structure and Development*, p.400.

⁶ Cottrell, *Industrial Finance*, pp.269-270. Michie, 'Options, concessions, syndicates, and the provision of venture capital'.

⁷ Farnie, *English Cotton*; Macrosty, *The Trust Movement*.

⁸ Chandler, *Scale and Scope*.

development. As a consequence, as the industry expanded through the nineteenth century, it accessed more finance through established networks of connected individuals. The choices, or network preferences, of these individuals were crucial. In documenting these preferences, the paper answers the general question: What were the human factors that determined business network evolution and that explain the characteristics of the industry through its life cycle, including its rate of growth?

To answer the above questions, the paper is structured as follows. In section 2, a theoretical framework is developed from three overlapping literatures. These are first, theories of networks and their evolution, second, theories concerning the evolution of financial centres and third, the literature on industry structure and economic performance, including entrepreneurship and entrepreneurial failure. The latter is important because the analysis of networks potentially complements, but does not necessarily fit into, neat descriptors of ‘personal’, ‘family’ ‘corporate’ capitalism, or correspond to an industrial structure dichotomy of integration or specialisation. The business history literature that overlaps with these three areas is integrated and finally prior interpretations of the rise and fall of the Lancashire textile industry are discussed so that the new interpretation offered in this paper can be specified. Section 3 introduces empirical evidence on the formation and evolution of networks using a chronological approach. Section 4 draws conclusions.

Theoretical framework and literature review

Network theory

The literature has consistently asserted that networks are economically important, in terms of transaction cost reduction, for example through lower contracting and information cost.⁹

There has been some debate about the extent to which the social aspects of networks promote

⁹ Casson, ‘Institutional Economics’.

trust based economic activity, or conversely, represent some degree of market failure.¹⁰ Empirical studies have produced evidence across a range of networking characteristics, including economic, social, religious, political, cultural and familial linkages, but typically only focusing on selected dimensions. More holistic approaches have argued that all these factors are potentially relevant explanatory determinants of decisive economic change such as diversification of business interests.¹¹ These developments should be explained iteratively stressing historical evolution and based on careful specification of network characteristics.¹² Other interpretations have suggested that network characteristics and their evolution are determined by transaction cost reduction through the process of hierarchy or market substitution and through the transparency or opacity of the social relationships involved.¹³

The present paper takes these ideas a stage further, relating networking characteristics to two possible sources of competitive advantage. These are first: linkages that promote control of the value chain, which might include network type relationships that substitute for what otherwise would be formal integration, vertical or horizontal. Also included here are collaborations on technology, production and marketing processes. Second, there are linkages based on financial markets, whether credit or capital markets, which provide access to capital or reduce the transaction cost of acquiring capital. Competitive advantage is based on the accrual of rent from either source, by the dominant firm, or firms, within the network. On the one hand, abnormal returns accrue from control of the value chain associated with market or technical dominance at its crucial stages. On the other hand, abnormal returns accrue from control of, or discounted access to, financial markets. Rents are Ricardian, such that dominant firms can allocate them within the network, thereby controlling financial returns available to other network firms. Network evolution is also path dependent, such that the accrual of

¹⁰ Williamson 'Economics of organization'; Granovetter, 'Economic action and social structure'.

¹¹ Pearson and Richardson, 'Business networking in the industrial revolution', pp.658-659.

¹² Wilson and Popp, 'Business networking in the industrial revolution: Some comments'.

¹³ Toms and Filatotchev, 'Corporate governance, business strategy, and the dynamics of networks'.

superior returns in one generation impacts on the diversification of the network in the next. The pattern of diversification reflects incumbents and entrants' preferences to link with specific nodes defined according to the underlying duality. Their opportunities in turn depend on the evolution of financial markets and institutions, and the ability of networks to access and potentially control them.

Financial centres

The development of the industrial economy during the nineteenth century was paralleled by some degree of integration of financial markets. However, financial market and institutional development tended to lag, presenting industrialists with some degree of choice across a number of regional and metropolitan financial centres which mirrored the regional specific, unbalanced, distribution of economic activity post the industrial revolution.

Writing in 1973, Kindleberger¹⁴ noted that there has been little interest in the geographical location or relationships among financial centres. He suggested that lack of local knowledge may inhibit investment by central financial institutions.¹⁵ The reciprocal idea, that local business leaders may lack knowledge of and access to central finance channels could potentially be added as further explanation. Indeed, clustering of activities in financial centres and facilitation of information exchange tends to reduce the transaction costs arising from such asymmetries.¹⁶

Branch banking, allowing a central head office to channel funds from the suburbs into industrial areas offered a further potential solution as bank finance concentrated at the end of the nineteenth century.¹⁷ By this time, to summarize the arguments of Kindleberger, through the development of railroads, comprehensive branch networks development, introduction of

¹⁴ Kindleberger, 'The formation of financial centers'.

¹⁵ Kindleberger, pp.1, 14.

¹⁶ Gehrig, 'Cities and the geography of financial centers'.

¹⁷ Crick and Wadsworth, *A Hundred Years of Joint Stock Banking*, pp.329-345.

limited liability laws and the dangers of lending specialization by industry sector, there was a strong logic to the centralization of finance in London.

However, branch networks do not provide sufficient explanation for the separation of London and industrial capital in Lancashire. Michie notes a further, hierarchical separation between high and low finance.¹⁸ Branch banking, a form of the latter, was well developed in the regions, but provided only working capital, as opposed to longer term structured finance. These regional and hierarchical separations were recognised by policy makers in 1931, in the form of the so-called ‘Macmillan gap’, in part as a response to the depressed conditions of staple industries after the First World War. Despite the efforts of policy makers and financial institutions, important aspects of the gap persist today.¹⁹

As the evidence related below demonstrates, recognition of the separation between London and regional industries was somewhat belated. Considering earlier phases of evolution of the textile industry as an example allows us to identify further factors not recognized in the financial centres literature. Most notably, referring back to Kindleberger, the role of localized information as a centripetal force in the distribution of financial activities seems counterintuitive in the case of textiles. By 1900 textile production was a simple process relative to newer and higher technology industries. Textile markets of course included insurance and futures, but these functions were widely replicated in other contexts in the City of London. Economic, transaction cost-type, arguments therefore seem to offer insufficient explanation of the separate development of Lancashire and London.

Social networks offer a further possible explanation in two dimensions. First, City networks may have consciously shunned industrial investment. Rubinstein notes that c.1850 there were two middle classes centred separately on commerce and London and a smaller

¹⁸ Michie, *Guilty Money*: p.10.

¹⁹ Amini, et al. ‘The equity funding of smaller growing companies and regional stock exchanges’.

group based on manufacturing in the North of England. Relatively few wealthy individuals were based in Manchester, notwithstanding its commercial importance relative to the industrial towns, which had higher representations of wealthy individuals. London's wealth predated industrialisation and its established networks provided plenty of opportunities for its investors throughout the industrial era.²⁰ There was a social basis for such separation. As aristocrats abandoned the land, they preferred finance to industry as a means of securing their fortunes.²¹ Relatedly, industrial networks may have experienced social barriers to accessing London finance, in the form of exclusion from relevant networks. Alternatively, industrial networks may have consciously shunned the City of London. As an established centre, London was no doubt technically capable of supplying any financial service demanded by Lancashire. But suppose no such demand existed. This may have been the case, had Lancashire secured self-sufficient access to suitable channels of finance.

Ownership, entrepreneurship and the rise and fall of the Lancashire textile industry

Personal capitalism, which invigorated Lancashire through the integration of innovation into factory settings during the industrial revolution later became a break on further expansion, inhibiting investment and growth.²² As the industry expanded in the nineteenth century, so too did sub-regional specialisation by product and process, as the scope of the market expanded.²³ Specialisation inhibited scale and reinforced personal control, resulting in allegations of entrepreneurial failure by the end of the nineteenth century. According to these allegations, Lancashire entrepreneurs failed to make the required investments in new spinning

²⁰ Rubinstein, 'Wealth, elites and the class structure of modern Britain'; Rubinstein, *Capitalism, Culture and Decline in Britain*.

²¹ Kynaston, *City of London*.

²² Chandler, *Scale and Scope*; the Lancashire variant is outlined in Toms, 'Windows of Opportunity in the Textile Industry'.

²³ Kenny, 'Sub-regional specialization in the Lancashire cotton industry'.

and weaving technology and were prevented by the separation of these functions.²⁴ *Market* relationships gave rise to social networks, for example through the functioning of the Manchester Royal Exchange,²⁵ to some extent institutionalising the otherwise atomised structure of the industry.

This literature has not addressed directly the issue of *financial* networks. The above review has demonstrated that in addition to prior explanations of the ownership, governance and performance in the cotton textile industry, a further potential interpretation can be based on path dependent networks increasingly dominated by financial inter-relationships. There is evidence that such relationships assisted survival strategies in textiles in the second half of the twentieth century.²⁶ If so, then it may have been the case that this form of financial networked capitalism underpinned the sub-regional specialisation that emerged in product markets during the nineteenth century.

If entrepreneurs were effectively networked and able to access financial resources through such networks, then the nature of barriers preventing co-ordinated investment in different branches of the industry must be reassessed. Taken together then, these literatures raise the question of whether financial networks offered a potential solution to the alleged inappropriate structure of the industry. If they did, why did they not respond with the supposed technical solutions to declining competitiveness? In the next section the case of an evolving network, with a timeline stretching from the industrial revolution to the trust movement of the late nineteenth century and beyond, is used to address these questions.

Network evolution: Cottage industries to textile trusts

²⁴ Lazonick, 'Competition, specialization, and industrial decline'.

²⁵ Rose, *Firms, Networks and Business Values*, p.73.

²⁶ Filatotchev, & Toms, 'Corporate governance, strategy and survival in a declining industry'; Toms & Filatotchev, 'Corporate governance, business strategy, and the dynamics of networks'.

The section uses an extended multi firm, multi actor case study to trace a small firm of the early industrial period via a social network evolution to the trust movement of the late nineteenth century. The story begins with a small partnership using primitive technology and ends with the emergence of a powerful Lancashire-Scotland axis, led by J&P Coats. The narrative is constructed from diverse archival sources, including business level financial records, and contemporary publications. It follows an approximate chronology.

Innovation and early networks, 1790-1890

Up to 1830, increased productivity in spinning meant that a relatively small capital investment could sustain a larger network of outworking handloom weavers. The origins of our network begin with one such firm, Nathaniel Dugdale Brothers (NDB), which used small outlays in fixed capital to sustain a web of connected outworkers. Other prominent firms used similar structures, for example Cardwell Birley and Hornby.²⁷ From a financial point of view, the output secured from a low fixed capital investment in spinning could supply much larger productive investment in capital circulating with outworkers, which in turn could be sustained in parallel by a web of trade credit.

The self-financing nature of circulating capital tended to increase the returns to capital from this strategy. Following this approach, NDB sustained high returns on capital (ROCE) in 1797-1808 (23.52%) and 1815-1823 (34.22%).²⁸ In financial terms, NDB was a strong performer when compared to a sample of other early cotton firms.²⁹ As figure 1 shows,

²⁷ Edwards, *The Growth of the British Cotton Trade*.

²⁸ Where return on capital is defined as profit per the partnership books of account (which partners typically calculated as the difference between opening and closing values of net assets), plus appropriations of capital in the form of rents and interest divided by partners' total capital.

²⁹ There are limited sources of surviving firm level financial data for this period. The financial details for ROCE calculations for NDB (John Rylands Library, Eng MS WP, 1208, Accounts) and the industry sample, consisting of an average of 7.93 firms per year and a total of 214 firm years between 1797 and 1823 is taken from a cotton financial database (CFD) compiled by the author from multiple archival sources (see Appendix 1).

although the profitability of NDB mirrored the cyclical pattern of other firms, its ROCE was consistently higher throughout and never fell below 10 percent.

NDB's financial performance was remarkable in view of its relatively small scale and primitive technology. NDB was established in 1797 with £1000 capital divided between Nathaniel Dugdale (1762-1816) and Taylor, Fort & Bury, and later Dugdale's brothers. In the first phase of its development, Dugdale used old technology (jenny spinning) in a spinning mill centred on the small town of Padiham, near Burnley.³⁰ In the 1790s the mule was generating rapid productivity gains, particularly for higher count yarns,³¹ so the choice of jenny based technology was odd at first sight.

However, given the limits on productivity improvements in handloom weaving, cheaper investments in jennies would have been sufficient to create a balanced supply. Such a strategy made sense because the NDB spinning operation was not an isolated business and functioned as part of a traditional structure of outworkers.³² The key to profitability was that one part of the process, spinning, could be partially automated in conjunction with guaranteed demand from the rest of the network. The firm invested in a new mill and warehouse, by 1812 using mule spindles. The resulting productivity increases kept spinning output in balance with an expanding network of outworkers. By 1803 the firm's capital had increased to £6,803 and it was employing around 300 handloom weavers, rising to 451 by 1810 and 699 by 1823.³³

The structure of the network, through family and business connections, provided the opportunities for growth. These came in equal measure from technical collaborations and

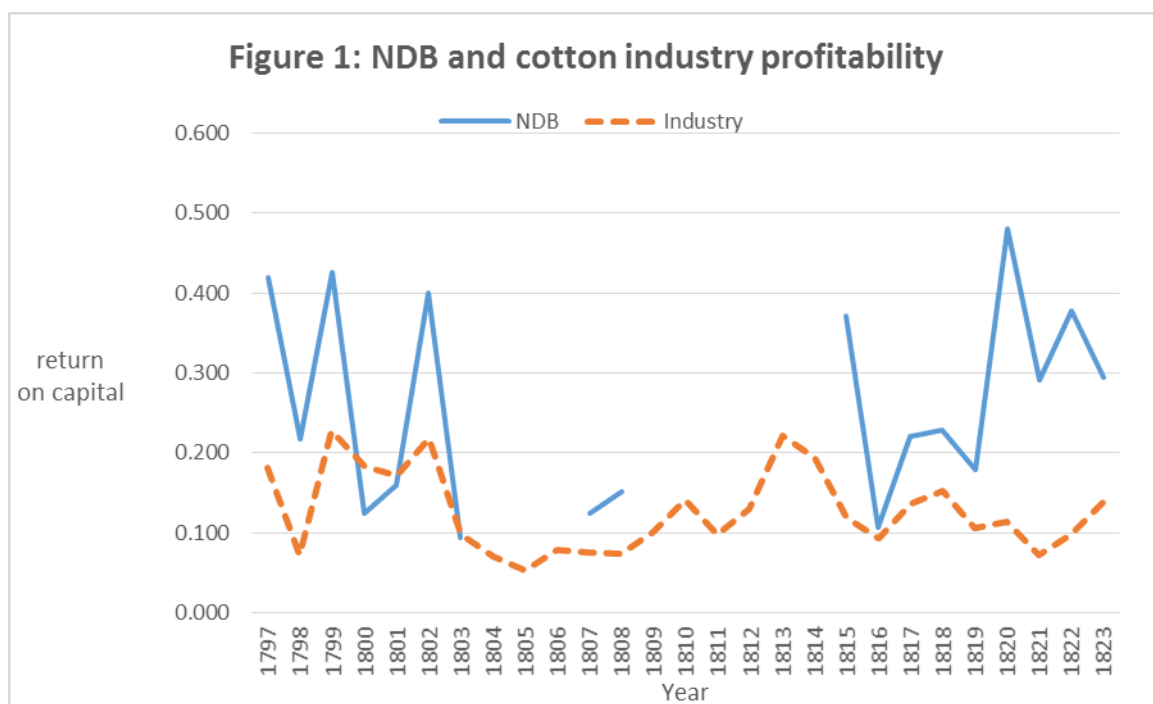
³⁰ At its inception in 1797, the spinning factory, Lowerhouse Mill, was equipped with jennies and in the period 1797-1803 twenty-four jennies were used. NDB, Partners' Money, Putting Out Lists, WP 1208, JRL. In Derbyshire and Lancashire, despite its obsolescence, jenny spinning was used for spinning coarser yarns in outlying districts Chapman, *The Early Factory Masters*, pp.50-51.

³¹ Allen, *The British industrial Revolution in Global Perspective*, figure 8.2, p.208.

³² Nathaniel Dugdale Bros, Eng MS WP, 1208, Accounts, JRL.

³³ Nathaniel Dugdale Bros, Eng MS WP, Jennies list, 1797-1803, WP, 1208, JRL. The firm was using mules according to the 1812 Valuations, AP 1208, Eng MS WP, 1208, Putting out lists; Hall, *Lowerhouse and the Dugdales*, p.6.

financial connections. The outworking network featured places important in the Dugdale family, including Nathaniel's family home at Great Harwood, Oakenshaw at Clayton le Moors, the place of his former employment at Taylor Fort & Bury's Broad Oak print works, and Clitheroe, where James Thomson (1779-1850), a tenant of Lower House Mill, later set up his Primrose print works.³⁴



Source: CFD (see appendix 1)

Dugdale's takeover of Lower House from Thomson in 1811 was prompted by the decision to integrate forward into calico printing. Two years later, Nathaniel purchased the Lower House spinning mill from Peel, Yates & Co. for £7,000, payable in annual instalments. The relatively small scale of its operation meant that it generated insufficient

³⁴ Hall, *Lowerhouse and the Dugdales*, p.6.

cash flow to meet these repayments,³⁵ even though the firm made a high return on capital, as shown in figure 1.

Following the death of Nathaniel in 1816, the firm was taken over by his son John, and became known as John Dugdale and Brothers (JDB). Hall suggests that in the subsequent decade the firm was beset by debt and financial difficulties. However the accounting records suggest otherwise. The firm's profits on all capital including loans averaged a 28.3% in the period 1815-1823, and in this time the personal wealth of the partners invested in the business increased around fivefold. Profits totalled £68,000 and the partners reinvested most of it.³⁶ So although some additional debt was incurred, the partners made significant investments in new capacity, including additional factories, machinery and warehouses.³⁷ Some of this investment was financed by family loans and a mortgage on the factory, although the debt diminished rapidly as a proportion of accumulated capital.³⁸

As the family extended their interests through a network of connections, these debts became more sustainable. Adam Dugdale, Nathaniel's youngest brother, had entered into a partnership with Thomas Hargreaves to take over Broad Oak printing works, Accrington, from Taylor, Fort & Bury in 1811.³⁹ The association meant that during this time, until JDB repaid all outstanding debts in 1827, Adam was able to underwrite some of the loans on the Lower House site.⁴⁰ The use of financial connections between businesses, and through personal intermediation, formed part of an expansion of a financial network that underpinned industrial and commercial activities.

³⁵ Hall, *Lowerhouse and the Dugdales*, p.7.

³⁶ Hall, *Lowerhouse and the Dugdales*, p.7. Table 2. JRL, Eng MS WP, 1208, Accounts.

³⁷ JRL, Eng MS WP, 1208, Machinery and valuations, partners accounts. In 1840, land and buildings alone were valued at £30,637.

³⁸ Hall, *Lowerhouse and the Dugdales*, p.7. JRL, Eng MS WP, 1208, partners accounts.

³⁹ Ashmore, *Industrial Archaeology*, p.179; Crossley, *Accrington through the Nineteenth Century*, p.18; Turnbull, *A History of the Calico Printing Industry*, p.97.

⁴⁰ Hall, *Lowerhouse and the Dugdales*, p.7.

Utilising such relationships, Hargreaves & Dugdale expanded the scope of their business into merchanting. They were very successful in this respect, acting in partnership with Salis Schwabe and Co., the rapidly expanding merchants and calico printers whose factory from 1832 was sited at Rhodes, Middleton, near Manchester. John Dugdale used the profits from Lower House to expand into merchanting using connections in Liverpool and Manchester.⁴¹ By 1840, the networked firms of Schwabe & Co., Hargreaves & Dugdale and Fort Bros. & Co. employed 2,500 staff between them.⁴² They also invested in new technological processes. John Mercer's experiments at Broad Oak with sulphur dioxide as a method of strengthening finished cloth before dyeing led to the patenting 'mercerisation' in 1850.⁴³

James Thomson, the former tenant of Lower House mill followed a similar strategy based also on technical innovation and marketing networks. The basis of the firm's profitable expansion was through scientific endeavour and effective marketing based on partnerships with merchants. Thomson had developed, and had a detailed understanding of the technical aspects of production and export market as manager of Peel's calico print works at Church, near Accrington.⁴⁴ In 1813, Thomson's Primrose works obtained a patent for a method of producing patterns on cloth previously dyed Turkey red.⁴⁵ He also employed Lancashire based artists, copyright protection and visits to shops in Paris.⁴⁶ Among the talented staff was Walter Crumm, who worked for James Thomson prior to setting up his own business. Both Thomson and Crumm studied scientific subjects at universities in Glasgow. Empirical

⁴¹ Chapman, *Merchant enterprise*, p.148; Hall, *Lowerhouse and the Dugdales*, p.11; Freeman et al., *Lancashire, Cheshire and the Isle of Man*, p.117.

⁴² The figure excludes those employed at Lower House by John Dugdale, which in capital terms was about half the size of Broad Oak, which employed 1040 (Turnbull, *A History of the Calico Printing Industry*, pp.170, 468).

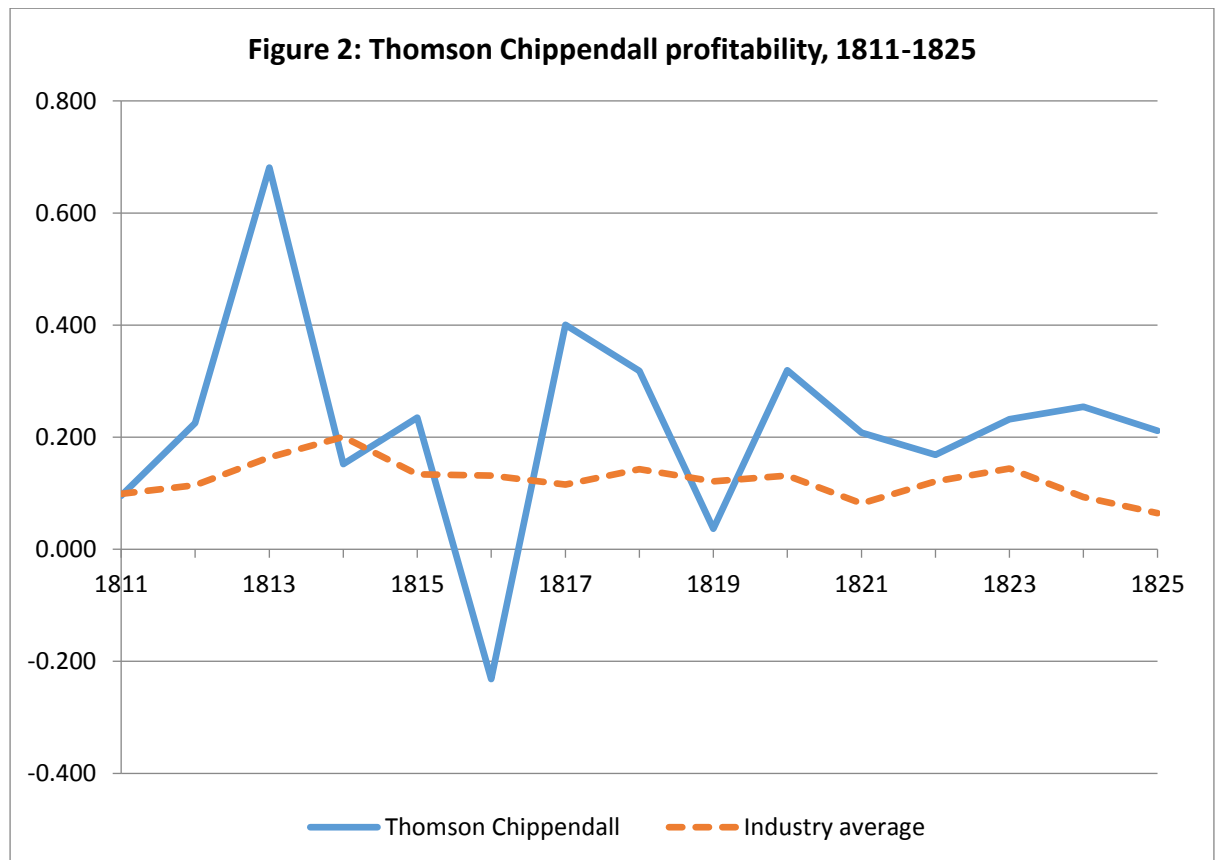
⁴³ Calico Printers Association, *Fifty Years of Calico Printing*, p.14.

⁴⁴ Jeremy, 'International diffusion of technology', pp.88-91 provides examples based on Thomson's writings in Rees's *Cyclopaedia* between 1808 and 1812.

⁴⁵ *The Monthly Magazine*, 1827, p.331.

⁴⁶ BPP, *Committee on manufactures*, ev. Thomson, qq.3831-3832, 3868, 3870, 3880-3887, pp.244-245. See also Baines, *The Cotton Manufacture*, p.285.

evidence from other contexts suggests that university scientists with connections to industrial firms have greater social capital and greater propensity to become entrepreneurs as a consequence.⁴⁷



Source: CFD (see appendix 1)

As a consequence, the firm's investment in quality and its customer focus contributed to longer run and sustainable abnormal returns. Thomson Chippendall returned an average of 22.03% on its capital in the period 1811-1825 (see figure 2).⁴⁸ The trends in the profitability

⁴⁷ Audretsch, and Hinger, 'From entrepreneur to philanthropist', pp.29-30.

⁴⁸ Thomson Chippendall, Primrose works, Ledger accounts, CYC 3/46-48, LCRO

of Thomson Chippendall were partly explained by the strong growth of printing as a branch of the cotton industry, particularly in the Indian market after the East India Company (EIC) gained total control over India.⁴⁹ The trade superseded the linen and mixed fabric branches, and also from the repeal of duties on printed goods in 1831.⁵⁰

Successful firms in the first phase of industrialization like the Dugdale-Hargreaves-Schwabe collaboration, and the associated endeavours of Thomson Chippendall, formed the basis of larger combinations subsequently. These developments were the genesis of connections between the Manchester and Glasgow branches of the cotton textile industry. On the death of Robert Hargreaves in 1854, Hargreaves's firm was transferred to F.W. Grafton and Co. and subsequently became a leading firm in the Calico Printers Association (CPA).⁵¹ These subsequent developments, as will be explained below, strongly impacted on the concentration of this section of the industry centred on the Lancashire-Scotland axis, underpinned by connections established by mid-century.

Indeed, the nature of these connections is worthy of detailed investigation, not least because the literature has hitherto stressed the separate development of Lancashire and Scotland. Howe notes the parochial origins of most Lancashire entrepreneurs and likewise Slaven found that the overwhelming majority of Scottish cotton masters were born in Scotland. Henry Houldsworth was the only exception.⁵² Although born in Nottingham, Henry Houldsworth settled in Glasgow by 1795. His son John (1807-1860) became head of spinning

⁴⁹ At the same time, in 1813 *East India Company Act*, 1813, the EIC lost its trade monopoly on most goods. Between 1814 and 1825 exported printed calicoes subject to duty doubled. Exported pieces increased from 3,324,160 to 6,662,368. (Committee on manufactures, ev. Thomson, q.3893; Calculated from Baines, *The cotton manufacture*, p.283).

⁵⁰ Before interest and depreciation. Calculated from Baines, *The cotton manufacture*, p.284.

⁵¹ Immediately before the repeal, the average profit margin in printed goods was 14.28% Turnbull, *A History of the Calico Printing Industry*, p.98.

⁵² Cooke, *The rise and fall of the Scottish cotton industry*, pp.183-184. Howe, *The cotton masters*, Slaven, 'Entrepreneurs and business success'. Much earlier, Robert Owen had also travelled extensively between Manchester and Scotland, sharing technical and managerial knowledge. Cooke, *ibid*, pp.47-48.

in his father's cotton business but also devoted attention to iron ore and railways, including the Caledonian railway, which connected to the family iron ore business at Coltness.⁵³

Houldsworth's connections between Lancashire and Scotland were reinforced by the Dugdale-Hargreaves-Schwabe network in subsequent generations. William Henry Houldsworth (1834-1917), was educated at St Andrews and married the Elisabeth, daughter of Walter Crumm, James Thomson's collaborator at Glasgow and leading technical employee at Thomson Chippendall, Elisabeth. The marriage was in Glasgow in 1862, and thereby connected Houldsworth to Glasgow families by technical collaboration, birth and by marriage.⁵⁴

Notwithstanding these connections, Houldsworth's immediate business priorities were in Lancashire, where he established the Reddish Spinning Company at the Houldsworth Mill complex at Stockport in the period 1863-1872, financed by share capital in which the family retained sixty percent control. His strategy was to install efficient machinery to achieve high productivity and as a consequence dominate the market. He had a philanthropic approach to management and promoted educational and social activities for his employees.⁵⁵ His vision was realised by his retirement in 1908, from what by that time had become the Fine Cotton Spinners and Doublers Association (FCSDA), the largest manufacturing employer in the country.⁵⁶ However, Houldsworth's activities were not limited only to the FCSDA, and extending through his wider business network.

⁵³ Henry Houldsworth, was Chairman of the Manchester and Leeds railway. 'Tenth Half-yearly Meeting of the Manchester and Leeds Railway Company', *Manchester Courier and Lancashire General Advertiser*, 18th September, 1841; p. 6; Henry Hounds Houldsworth was a partner in the Coltness Iron Company. 'Railways Amalgamation Bill.' *Glasgow Herald*, 3 July 1861.

⁵⁴ Laslett, *Colliers Across the Sea*, p.78. Kellett, *The impact of Railways on Victorian Cities*, p.222. Gordon and Nair, *Public lives*, p.50; Howe 'Houldsworth'.

⁵⁵ 'Sir W. H. Houldsworth and His Workpeople,' *Manchester Courier and Lancashire General Advertiser*, 7th November, 1887, p.6.

⁵⁶ Holden, 'The Architect in the Lancashire Cotton Industry, 1850-1914; Cowle, *Dirty Politics*; Howe, 'Houldsworth'.

The Houldsworth-Crumm-Thomson network demonstrated strong connections between Lancashire and Scotland. Textile and finishing businesses featured prominently, but it was also strongly characterised by family connections and portfolio style investments in otherwise unrelated businesses. Institutional connections were also important and all the network components benefited from interests in infrastructure, particularly railways and increasingly, financial connections. The character of these evolved networks meant that at the close of the nineteenth century, textile entrepreneurs faced a choice between securing finance on London or regional financial markets. For the Houldsworth-Crumm-Thomson network, the specifically important regional alternatives for accessing finance were the provincial stock markets of Manchester and Glasgow.

These preferences were exercised as the finishing and thread sectors of the industry underwent rapid consolidation. Commentators noted that these amalgamations were ‘trusts’ framed on American lines.⁵⁷ In some respects, for example price fixing, the leading players in these combines resembled Cornelius Vanderbilt’s methods of controlling railroad and freight rates. Unlike Vanderbilt, Carnegie and others, who came from humble origins, the members of the Manchester-Glasgow textile axis were second and third generation descendants of successful textile entrepreneurs, and included talented technicians, in some cases with university backgrounds. The strength of this network therefore reflected earlier successes and Britain’s first mover advantages dating back to the industrial revolution. Established thus, the network would now go through a further phase of expansion and consolidation, based on the financial centers of Manchester and Glasgow.

The emergence of the Coats network, 1890-1914

⁵⁷ *Reynolds's Newspaper*, 17th December, 1899

Terminable combinations, as developed in the textile trades, facilitated the standardization of contracts and selling arrangements and prevented special deals for customers, for example involving secret rebates. The impetus for the movement was the depression that followed the boom of 1870-5 and the development of similar practices in the US. Several British combines emerged from pre-existing sales associations. To compensate existing owners for loss of independence, high prices were paid to them on the formation of the Trust.⁵⁸ In practice, the textile combinations typically incentivised component firms by allowing them to retain local management teams superintended by representative boards of directors. At the same time, conflicts of interest were occasioned between component firms and the association. The earliest mergers were Horrockses Crewdson (1887) and J&P Coats (1890).⁵⁹ They were followed by a further series of combinations: English Sewing Cotton (1897), American Thread (1900), the FCSDA (1898), the CPA (1899) and the Bleachers' Association (1900). Except for Horrockses, these combinations floated their shares on the London and regional stock markets, although London ceased to be important following the initial floats.

The startling result of these combines was the emergence of J&P Coats as the leading firm. Coats' dominance was exercised not just in the thread and finishing sectors, as is well known, but also through financial connections with the other major combines through regional financial networks and markets. There were three important dimensions: First, Coats was the only firm that utilised connections via London and the metropolitan social elite; second Coats enjoyed very high profitability relative to the other combines floated at around the same time; third Coats used its financial strengths arising from these sources to reinforce the network connections, principally between Manchester and Scotland, that had emerged over previous generations. Each of these three dimensions is now considered in turn.

⁵⁸ Macrosty, *The Trust Movement*, p.6.

⁵⁹ Macrosty, *The Trust Movement*, pp.16-17, 126.

On 8th August 1890, Coats made a new share issue to convert the existing firm into a limited company. Unlike the floats that followed later in the decade, the Coats board of 1890 had a distinctly elite flavour. There were three aristocratic directors, each with strong connections to non-textile elements of wider business networks. These were Sir James Whitehead (baronet), Lord Mayor and High Sheriff of London;⁶⁰ Sir James King (baronet), deputy Chairman of the Caledonian Railway; Sir William Arrol, of the civil engineering firm Arrol Brothers of Glasgow. The firm set up a London office at the time of the float and the shares were also brokered in Glasgow and Montreal, The value of the preference and debenture stock classes per the prospectus was £1,333,340 each.⁶¹ Both were oversubscribed, attracting total applications of £15m.⁶² The ordinary shares opened at 1½-1¾ premium.⁶³

Notwithstanding this very successful share issue, Coats resisted becoming a London centric company, and its financial centre of gravity remained in its Scottish heartland. The vendors retained one third of the capital, the maximum allowed under the rules of the London Stock Exchange.⁶⁴ The London office was only a temporary arrangement, and the main head office continued to be in Paisley. A further amalgamation followed in 1896 when Coats purchased its main rivals, which had hitherto collaborated in the Central Thread Agency and which exploited economies mainly through the control and administration of selling agents.⁶⁵ This provided Coats with a dominant position in the distribution stage of the value chain,

The FCSDA was an association of cotton firms spinning average counts of 120 or higher, in addition to doubling firms. Coats was a major shareholder in the FCSDA from the outset, with 200,000 ordinary shares. This investment was made to securing some control

⁶⁰ Whitehead was also a Director of Pawsons & Co. Ltd the London based clothing and wholesale warehouse business (Prospectus: "Public Companies." *Times*, 8 Aug. 1890, p.11; *Economist*, 1st March 1873, p.260).

⁶¹ Prospectus: "Public Companies." *Times*, 8 Aug. 1890, p.11.

⁶² "The Money Market." *The Times*, 16 Aug. 1890, p.11.

⁶³ "The Money Market." *The Times*, 12 Aug. 1890, p.9.

⁶⁴ "The Money Market." *The Times*, 8 Aug. 1890, p.9.

⁶⁵ Macrosty, *The Trust Movement*, p.6. Conant Thread works at Pawtucket, Rhode Island. Blair, *The Paisley Thread Industry*, p.63.

over raw material in the form of cotton yarn,⁶⁶ but also reflected financial network connections through director interlocks. As noted earlier, the Houldsworth family had interests in the Caledonian railway. A director of Coats, Sir James King (baronet), was also the deputy Chairman of the Caledonian Railway.⁶⁷ Sir William Houldsworth, by this time a baronet and Conservative MP, was, as noted, also the Chairman of the FCDSA.⁶⁸ The prime movers in forming the FCDSA were Mr Scott Lings (also of Houldsworth's Reddish Spinning Company) and Herbert Dixon (of A & G Murray).⁶⁹ Dixon had modernised A & G Murray by investing in new technology. He later became Managing Director of the Association. On the formation of the FCDSA, constituent firms like Murray, were wound up and conveyed to the new amalgamation.⁷⁰ Apart from Houldsworth, there were no other peers or elite directors on the executive or general boards, which were made up of representatives drawn from the Association's constituent mills.

The FCDSA's prospectus was issued in May 1898 and applications closed 11th May. The Association's Head office was in Manchester, and its shares were listed on London and regional markets. The total value of the issue was £4m (£2m ordinary shares, £2m preference shares, £1m debts), and was therefore large enough for London to be interested. The issue of ordinary share capital was three times oversubscribed, but there was less interest in the debentures and preference shares, which were more marginally oversubscribed.⁷¹ The equities opened trading at 1s 6d premium (on 10s called up).⁷² The company moved quickly

⁶⁶ Macrosty, *The Trust Movement*, p.127.

⁶⁷ Prospectus: "Public Companies." *The Times*, 8 Aug. 1890, p.11.

⁶⁸ Howe, 'Houldsworth'. Houldsworth's firm was the lead firm in the amalgamation. In 1877 Houldsworth was chosen to represent the Conservative party alongside Mr Hugh Birley. *The Standard*, 20th June, 1877; p.3.

⁶⁹ *Pall Mall Gazette*, Tuesday, March 15, 1898

⁷⁰ Miller, and Wild, *A & G Murray and the Cotton Mills of Ancoats*.

⁷¹ *The Pall Mall Gazette*, 14th May, 1898

⁷² *Belfast News-Letter*, 1st June, 1898

for a stock exchange settlement and London quotation post issue,⁷³ but Manchester was the main market for its financial dealings.⁷⁴

Further issues of uncalled capital and issues to existing investors allowed the FCSDA combine to expand further. In 1904, a further preference share issue financed the purchase Great Lever Spinning Company in Bolton, the Wingate Spinning Company in Westhoughton, and the Lumb Spinning Company in Manchester.⁷⁵ In 1911 the company launched a rights issue, underwritten by the directors, to finance the acquisition of cotton plantation facilities in the Mississippi Delta. The early stages of this venture involved some financial assistance and collaboration with Horrockses and the CPA, and reflected some frustration with other sections of the cotton industry who were engaged in apparently wasteful attempts to set up new sources of cotton supply in Africa.⁷⁶

As these investments unfolded utilising existing pools of investors, the Coats connection underpinned the already developing preference of the Manchester based FCSDA for Scottish financial connections, notwithstanding its initial issue of shares in London. It is noteworthy that all the combines of the trust movement that subsequently featured in the Coats financial network, including the FCSDA, listed Manchester as the main location of financial dealings. For Coats, Glasgow was the first listed location, ahead of London.⁷⁷ Through its own links with London, and its financial connections to the other combines, Coats was effectively able to function as investment banker to the network.

⁷³ *Pall Mall Gazette*, 23rd June, 1898. Shares were quoted in London, Manchester, Glasgow, Belfast, Dublin, Bradford and Nottingham. Prospectus, "The Fine Cotton Spinners' and Doublers' Association, Limited." *The Times* 7th May 1898, p.6.

⁷⁴ *Investors Monthly Manual*, December 1903.

⁷⁵ 'The Fine Cotton Spinners' New Issue', *Financial Times*, 2 Mar. 1904, p.2.

⁷⁶ The focus of this critique was the British Cotton Growing Association: 'Fine Cotton Spinners and Doublers', *Financial Times*, 27th May 1911, p.3; Robins, *Cotton and Race*, p.260, n.41.

⁷⁷ For example, *Investors Monthly Manual*, December 1903, entries for American Thread (p.755), CPA and J&P Coats (p.759), ESC and FCSDA (p.761) and other issues, *passim*.

Coats was now in a powerful position, and able to influence the other combinations in the merger wave. The first of these was the English Sewing Cotton Company in 1897. There were no Lords on the board, although there were several JPs. In the absence of strong connections to London elites, J&P Coats acted as broker for the firm via its London office. Other brokers were listed in Glasgow, Dublin and Manchester. Apart from the Coats holding, most interest was from numerous new retail investors.⁷⁸ The prospectus noted that the company aimed to maintain the trade of the component firms by promoting friendly relationships with other manufacturers. These included J&P Coats, which the prospectus noted, had a 'perfectly friendly' attitude and would apply for 200,000 shares in the ESC. Constituent firms, which included Edmund Ashworth and Sons, Egerton, near Bolton and Bagley and Wright, Oldham, had suffered low profits in recent years, not disclosed in the prospectus, as a consequence of 'excessive undercutting.'⁷⁹ As early as June 1898, in parallel with speculation about good early profits and dividends, rumours circulated that Coats was interested in purchasing the ESC.⁸⁰

Like J&P Coats, ESC invested significantly in the US, acquiring capacity there to avoid import tariffs.⁸¹ In 1900 the ESC set up the American Thread Company, in which it owned all the paid up common stock of the American firm.⁸² The firm was therefore British in all but name, with preference and debenture stocks quoted in Manchester, reflecting the significant interest ESC and also of J&P Coats.⁸³ Trading results in the American firm were poor and as a consequence it was dependent on loans from ESC, which in turn used a loan from J&P Coats, offered at a preferential rate of interest.⁸⁴ Shareholders complained that the

⁷⁸ English Sewing Cotton Company. *Financial Times*, 9th December, 1897, p.4.

⁷⁹ Prospectus: "English Sewing Cotton Company, Limited." *The Times*, 2nd Dec. 1897, p.4.

⁸⁰ *Financial Times*, 14th June, 1898: 4.

⁸¹ 'The Thread Combines', *Financial Times*, 2nd Jan. 1900: 3. On Coats's US involvement, see Kininmonth 'The growth, development and management of J. & P. Coats Ltd', p.558.

⁸² 'The American Thread Report', *Financial Times*, 2nd July, 1902, p.2.

⁸³ 'The Thread Combines', *Financial Times*, 2nd Jan. 1900: 3.

⁸⁴ 'Dividends and Reports', *Financial Times*, 1st July, 1903: 2.

ESC extracted all spare cash from American Thread in the form of dividends.⁸⁵ In 1907 the firm ceased to issue balance sheets, on the grounds that these would disclose valuable information to competitors.⁸⁶ Immediately before this point, financial performance was poor, with the firm returning only 3.2% on capital in 1905 and 2.7% in 1906.

US diversification, then, did little to assist the ESC, notwithstanding the attempt to extract financial resources through dividends. After 1898, the new British combine, including its US subsidiary, could do nothing to resolve the problem of low profitability in its constituent firms. In the period 1898-1914 the firm's average profit was 6.3% compared to 16.9% for J&P Coats in the same period (table 1). A possible reason was that the ESC had, according to Rose, a cumbersome management structure that typified the unsuccessful pre-war holding company model.⁸⁷ By 1902 the firm required a financial reconstruction. J&P Coats provided a loan at below market rates, which also allowed the ESC to offer a lifeline to its American Thread subsidiary.⁸⁸ Coats later took over its overseas (1900) and then its domestic operations.⁸⁹ Through this process, the dominant position in the distribution node of the value chain that Coats had established through the Central Thread Agency, was now reinforced through the control of the ESC distribution operation. Although this provided an immediate response to the pre-interest loss of over £150,000 (-3.7% of capital) in 1902 in the form of new capital, subsequent rates of profit remained typically around the long run average of 6% before 1914.

Another of the combines that soon needed support from the Coats led financial network was the Calico Printers' Association. Launched in 1899, the CPA reflected the

⁸⁵ 'American Thread Company', *Financial Times*, 10th May, 1907: 7. Letter to the editor from a Londonderry debenture and preference shareholder.

⁸⁶ 'American Thread Company', *Financial Times*, 1st July, 1907: 2.

⁸⁷ Rose, *Firms networks and business values*, p.174. Wilson, *British Business history*, p.107.

⁸⁸ 'Dividends and Reports', *Financial Times*, 1 July, 1903: 2.

⁸⁹ Cook and Cohen, *The effects of mergers*, p.135. Coats controlled the ESC distribution operation and the sale of sewing silk threads on behalf of Messrs Lister & Co. Bradford, Blair, *The Paisley Thread Industry*.

influence of the Houldsworth-Crumm-Thomson network, and its historical links with J&P Coats. The firm's prospectus was issued 13th December 1899 and Francis Frederick Grafton, of the successor firm to Hargreaves and Dugdale from the mid-nineteenth century, was listed as the Chairman. Again, none of the executive or general board were peers. Even so, although there were no elite directors, the firm had the advantage of political and social connections through the Lancashire network. A leading firm in the combine was the Thornliebank Company Ltd, whose Chairman, William Graham Crumm, was as noted above, shared business connections with James Thomson and was connected by marriage to the Houldsworth family.⁹⁰

The CPA was a genuinely Lancashire-Glasgow combine. It included thirteen merchants and forty-six printing firms and twenty-two of the participant firms were Glasgow based, with the remaining thirty-seven based near Manchester. The firm's registered office was in Manchester, and shares to be traded in London, Manchester and Glasgow.⁹¹ The issue was immediately successful, being two times oversubscribed, and the shares traded at a post issue premium of 4s 9d.⁹² Notwithstanding the successful launch of its shares in late 1899, the firm did not perform well financially. £1 shares rose to 25s and 26s soon after issue, but fell to 14s by September 1900.⁹³ The firm got into managerial difficulties and was restructured in 1902. To rescue the ailing business, a new executive board was formed including OE Phillippi of J&P Coats, John Stanning of the Bleachers' Association) and Frank Hollins of Horrockses Crewdson.⁹⁴ A consistent pattern of J&P Coats involvement in

⁹⁰ William Graham Crumm's role included acting as trustee for the debentures, see prospectus: "The Calico Printers' Association, Limited." *The Times*, 14 Dec. 1899: 3. Houldsworth married Elisabeth Graham Crumm in 1862. Howe, 'Houldsworth'.

⁹¹ "The Calico Printers' Association, Limited." *The Times*, 14 Dec. 1899: 3. Shares at this stage had 7s 6d called up. Total capital issued by the CPA was £8.2m. The purchase price of the concerns taken over was £8,047,031, with a certified value of £7,693,504, with profits on equity capital (post depreciation) of £355,826 over the previous five years, thus averaging 4.6% of capital excluding goodwill.

⁹² *Liverpool Mercury*, 18th December, 1899; *Glasgow Herald*, 19th January, 1900 (quoting unofficial list)

⁹³ Cook and Cohen, *The effects of mergers*, p.158.

⁹⁴ Rose, *Firms, networks and business values*, p.174.

financial support and restructuring in the combines is emerging; more will be said about the latter two firms subsequently.

In summary, the story of the merger wave firms considered thus far is of a financial network centred on J&P Coats. Coats had been the first firm to raise significant capital in 1891 and used its elite directors and London connections to achieve this. Once that was done, the firm then consolidated its position away from London on its traditional Manchester-Glasgow axis. Coats through its networked connections now became a prime mover in the reorganisation of significant sections of the industry through the four further new combines: the FCDSA, the ESC, American Thread and the CPA.

As the above analysis shows, these satellite firms had prior connections, which they chose to utilise to secure financial resources in preference to setting out new connections through London. The new combines had the scale to potentially interest London based intermediaries in new issues, but they lacked the necessary connections. Unlike Coats, their boards did not include elite directors with good connections to the City. Rather, their directors were influential through connections to northern political and civic networks, and in parallel, through connections to previously evolved Manchester-Glasgow axis under the auspices of J&P Coats. Consequently, as the new combines hit financial trouble in the early 1900s, Coats further increased its control of their operations and of their capital.

To assess the financial effects of this industry restructuring the return on capital employed was calculated for the relevant firms. Figure 3 shows the return to capital for Coats compared to an aggregate of the four firms that were subsequently invested in by Coats or provided with financial assistance during and after the amalgamation wave of 1897-1900: American Thread, FCSDA, CPA and ESC. Table 1 shows further comparisons divided into sub periods before and after the merger wave, 1891-1897 and 1898-1913, between Coats and an index comprising the British cotton industry generally, the four satellite firms (panel A),

the individual performances of those firms (panel B) and performances of other combined firms, Horrockses Crewdson and the Bleachers Association (panel C).

The figures show that in the period before the merger wave, Coats's profits were adequate but not spectacular. They were ahead of the cotton industry generally, typified by the smaller specialised mills of Lancashire, which were locked into stagnant export markets before 1896.⁹⁵ Conversely, they lagged Horrockses, which averaged over 14% returns during this period. After the merger wave was completed the situation changed radically. At just over 17%, Coats' profits in the 1898-1913 period were substantially higher than any other firm or benchmark, notwithstanding the generally positive trading conditions including the spectacular boom enjoyed by the industry generally in the period 1904-1907. As figure 3 shows the profits of Coats were persistently higher than the other firms in its immediate network and under its close influence. It is certainly the case that the profitability of J&P Coats was much higher following the merger wave of 1898-1899 than before, whilst the profitability of all the other firms within the Coats network remained sufficient to keep them afloat, but at the same time stubbornly low (figure 3). Ricardian rents were, it seemed, extracted by Coats as the dominant firm in the network. The difference in profits between Coats and ESC is illustrative. In view of the overarching control of ESC by J&P Coats, financially and over its main source of competitive advantage in distribution, and the similarity of their activities otherwise, the superior profitability of J&P Coats may well have reflected nothing more than its dominance within the financial network.

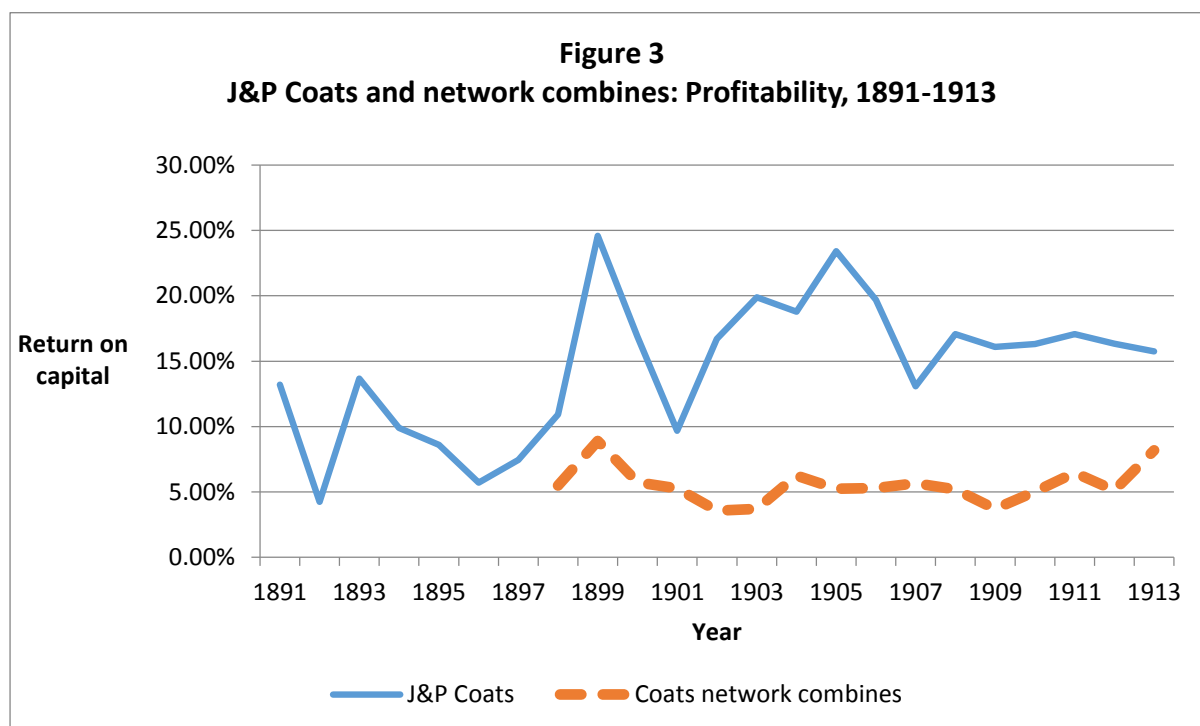
⁹⁵ Toms, 'Windows of opportunity'.

Table 1: Comparative profitability

	Return on capital employed	
	Average 1891-1897	Average 1898-1913
A. J&P Coats and general comparatives		
J&P Coats	8.97%	17.02%
Coats network combines: average		5.56%
Cotton industry: average	5.94%	9.09%
B. J&P Coats network combines:		
Calico Printers Assoc.		3.45%
English Sewing Cotton		6.16%
American Thread		6.05%
Fine Cotton Spinners and Doublers Assoc.		6.17%
C. Other Combines:		
Bleachers Assoc.		4.97%
Horrockses Crewdson	14.37%	11.31%

Notes: Return on capital employed is defined as profit before interest divided by total long-term capital (Ordinary shares plus reserves plus preference shares, debentures and other long term loans).

Sources: Calculated from CFD (appendix 1)



Sources: As table 1.

The network of interlocking directors emanating from Coats had a centralising effect on the control of the sector,⁹⁶ the connections of all four of these firms extended the power of a relatively small number of individuals across a significant sector of the industry. The network was notably centred on Manchester and Glasgow, to the exclusion of London.

Other Combines: Horrockses and the Bleachers' Association

As discussed earlier, the rescue of the CPA by Coats in alliance with representatives of two other combines effectively widened the network further to include the Horrockses Crewdson and the Bleachers' Association. Significantly, unlike the other combines discussed earlier, although associated with Coats, they were not dependent upon the Scottish combine. It is

⁹⁶ Rose, *Firms, networks and business values*, p.174.

therefore appropriate to analyse the evolution of these firms separately to trace the reasons for their preferences for voluntarily assisting the Coats led network.

Hollins's choice to join in the Coats network was significant, and signalled a new stage in Horrockses progressive move away from London and reorientation to its northern network. Horrockses had originally expanded from its Preston base by setting up an associated partnership in London. The partnership was structured so that the Horrocks family and their associates retained control and in 1860, following retirements and deaths of other partners Thomas Miller became the sole proprietor.⁹⁷ Frank Hollins, who later emerged as the chief executive, had previously been a partner at Sovereign Cotton Mill, Preston. Both of these companies also had offices in London and Manchester.⁹⁸

The Horrockses merger began two years earlier in 1885 when Horrockses, Miller and Co. reached an arrangement with the adjoining firm of Hollins Brothers, creating the largest cotton firm in the country.⁹⁹ A subsequent amalgamation in 1887 brought together the existing partners of the unincorporated the Preston firm Horrockses Miller & Co and the members of the Bolton firm Crewdson Crosses and Co (Limited).¹⁰⁰ Hence no new shares were issued to the public. The chairman was Mr F Styles, and the board members with responsibility for the Preston mills were Frank Hollins, Sidney A Hermon, S.O. Hermon and W.W. Galloway. The Manchester branch of the business was controlled by Isaac Crewdson Waterhouse and Alfred Crewdson, the Bolton mills by Edward and then Carlton Cross and the London interest by W.B Secretan.¹⁰¹ The directors of the firm consisted therefore entirely of local business leaders with specialist knowledge of the Preston, Manchester and Bolton branches of the business.

⁹⁷ Messrs. Horrockses, Crewdson, and co. and the cotton manufacture, *Manchester Times*, November 25, 1892;

⁹⁸ *Preston Guardian*, Saturday, June 8, 1878

⁹⁹ Messrs. Horrockses, Crewdson, and Co. and the cotton manufacture, *Manchester Times* (Manchester, England), Friday, November 25, 1892;

¹⁰⁰ *The Standard*, 29th April 29, 1887; p.6. Both companies had offices in London and Manchester.

¹⁰¹ Howe, 'Sir Frank Hollins'.

The Horrockses mergers were essentially a series of amalgamations, where pre-existing independent businesses achieved some continuity in the merged firm. They thus had much in common with strategic amalgamations of partnerships of the early and mid nineteenth century. The scale of the Horrockses operation, however, meant that this model now needed adapting, such that the new board was the representative of the component firms. As a consequence, in its board structure at least, Horrockses had much in common with the larger combinations that followed. The result, a combination with a capital of £773,000, was at that time the largest cotton-manufacturing firm in the country.

Hollins's business strategy was focused on mitigating the firm's dependence on London. Most notably this included the construction of a new warehouse in Manchester. An important reason for the investment was that Hollins considered the London staff, inherited from the 1887 merger, to be unreliable.¹⁰² To further assist its marketing operation the firm invested heavily in brands. In parallel to the expansion of the selling and retail capacity, production was also expanded with the construction of the new Centenary Mill (completed in 1896) and the acquisition of the Fishwick mills through the absorption of the Swainson Birley partnership in 1900.¹⁰³ The main problem faced by this new vertically integrated combine was the difficulty of selling into remote and difficult markets, in particular Latin America. The firm had to rely on London agents to do this, notwithstanding the investment in Manchester, and this proved expensive.¹⁰⁴

Even so, the preference for brands over standard contracts was generally a successful one for Horrockses. Before the combinations of the late 1890s Horrockses was the most profitable of the merged firms, earning almost twice the average rate of return on its assets compared with J&P Coats (table 1). It is noteworthy that it was only after the merger wave of

¹⁰² Howe, 'Sir Frank Hollins', p. 315.

¹⁰³ Toms, 'The profitability of the first Lancashire merger', p.135.

¹⁰⁴ Chapman, *Merchant enterprise*, pp.200, 304-305.

the late 1890s that Coats became industry leader in terms of its profitability, superseding Horrockses. Even so, Horrockses remained a strong financial performer compared to the other combines. As the firm accumulated capital the scope of its activities widened through selected investments in other businesses. These included the British Cotton Growing Association and the British Northrop Loom Company.¹⁰⁵ In short then, the emergence of the Horrockses combine was based on the centralisation of production assets in the north. A more diverse, brand oriented, distribution network was also controlled from the North as far as possible. With the accumulation of capital, Horrockses built financial connections through investments in other firms, including in 1902, the CPA.

The final important firm in the network that evolved as a consequence of the trust movement was the Bleachers' Association. The Association was led by an executive board included chaired by Herbert Shepherd Cross MP. As the MP for Bolton and Chairman of Thomas Cross & Co. Bolton, Cross complemented the dominant political and business interests of Horrockses in Preston and Bolton. Cross now became chairman of the Bleachers' Association, a combine of fifty-three concerns. Remaining members of the executive or general boards were made up of representatives drawn from the Association's constituent mills.¹⁰⁶ Its prospectus was issued in July 1900 and applications closed 25th July. According to the prospectus, its registered office was to be in Manchester, and its shares to be traded in London, Manchester and Glasgow. The share issue was not a success and, as a consequence, the vendors took up the ordinary shares.¹⁰⁷ As a result, the firm had few residual connections through London, but continued to grow its connections in the north and more firms applied to

¹⁰⁵ In addition, Hollins was a director of the Manchester & County Bank and the London and North Western Railway and a supporter of the Manchester Ship Canal. Howe, 'Sir Frank Hollins', pp.315-316.

¹⁰⁶ Prospectus: "Bleachers' Association, Limited." *The Times* 23 July 1900: 6. Shepherd Cross was a partner in Thomas Cross and Co. of Mortfield Bleach Works. Mason, 'Herbert Shepherd Cross'.

¹⁰⁷ "Bleachers' Association. I." *Manchester Courier and Lancashire General Advertiser* 31 Aug. 1901, p.5.

join the combine after the first issue.¹⁰⁸ The consequence was steady, if unspectacular, profits for the new combination (table 1).

In summary, the trust movement had a significant effect on the structure of an important part of the textile industry. The evolution of the network, through technical collaborations, but more substantively through financial connections, resulted in an interconnected system of nominally independent businesses. The controlling network was firmly centred on Lancashire, particularly Manchester (through Horrockses, the Bleachers and the FCSDA), and Scotland (through J&P Coats), but not London. Indeed, once floated, and even on flotation in some cases, there is little evidence that these new textile giants caught the imagination of the London investor. The consolidation of Horrockses in Manchester and Preston, the failure of the Bleachers' issue, and the bail out of the CPA reinforced the independence of the Manchester-Scotland axis from London finance. By 1902 the key firms and substantial capital were controlled by a relatively small group of connected individuals. Coats was the dominant firm, in terms of its physical scale as a multinational conglomerate, but also in terms of its network influence. Unlike the other firms, Coats directors were members of the aristocratic elite and enjoyed international connections.

For the other powerful firms in the group, particularly the Manchester centred group of Horrockses, Bleachers and the FCSDA, political connections were important. These were exercised through the Conservative party. In the case of Horrockses, as noted earlier, political connections were established by previous generations of partners in the composite firms.¹⁰⁹ John Kynaston Cross, of what became Horrockses Crewdson, was Tory MP for Bolton, and Herbert Shepherd Cross of the Bleachers' Association served as one of the town's MP from

¹⁰⁸ *Glasgow Herald*, 22nd August, 1900

¹⁰⁹ John Horrocks elected Tory MP for Preston in 1802, which coincided with his brother Samuel becoming local Chief Magistrate, who then succeeded John as MP. John Kynaston Cross, MP for Bolton, 1874-1875 and under secretary for India, 1883-1885. 'Messrs. Horrockses, Crewdson, and Co. and the Cotton Manufacture', *Manchester Times*, 25th November, 1892; 9th December, 1892.

1885 to 1906.¹¹⁰ William Henry Houldsworth of the FCSDA served as Tory MP for Manchester.¹¹¹

The Manchester-Glasgow axis described by these inter-connected firms was easily the largest and most powerful network. There were however, similar smaller networks. Like the ESC, United Turkey Red (UTR) attracted significant investment from Scotland, and had strong links with Lancashire. It was successfully launched soon afterwards, in 1898, raising one and a half million pounds through private subscription.¹¹² UTR combined three firms in the Vale of Leven, centred on Dumbarton, Archibald Orr Ewing and Co., John Orr Ewing and Co. and William Stirling and Co.¹¹³ UTR opened a branch at Manchester as red yarn merchants in c.1880.¹¹⁴ The only large firm outside the main CPA and UTR combines was Accrington based F.Steiner & Co. Ltd, which had its own advantages in terms of process innovation in Turkey Red dyeing, patents, and scale in its distribution network.¹¹⁵ As noted earlier, Lancashire firms like Thomson Chippendall had played an important role in developing the Turkey Red process.

The common feature of all these networks was their orientation to technical processes, usually patentable, or applied to design through copyright, and the finishing process, with its associated scale economies. Notwithstanding technical collaborations, by the end of the nineteenth century, financial ties were the dominant feature of these networked combinations.

Conclusions

The network preferences of the orchestrators of the combinations reviewed in the evidence presented above can be summarised as follows. Technical collaborations, underpinned by

¹¹⁰ Mason, 'Herbert Shepherd Cross', pp.845-846.

¹¹¹ Hollins later became a baronet (1907), Howe, 'Sir Frank Hollins'.

¹¹² "Scotch Industrial Notes." *Financial Times*, 15th Jan. 1898, p.5.

¹¹³ *Financial Times*, 1 Nov. 1897: 3.

¹¹⁴ *The Scottish Commercial List, 1880-1881*, Syed and Co: London.

¹¹⁵ Steiner process, Knecht, *Textile printing*, p.372; Cohen and Cook, *Effects of mergers*, p.152.

family connections were the rationale for developing and extending networks up to the mid nineteenth century. The control of these embryonic production and distribution networks resulted in impressive financial returns for the firms in the central nodes. Subsequently, and with the consequent accumulation of capital, these networks extended through diversification into textile related activities, but also banks, railways and overseas interests. Scale economies in distribution provided the rationale for the amalgamations of the late nineteenth century.

Prior accumulations of capital and pre-existing network connections limited the dependence of these amalgamated firms on the London capital markets. J&P Coats, with its elite connections, might have fallen back on London, had the need arisen. In practice, through the preferences of firms that were less financially successful it headed a network based on the regional financial centres of Manchester and Glasgow. In view of the scale of the mergers, the general absence of involvement by London finance is, at first sight, surprising.

However, the long run evolution of the networks, as described in the evidence above, illustrates the reasons for the orientation of the associated combined firms to the regions. Indeed, the centralisation of production and ownership networks around these regional centres had a long history, borne out of technical collaborations, design led production, high profitability and capital accumulation within connected family networks and regional financial markets. The separation that appeared between London and the regions had long run consequences, particularly after 1920, when regional financial structures experienced systemic failure.

The networked capitalism that emerged in the long nineteenth century defies description as purely family, managerial, or financial capitalism, although in certain respects it combined all these features. In doing so, the leading firms in the networks combined innovative investment with financial amalgamation that resulted in large profits. To some extent, these profits came at the expense of the less successful, bailed out, firms whose

activities were sustained by the Coats-led financial colossus. By using its dominance in distribution to control larger networks that included upstream producers, the Coats-led network anticipated features of industrial structure that were to become more widespread by the late twentieth century. In this later period, the success and survival of fabric and textile manufacturers came to depend on the allocation of sufficient margin by retail giants.¹¹⁶

¹¹⁶ Toms and Zhang, 'Marks & Spencer and the Decline of the British Textile Industry', 1950–2000.

Appendix 1: Cotton Financial Database (CFD)

The Cotton Financial Database has been assembled using hand-collected data from multiple sources. These sources include archival records of individual firms and financial statistics drawn from the trade and financial press. For each firm where there is consistent and usable data, financial performance indicators are calculated. The principle indicator used in the present study is the return on capital employed, defined as profit before interest divided by long-term capital (owners' equity plus structured loan finance). For this indicator, the database consists of c.2800 data points for c.90 firms between the years 1777 and 2001. The present paper has utilised the database for the years 1798-1913, which comprises 1092 data points for 47 firms.

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