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Accounting and social conflict: Profit and regulated working time in the British Industrial Revolution

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ABSTRACT

We demonstrate that social movements can use accounting for progressive purposes, and that such outcomes can be promoted where they are aligned with the material interests of key fractions of capital. Such fractionalization is a function of technology and labour process, underpinned by adopted ideology. Alignment with social movement objectives overcomes the class belongingness of accounting that limits its progressive role in normal circumstances. We illustrate the role of accounting in achieving limitations to working hours and child labour, drawing on accounting evidence used to resist and support factory reform during the industrial revolution. We compare the evidence on costs and profits presented by both sides in parliamentary hearings and also with data revealed from the business accounts of the main protagonists. These comparisons show that assumptions about cost behaviour were used to exaggerate or mitigate the apparent effects of reduced working time on profits. Regressive fractions of capital were unable to resist change because they

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failed to consistently monopolize accounting information to impose a dominant narrative about the consequences of regulation.

1. Introduction

Recent critical accounting literature has offered differing interpretations of the class-bound nature of accounting information. Using a series of historical cases, Gallhofer and Haslam (2003, 2006, 2009) suggest an underlying neutrality of accounting information that can be appropriated to further the agendas of social movements. Catchpole and Smyth (2016: p.221) argue instead that accounting information is not neutral and has a particular 'class belongingness'. They also note (2016: p.221) that although critical accountants have investigated bad corporate behaviour as a discourse in annual reports (Neimark, 1992) and highlighted how creative accounting, tax evasion, exploitation and similar behaviour by corporations has been assisted by the accountancy profession (Tinker, 2005; Sikka, 2008), 'limited attention has been placed directly on the way accounting information has been used by social movements in their struggle for a better world'. Indeed, accounting research has traditionally ignored issues like labour rights and social justice, and lack of access to accounting information has a long history of disadvantaging employees and unions in bargaining situations (Brown and Dillard, 2015; Brown, 2000a).

To add to this literature, we therefore consider a case where accounting was effectively harnessed by a progressive social movement: the campaign to regulate child labour and excessive working hours during the nineteenth century British industrial revolution, which found political expression in the factory reform movement and factory reform debates. Certain features of this case illustrate aspects of accounting hitherto unexplored. Most notably, a social movement that included in

its leadership progressive business interests had access to, and was able to use, accounting information drawn from business records and practice to overcome the resistance of other business groups to regulation. This ‘Trojan horse’ function of accounting relies on an alignment of interests between working class organizations and sections of the elite. Such alignment may of course be temporary, but can result in permanent change. So, what motivates the progressive section of the elite to use accounting information in this fashion is a significant question. Focusing on arguments in contemporary pamphlets and parliamentary committees and debates, particularly concerned with cost of production in cotton textile factories, we argue that material interest and ideology determine lobbyists’ behaviour and use of accounting.

In our interpretation, the development of productive capital creates an objective measure for the quantification of cost through accounting, but competing agents use accounting subjectively through interpretation, ideology and institutions, including the institutions of regulation. Such an approach builds on the base/superstructure interpretation of Catchpowle and Smyth (2016), but also implies the conclusion of Gallhofer and Haslam (2003, 2006, 2009): that social movements can subjectively appropriate accounting information as ostensible fact, to pursue their wider objectives. Unlike Gallhofer and Haslam, the paper argues that how factions within the elite used accounting, including representation of accounting information through the media, reflected their material interests. Catchpowle and Smyth (2016) argue that the established hegemony of the capitalist class limits the capacity of social movements to use accounting effectively within capitalist social relations, which is undoubtedly a general tendency. However, our point of departure is that competing

interests within that hegemony can, in some circumstances, provide political levers accessible to social movements, enabling such interests to use accounting effectively.

The combination of factionalism within the hegemony, and the effective use of accounting to promote progressive change, raises the question of how these factors interrelate. For example if there is factionalism, but one faction, typically the regressive faction, monopolizes accounting information, developing any kind of counter-narrative using accounting is impossible. Alternatively, if there is factionalism, but both sides have access to accounting, counter-narratives are possible and can help underpin the case for progressive change. Contextualising the role of accounting in social change can therefore be helpfully supported by the analysis of competition between factions, or fractions of capital. Writing at the time of the culmination of the factory reform campaign in early 1846, Marx noted: ‘The bourgeoisie... develops only gradually, splits according to the division of labour into various fractions... separate individuals form a class only insofar as they have to carry on a common battle against another class; otherwise they are on hostile terms with each other as competitors’ (Marx & Engels, 1970 [2004]: p.82). The quotation is well known, and has prompted significant research on the nature of fractionalization (for example Davies, 1977, Clarke, 1978) and its consequences for the role of the accounting profession in periods of political transition (Catchpole and Cooper, 1999).

A possibility that has thus far not received attention is that such fractionalization could occur within the same industry, with rival capitals utilizing their business level accounting data differently to promote competing agendas on regulation. Political differences between firms in the same industry occur frequently, for example oil firms favouring differing degrees of environmental protection

legislation or the degree of support for divestment campaigns across financial and other institutions. Capital is rarely motivated by pure altruism and such variations, we argue, emerge from the social relations of production expressed as alternative competitive strategies. In productive industries, the labour process is an important component of social relations and can therefore influence business strategy.

The nineteenth century cotton industry and proposals for its regulation provide a useful illustration. At this time, different technologies were employed, such as continuous throstle spinning or intermittent mule spinning, leading to alternative labour processes and payment systems (Burawoy, 1984). Such variations meant that cotton capitalists were faced with different cost functions, creating the possibility of using accounting to support opposing viewpoints towards regulation. An important consequence of the use of accounting in this fashion was a substantial setback for the laissez faire ideology of some mill owners, who had argued against regulation.

The paper thus addresses how the formation of coalitions between fractions of capital and classes impacted on the use of accounting and the presentation of accounting numbers as supposed fact. In this sense, accounting information is implicated in a dialectic of (de)regulation, resulting in series of compromises between competing capitals. As a case of competition between capitals in the same industry, factory reform is a useful example of the workings of this dialectic. Although accounting was strongly implicated in the political battles over factory legislation, historians have thus far examined the factory question largely as a moral or ideological issue, without considering accounting evidence in detail. The paper analyses this evidence for the first time.

The remainder of the paper is organized as follows. In the second section we review the literature on social movements and the use of accounting and the

accounting history literature on the state of accounting theory and practice immediately before the major pieces of factory legislation (c.1830), to show how this historical episode contributes to each. In the third section we then consider the historical context of the campaign for factory reform, explaining the competing agendas of the two sides of the debates. The fourth section introduces new empirical evidence, based on parliamentary debates and committees, contemporary pamphlets and business archives, on the use of accounting in the parliamentary debates preceding the Factory Acts of 1833 and 1847. The reasons for the divergences in presentation of accounting evidence by opposing lobbies are evaluated in a fifth discussion section which also draws out implications for more recent and current debates. A sixth, final, section draws conclusions.

2. Accounting and social change

2.1. Social movements and accounting

Using a series of examples, Gallhofer and Haslam (1994, 2003, 2009) have demonstrated the importance of the long nineteenth century² in highlighting the role of accounting as part of a wider story of the evolution of modern institutions. They suggest that Jeremy Bentham's accounting represented emancipatory activism, as part of a rational, transparent and inclusive public discourse, in the absence of official hegemony of publicity, to promote moral behaviour and general well-being. The use of accounting by the radical newspaper *Forward*, showing that Bryant & May could afford a wage rise for the striking match girls, illustrates a perceived underlying

² The period 1789-1914, as defined by Hobsbawm (1995).

neutrality in accounting information that can be appropriated to signify the claims of social movements (Gallhofer and Haslam, 2003). Likewise, in their account of the protest movements of Red Clydeside, both conventional and radical socialist newspapers engaged similar accounting information to promote their alternative capitalist and counter-hegemonic narratives (Gallhofer and Haslam, 2006: p.237, see also Amernic, 1988). In these episodes, Gallhofer and Haslam (2006), drawing on Stuart Hall, explain that similar events can be portrayed differently because the mass media allows them to be signified in different ways. As a result, oppositional movements can decode accounting, for example to signify excess profits in support of their claims.

Industrial relations and collective bargaining cases provide further examples of attempts to develop alternative accounting narratives. In some bargaining cases, for example the coal industry, accountants have been accepted for the purposes of arbitration by both sides, in which intermediaries were trusted with confidential information about profits (Bougen, Ogden, and Outram, 1990). Even if such accounting information is unbiased, its interpretation often ‘may be no more than a subjective assessment of unquantifiable data’ (McBarnet, Weston & Whelan, 1993: p.94). For similar reasons, unions and employers may contest evidence on health and safety risks, possibly with the assistance of ‘organic accountants’ prepared to advocate on behalf of vulnerable groups (Brown and Dillard, 2015). To assist negotiations, these dialogical approaches might develop counter-accounting or information systems, building multiple dimensions of performance (Brown and Dillard, 2013). Accounting can also be a means of including employee representatives in dialogue with management, although the scope is necessarily limited (Brown, 2000b).

The risk in all these cases, however, is that if accounting indeed has ‘class belongingness’, as suggested by Catchpole and Smyth (2016), the ability to decode it may be circumscribed via the obfuscations of accounts preparers. For Amernic and Craig (2005: p.79), cost information in particular is not clear-cut, leading to ambiguous and non-neutral ‘technical, strategic and tactical uses...in collective bargaining’. Selective and subjective interpretation of accounting information by accounts preparers thus constitutes a ‘hidden power’ masked by its technocratic perception (Hines, 1988: p.257). Carruthers (1995: p.322) suggests that in bargaining situations accounting ‘can abstract and reduce enormous social and organizational complexity down to a single bottom line’. In similar vein, Hopwood (1990) suggests that accounting is an objectifying force, making precise what would otherwise be abstract. The very act of recognising accounting information in a collective bargaining situation is to reify capitalist social relations and rationalize its assumptions (Spence and Carter, 2011). Accounting was used in such a fashion in the Renold case (Bougen, 1994), to keep management holding power over labour and to mask real stories about workers’ experiences.

Challenges to this form of objectification are also difficult for such oppositional movements, due to barriers to accessing information. Dominant capital can normally resist demands for legislatively enforced information and participatory rights and limit the effectiveness of social movements through regulatory capture (Brown, 2009). Historical studies have shown that firms have prevailed on regulators to limit accounting disclosure, citing the potential for increased conflict between capital and labour (Arnold, 1997, Edwards, 1980).

In general then, where accounting is used in a bargaining situation with labour, capital is in a stronger position due to its control over accounting information and

accounts preparation. Evaluating the motives of preparers is therefore crucial, raising the question of their material and ideological interests. As Catchpowle and Smyth (2016: p.223) suggest, instead of being socially constructed, accounting discourse has material roots based in the class nature of capitalist society, reflecting the dialectical relationship between the economic base (capitalist) and the superstructure (culture, language, ideology etc.).

Social contradictions thus create the opportunity and motive for campaigners to mobilize accounting information in support of their aims. Such broad demands can be part of a 'value-based' social movement. According to Smelser (1962 [2011]: pp.301-302) such movements challenge the values of capitalism, as distinct from 'norm-oriented' movements. The latter have the aim of establishing a norm, or a new law, for example agitation for shorter hours in the United States. Based on Gramsci's (1971) 'common sense/good sense' contradiction, Srnicek and Williams (2015) suggest that such demands might constitute alternatives to hegemonic 'common sense'. For example social movements might demand shorter working hours as the logical consequence of automation, but at the same time such demands challenge the dominant narrative of capitalism. Whether or not they ultimately challenge hegemony, where social movements embrace quantifiable and progressive demands based on Gramscian 'good sense', there is a potential role for accounting (Smyth and Whitfield, 2016), for example by highlighting the effects on profit of alterations to the labour process or by countering arguments about such effects put forward by defenders of the status quo.

Opportunities for such challenges may be enhanced where social movements can access business level accounting information, which in turn may be more likely where capital is divided on an issue. Such divisions might feature conflicts over

regulation between capitals, which are motivated accordingly to use accounting to serve their competitive interests. Examples include industrial versus finance capital, national capital versus transnational capital, or, within the same industry, green versus fossil fuel energy companies, seeking to influence subsidy, tax or regulation policies.

There are competing theories to explain such fracturing, including why, as we explore in our case study below, capitals and capitalists may compete with each other on policy issues such as working time. Recognising that capitalists can effectively become ‘warring brothers’ (Catchpowle et al., 2004: p.1048; Harman, 1991: p.9),³ the ‘fractionalists’ argue that different capitals’ political demands can reflect their industrial sector or functional base (e.g. manufacturing v finance capital) within the economy. Although based on the traditional definition of classes in relation to ownership of the means of production, these approaches have been criticized as merely analytical and ignoring the fundamental relation between capital and labour (Clarke, 1978). Capitals are mutually dependent on each other for resources (Catchpowle et al. 2004), or as Marx (1973: p.414) notes: ‘Capital exists and only can exist as many capitals, and its self-determination therefore appears as their reciprocal interaction with one another’. The capital relation is a summary expression for the whole nexus of social relations, founded in the production of surplus value, but embodied in the whole circuit of capital’ leading to a dual form of social relations of capital, i.e. between capitals there is anarchy, within capitals there is despotism (Barker, 1991: pp.206-207).

³ Harman notes that the ‘warring brothers’ quote is attributed to Marx (Harman, 1991: p.9), but it is impossible to locate in his work (Murray, 2006: p.8).

In seeking to establish a dominant position, certain fractions of capital may enter coalitions with other social groups. For example apartheid South Africa promoted manufacturing capital as a leading sector through an alliance with a fraction of the (white) working class, thereby promoting the interests of capital as a whole (Clarke, 1978). Distinct from other cases of alliances between fractions of capital and social movements, for example to remove apartheid in South Africa (Catchpole and Cooper, 1999), or cases of dialogic uses of accounting more generally relying on alternative accounting and information systems (Brown and Dillard, 2013; Brown and Dillard, 2015), collaboration between a social movement and a fraction of capital might place accounting information at the disposal of a progressive agenda. Such fractions coalesce around political and ideological demands (Davies, 1977), arising from the relations of production (Clarke, 1978: p.41).

For the purposes of our analysis therefore, the motivations of different fractions of capital to engage with or oppose a social movement reflect alienation within competitive relations of production, but at the same time arise from the same underlying processes of production and accumulation of surplus value. Rival groups of capitalists thus utilize accounting in conjunction with ideological arguments for the purposes of successful competition. These divisions might occur where it is not in the interest of all capitalists to follow the same strategy towards the deployment of technology and the labour process. There is as a consequence, a material basis for the fracturing of the common class interest of capitalists by economic competition.

We prefer such a conventional Marxist approach for several reasons. First, our story is about resistance to accumulation by exploitation as opposed to the accumulation by dispossession that has characterized later social movements (Harvey,

2003, Catchpowle and Smyth, 2016, p.225).⁴ Second, resistance to the exploitation of workers in cotton factories by demands for shorter hours constituted a ‘good sense’ counter-narrative to the ostensible ‘common sense’ relationship between longer hours and sufficient profitability. Third, much of Marx’s analysis in his core works was formulated using examples from the cotton industry, including commodity production, labour process and the determination of the rate of profit. These underlying categories were at the centre of the debates on factory reform, which were also referred to extensively by Marx, most comprehensively in his chapter on the working day (1976: ch.10). Finally, the debates pre-dated the general extension of the democratic franchise to working class voters by several decades. Methodologies that investigate social movements from the standpoint of democratic pluralism (Brown, 2009; Laclau and Mouffe, 2001) although arguably more useful in current contexts (Tregidga et al., 2016), are perhaps less so in situations where democracy is proscribed. Our case study therefore complements analyses of contemporary social movements by focusing directly on the politics of the factory, the labour process and the use of accounting by competing factions of the elite. Our findings potentially inform other cases of exploitation of labour in the absence of democracy, for example textile factories located in dictatorial countries with output contracted to multinational corporations (MNCs). Using a nineteenth century case also allows aspects of the

⁴ For example, the emergence of minority rights movements in the 1960s.

Recognising that such social movements may nonetheless be based on the interests of more than one group (Hirst, 1993), more recently movements have developed broader programmes and agendas, for example opposition to globalisation, based on the material interests of multiple groups (Catchpowle and Smyth, 2016).

accounting history of that period to be reassessed. To contextualize the case study that follows, a brief review of the literature on the uses, abuses and state of development and understanding in accounting and costing at this time is required.

2.2. Early nineteenth century accounting theory and practice

The most significant contextual questions, in the light of the above review, are the extent to which accounting reflected class dominance and the extent of associated bias. If Weber's (1978: pp.91-92) view is accepted, accounting was simply a rational tool in the capitalist machine and not subject to persistent error or bias. It follows that the capitalist mentality leads to the demand for accurate accounting information within the labour process and from business owners (Bryer, 2005). However, these links form an ideological basis of class rationality and do not accommodate the material processes that might otherwise explain conflicting use of accounting within the capitalist class (Toms, 2010). Moreover, according to Brief (1965), the validity of management claims in business disputes during the nineteenth century was undermined by widespread 'accounting error'. To what extent though were Brief's claims justified, and how far was nineteenth century accounting practice likely to promote the ambiguities in accounting information referred to earlier?

If treated as a hypothesis, the 'accounting error' argument is problematic in the sense that its evaluation raises the issue of objective truth. To address this, we follow Marx's formulation of use and exchange value, and argue that accounting has an underlying objectivity arising from the labour process of value creation. An asset thus embodies a specific quantity of labour, for example 'a definite quantity of labour ... has been objectified in the cotton' (Marx, 1976: 296). Value creation through the labour process is at the same time a social relation, with the aim of the production of

surplus value (Marx, 1976: p.1002) such that the division of such value requires the institutional settlement of conflicting claims (Toms and Fleischman, 2015). Market price, as distinct from value, in turn represents the crystallization of value as a specific quantity of money (Marx, 1976: ch.2). A similar approach can be applied to cost categorization and behaviour. Fixed cost then, as a quantity of money, can be fixed in an objective sense, i.e. it does not vary at all with a change in output. At the same time, whether a cost, for example wages, is fixed or not is determined subjectively by social and market institutions, for example the choice to impose piece rates or time based wages.

The question of fixed cost was a crucial aspect of the ‘accounting error’ hypothesis. The so called the ‘fixed cost problem’, suggested that whereas accounting methods were adequate for domestic production under the putting out system, once production had been internalized in factories, there was a subsequent failure to adopt suitable accounting treatments for production overheads (Edwards, 1937). Indeed Pollard (1965) suggested that costing techniques were largely superfluous in textile and related industries due to reliance on market price; a view echoed by Hoskin and Macve (1988). They note (p.71) limited application of costing for decision purposes at Charlton Mills in Manchester, and by one time employee of Strutt and English émigré Samuel Slater, whose costing methods did not differentiate varying costs of labour. An important aspect of Brief’s (1965: p.14) accounting error was ‘the failure to systematically distinguish between capital and revenue expenditures and the failure to periodically allocate the original cost of fixed assets to expense’. Failure was compounded by subjective use of accounting numbers, so that for Hopwood (1987: p.215), writing about practices at the pottery manufacturer Wedgwood, ‘cost remained an idea, not a fact’. Where the functions of accounting are more significant

than technical procedures, accounting had to be constructed not merely revealed (Hopwood, 1992). In similar vein, Miller and Napier (1993) stressed the need to consider meaning and significance attached to calculations, not (just) calculations themselves. All of these dimensions of accounting error provided significant potential for competing interpretations of accounting by political lobbyists.

Error and subjectivity did not, however, obscure genuine progress in the theory and practice of accounting. Using the example of steam engine manufacturer, Boulton and Watt, in the period 1770-1820, Toms and Fleischman (2015) note that relatively sophisticated managerial accounting techniques evolved in response to changes in the material base, including the internalization of asset configurations and transformation of the labour process. Similarly, for contemporary theorists like Babbage, fixed cost was a consequence of mechanization, widely recognized in the railway and engineering industries (Wells, 1978: p.61), thus becoming more significant with industrialization and the increasing complexity of manufacturing (Garner, 1954). Parker (1969) notes that Babbage was the first to make the distinction between fixed and variable costs in the literature, but, as Edwards (1989: p.310) points out, business practice reflected the distinction much earlier. Boyns and Edwards (2013: pp.108, 97, 114) note an awareness of effects on cost of changes in cost of production at Keswick copper works c.1600 and that businessmen were aware of the importance of differentiating between fixed and variable cost as early as 1740 citing the case of a production location decision with varying levels of output by the Melincryddan works. They also note linkages made between the scale and cost of production in the iron smelting, pottery and Cornish metal industries thereafter during the eighteenth and early nineteenth century (Edwards, 1989: pp.310-311).

In summary, the literature suggests that before c.1830, business owners were well aware of cost accounting techniques, but used accounting information subjectively, often reflecting their wider objectives. It is also noteworthy that absence of regulation meant that accounting was used almost exclusively for management accounting purposes in sole traders and partnerships, with few incentives to manipulate the accounts, as there was no ‘outsider’ audience for accounting information. Lack of clear rules also meant that in the cotton textile industry, there was space for mill owners and social reform campaigners to interpret accounting information differently and present it subjectively to an interested ‘outsider’ audience, as they did in the factory reform debates. Extending the above evidence (Wells, 1978, Garner, 1954, Toms and Fleischman, 2015), it can be argued that mill owners’ accounting understandings and perspectives were driven by the development of productive forces under their control. As economic growth occurs, there are opportunities to substitute capital for labour, which will create differences in the resource bases of firms within the same industry. Businesses can, for example, vary according to capital intensity, product type and range, choice of technology, or dependence on certain types of labour and labour processes. In turn, these features create the material base for ideological differences and attitudes to regulation.

Our contention is that both sides amplified accounting error in the factory reform debates for political purposes. As suggested by Catchpole et al. (2004: p.1040), accountancy has a ‘Janus face: at once a social calculus which can act as a lever of general social advance, and yet also a tool of class power’. A commonly used ‘common sense’ argument, often supported by accounting calculations, was (and still is) that regulation would destroy profit and therefore employment in favour of foreign competition. Good sense rejoinders to such assertions included the notion that long

hours damaged productivity by exhausting workers and reducing their working lives. Leonard Horner, the first factory inspector, became increasingly convinced of this view, which was reinforced by experiments demonstrating increased productivity in shorter working time (Nyland, 1989; Smelser, 2013).

To illustrate these processes, the remainder of the paper considers the use of accounting information by competing interests on the issue of factory reform in the 19th century British cotton textile industry. The paper uses a range of contemporary sources that featured accounting evidence. These consist of pamphlets and short books, evidence given in parliament and the surviving accounting records of factory owners. The purpose was to investigate how the protagonists used accounting evidence to further their arguments, with a particular emphasis on the presentation of production costs. Contemporary books and pamphlets were frequently polemics on the morality of child labour, but also the consequences of legislation for costs and profits, notably Fielden (1836), Ashworth (1837), Greg (1837), Horner (1837), Senior (1837), Kenworthy (1842) and Ashley (1844). These standpoints overlapped to some degree with further evidence available from minutes of parliamentary inquiries, principally the Factories Inquiry Commission (FIC) (BPP, 1833, 1834), but also the subsequent Factory Inspectors' reports (for example BPP, 1842) and further proceedings (BPP, 1846), culminating in the legislation of the ten hour day in 1847. Factory reform also occasioned much debate in parliament, recorded in Hansard (for example BPP 1844), although not commonly on detailed technical questions of accounting. Finally, business archives, specifically the Greg papers (GP) and Ashworth papers (AP), have been consulted because they provide detailed accounting

information which can be compared to the evidence presented by these entrepreneurs to the public and to parliament during the debates.⁵

The next section uses these sources along with historical and contemporary literature to set out the competing agendas of the protagonists and how and why they mobilized accounting evidence. A further section then concentrates on accounting evidence specifically to explain how mill owners on either side of the factory debates used accounting and cost information to advance their arguments. Through an analysis of these competing interests, we can evaluate the extent to which their material circumstances and ideology determined their use of accounting information about the relationship between fixed costs, the length of the working day and profit. Specifically, the material aspect concerns mill owners' use of physical assets and organization of the labour process; ideology refers to their political and religious orientations.

3. The factory reform debates: Competing agendas and historical context

Although often set in the context of ruthless labour exploitation, the factory reform movement was not a simple conflict between labour and capital. Within the industrial bourgeoisie and aristocracy, child labour and working hours were divisive political issues by the early 1830s, reflecting rapid industrialization and ineffective earlier legislation.⁶ Consequently a social movement emerged, based on the demand for

⁵ Located respectively at Manchester Central Library and the John Rylands Library, Manchester.

⁶ Peel's Health and Morals of Apprentices Act 1802 (42 Geo III c.73) placed in loco parentis responsibilities on masters employing orphans, and was widely regarded as

shorter working hours. The Short Time Committee, led by John Doherty in Manchester, demanded a ten hour day, with associated protection for younger and female workers (Robson, 1985), which gained traction with the wider labour movement (Kirby & Musson, 1975). However, the short time movement (hereafter STM) did not encompass all working class political perspectives. In March 1850, Engels (1975: p.99), noted that it provided ‘an excellent meeting ground’ for reactionary classes ‘to join forces with the proletariat against the industrial bourgeoisie’. Engels perhaps had in mind Lord Ashley’s assumption of the leadership of the STM in parliament in 1832, with support from Anglicans, landowners and some factory owners. However, the involvement of mill owners in the STM also reflected a significant split in the industrial bourgeoisie, and prominent supporters of regulation, including William Kenworthy and John Fielden, used their firms’ accounting data to assist their case in the later phase of the debate.⁷

The laissez-faire lobby (hereafter LFL) consisted exclusively of mill owners, and insisted on factory discipline and unregulated hours (Kirby & Musson, 1975; Berg, 1982; Clark, 1994). Prominent mill owners in the LFL included Henry and

ineffective (Hutchins & Harrison, 1903, p.17). The Cotton Mills and Factories Act 1819 (59 Geo. III c.66) outlawed employment of children under 9 and limited the working day to 12 hours for children aged 9–16. In 1825 Sir John Cam Hobhouse’s Bill resulted in a legislated 69 hour week and in 1831 the Labour in Cotton Mills Act, 1831 (1 & 2 Will. IV c.39) limited the working day to 12 hours for all those under 18, and night work to those aged 21 and over.

⁷ John Doherty (1798-1854) trade unionist and factory reformer; Lord Ashley, (Anthony Ashley Cooper) Tory MP and 7th Earl of Shaftesbury (1801-1885).

Edmund Ashworth, John Pooley, Robert Hyde Greg, Hugh Hornby Birley and Holland Hoole, who used accounting information to advance their arguments. Following an initial inquiry and report drafted by Michael Sadler MP (BPP, 1832), the LFL leaders engineered a new Parliamentary Commission (the Factories Inquiry Commission, hereafter FIC) to visit the manufacturing districts and take further evidence prior to redrafted legislation (Greg, 1837: p.8). The Great Reform Act of 1832 enhanced the political power of the manufacturing classes, and the Whig (subsequently Liberal) party and Anti Corn Law League represented their interests. Accordingly, the dispute over factory reform has been characterized as between the interest of Whig, Dissenting, rural water powered mill owners, against Tory, Anglican, metropolitan, steam powered mill owners (Marvel, 1977; Nardinelli, 1985). However, this literature does not consider by whom and for what purpose accounting evidence was used, and is reconsidered in the light of new empirical evidence presented below.

The fixed cost question was at the centre of the ensuing evidence to the FIC and associated public debate of 1833. To provide theoretical support to the arguments of the LFL for long hours, Oxford economist Nassau Senior (1837) promoted the idea that all profit was earned in the ‘last hour’ of the working day. Accounting was used by the LFL in the factory reform debates to directly support these arguments that a high proportion of overhead costs were fixed and had significant effects. The FIC summary report BPP (1833, p.45) referred to Greg’s evidence on the disproportionate reduction in wages that would arise from a reduction in output due to the effects of fixed charges. As a consequence, they argued effectively that, in cotton and other textile industries, long hours were essential to profitable operation and indeed their mills’ survival against the threat of overseas competition.

However, Senior's theory and the use of accounting evidence in this fashion was misleading, and a prominent case of 'accounting error'. Insofar as fixed cost represents a quantity of money that does not vary with output, as noted earlier, Senior's (1837) assertion that all profit is earned in the last hour of the working day is demonstrably false, unless it can be shown that all costs were assumed fixed. Assumptions about cost behaviour were therefore crucial to the whole debate. In accounting terms, the total destruction of all profit as implied by Senior's theory contained an implicit 'good sense' counter argument: that profit would not be destroyed by shorter hours insofar as costs were variable and not fixed. Indeed, profit could be increased if fixed costs were more than covered by investments enhancing labour productivity. Other economists, notably Marx (1976: ch.9, section 3), subsequently challenged Senior's arguments along these lines (Nyland, 1989: p.9).

However misplaced, the accounting evidence to the FIC reflected the views of the LFL almost entirely. An important reason was that Ashley, Doherty and the STM refused to participate in what they called this 'Commission for the perpetuation of infanticide' (*Fraser's*, 1833), because they expected it to whitewash the owners and prevent reform (Henriques, 1971: p.8). The STM had good tactical reasons for not participating and challenging this evidence. Specifically, the STM were suspicious of the composition and process of the FIC. Gray (2002: pp.68-70) notes several reasons. Sadler's Committee of 1832, which established substantial and credible evidence of the degrading nature of the factory system, had been conducted as a public parliamentary hearing. In contrast, the FIC was without legal precedent, and the STM viewed it as a 'Star Chamber' and an illegitimate extension of executive power, staffed by Whiggish commissioners acting on behalf of the government, with the objective of vilifying the operatives. A boycott was organized, and the

Commissioners were frustrated in their attempts to identify and call the STM leaders to give evidence. Even so, some operative witnesses to the Sadler Committee were compelled to re-testify to the FIC under oath, whereas mill owners were allowed to submit written evidence drafted in their own counting houses. Gray (2002: p.71) also notes that the most prominent example in the report was Robert Hyde Greg's elaborate accounting calculations, as analysed below.

It is important to note, however, that the LFL's accounting evidence, even at this stage, was not entirely unchallenged. John Welsford Cowell, in his capacity as FIC committee chair for one of the textile districts, subjected Hoole, Ashworth and Pooley's accounting evidence to critical scrutiny during the FIC hearings, and also compiled his own lengthy report analysing the cost structures of cotton mills in Lancashire and overseas.⁸ To do so, he conducted a detailed survey of cotton factory costs, production and profits. The survey used accounting and other data collected independently of the LFL lobby and showed that unit production costs were significantly higher overseas and British unit costs much lower. Although an impressive piece of accounting analysis, Cowell's intervention was nullified by the disengagement of the STM from the FIC, such that the spurious arguments of Senior and the selective use of accounting evidence by the LFL were sufficient effectively to resist change.

⁸ John Welsford Cowell (1796-1867, lawyer, Bank of England economist and government commissioner). BPP (1834), Cowell's Preface. 'Preface' is a misnomer if interpreted here literally or anachronistically; it amounted to full report of 37 pages (377-414), including data and detailed calculations.

Cowell's minority report was ignored for the purposes of informing the final legislation, but nonetheless reflected the importance of accounting evidence in the debates and of assumptions about cost behaviour. Although legislators had ignored Cowell's critique of the LFL in the enacted reform of 1833, it was widely reproduced through STM sympathetic media outlets and elsewhere,⁹ and his conclusions began to underpin a groundswell of support for legislation in the 1840s. From then on, the arguments of the STM were based on downplaying the level of fixed costs, thereby suggesting that shorter hours would not have a catastrophic impact on profit. Their case for new legislation in the 1840s could now be supported as much by accounting evidence as morality.

The tactical retreat of the STM after the Sadler Committee influenced the outcome of the FIC hearings and the consequent Factory Act of 1833.¹⁰ The final FIC report accordingly proposed only limited reforms of child labour and inspection. Ashley and the STM were forced to surrender their ten hours proposal in parliament, at least temporarily (Grant and Ashley Cooper, 1866, p.53).

⁹ For example, *Mechanics' Magazine* (1834) published a digest of Cowell's analysis. It was also readily assimilated by economists, for example, Carey (1838), *Principles of Political Economy*: p.145.

¹⁰ Grant and Ashley Cooper (1866: p.53). Factory Act of 1833 (3 & 4 Will. IV c.103). No children were to work in factories under the age of nine (though by this stage numbers were few). The Act also required children under 13 to receive elementary schooling for two hours each day. Even so, the Act established a maximum working week of 48 hours for those aged 9 to 13, limited to eight hours a day, and for children between 13 and 18 it was limited to 12 hours daily.

Although a defeat for the STM, the 1833 Act was not an outright victory for the LFL either. It was underpinned by Benthamite utilitarian principles, and sought to protect children (as non-free agents) based on administrative centralization and a professional system of inspection (Thomas, 1948: pp.46-48), potentially providing a new avenue for scrutiny of the financial affairs of the cotton mills. Consequently, the 1833 hearings were only the beginning of further arguments over accounting and costs of production. In the 1830s Horner, a prominent Benthamite, was appointed lead factory inspector and therefore responsible for the implementation of the 1833 Act (Martin, 1969: p.438).¹¹ His interventions were the subject of much criticism from the LFL, particularly from Greg and Senior (Greg, 1837; Senior, 1837). Greg, being ‘(f)oremost in this movement of importing children from the agricultural districts’ was potentially an important target of Horner’s scrutiny. Greg, along with the Ashworth brothers, led the opposition to the inspection regime and the threat of new legislation (Grant & Ashley Cooper, 1866: p.57).

Ashley proposed a new ten hours Bill in 1844 and, for the first time, the STM used accounting evidence from mill owners within the movement to support their position in Parliament. The LFL, including the Ashworth brothers, undertook similar calculations, focused on costs of production in their own business accounts. In his pamphlet Kenworthy (1842) detailed the effects of reduced working time on

¹¹ The FIC was dominated by Benthamites. The central commissioners of the FIC were Edwin Chadwick, who chaired the Commission and drafted the Bill, which naturally embodied most of the FIC’s recommendations (Marvel, 1977, p.383), Thomas Southwood Smith and Thomas Tooke, all friends and disciples of Bentham (Henriques, 1971: p.9; Thomas, 1948: p.46).

production costs that were later reproduced by Fielden in his parliamentary campaign (BPP, 1844: q.1236). Fielden, like Ashworth, could have used cost and profit data from his own firm, but relied instead on the calculations that had already achieved wider circulation via Kenworthy's pamphlet. A speech by Ashley in 1844 used examples based on more comprehensive data, including a spinning establishment comparable to earlier examples fielded by Greg, Birley and Hoole, Pooley and the Ashworths. This time the debate was resolved mostly in favour of the STM with a new Factory Act in 1847 that legislated for a ten hour day,¹² suggesting the value of accounting evidence when utilized as a counter-narrative by progressive interests.

As the above review has made clear, the issue of cost behaviour, which relied on accounting evidence, was at the centre of the debates and evolution of regulation on child labour and working time. That said, much of the literature on factory legislation has been concerned hitherto with disputes and apparent misrepresentations over factory working conditions (Kirby & Musson, 1975: p.396) and the ethics and regulation of Victorian employment practices, particularly the treatment of child workers (for example, Hutchins & Harrison, 1903; Robson, 1985; Humphries, 2010), not with claims and counter-claims about relative profits of private firms in the industry. The unanswered question is how and with what motivations did textile mill owners use accounting evidence to support their arguments in favour of or against regulation? Such a question is significant, as there has been no systematic investigation of how accounting was used to inform these debates, and the extent to which accounting numbers influenced the timing and impact of regulation from the point of view of the rival groups of mill owners. The next section introduces new

¹² Factories Act 1847, 10 &11 Vict. c.29.

empirical evidence on the motivations, purposes and effectiveness of the uses of accounting by the rival lobby groups.

4. Factory reform and accounting

4.1. LFL: Motivations and accounting in the 1833 debates

A key argument in the economic and social history literature, as noted earlier, was that religious or political affiliation determined the attitudes of the two sides in the factory reform debates. For those mill owners that used accounting evidence to support their case, this is not, however, a sufficient explanation. It is noteworthy that the leaders of the LFL comprised Anglican Tories (Birley, Pooley) and dissenting Whigs (Hoole, Greg, the Ashworth Brothers). All were, however, strongly connected to business networks in Manchester that shared and promoted the individualist *laissez faire* ideology, including the Manchester Chamber of Commerce, the Mechanics Institute and the Anti-Corn Law League (Prentice, 1851: pp.428-431; Somerville, 1853, Rose, 1986, Boyson, 1970, Mosley, 2013). Hoole was a leading figure in the Anti-Corn Law League (Prentice, 1851: p.200), and took over the firm of Philips & Lee in 1831 (Howe, 1984). Sir George Philips, Hoole's predecessor at Philips & Lee, and founder of the Manchester Exchange and a political Whig, was described as the unofficial MP for Manchester (Brown, 1996). Through this network, Greg and Ashworth collaborated with Senior, whose 'last hour' argument was aligned with data from Ashworth's business accounts (BPP, 1833: p.1104).

Individualism and *laissez faire* then, rather than a common religious tradition, was the ideology that united the LFL as a significant fraction of capital with a hegemonic project. It found its expression in ostensible philanthropic approaches to

labour management. Such arguments allowed Philips to resist Peel's earlier attempts at factory legislation, arguing that it undermined the voluntary improvements in working conditions enacted by mill owners, which at Philips & Lee included a contributory insurance scheme (Brown, 1996: pp.68, 77-78). At Quarry Bank Mill, Greg actively promoted education (Rose, 1986: p.107) and spent large amounts in the 1830s and 1840s to provide high standard cottages and accommodation at low rents, so that although wages were low, living standards were high, resulting in low labour turnover (Rose, 1986: p.117). Like the Unitarian Gregs, the Ashworths made major investments in housing for their employees (Boyson, 1970: p.119). The Ashworths were Quakers and attached great importance to education, which meant that they did not employ apprentices or children under the age of nine and were therefore unaffected by earlier factory legislation (Boyson, 1970: pp.85, 159-160).

Such philanthropic motives reflected the material resource base of the leading LFL businesses. Quarry Bank Mill was at a remote water-powered location in Cheshire, and relied on the parish apprentice system, thereby creating a high dependency on child labour. Greg therefore needed to offer good conditions to attract workers and prevent apprentices from truanting. As a consequence, Quarry Bank became a self-contained factory colony with few threats from outside agitation (Rose, 1986: p.105).

In these respects, the Ashworth brothers had much in common with Greg. When opening their new factory at Egerton in 1833, they faced a major labour shortage, fearing emigration of workers if business was lost to foreign competition (Ashworth, 1837: p. 29). Because they were ideologically opposed to labour organization, the Ashworths confronted and stood down a wave of bitter labour unrest including in 1830 strikes, riots and violence over rates on the new machines, and, as a

consequence excluded workers to prevent trade union organization (Boyson, 1970: pp.143-146; 148-149). These measures compounded the labour shortage, so that instead of recruiting locally, the Ashworths joined with Greg to recruit pauperized southern, largely agricultural, labourers. Skilled labour in particular was in short supply and required a long period of training. In 1834 and 1835 Ashworth's mills stood idle for want of labour (Boyson, 1970: pp.194, 196). A weaving shed was built at New Eagley in 1839, which absorbed some handloom weavers, but Ashworth was criticized nonetheless by Fielden and others in 1843 for not employing enough of them (Boyson, 1970: pp.197-198). Labour confrontation also increased the Ashworths' dependence on local magistrates for support and they did not wish to undermine their standing in this respect if they themselves risked prosecution for factory legislation violations (Boyson, 1970, pp.147, 167).

To summarize the LFL perspective, Greg and the Ashworths, faced with labour shortages, needed to attract and retain skilled workers, even if in part the skills were, for Greg at least, those unique to small children who could work underneath machines. They also believed in moral improvement and education as well as high standard housing. These considerations meant fixed capital investment over and above basic factory buildings, which would tend to promote social stability but limit the net return, and increase the risk, on their investment. For these reasons, the LFL tended to exaggerate fixed costs and the effects of legislation on business profitability, but such exaggerations would to some extent also have been seen as necessary to reflect the wider risk to their business model.

Table 1 about here

As a consequence, when using accounting evidence in support of their arguments, the LFL presented a consistent and pessimistic line on their costs of production, especially the burden of fixed expenses and the risks faced by their enterprises.¹³ To provide a comparison and benchmark for these claims, table 1 sets out the implied fixed cost per lb of yarn production, based on the mill owners' assumptions made about which costs should be included in this category. The main categories of cost are itemized in each case. Cases are listed in approximate chronological order following the course of the debates in the 1830s and 1840s.

According to their FIC evidence, LFL estimates of fixed cost per lb averaged 1.516d (table 1), much higher than subsequent estimates by the STM and by Horner. The primary purpose of Greg's presentation of costs was to demonstrate the leveraging effect of fixed costs on wages and profits. Greg used extracts from his accounting data from one year only, the year to September 1832, from which he implied that all listed non-wage costs (total £6510, or 1.782d per lb) were fixed.¹⁴ He stated that: 'In coarse spinning the fixed charges and contingencies amount to as much as the wages; and if the former remained the same and price stationary, the reduction on the latter must be double' (BPP, 1833, p.782). He also stated the total

¹³ Greg gave evidence to the second Lancashire committee of the FIC, chaired by Edward Carleton Tufnell (1806-1886, government commissioner) whilst Birley, Hoole, Edmund Ashworth and Pooley gave evidence to the first committee, chaired by Cowell.

¹⁴ BPP (1833, p.784 [D2]) showed wages costs as £6,800. GP 'Statement of sunk and floating capital'.

costs of production (excluding raw material)¹⁵ as £13,401 for an output of 880,000lbs per annum and suggested that Ashley's bill would reduce these figures to £12,730 and 727,000lbs respectively, being a difference of 0.55d per lb, which 'is equal to a good profit' (BPP, 1833: p.782). These relationships implied a fixed cost of £10,044, or 2.739d per lb, that the proportion of fixed to total expenses was c.71%, and that a substantial proportion of wages were also fixed. However, not all the categories of expense included by Greg were obviously fixed. The sundry and contingent expenses necessarily included some categories of variable cost, for example selling and distribution costs, a point acknowledged by Greg when referring to higher costs faced when selling to more distant markets (BPP, 1833: p.785). There was also an argument put by Cowell (BPP, 1833: p.679), later echoed by the STM, that interest on the floating part of capital¹⁶ could be considered a variable cost, and this emerged as an important difference in the assumptions of the protagonists, returned to below.

Cowell's challenges aside, the LFL was free to use accounting evidence to present a one sided and pessimistic view of the costs, profits and risks of their businesses. For example, Greg's figures presented to the FIC also included depreciation (sinking fund). Greg's actual accounts, as revealed in the archival evidence, showed no evidence of depreciation being applied.¹⁷ Nonetheless, he

¹⁵ Throughout the debates, production costs referred to wages and overheads, and excluded material costs (i.e. the costs of raw cotton),

¹⁶ Floating capital was a commonly used term in contemporary accounts, to distinguish from fixed capital, and therefore corresponds to working capital.

¹⁷ The available figures in the Quarry Bank Mill accounts (GP, Partnership Book) end in March 1831.

described the depreciation policy as ‘five per cent annually on our buildings, water-wheel and engine and ten per cent annually on our smaller machinery’, which covered ‘not only wear and tear but also... deterioration arising out of new inventions’ (BPP, 1833, pp. 784-785, 780). Indeed, other LFL witnesses (for example Jackson) argued for high depreciation charges that remained constant regardless of use, because the rate of technical progress tended to increase obsolescence rates of ‘sunk capital’ (ie fixed capital) investments (BPP, 1833, pp.777 & 782).¹⁸

Further LFL representations, meanwhile, made points about high fixed cost, for example Hoole’s evidence. His figures showed that ‘...the charge for rent, poor’s (sic) rates and fixed salaries’ accounted for 1.250d (table 1) out of total expenses of 5.5d (BPP, 1833, pp.729-730), implying fixed costs were 22.7% of total expenses. Hoole’s figures differ in part from Greg’s because they were based on an urban Manchester steam-powered mill (rather than a water-powered mill). The former incurred specific variable expenses, such as coal costs. Even using these relatively conservative assumptions, Hoole was able to demonstrate that the loss in wages due to shortened working hours across the whole industry would be ‘at least £1,000,000 per annum’ on a loss of output ‘at the disposal of our foreign competitors’ of 40,000,000lbs. The operatives understood this, according to Hoole, and for that reason opposed restrictions on working time (BPP, 1833: pp.729-730). Hoole and Greg’s evidence demonstrated a point which recurred consistently throughout the debates: that high fixed costs would lead to disproportionate reductions in wages and damage the profits of the mill owners in the event of further restrictions on working hours.

¹⁸ See also Marx (1976, p.528, notes 64 and 70), quoting authorities from the 1860s (The Times, 26th Nov., 1862; BPP, 1862, 31st Oct., p.19)

Greg was also aware of counter arguments about the impact of shorter working hours, mainly from Cowell, based on the benefits of new technology. He discounted the effects of increased efficiency from technical improvements, for example extensions to spinning mule width, arguing that costs tended to rise in proportion (Greg, 1837: pp.101-102).¹⁹ Further, he argued that competition prevented price rises being passed onto consumers, suggesting that an increased price was attended by diminished consumption in a greater ratio than the rise of price (BPP, 1833: p.785). These arguments stressing the elasticity of demand and fragility of profit helped Greg underpin his case that the Bill presented a serious threat to his business and were further supported by arguments about the cost of production that continued into the 1840s.

Although biased, Greg's arguments were effective, and his evidence was crucial to the outcome in terms of the 1833 Act. Tufnell, as chair of one of the FIC committees for Lancashire, used Greg's business accounts to support his own conclusion that restrictions on hours would undermine the industry. Tufnell (BPP, 1834: pp.186) cited the accounts of an anonymous business (1829-1833) as evidence of low profitability in the trade as a whole, in concluding on the dangers of restrictions on hours. On checking the archives, the figures for 1829-1831 correspond exactly to those in the private ledgers of Quarry Bank Mill.²⁰ The evidence therefore

¹⁹ Other witnesses (Hall, Rowbotham and Gaskell) supported the view that newer machines would mitigate the consequences of reduced hours (BPP, 1833: p.678).

²⁰ GP, Partnership Book. Other features described by Tufnell correspond to those of Quarry Bank: total capital £40,000, numbers employed, use of throstle spindles (BPP, 1834, p.490).

shows that Greg and Tufnell not only shared the same view, but also, by sharing private accounting information, were in close collusion.

Moreover, the accounting evidence used was highly selective. For example Greg could have shown Tufnell the accounts of his Bury Mill, which was much more profitable than Quarry Bank in the corresponding period, or indeed the consolidated accounts of all the mills owned by the family partnership, which showed their vast accumulated wealth.²¹ Table 2 compares the figures cited by Tufnell for Quarry Bank with the profits from other Greg family owned mills. As the table shows, absolute profits and net returns on capital were higher at Caton and much higher at Lancaster and Bury than at Quarry Bank.

Table 2 about here

The marginal profits shown by Tufnell in his representation of the Quarry Bank accounts were after deduction of all expenses. These included, legitimately perhaps, given the remote rural location of the mill, expenses for mill cottages. Significant rent and interest charges were also deducted. However, these charges were set by the partnership, and appropriated by the partners as profits in their capital accounts, even though the accounts also added them into production cost.²²

Figure 1 about here

²¹ The total invested wealth of the Greg family in 1824 across a portfolio of assets including cotton mills was £223,000 (GP, Statement of assets and liabilities).

²² GP, Partnership Book.

Given the evident subjectivity of depreciation, rent and interest, consistency is required for comparison. In Figure 1, the seven years' returns prior to the FIC are recalculated using the partnership books of account²³ in conjunction with the net profit figures provided in Tufnell's account (BPP: 1834, p.490) but applying the depreciation policy that Greg told the committee was used, notwithstanding the absence of such charges from the actual accounts. Such adjustments are required due to the discrepancy between the business accounts in the archives and those presented in Parliament. Tufnell noted the rent was reduced from an annual equivalent of £4,096 to £2,500 in the accounts of September 1832 (BPP: 1834, p.490). However, before that date, the net profit figures used by Tufnell were arrived at after the deduction of the much higher rent charges previously applied. Figure 1 therefore shows rates of profit calculated using consistent charges for rent and depreciation, and shows that in general profits were higher than the atypical year of 1832, which was a relatively low point in the trade cycle. In other words, Greg's evidence was characterized by omission, and highly selective use of accounting data. Nonetheless, the choice of the 1832 accounts, for Quarry Bank only, proved influential in assisting the committee chair's decision to reject the proposal for the ten hour day. Although Cowell made coherent counter-arguments, these were undermined by the STM's non-participation in the FIC. As a consequence, collusion between the LFL and regulator based around a single accounting narrative, marked a significant defeat for the STM.

The behaviour of the LFL in securing sympathetic legislation in the 1833 Act is reflective of the common case of regulatory capture and bargaining dominance

²³ GP, Partnership Book.

based on a single accounting narrative. Crucial to this outcome was access to the business accounts of the leading advocates. Such evidence could be manipulated through collusion with regulators and counter narratives thereby marginalized. The FIC Report referred directly to the financial arguments of the LFL mill owners in summarizing its findings.²⁴ Notwithstanding wider factionalism, the monopolization of accounting information by the LFL allowed a one-sided, pessimistic, view of costs and profits to be presented to significant effect, sufficient to prevent decisive regulatory change. The 1833 Act appeared therefore as a triumph for the LFL predicated on the 'class belongingness' of accounting information.

4.2. STM: Motivations and accounting in the 1840s debates

The STM regarded the 1833 Act as a temporary setback. Although the Act instituted the factory inspection regime and limited the employment of children aged 9 to 13, the universal ten hour day remained unrealized, and they continued their campaign accordingly. In this new phase, the STM made increasing and effective use of accounting to counter the LFL arguments that had been so influential in framing the 1833 Act.

Indeed, the STM had good reasons, based on ideology and economic circumstances, to argue that potential legislation would not increase costs or damage profits. Kenworthy represented a typical advocate for the STM, being based in the weaving district of Blackburn, in an innovative steam-powered firm, and forming part of a circle of Tory Anglicans (Lewis, 2002: pp.276, 389). Fielden, by contrast, was a utilitarian and radical and shared William Cobbett's hatred of the political economists

²⁴ BPP (1833), summary report, pp.43, 45-46.

(Stephen, 1912: p.174), albeit for different reasons than the Ashleyite Tories (Croft, 1994: p.9) and Anglican Tories like Kenworthy. He was strongly influenced by Robert Owen's lecturing tours of the North in 1836 and 1837 on the theme of social co-operation (Royle, 1974: p.48), and had been persuaded that reduced hours could be worked such that the employer could still make a handsome profit (Croft, 1994: pp.24, 35).

Fielden and Kenworthy, like Greg and Ashworth, had major issues with labour and capital resources, but with different consequences. Power weaving looms had lagged the automation of spinning, but by 1826 their diffusion was regarded by many as inevitable, and as introductions accelerated and handloom weavers were displaced, there was a wave of rioting and machine breaking in the weaving districts (Bythell, 1969: p.75). The Todmorden area, which Fielden's businesses increasingly dominated, was highly dependent on weaving (Croft, 1994: p.37) and in the 1820s rapid displacement of hand loom weavers went hand in hand with Fielden's substantial investment in power looms. There were major riots in 1826 and attacks on machinery were a real concern (Croft, 1994: pp.8-9). After Fielden's Waterside mill was established in 1829 (Anon, 1884: p.420), he was forced to turn away scores of weavers each week looking for work.

Fielden relied on Kenworthy's accounting data to present the STM case in parliament in 1844 and, in certain crucial respects, their circumstances were similar. Blackburn, like Todmorden, was a weaving centre also threatened with social disorder arising from the displacement of the handloom weavers. Kenworthy was a noted inventor of a loom automation feature, condemned as a 'local evil,' likely to incur 'machine breakers wrath' (MacLeod, 2007: p.159). He therefore believed that innovation and invention would stimulate supply, but because working hours were

long, had instead only increased drudgery, and as a result the 'lives of inventors have been endangered in many instances' (Kenworthy, 1842: p.15). The problems of surplus labour and instability faced by Fielden and Kenworthy contrasted therefore with the labour shortages and contained social stability at the Quarry Bank and the Ashworth mills.

Reflecting these material circumstances in terms of labour availability and labour process, Fielden (1836: p.64) thus argued that a Ten Hours bill would create employment for handloom weavers without significant loss of profit. Like Owen (Parker, 2014: p.640), the Fielden mills already had a long tradition of working ten hour days (Fielden, 1836: p.32). Legislated shorter time, Fielden argued, would overcome another problem for the industry: increases in price due to fixed raw cotton supply from America against increased consumption of yarn in England with associated higher cost, speculative activity and market disequilibrium (Fielden, 1836: pp.57-58, 59-64).

To summarize, as the STM's business leaders, Kenworthy and Fielden both wanted the benefits of technical progress, but feared technological unemployment and its social consequences. Their ideologies made legislation acceptable, as they believed it would create social stability in their localities and equilibrium in markets. Their attitude to regulation and attachment to a progressive social movement for shorter hours therefore reflected a desire for a 'level playing field' such that competitors could be forced to adopt similar employment practices and thereby not undermine market equilibrium. For these reasons, the STM stressed the low proportion of fixed costs to the total costs of production and the consequential marginal effects of legislation on costs and profits in the 1842-1844 debates on further factory reform. The involvement of these influential entrepreneurs on the side of the STM meant that

the LFL faction now lost the monopoly of accounting information that had been decisive in 1833. The STM now used its own figures to significant effect on the ensuing debates. Figures given by Ashley in his speech of 1844 and implied by Kenworthy in his 1842 pamphlet²⁵ were important ingredients of this counter-narrative. These suggested an average fixed cost of 0.297d per lb. In contrast the equivalent number for the LFL arguments was 1.001d per lb (table 1). An important reason for the difference was the STM's argument that depreciation, and interest on the floating part of capital, should be costs that varied with production, and according to this assumption should be left out of the calculation altogether.²⁶ Fielden (BPP, 1844: q.1236), also using evidence from Kenworthy's (1842) pamphlet, argued, as Cowell had done in the 1833 debates, that interest on the floating capital was a variable cost of production, since the reduced output following from a shorter working week would lead to a corresponding reduction in that part of the capital. Birley and Hoole's 1833 evidence was consistent with such an interpretation and only included rent, rates, insurance and fixed salaries in their fixed cost per lb figure of 1.25d, ignoring depreciation altogether (table 1).

Kenworthy's evidence now suggested that fixed costs were lower than anything implied by the LFL previously. In contrast to their earlier evidence, he argued that all non-wage expenses totalled 1.25d per lb, which may have equally been

²⁵ Law (1995: pp.63-64) suggests that, based on his investigation of Fielden's accounts, Kenworthy's figures were probably more reliable than Ashley's.

²⁶ Ashley (1844, p.7) used pro-rata reductions in wear and tear allowance in tabulations; Kenworthy (1842: p.12): 'amount of wear and tear... will be lessened in the same proportion', also cited in a speech by Fielden, BPP (1844: q.1236).

an understatement. The implied fixed costs element of these expenses was even less, according to Kenworthy's scenario. On the basis of these assumptions, he went on to argue that the net effect of reducing production hours by the fraction of 60/69 would be to raise unit costs in spinning, including labour, by 3/8d per lb. To be consistent with this outcome and stated costs, the fixed cost element of the total non-raw material cost per lb would be 0.300d per lb (table 1). Ashley's assumption, that the only truly fixed cost was interest on fixed capital, produced a similar result (0.293d per lb, table 1), implying the STM's lobbying position was to argue essentially that almost all costs were variable. In parliament Fielden (BPP, 1844: q.1236) used Kenworthy's figures, which also showed the increase in the cost of woven cloth amounted to 1/4d per yard to undermine the pessimistic forecasts of the LFL mill owners of the consequences of legislation: 'Are we so near ruin, that an advance of one farthing per yard on our cotton cloth would irrevocably seal our fate? If so, how important an element of national prosperity, is the labour of these poor people! How praiseworthy is their exemplary patience under their complicated sufferings!' Fielden thus used Kenworthy's accounting evidence to great polemical effect.

In summary, as the data in table 1 show, the STM and LFL adopted very different interpretations of cost behaviour in making their arguments about regulation. Neither is likely to represent an entirely neutral perspective, and it is therefore worth considering if either can be validated using additional evidence. Two sources are used for this purpose: first, the calculations of the factory inspector, Horner, and second, the detailed accounts and actual costs of one of the mills that featured in the dispute.

Horner, whose role as chief Factory Inspector required a substantial degree of public neutrality, also provided him with direct access to business level accounting information. To begin with, he was concerned that a lack of transparency made

enforcement difficult, for example falsification of age in the records of child workers (Wing, 1837, Henriques, 1971). Horner had written to Senior:

‘The statements of people engaged in trade, as to their profits, especially where a complicated process of manufacture makes it difficult for us to verify them, must be received with great caution: their object always is to show for how little they work. They take a large margin, in their estimates of the cost of production, for tear and wear, of machinery, &c. bad debts, and sundry possible contingencies; and they prudently take care to keep themselves quite safe in their calculations’ (Horner, 1837: pp.31-32).

Whilst making such criticisms, Horner carried out his role, with fairness and rigour, strongly defending the autonomy of the process (Martin, 1969: pp.429-430). To this end, he accumulated accounting evidence to examine mill owners’ claims in detail. Examples are shown in table 1. His calculations suggested a fixed cost figure closer to 1d per lb, for the two most comparable mills (shown in table 1; 1.254d and 0.763d respectively). As table 1 shows, his figures were much nearer to the STM than the LFL. As a result, Horner believed that profits were higher and costs lower than the LFL claimed, and that legislation would not damage profits, as workers would be more productive. Consequently, Horner gradually became more convinced of the STM case. He took an interest in experiments at Preston, which showed that changes in hours did not result in output reductions (Nyland, 1989: p.10). The results influenced him to work alongside Ashley in 1844 for the new Ten Hours Bill (Henriques, 1971: p.16). Accounting evidence in the eyes of an objective observer like Horner, who was also under pressure to be seen to be objective, was therefore crucial in undermining the case against further regulation.

Horner’s calculations lend further credibility to the STM case, but what of the

accuracy of the LFL counter claims based on their own accounts? The Ashworth brothers' calculations were made on a separate sheet in one of their ledgers and were intended as a response to Kenworthy's (1842) pamphlet (AP, Quarterly Stock Accounts, 'Calculations for Ten Hours Bill', p.111; Kenworthy, 1842: pp.11-12). The striking feature of the LFL evidence was again the high level of fixed cost in relation to output and the assumption that all the costs specified, including interest and depreciation, remained fixed for scenarios showing the effects of Ashley's Bill. The two calculations were based on average fixed costs taken from survey returns of large manufacturers and included in a 'published address of manufacturers', and from Ashworth's own accounts for New Eagley mill (shown in the ledger as the 'Old Mill'). According to these calculations, fixed costs were the equivalent of 3.887d per lb. Using table 1 for comparison, the STM figure was 0.297d and Horner's figure was 1.001d.

In view of the differences between the STM and LFL groups' figures, investigating the costs listed in the Ashworth archives provides a possible resolution. In their private ledgers, the Ashworth accounts provided a wealth of detailed expenditure analysis at high levels of disaggregation, so that a comparison can be made between what would normally be considered to be fixed and variable costs and the claims made by the competing interests, including the Ashworths themselves. The document allows a more detailed level of analysis in terms of cost breakdown than any of the publicly available calculations used in the debates.

Some guidance can be gained from the treatment of costs in accounts of cotton mills and other businesses during this period. Overheads included 'Wear and tear, rent etc.' at the Cambrian Smelting and Coal Company in 1822 (Jones, 1985: p.104). In cotton textiles, at 'Charlton' Mills, general expenses included cost of 'containers,

carting, packing, advertising, legal expenses, taxes and London sales allowance' (Stone, 1973: p.77). Chorlton Mills general expenses for 1840 consisted of depreciation, interest, bad debts and selling expenses, carting, packing, rates and taxes.²⁷ At Greg's Quarry Bank Mill contingent expenses included wages and 'sundry invoices', to which interest, rent, selling expenses, bad debts and discounts were added, along with charges for the school and chapel.²⁸ From March 1825 onwards the format changed such that wages, interest on capital, rent, sundries and selling expenses were again itemized, but also calculated on a cost per lb basis. Identifying fixed expenses from within these groupings would not be easy, and, in a separate calculation by Greg in 1831, all costs except wages were treated as fixed.²⁹

Using these examples of typical industry practice at the time to inform our judgements, the result of our analysis of the Ashworth accounts is also shown in table 1, based on the following assumptions. All costs associated with goods in (e.g. cotton carriage and brokerage) and production processes (carding through to spinning) are assumed to be volume-based and therefore variable costs. Because the Ashworth factories paid workers by the piece (Huberman, 1996: p.90), production wages can be accurately classified as costs varying directly with output. Overlookers (supervisors), warehouse costs, salaries and travelling, and engineers' salaries, although probably involving some variable element, are assumed to be 100% fixed. Interest on floating

²⁷ Chorlton Mills, Birley and Co. Mill ledger, p.147. Stone (1973) and the archive index refer to 'Charlton' but detailed analysis of the archive suggests the correct attribution is Chorlton.

²⁸ GP, Partnership accounts, 1824-1825.

²⁹ GP, Statement of sunk and floating capital

capital and depreciation on machinery is assumed to be variable and interest on fixed capital and depreciation on land and buildings assumed fixed. On this basis, the Ashworth accounts tend to confirm Horner's view, with annual fixed cost of just over £2,500, the equivalent of 1.856 per lb, much less than the £4,872 stated in the 'Calculations for a Ten Hours Bill' document and the £6,334 per year suggested by Boyson.³⁰ These detailed figures provide greater accuracy when compared with the aggregations into more generic cost categories used in the parliamentary debates by either side.³¹ Evidence from Ashworth's own accounts therefore seems to support Fielden's (BPP, 1844: q.1236) assertion of marginal impacts on unit production costs.

Although the effect on production cost was small, the potential consequence for profit was larger, and may explain the behaviour of the LFL mill owners. Tufnell had used his analysis of Quarry Bank to make the point about profit variability (BPP, 1834: p.490). Based on the figures in the Ashworth accounts, a reduction of working time from 69 to 60 hours (13.0%), even with the relatively low proportions of fixed costs calculated in table 1, would still result in a 25.1% reduction in profit.³² In other

³⁰ Boyson (1970: p.59) refers to a calculation by Henry Ashworth, showing that overheads were such in a 52,000 spindle mill that it did not pay to stop it until losses exceeded £6,334 a year. See also BPP (1846: pp.336-337).

³¹ Excluding labour and raw material, Ashley and Greg used only four cost categories (Ashley, 1844: p.9; BPP 1833, p.784).

³² The categories of fixed cost referred to in table 1 amount to 1.856d per lb. The figure corresponds to an annual equivalent total fixed cost of £2,502 and an output of 323,664lbs of yarn yielding a net profit of £2,712. If output is reduced by the fraction

words, risk, arising from the operating leverage of fixed capital investment was as important, if not more important, than the actual levels of cost and profit, and may have coloured the attitudes of the LFL leaders accordingly.

In summary, the historical records show the crucial role of accounting evidence in the second phase of the debates, in particular how the STM was able to use firm level access to accounting information to undermine the dominance of the LFL after 1833. The focus of the challenge was cost behaviour, and views on the subject were strongly affected by variations in the cost and cost variability impacts of technology and labour process, which explained the fractionalization of capital. Such fractionalization created the opportunity for the effective use of accounting information as a counter-narrative to the high fixed cost story that had been established unchallenged in 1833, adding an economic case to the moral arguments previously made in isolation. A convincing case based on a higher variable cost proportion demonstrated that substantial costs could be avoided if restrictions on working time were imposed and that sufficient profit would be protected to justify further innovation and investment. As it turned out, the final passage of the Act in 1847 and the ten hour restriction did not depress profit rates and the continued expansion of the cotton industry thereafter mitigated downside risk and confirmed the empirical truth of the STM position, whilst ensuring the fears of the LFL were unrealized.³³

60/69 (13.0%), reflecting the proposed reduction in hours, the profit falls to £2,032, or a reduction of 25.1% (AP, Quarterly Stock Book, November 1845).

³³ Return on capital for sub-samples of cotton firms was 6.575% in the period 1836-1847 compared to 11.848% in the period 1849-1860.

5. Discussion: The uses and abuses of accounting

In summary, both sides of the factory reform debate had access to accounting information and clearly understood the nature and scale of fixed cost and how it affected projected profit. These understandings are manifested in the significance of the differences in estimates made and the corresponding convenience of such estimates to the broader arguments of either side. The debates in 1833 and the 1840s were both characterized by the fractionalization of mill owning capital, but only in the 1840s was accounting used effectively to construct a counter-narrative.

Accounting was influential in framing the 1833 Act, albeit on the basis of impressionistic and monopolistic use of the data by the LFL. Some, like Greg, made effective use of accounting as publicity by selecting helpful interpretations and suppressing others. The counter arguments by Cowell were ignored by the regulators but not in the wider debate, and these accounting interpretations of production costs strongly informed subsequent arguments about the Act's inadequacies, leading to the subsequent passing of the 1847 Act and the effective 'victory' of the STM.

The tendency to suggest higher fixed cost or vice versa at all stages of the debates was primarily a function of responses to changes in technology and its relationship to local employment conditions. The LFL, who stressed low profits and overstated costs, were motivated by the threat of foreign competition, perceived business risk and shortages of skilled labour. The STM, who understated costs, were motivated by threats to innovation, risk arising from market disequilibrium, and social unrest arising from surplus labour. In turn, these production and labour process related pressures were reinforced by the ideological positions adopted on either side of the debate. The examples of the selective use and subjective interpretations of accounting

evidence which we have uncovered in relation to the factory reform debate thus provide an explanation of lobbying behaviour that goes beyond the binary distinctions, in terms of religion and geographical location, offered thus far in the wider social and economic history literature (Marvel, 1977; Nardinelli, 1985). The manner in which accounting information was used and presented by both sides of this 19th century social reform conflict, in the context of the wider ideology and institutions forming the background of the debate, supports the contention of Gallhofer and Haslam (2006) that accounting can be decoded in different ways to align with the wider objectives of a particular lobby group, and enhances the evidence base of examples of such use of accounting information during the long nineteenth century.

As the evidence makes clear, accounting was characterized more by the ‘Janus face’ notion of Catchpole et al. (2004) than by Brief’s (1965) ‘accounting error’. Both sides of the factory reform debate had good understanding of cost classification and behaviour and realized that the outcome was highly dependent on their associated assumptions. Because of the presence of mill owners on both sides of the debate, after 1833, neither side could monopolize the accounting function as a source of information. The likelihood is, therefore, that true fixed cost of production lay somewhere in between the protagonists’ claims.

The evidence does suggest, however, that the good sense arguments of the STM were more accurate, and that its leaders had less pressure or incentive to exaggerate their claims. The epithet earned by Fielden, ‘honest John’ (Stephen, 1912: 174), would appear to be justified, or at least not compromised, by his use of accounting. Horner’s Benthamite agenda based on greater state-driven transparency through inspection, including scrutiny of accounts, underpinned the STM’s position.

In particular, he strived for rigorous and systematic comparability of mill costs, such that he could use his position to obtain empirical evidence to independently scrutinize the claims of the LFL. Indeed, Horner's role in this episode is comparable to Bentham's earlier advocacy of accounting, along the lines suggested by Gallhofer and Haslam (1994).

As a consequence, the LFL's accounting arguments were insufficient to permanently stem the regulatory tide. Theoretically, the claim of the LFL rested in its most extreme form of Senior's flawed notion of the 'last hour', a world in which all costs were fixed costs. In effect, substantial proportions of cotton textile mill running costs at this time were variable. The LFL mills faced greater sunk costs, in part as a consequence of their investment in factory communities, which in turn reflected their dependence on child labour.

Arguably there was more at stake for the operatives in the STM, as long hours threatened their personal welfare. Although the STM mill owners shared these concerns, their motives were, like the LFL, grounded in their underlying business circumstances, reflected in their use of accounting evidence. A crucial element of the STM's strategy, articulated by Fielden, was that because fixed cost was so insignificant, and the threat to profit of shorter hours correspondingly reduced, the moral gains from regulated hours were all the more significant.

To summarize the accounting evidence, the material resources of the LFL and STM mill owners' businesses created the opportunity to use accounting to support ideologies that in turn promoted a suitable regulatory outcome. The successful use of accounts in 1833 by the LFL staved off the ten hour day for fourteen years, but the subsequent mobilization of accounts by the STM and the new inspection regime led to its final realization. It is unlikely that this success would have been achieved as

quickly or with the same degree by relying on moral arguments alone, without the use of accounting evidence by the STM after 1833.

The case also illustrates some moral arguments, which have wider resonances. The LFL mill owners' provision of benefits for operatives such as housing and education, however basic, was designed to head off the threat of government factory inspection. In the general case, there would be a corresponding incentive, particularly in highly competitive industries, to ensure that similar practices were adopted by the whole industry (Jenkins, 2001). However, this would only be the case where such provision is by a leading firm based on genuine reputation, and there is little evidence that the LFL made any attempt to campaign for wider industry adoption of their business methods. Indeed, as Burowoy's (1984, pp.253-260) comparative analysis illustrates, the 'company state' model (analogous to the Quarry Bank Mill community) declined during the first half of the nineteenth century. The outcome was unsurprising given that the motivation of the LFL leaders was primarily to avoid legislative interference in what they considered matters of their purely individual discretion.

These attitudes have more recent parallels. Jenkins (2001: pp.8-9), referring to large MNCs, suggests that they may adopt voluntary codes of conduct to pre-empt external regulatory pressure. Jenkins refers to the examples of the US textile industry's consideration of the Clean Clothes Campaign³⁴ as a means of potentially

³⁴ These principles were developed from the Clean Clothes Campaign, which originated in the Netherlands in 1992 and spread rapidly in Europe, being subsequently adopted by International Labour Organization (Ascoly and Zeldenrust, 2013).

avoiding intrusive regulatory scrutiny and the more general adoption by US firms of the ‘Sullivan Principles’ as a method of doing business in apartheid South Africa without being forced into a boycott. The motivations here, of pre-emption, correspond closely to those of the LFL mill owners.

The enduring division of opinion within the industry also explains why the progressive employers attached to the STM chose not to advocate a voluntary code. Notwithstanding the voluntary adoption of shorter hours in his factories, Fielden (1836) strongly believed that regulation was the only way to achieve a uniform ethical outcome and a ‘level playing field’ for competing firms, and the STM accounting calculations showed that this was consistent with a reasonable profit. Part of the motivation was thus to avoid ethical firms being undercut by competitors.

Like the STM, examples of other social movements show that a section of the elite might have competitive reasons for offering support. There are similarities with the campaign to abolish slavery. In Britain, this notably involved some members of the Greg family, even though much of their earlier fortune had been made in the plantations (Seekers, 2013, ch.3). The irony was not lost on campaigners for shorter hours in cotton factories, like Sadler and Oastler, who used the notion of ‘white slavery’ to expose the consequences of long working hours in the cotton mills (Waller, 2005: pp.8, 292). Living wage campaigns that emerged in a number of US cities in the 1990s built coalitions that also included some business owners who favoured paying good wages and did not wish to be undercut by less scrupulous competitors (Jenkins, 2001; Luce 2002). In South Africa during apartheid, assistance given to poor whites and Afrikaner capital underpinned a new business elite in the inter-war years (Clarke, 1978; Uppal 2014). Subsequently, as the economic costs of preserving apartheid began to hinder capital accumulation, white national and

international capital negotiated an alliance with the African National Congress (ANC) leadership (Iheduru, 2004), and thereby using accounting calculations to impose a privatization agenda, whilst ostensibly promoting social progress through Black Economic Empowerment, and to undermine the case for divestment from apartheid (Catchpole and Cooper, 1999; Neu and Taylor, 1996).

In summary, although there are circumstances where fractions of capital have aligned with progressive causes, in some cases accounting has been being used to frustrate their wider objectives whilst offering partial concessions. The case of the STM illustrates how an alliance with a fraction of capital afforded privileged access to accounting information, which, when used effectively to construct a counter-narrative, could be instrumental in promoting the social movement's ultimate success. As the contrasting campaigns of 1833 and the 1840s reveal, fractionalization in itself was insufficient to create the conditions for such success.

6. Conclusions

Divisions in the elite resulted in differential use and interpretation of accounting information as a function of the strategies and associated material interests of the relevant fractions of capital. In the factory reform debates, the adopted ideological positions of the fractions also underpinned their use of accounting, which played a pivotal role in the wider debates. The consequence was that the narrative of long working hours being essential to profits, backed by ideological *laissez faire*, was challenged by the STM on the basis of contrary accounting evidence.

Counterfactually, had the industry been organized around identical technologies and labour process, rather than splitting into fractions, the cotton capitalists could have acted as a single class interest, using a unified accounting

narrative, and the outcome may well have been different. Similarly, had the STM not used the accounting ‘Trojan horse’ of sympathetic mill owners to establish a competing accounting narrative, and relied solely on moral force arguments, they might have been less persuasive. Under these circumstances, the LFL’s resistance to regulation based on exaggerated claims about fixed costs would have been more effective through control of the production and associated narrative of accounting information. The differing outcomes in 1833 and the 1840s tend to support this view. The LFL was allowed to monopolize the accounting evidence in 1833, but this was decisively contested in the 1840s by the STM.

The example of factory reform illustrates that ‘class belongingness’ of accounting, whilst an important tool for the emasculation of labour in the general and in other specific cases (Catchpole and Smyth, 2016), can be suspended, for material reasons based on sectional divisions within capital. Ideology is nonetheless crucial, so that whilst utilitarian arguments were used to justify regulation supported by one set of financial claims, laissez faire was used to resist it, supported by a different set of financial claims. As the evidence shows, the former were nearer the truth in accounting terms and the consequences were the defeat of laissez faire and the transformation of the demands of a social movement into an evolving, and contested, structure of regulation.

Strong rhetoric was used on both sides, particularly on the moral and health consequences of factory work, which has been dealt with in the general and social history literature. The economic arguments, which drew extensively on accounting evidence, have been dealt with in detail above, but without embracing full analyses of the rhetorical discourses associated with each side. These could be the subjects of further investigation.

The role of accounting in debates over the length of the working day and the effects on profitability in other contexts is an area for further research. Today, as in the nineteenth century, businesses differ in terms of their orientation to capital-intensive fixed cost investment or cheap labour based sweatshop production. In an age of reducing regulation and rising inequality, these variables assume greater significance, which accounting analysis can powerfully illuminate, to the extent that the class belongingness of accounting and the associated bias can be overcome.

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Table 1: Representations of fixed cost in the Factory Act debates

	Fixed cost d/lb	Costs included
<u>1833</u>		
Anti-regulation		
Birley and Hoole (FIC)	1.250	Rent, rates, insurance, fixed salaries
Greg (FIC)	1.782	Rent, rates, taxes, interest on capital, sinking fund, contingencies of carriage, coal &c
Average	1.516	
<hr/>		
<u>1842-1844</u>		
Pro-regulation		
Ashley (speech)	0.293	Interest on fixed capital
Kenworthy (pamphlet)	0.300	Expenses, interest of capital, wear and tear, depreciation of machinery (total 1.25d), fixed proportion corresponds to proportion of establishment costs that would need to be fixed for a 3/8d increase in total cost combined with a reduction in output in the proportion 60/69
Average	0.297	
Horner		
First example (report), cotton spinning mill at Manchester **	1.254	Rent, taxes, rates, interest on fixed capital, depreciation of machinery, fuel to maintain proper temperature, wages and salaries of engine man, stoker, managers clerks & others not discharged during stoppages, watchman and labourer, insurance, interest on floating capital not invested, interest on stock of cotton, yarn and materials
Fourth example (report), a cotton spinning mill in Bolton**	0.763	Interest on buildings, engines, boilers and machinery, deterioration of the same, manager overlookers and bookkeepers salaries, rates, taxes, insurance.
	1.001	
Anti-regulation		
Ashworth (ledger)	3.781	Taxes, insurance, salaried servants, wear and tear, interest on capital
Address of Manufacturers (ledger)	3.993	‘Fixed charges taken on the usual authority’*
Average	3.887	
Other		
Ashworth accounts (ledger) ***	1.856	Rents, rates and taxes, depreciation, interest on fixed capital, insurance, (50% of: engineers wages, salaries and travelling expenses, overlookers and warehouse, incidental and stable expenses).

Sources: Birley and Hoole, BPP (1833), 729-730 [D1]; Greg BPP (1833), 782-784 [D2]; Greg accounts estimate, GP Partnership Book; Ashley (1844); Kenworthy (1842) 11-12; Ashworth, AP, Quarterly Stock Book, ‘Old Mill’ calculations; Address of Manufacturers, AP, Quarterly Stock Book, ‘Calculations for a ten hours bill’; Horner, BPP 1842, pp.79-82; Ashworth accounts, AP, Quarterly Stock Book, November 1845.

Notes: * Component elements not specified. For consistency with the source document cost per lb is based on dividing fixed charges by output in lbs for a £100,000 mill producing medium yarn counts. ** The first and fourth examples were used because they were spinning only establishments, therefore corresponding more closely to the comparative examples in the table and had sufficient data. *** The November 1845 quarter is chosen because it appears opposite the Kenworthy calculations in the ledger.

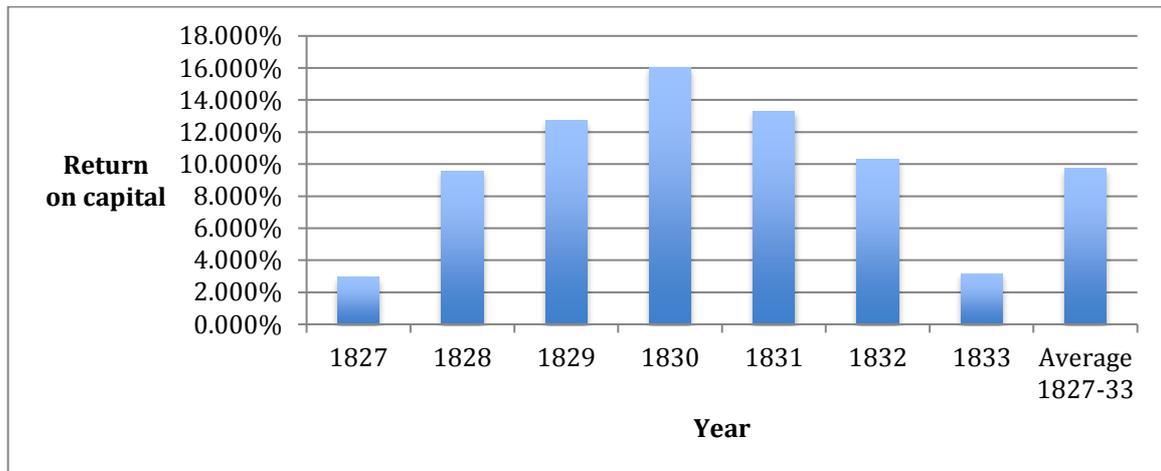
Table 2: Net profits and returns at Greg family mills, 1829-1833

Year		Quarry Bank	Caton*	Lancaster	Bury
		£	£	£	£
1829	March	-661		3396	2041
	September	147		-350	1578
		-514	1666	3046	3619
1830	March	113		-167	2301
	September	161		1241	2591
		274	-2613	1074	4892
1831	March	-406		2624	3695
	September	-1589		4076	4839
		-1995	2340	6700	8534
1832	March	414		3916	4370
	September	-1012		1619	2142
		-598	2034	5535	6512
1833	March	-1688	1159.5	473	908
Average net profit		-1004.67	1019.22	3739.56	5436.67
Total capital		44000	17000	45000	62000
Average net return on capital		-2.28%	6.00%	8.31%	8.77%

Sources: Quarry Bank figures from Tufnell, BPP 1834, p.490; Caton, Lancaster and Bury from GP, Partnership Accounts, Caton mill, 1819-1841; Capital taken from FIC, 1833, p.785 and GP, Statement of sunk and floating capital.

Notes: *Annual data only available for Caton mill.

Figure 1
Return on capital: Quarry Bank Mill



Sources: 1827-1833 and average 1827-33 calculated from GP Partnership book, and Tufnell, BPP 1834: 490.

Note: Return on capital calculated using net profit plus interest and rent minus depreciation divided by total assets minus third party liabilities.