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Some Consequences of the Early Twentieth Century
Divorce of Ownership from Control

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Abstract

Because ownership was already more divorced from control in the largest stock market of 1911 (London) than in the largest stock market of 1995 (New York), the consequences for the economy, for good or ill, could have been considerable. Using a large sample of quoted companies with capital of £1 million or more, we show that this separation did not generally operate against shareholders' interests, despite the very substantial potential for agency problems. More directors were apparently preferable to fewer over a considerable range, as far as their influence on company share price and return on equity was concerned: company directors were not simply ornamental. A greater number of shareholders was more in shareholders' interest than a smaller, despite the enhanced difficulties of coordinating shareholder 'voice'. A larger share of votes controlled by the Board combined with greater Board share ownership was also on average consistent with a greater return on equity. Corporate governance thus appears to have been well adapted to the circumstances of the Edwardian company capital market. Hence the reduction in the cost of capital for such a large proportion of British business conferred a substantial advantage on the economy.

Some Consequences of the Early Twentieth Century Divorce of Ownership from Control

'..Margaret, now of age, was taking her money out of the old safe investments and putting it into Foreign Things, which always smash... Her own fortune was in Home Rails and most ardently did she beg her niece to imitate her...Margaret, out of politeness, invested a few hundreds in the Nottingham and Derby Railway, and though the Foreign Things did admirably and the Nottingham and Derby declined with the steady dignity of which only Home Rails were capable, Mrs Munt never ceased to rejoice...'

Howards End E M Forster

The fictional Mrs Munt and Margaret Schlegel were representative of the large number of relatively small scale and fairly passive shareholders of late Victorian and Edwardian Britain. Such people were part cause and part consequence of the number and value of firms quoted on the London stock exchange (LSE) exceeding those of the US, France or Germany on their national exchanges in 1900[2] (Hannah 2007a; Hannah 2007b). There were more shareholders in the British companies than in those of similar size abroad, and the normal bargain size of the LSE, £100 ($500), was a fraction of that on the New York stock exchange ($10,000). Moreover UK equity markets were larger relative to GDP in 1913 than in 1980 (Rajan and Zingales 2003)[3]. Such facts suggest both that company ownership was more separated from control in Britain than elsewhere in the first decade of the twentieth century (Foreman-Peck and Hannah 2012)[4] and that these arrangements must have had a significant impact.

Opinion is divided about the possible consequences of this precocity for business performance. On the one hand, agency theorists (Berle and Means 1968, Morck, Shleifer and Vishny 1988) maintain that splitting management control from ownership will misdirect managerial effort. On the other, for Britain the separation has been represented as unleashing the management potential of a gene pool wider than that of successful firm founders and their descendants (Jeremy 1998 p171). From market competition could emerge optimum forms of corporate governance for 'divorced' management and adverse effects would be avoided (Demsetz and Lehn 1985; Demsetz and Villalonga 2001 for the later twentieth century

US). On this view investors and managers make rational trade-offs among the advantages and disadvantages of different governance regimes, reaching the most effective compromise.

Nonetheless faith in the equilibrating properties of markets is not sufficiently widespread to prevent controlling owners – when their control is inherited - being perceived as damagingly nepotistic, unwilling or unable to invest in scale, or otherwise inefficient (Perez-Gonzalez 2006, Chandler 1990). Competition may be too weak to eliminate such behaviour. The quality of regulation and the legal framework as well plays a vital role in determining the performance of the corporate economy. The present paper addresses how well the 1911 actual arrangements worked.

Because of liquidity advantages stock market finance was cheaper than that available to unlisted firms[5] and the high proportion of companies quoted on UK stock markets will therefore have helped British business. Yet there is a vast literature on the alleged shortcomings of late Victorian and Edwardian British business (Kennedy 1987; Chandler 1990; Johnson 2010), which might imply such advantages did not materialise, perhaps because of regulatory failure. To date there is little direct evidence connecting the British legal and regulatory regime before the First World War with business performance. Here we aim to fill this gap by linking aspects of corporate governance in Britain before the First World War with the performance of the largest publicly-quoted firms.

More detailed regulation is not necessarily better than less and actual business practice may be better or worse than prescribed by law. In an apparently unregulated market Campbell et al (2011) point out that regular payment of adequate dividends in an earlier period was sufficient to satisfy investors. Focussing on practice, the strategy of the present paper is to distinguish structural features of corporate governance – corporate type and voting rules – that were likely fixed at IPO, from more changeable variables with a potential impact on corporate performance: shareholding concentration, numbers of directors and directors' voting control/ shareholdings. Where there are only a few shareholders in a company the

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likelihood that they will be able to control aberrant behaviour by boards of directors or management is sometimes reckoned to be higher. The effectiveness of board appointments may be tested by whether more directors raise company performance or merely absorb company resources. The incentives for directors to interest themselves in companies might be measured by their shareholdings and their voting control conferred by these holdings.

The principal methodological issue in the exercise is whether any co-variation of these indicators with performance is to be expected if the institutions are working well, and whether any observed co-variation reflects a causal influence in a particular direction. A finding that more shareholders are associated with better financial outcomes might reflect shareholders' ability to identify a good investment, or the beneficial impact of a readier supply of equity capital, or both. Possibly even the first effect might be combined with, but dominate, an adverse impact of a larger shareholder body on company performance. The absence of any apparent consequence could be interpreted as reflecting company optimised equilibria; each company chooses corporate governance and associated variables, such as voting rules, so as to maximise performance (Demsetz and Villalonga 2001). Variations in performance between companies then reflect their fundamental potential, not differences in corporate governance.

A two stage approach is adopted to distinguish between these interpretations. First we find explanations for the corporate governance variables in terms of institutional or other arrangements that we can plausibly regard as fixed for the purposes of analysing behaviour in 1911. Some of these explanatory variables are then used as instruments for governance variables in corporate performance regressions. When they ensure that the assumptions underlying the estimation of the regression parameters are satisfied, we can accept these parameters as estimates of corporate governance impact upon performance. If we find no apparent effect we would still need to ascertain whether each firm has simply optimised in their unique different circumstances. One way of doing that is to distinguish behaviour under different

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effective regulatory regimes, allowing the identification of companies' common and different circumstances.

We find that companies whose governance rules were regulated at formation by Parliament indeed appeared to need more directors, consistent with regulation having an effect. But voting rules that restricted the chances of takeover had no measurable impact on any of the other tested corporate governance variables. Consistent with some qualitative strands in the literature, we establish that titled directors boosted numbers of shareholders - but did not <u>directly</u> affect corporate performance (one way or the other, any more than did directors without titles). A higher proportion of family directors neither raised the average large listed firm's directors' numbers, nor drew in more shareholders, but more such directors were associated with a greater concentration of shareholdings in directors' hands and increased board voting control.

Turning to the effectiveness of corporate governance, more directors were apparently preferable to fewer over a considerable range, as far as their influence on company share price and return on equity was concerned. This implies indirect benefits of regulation on corporate performance through numbers of directors. A greater number of shareholders was more in shareholders' interest than a smaller - despite the intensified difficulties of coordinating shareholder 'voice'. In combination with a larger share of capital in directors' ownership, a bigger share of votes controlled by the board was also on average consistent with a higher return on equity. Apparently then, the regulatory framework was well adjusted to the extreme divorce of ownership and control of the time. The additional capital-raising powers from access to stock market finance and the more professional management permitted by these less personal arrangements probably boosted the performance of the Edwardian British businesses. Cultural critiques (Wiener 1981, Johnson 2010, Chandler 1990, Cain and Hopkins 1993) may still be correct, but our quantified positive findings provide firmer evidence of a very different side to British business.

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Section 1 outlines the principles of corporate governance, some of the evidence for its recent effectiveness and the historical background. Section 2 summarises our data and sections 3 and 4 develop the models. The conclusions and implications are summarised in section 5.

1. Corporate Governance: theory and evidence

Corporate governance mattered because it affected the supply and management of the British capital stock. If the governance framework and its operation in 1911 were poor then this may explain any underperformance of the British economy. At first sight corporate governance is a distributional matter but it is also one that, by affecting incentives, influences the efficiency of resource use. Conversely if regulation seems to have been effective or unnecessary we have reason to suppose performance of the economy was likely to have been good relative to potential. Since about a quarter of the UK's capital stock was controlled by large quoted companies, the impact of good or bad corporate governance on national assets would have been substantial (Feinstein 1972; Feinstein and Pollard 1988, Foreman-Peck and Hannah 2011).

Good corporate governance should protect shareholders' interests. A public company is owned by shareholders who have control rights through their votes. The separation of ownership and control means that they delegate control to boards of directors who pass on much of it to management. Governance structures are required to resolve disagreements that were not anticipated when the terms and conditions of a company's charter (or statutory clauses or memorandum and articles of association) were agreed. The cost of considering all eventualities, and negotiating and specifying enforceable agreements, ensure that parties cannot and will not write comprehensive founding contracts. Governance structure therefore allocates residual rights of control over the firm's non-human assets (Hart 1995*)*. Such structures are invoked if there are agency problems that cannot be dealt with by contract. In short, corporate governance matters when contracts are incomplete and there are difficulties arising from delegation within the firm.

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That shareholders' interests needed protection had been frequently demonstrated . Statutory companies often had explicit reporting and voting rules and other obligations that were consolidated in the 1845 Companies Clauses Consolidation Acts (Napier 1995)[6]. With the Royal British Bank scandal of 1856 the state was obliged to attempt the reconciliation of the competing claims of shareholders and depositors and to legislate to prevent future frauds. Radical reforms were rejected in favour of measures designed to encourage shareholders to fulfil their regulatory duties (Taylor 2007). The original intention behind the 1856 Act had been to increase the disclosure obligations of joint stock companies, but Parliament actually reduced requirements to very little. The 1855 and 1856 Companies Acts were followed by many dramatic failures where shareholders' money was negligently or fraudulently lost. These company collapses under the newly liberalised regulation were centred in finance, insurance and banking because coal, iron and engineering, which needed physical industry-specific assets to be credible, were much more likely to be genuine enterprises (Shannon 1932, 1933; Cottrell 1980). The upside of liberalisation, however, is perhaps that the new permissive legislation boosted investment even though it lowered efficiency (Foreman-Peck 1990).

Continuing attempts to control moral hazard in corporate governance included the Act of 1890 that laid down that company officials guilty of misconduct, misinformation or trading while insolvent, could be required to pay full compensation to those affected. Yet the Comptroller-General for bankruptcies for 1895 lamented that this provision was not in general implemented He complained that many liquidations still occurred solely because joint stock companies provided the opportunity to defraud creditors (Foreman-Peck and Hannah 1999). The Companies Act 1900 strengthened the principle of compulsory corporate disclosure, for example by extending the requirement to publish balance sheets from statutory to registered companies. Consistent with either improving UK corporate governance or increasing moral pressure is the decline between 1892 and 1913 in losses from corporate winding up in the UK (Markham1995, pp. 229, 236, 244).

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Railways constituted a special corporate category for which user groups were especially powerful, triggering increasingly restrictive regulation, such as the 1894 Railway and Canal Traffic Act that shifted the burden of proof of discrimination in a rate change from the objector to the railways. Since the offence was not clearly defined, railways became committed to holding down rates under any circumstances (Foreman-Peck and Hannah 1999). The absence of either competitive pressures, well-designed regulatory pressures or the takeover bidding that drove contemporary American railway reorganisations plausibly had distinctively negative effects on profitability and efficiency in the UK (Foreman-Peck 1987; Foreman-Peck and Millward 1994; Mitchell et al 2011).

Then and now, widely dispersed shareholders have minimal incentives to monitor management, for monitoring is a public good: if one shareholder's scrutiny leads to improved company performance, all shareholders benefit. Given that monitoring is costly, each shareholder may free-ride in the hope that others will do the scrutinising. If all shareholders think the same way the result is that little checking will be undertaken. This could give rise to an agency problem: managers of a public company may pursue their own goals at the expense of the shareholders. They may overpay themselves and give themselves extravagant perks, or carry out unprofitable but power-enhancing investments, or even run down the capital of the company.

On the other hand, concentration of shareholders can have either harmful or beneficial effects for minority owners. Large shareholders, better able to monitor management, might have little incentive to exploit minority shareholders because the extra cash-flow would be small. Yet these large shareholders might extract other private benefits from control due to their greater influence on the company.

Other constraints on corporate management include monitoring by boards of directors; non-executive directors might monitor executive directors and independent chairs might do the same, along with audit and remuneration committees. The number of directors necessary or ideal for scrutinising and advising

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management has been debated for many years. But otherwise these issues (non-executive monitoring of executives apart) were not much discussed during the period of the present study, though there was a 1900 requirement that auditors could not be directors.

The importance of appropriate incentives for directors was also recognised in the longstanding requirement of the LSE that directors be shareholders, though companies were free to set the level as low as £1, so effectively it remained optional. But companies in our population chose to require amounts up to £25,000, with an average of £2240 (and in almost all firms directors actually held more), so directors' incentives were to some extent aligned with shareholder interests. As one Edwardian investment adviser delicately put the problem of directorial shirking "If it is found that the directors are but small shareholders, there is the risk that the management may not display active intelligence" (cited in Foreman-Peck and Hannah 2011, p. 3).

Empirical evidence on the effectiveness of managing firms without ownership is mixed even for the US in recent times. One survey (Hermalin and Weisbach 2003) found that boards of directors could become too big; agency problems (such as director free-riding) increased with board size. Later US research (Lehn et al 2009) cast doubt on this hypothesis but a study of 450 firms in 10 OECD countries did find a negative relation between board size and corporate performance, controlling for endogeneity (de Andres et al 2005). Recognising this potential endogeneity of directors, Adams et al (2010) emphasise that many studies of boards should be interpreted as jointly assessing the director-selection process and the effect of board composition on board actions and firm performance.

A special case of the endogeneity problem is that of optimal equilibrium. Demsetz and Villalonga (2001) claim for the US that firms adopt the corporate governance arrangements – such as numbers of board directors, proportion of management share ownership, or voting rules - most appropriate to their circumstances. Therefore no association across heterogeneous firms should be expected or observed

between these arrangements and corporate performance. They model ownership structure - management share ownership and shareholding concentration - as endogenous variables. They find ownership structure depends upon firm performance but there is no reverse causation; with appropriate controls variations in firm performance do not appear to depend upon ownership structure. Although this is consistent with ownership structure being an optimal response to circumstances as they claim, it is also consistent with ownership structure being ineffective.

Corporate governance structures may need to be adapted to individual corporate circumstances but they might not necessarily always be ideal; the 'institutional market' may not be in long run competitive equilibrium all the time. Recognition of the potential endogeneity of directors is not the same as assuming there will always be the right number. Directors will add value if the system works well but there is no reason to suppose that the supply of suitable directors will always match the demand, and that the number will always be optimal.

In Edwardian Britain, most executive directors were promoted from within companies and most non-executives were recruited from professional, social and regional networks. Both were perhaps sometimes constrained by the requirements for a minimum director's shareholding (which, in marked contrast to modern share incentive schemes, at the upper end required an investment of several years' salary by senior managers promoted to the board). Moreover, at a time when their reputation was high, extensive overseas recruitment of mobile British managers limited the domestic supply (Hannah 2009, pp. 17-18). In addition, although business was a more effective channel for mobility into the elite for children of manual workers than were the professions, lack of access to education and to capital prevented the bulk of the population from entering the upper echelons of business (Foreman-Peck and Smith 2004). The likelihood that every company could always optimally adjust the supply of directors to demand is therefore remote, creating the possibility that the demand for directors can be identified.

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As far as the effects of shareholder dispersal or concentration are concerned, these may well depend on national institutions. Evidence for Germany is that for most types of large shareholder, the benefits for minority shareholders of increased big shareholder ownership were at least as great as the harm, and sometimes significantly greater (Edwards and Weicherieder 2004). It has been contended that corporate governance differences between US and the UK ensure external shareholders -particularly institutions - are better able to constrain managerial discretion in the UK (Short and Keasey 1999).

As long as the concentration or dispersal of shareholdings are dominated by firm-specific circumstances that are not necessarily desired by the firm, the impact of numbers of shareholders on corporate performance, rather than the causes of the latter, may be observed. Companies that discovered how to tap mass markets for shares would have had a lower cost of capital and more shareholders, with consequences for corporate performance. Directors' shareholdings again may have been independent of the optimal incentive structure for the company but instead varied with personal circumstances and preferences. If so, incentive effects of shareholdings on company performance may be observable.

Board voting rules and corporate type (chartered, statutory or registered), might be rather different. Perhaps there is more reason to suppose those launching the enterprise provided optimal arrangements, so long as relevant corporate circumstances did not change between the formation date and the period of concern. In this case there may be no relation between voting rules and corporate type on the one hand and performance on the other.

That good corporate regulation is essential to addressing the agency problem has been emphasised by La Porta et al (1997 and 1998) who maintain that concentrated ownership is a response to regulatory shortcomings. But better legal protection may exacerbate rather than alleviate the conflict of interest between large and small shareholders and therefore pull in the opposite direction (Burkart and Panunz

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2005). Legal protection affects the opportunities for directors to expropriate shareholders but also the incentives for large shareholders to monitor management.

2. The 1911 Data

To assess these views we employ a data set drawn from the 339 large[7] (issued share capital of £1 million or more), independent, British-owned companies with shares listed on a UK stock exchange. These data are largely taken from the 1912 edition of the *Investors Year Book* and so reflect the late 1911 position, as described in Foreman-Peck and Hannah (2011)[8]. However, as pointed out in the previous section, British railways were uniquely regulated in this period and largely unconstrained by competition, with the consequence that performance was poor (Dodgson 2011; Crafts et al 2007; Mitchell et al 2011). We therefore exclude British rails from the data set, though we retain British-owned and -managed railways operating in freer overseas markets.[9] We also exclude 16 companies for which there is no independent evidence of directors' holdings and shareholder numbers. Additionally in some equations we exclude 9 companies with shareholder numbers but for which directors' holdings are unknown, and 8 for which directors' shareholdings are known but shareholder numbers are not.

Testing the effectiveness of corporate governance requires an assessment of the remaining agency problems and the impact of different corporate arrangements on performance indices. The first index we choose is the company's share premium above par in 1911[10]. The assumption is that the share price reflects the capitalised value of expected profits and that the par value approximates a company's assets at IPO, plus new issues since IPO. The greater the share price premium above par, the stronger the reputation and anticipated performance of the firm. We also assume that, in a cross-section of firms, market expectations are the best relative forecast of profitability, given the available information.

Par is not the same as issue price. At IPO the company would have been formed before the price was set. In response to changed market conditions, it was often a little above or below, although basically the

same, for all capital issued. Of an 800+ pre-1914 IPO sample, 9 out of 10 were issued at par (Chambers, personal communication). The maintained hypothesis is that par value roughly reflected underlying asset values (at replacement cost). In short the contention is that the 1911 share premium is an acceptable proxy for the increase in the present value of expected profits since IPO. If the wrong corporate governance structure were adopted, or the firm were unlucky or badly managed, then shares would drop below issue price. With a good governance structure they would appreciate, for a good governance structure would be able to take account of changes in the market since IPO or reconstruction.

We also use the return on paid up capital (RoE) as a second performance indicator. This is a more limited measure because it is concerned only with one period and investors might be inclined to discount one period shocks and take a longer view. They may through personal contacts and other informal channels of information have acquired different, and perhaps better informed, opinions about corporate earnings prospects than could be gleaned from annual accounts. Nonetheless one period returns are not dependent on assuming that investors have rational expectations, as is the share premium index, and so are of some interest. In addition they provide a performance indicator for companies, such as Imperial Tobacco, whose ordinary shares were entirely privately held, preventing our calculating a share premium.[11]

Corporate samples tend to be right skewed and the present dataset is no exception (Table 1)[12]. The share premium shows that the mean firm's ordinary shares had appreciated by 117 percent above par, although this average was pulled up by a few high flyers. The median company achieved only a 43 percent appreciation. Similarly the mean return on paid up share capital at 17 percent was double the median of 8 percent. 'Personally managed'[13] J&P Coats with a 30 percent return on equity, and a 1000 per cent premium at first sight was a star performer. Mather & Platt, classified by Chandler (1990) as an entrepreneurial failure ('minor producer of specialised electrical equipment' p277) achieved a 14.2 percent return and almost a 100 percent appreciation. However, the best returns were found in the

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financial sector; for instance Scottish Union and National Insurance achieved 252 percent profit on paid up capital and a broadly similar premium[14].

While one company (Bleachers, the textile finishers) was governed by 37 directors, the median board size of 8 was not much different from the mean of 9.5. There appears little chance of directors influencing average corporate behaviour on the basis of their shareholdings alone, for the percentage of a company's shares held by directors was generally small, with a median of 2.9 percent and a mean of 7.8 percent. These numbers are not much raised when board control of votes is considered; the mean rises to 12 percent and the median to 3.4 percent. Numbers of shareholders ranged from 170 to 41,000 with a median of 2,800 and a mean of 4,898 (Table 1).

Greater risk lowers the value of expected profits for risk-averse investors. We measure risk, the volatility of share prices, by the dispersion of share price-difference between highest and lowest share price for the year, normalized by the average of the two (Parkinson 1980; Alizadeh et al 2002) ('Vol' and 'Vol sq'd', when the square of volatility is included). Location and sector dummies are also allowed to influence performance. The inauguration year ('Date') and size measured by paid up capital ('Lsize1') complete the list of possible controls. It should be noted that the binding constraints on the number of usable observations are the two dependent variables[15].

<TABLE 1 ABOUT HERE>

Turning to the structural corporate governance feature, statutory companies (those set up by private act of parliament or provisional order, and usually subject to the provisions of the 1845 and subsequent Companies Clauses Consolidation Acts, CCCA) had the strongest regulation and are the second largest category. A hypothesis is that both statutory and chartered companies had more rigorous rules broadly as in the CCCA, and so were better governed than registered companies which did not have similar parliamentary scrutiny. Registered companies (that is generic companies simply registered since the

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procedure was first authorized in 1844 and at this date subject to the 1908 Companies (Consolidation) Act) were the largest category but more lightly regulated. The null hypothesis then is that there is no difference between the two categories because big registered companies usually adopted CCCA-style governance rules voluntarily. The statutory and chartered sectors were mainly in finance and utilities, though constituted only a minority of each sector (Table 2).[16]

<TABLE 2 ABOUT HERE>

Voting rules adopted by joint stock companies could be a significant element of corporate governance. For present purposes these rules have been aggregated into the two principal categories of Table 2, 'takeover constrained' or not. This first category consists of 'capped' and 'tiered' rules. Capped voting was achieved either by limiting the maximum permitted individual shareholding or by disqualifying shares above a specified holding from the vote. This rule was quite common in the finance sector, which included three quarters of the cases. Financiers traditionally took the view (often shared by regulators) that there may be particular dangers for this sector in being over-influenced or even owned by customers, particularly those who might aspire to favours. Tiered voting rules (the more shares held the less the incremental votes) had the same effect as capped, so they are grouped together in Table 2.

Regressions of regulated status, and of voting rule, together with finance and utilities dummies on the log of mean returns on equity in 1911 and log of the share premium did not yield statistically significant coefficients on regulated or voting status (not tabulated here). These results are consistent with the spread of good practice among all the large listed firms whatever their corporate type. Equally they are consistent with lax regulation, independent of corporate type, if regulated firms were not constrained in any way. However, there is some evidence below in favour of the first interpretation.

Chandler's (1990, p.242) famously negative view of British corporate governance alleged that 'outside directors were selected as much for family connections and social position as for industrial experience.'

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Of course such a preference for aristocratic directors could have been rational if they drew in more shareholders. Though Table 3 shows manufacturing – on which Chandler focuses especially - was most prone to family directorships, families were not especially prominent even there, as measured by the numbers of directors with duplicated family names[17]. Aristocrats did not especially favour manufacturing, perhaps because bigger fees were to be obtained on finance boards.

<TABLE 3 ABOUT HERE>

The mean number of titled directors per company was 1.55, with a maximum of 17[18] and most companies having no titled director. Mean directors per company with a duplicated family name was 0.7 with a maximum of 12.[19] Again, companies with such directors were the exception rather than the rule.

The proportion of 'aristocratic' directors varied by industry inversely with the proportion of family directors; foreign railways followed by finance were destinations for aristocrats, with one fifth of the average board, whereas there were no family directors in foreign rails and they were rare in quoted financial companies. On the other hand in brewing family directors accounted for one quarter of the average board but (despite the contemporary lampooning of the elevation of many of them to the "beerage") aristocrats constituted only 7 percent.

3. **Determinants of Corporate Governance**

The above structural and social features of corporate governance – corporate type and voting rules– that were probably fixed at IPO, plus directors' characteristics , are here distinguished from more changeable variables with a potential impact on corporate performance; shareholding concentration, numbers of directors and directors voting control/ shareholdings. In addition we also assume that whether a company is quoted in London ('Lon') and whether the principal field of operation is the UK ('Britain'), are exogenous to the models. As outlined in the introduction, one of the motivations is to identify the impact

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of corporate governance on corporate performance. Identification and estimation of coefficients in the equations below requires the random, firm-specific, disturbance terms, e_i, are independent of the right hand side variables. So tests must be conducted for whether this is the case.

Corporate governance=f ('structural' corporate governance, company characteristics, e_1)   ..(1)

Corporate performance =g (corporate governance, company characteristics, e_2)   ..(2)

Demsetz and Villalonga (2001) maintain the true coefficients on corporate governance in (2) are zero but because e_1 and e_2 are correlated single equation estimates of (2) yield non-zero coefficients. A unique feature of a company (a high value of e_1 say) warrants a high value of the corporate governance variable. Suppose this unique feature of the company happened also to be associated with unusually good corporate performance (a high value of e_2). The corporate governance variable and the disturbance term e_2 are positively correlated in this example. So in this case a high value of the corporate governance variable will be associated with a strong corporate performance even though there is no direct causal connection. We test whether this affects our estimates by ensuring that corporate governance variables in (2) are uncorrelated with e_2, using instrumental variables and associated exogeneity tests[20].

Estimates of equation 1 are presented in Table 4. Equation 4.i explains the governance characteristic of number of directors on a company board. Larger companies (log of paid up capital, 'lsize1') had more directors. Regulated companies ('Regco') appear to have significantly more directors than other corporate types (Table 4 (i)). By contrast neither the proportion of 'titled' directors ('Proparisto') nor the proportion of directors ('Propdir') with family connections is significantly associated with larger boards. Firms whose principal area of activity was Britain ('Britain') tended to have more directors, possibly because the supply of those suitably qualified was less constrained. Voting rules to prevent takeover were not associated significantly with board size, but companies in the finance sector had more directors (the base case is 'other industry') and to a lesser extent so did those in manufacturing. Brewing, a traditional family

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dominated sector, on the other hand, had fewer directors. Partly paid capital companies were prone to have more directors, perhaps because shareholders with such liabilities particularly valued stronger monitoring.

Bigger companies not surprisingly had more shareholders and apparently a larger number of 'titled' directors ('Aristocratic') attracted a greater number of shareholders (Table 4 (iii)) (although a larger proportion of titles ('Proparisto') did not). Being quoted in London ('Lon') and operating primarily in Britain ('Britain') had qualitatively similar effects. But the capped plus tiered voting rule ('Takevote') and regulated companies ('Regco') did not influence shareholder numbers (we cannot reject the null hypothesis of a zero coefficient), according to these equations.

<TABLE 4 ABOUT HERE>

Companies with more family directors tended to have significantly higher proportions of shares owned by the board ('Board share') and equally plausibly in larger companies the board controlled smaller proportions of the total share capital (Table 4 iv - vii). Again the regulated status of the company and takeover voting rules apparently exercised no influence. Similar results are found for voting control ('Lboardvotin' eqn vii), including that those more recently inaugurated also tended to have higher board votes.

4. **Determinants of Corporate Performance**

The above contributors to corporate governance are predicted to affect corporate performance (equation 2 above). We might expect from the earlier discussion that greater shareholding dispersion ('Lnoofsh' larger for given firm size) would lower performance if corporate governance was weak; large shareholders would be necessary to keep management up to the mark. Again if corporate governance was weak, directors might be inclined to pack the boards with their friends and relatives who did not add value

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to the company; firms with more directors ('Noofdirect' larger) would then perform no better than those with less. Then there is board directors' control of the company through the voting powers ('Lboardvotin') conferred in part by their shareholdings ('Board Share') which gives them a material incentive to ensure profits and dividends.[21] Poor corporate governance might allow directors with greater voting control more easily to exploit their company's assets in ways beneficial to themselves but that did not boost share price or profits.

If more directors were preferable to less, those firms with more would be outperforming those with less and sending a market signal that more directors were desirable. Why did not such companies appoint more directors and raise their returns? Supply rather than demand side considerations may be binding; more directors may be wanted but none suitable may be available. In which case, observations will identify the demand for directors. Share ownership may not be sufficiently concentrated to incentivize successful monitoring of management because some shareholders refuse to sell to others. Or directors might want to reach a mass market for their shares so as to reduce their price of capital, but their corporate reputation or marketing may not permit the popularity to which they aspire, so average size of shareholding remains high and numbers of shareholders relatively small. Or board voting allocations may stem from historical accident and control. In short if these types of constrained equilibria were likely, then a test of the effectiveness of corporate governance is the sign and significance of the influence of these three variables on the corporate performance indicators – contrary to the Demsetz and Villalonga critique.

To estimate these coefficients accurately other influences on corporate performance must be controlled. These may include risk (measured by share volatility, 'vol', 'vol squared'), and the size of the company (as well as the sector in which it operated). To test whether corporate governance arrangements influenced performance when other contributors are controlled, we estimate by various regression methods on both indicators, broadly the following model for the ith firm;

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Corporate performance$_i$ = f('Noodirectors$_i$', 'Lnoofsh$_i$', Llboardvotin$_i$', 'Board Share$_i$', Risk$_i$, Size$_i$, U$_i$)

….(2a)

The first four variables measure the impact of corporate governance. Predictions of the signs of the corporate governance measures considered here are generally ambiguous, though the signs for testing for poor corporate governance are not. Do directors' shareholdings ('Board Share') allow directors to exercise control over the company in their own interests (-) or do they more closely align directors' interests with those of shareholders (+)? Closely related must be board share of votes ('Lboardvotin') for this is one consequence of directors' share ownership.

Directorial control might decline with a smaller number of shareholders ('Lnoofsh'), for widely dispersed shareholdings are harder to coordinate by those who wish to challenge the board. If directors' control was exercised against shareholder interest, for given directors' shareholding the share premium should fall with number of shareholders or rise with average shareholding size.

How many directors are necessary for the supervision and strategic management of a company? Number of directors ('Noofdirect'), as indicated above, might show an inverted U shaped relation to corporate performance ('Noofdirect'>0,'Dir sq'd'<0); it must be possible to have too many of them, or too few.

We estimate corporate performance equations separately on the assumption that each of the four governance variables of concern is endogenous and then compare each to the equivalent equation assuming all governance variables are exogenous. First we consider the premium performance indicator. Table 4 suggests some possible instrumental variables for the corporate governance variables. Including the regulated company variable ('Regco') as an instrument in performance equations is acceptable because there was no measurable direct effect on performance (nor was there for 'Takevote,' not tabulated here). There was no difference in the performance between regulated and unregulated companies presumably because where appropriate big registered companies usually adopted CCCA-style

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governance rules voluntarily – assuming these rules were effective, as the consequences for directors numbers reported in Table 4 might imply.

Equation i Table 5 is estimated by GMM instrumental variables[22], assuming number of directors is endogenous and identifying by means of the excluded instruments suggested by 4.i. Performance appears to decline with rises in company size and in share price volatility (quadratically, 'vol', 'vol sq'd') but increases with number of shareholders and number of directors. The equation passes the K-P LM under-identification test (instruments correlated with the regressor). The Hansen J statistic indicates the instruments are valid; uncorrelated with the disturbance term and correctly excluded. The endogeneity test indicates the null of exogeneity cannot be rejected.

Estimating the same specification by the more efficient OLS reduces the coefficient on directors' numbers but otherwise changes the coefficients little. Adding a squared number of directors variable ('Directors sq'd', Eq.iii) implies that to maximize the share premium, the optimum number of directors is $(.156/(2*.00368)=)$ 21. The implication is that the twenty-second director was redundant or even a handicap (the Bleachers Association, with 37, was very much overstaffed). This seems to have been generally appreciated at the time[23]. Since the great majority of companies had fewer than 22 directors it is fair to say directors did add value on average. These results are not changed when the (all statistically insignificant) sector dummies and the year of inauguration are included in the model.

Turning to the (log of the) number of shareholders IV equation (5.iv) this has a highly significant KP LM statistic, indicating model identification (excluded instruments are relevant, that is correlated with the endogenous regressors) and the Hanson J statistic does not reject the null of uncorrelated with disturbance term. The shareholders' coefficient is significant at the 5 percent level and double the OLS estimate. The endogeneity test indicates the null of exogeneity cannot be rejected. We conclude that more shareholders do boost the share premium, presumably because they lower the firm's cost of capital,

more than entirely offsetting any undesirable loss of monitoring incentives. Agency problems are not implied by the effects of share dispersion, for the premium falls with the (log of) the number of shareholders ('Lnoofsh'), holding constant company size (as measured by the log of share capital , 'Lsize1'). Greater shareholder concentration - as against directors' control - brings a lower premium, once more inconsistent with poor corporate governance. [24]

The effect of board voting control is not significantly different from zero in the GMM equation and in the OLS version (in combination with board shareholding as shown in 6.vi or separately – not reported here). So we cannot reject the hypothesis that greater board voting control has neither favourable nor unfavourable effects on the premium. A higher board share of capital, generally associated with greater board control, but perhaps incentivizing the Board to greater efforts, similarly is not significantly different from zero.

<TABLE 5 ABOUT HERE>

Neither titled directors nor family directors exercised a significant negative or positive effect on the premium independently of the number of directors (not tabulated here). This means that the hypothesis that such directors were included on the board on their merits cannot be rejected[25].

Turning now to the alternative performance indicator, the ratio of profit to paid up share capital in 1911, the ordinary least squares model shows returns increased with (log of) shareholder numbers ('Lnoofsh'), contrary to the poor corporate governance prediction. Also a negative relation to company size (measured by paid up capital) is estimated but otherwise the coefficients are not significantly different from zero (Table 6.i). However, this general result is overturned when the corporate governance variables are estimated on the assumption they are endogenous[26]. Number of directors becomes a highly significant and large positive influence on return on equity in equation iii and in equation iv board voting control negatively and significantly affects profitability (implying possible "tunnelling" by insider directors)

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while the closely related directors' shareholding has the opposite impact (suggesting a positive effect of ownership incentives that do not offer disproportionate control rights). The latter behaviour seem to dominate: the net effect of an increase of one standard deviation of board voting control and an increase of one standard deviation of board proportion of share ownership is to raise the log of RoE.[27]

It should be remembered that the RoE horizon is shorter than the forward looking equation, which may explain the contrasting endogeneity of the governance variables. While management may not have been invariably as efficient as it could have been, the corporate governance regime did seem to push them in the right direction, according to both performance indicators. Overall the RoE results are the opposite of Demsetz and Villalonga; the structural coefficients are significantly positive while the single equation coefficients tend not to be.

<TABLE 6 ABOUT HERE>

5. **Conclusion.**

However permissive corporate governance of larger UK joint stock companies was in 1911, it was effective compared to the arrangement in later times. The received wisdom of a twentieth century capitalism of constantly improving corporate governance, investment bankers' diligent information signalling and better accounting rules overcoming agency problems may (as recent events remind us) simply betray a misplaced belief in the inevitability of progress. Greater numbers of shareholders boosted the share premium and the return on assets for large British quoted companies in 1911. Our interpretation is that firms that could or did attract a wider shareholding achieved a higher return on equity by appealing to more of a mass investor market. This was not offset by less individual shareholder influence over management, as a dysfunctional view of corporate governance might suggest. Some companies might

have wanted to attract numerous small shareholders who were willing to accept directors' guidance unquestioningly but may not have been able to draw them for lack of reputation or presentation of inappropriate corporate governance rules at IPO.

The positive impact of the number of directors on corporate performance may have stemmed from their information function and expertise. Or, their reputation was such that the market thought they had value- but then they seem to have been associated with greater measured profitability as well. In any case the result runs counter to the recent experience reported for the modern USA by Hermalin and Weisbach (2003), again suggesting the UK 1911 market worked quite effectively. In the short term (the RoE indicator) it was advisable for directors to own a significant share capital if their interests were to be fully aligned with shareholders; in the long term, with shareholder forward-looking perceptions there is no evidence that greater board ownership and control favoured or harmed shareholders through the share premium.

Doubtless many British businesses operated before 1914 below their theoretical optimum, but that is true of all countries at all times. Credible assessments of alleged systemic sources of economic failure must apply to a significant part of the economy and the comparators, such as other countries, should be appropriate. Our evaluation of a range of UK business governance structures before 1914 passes those critical tests. Corporate governance may not have been ideal in the British stock markets of 1911, but many arrangements operated to the benefit of shareholders. A possible reason, suggested by Chambers and Dimson (2009) in a different context, is that greater trust in 1911 more than offset less thorough regulation and reporting. Alternatively or additionally private or state regulation was more pervasive and effective than most researchers have assumed.[28] Either way the early twentieth century pervasive divorce of ownership from control in large-scale British businesses appears to have been managed well.

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Table 1 The 1911 Large Quoted Company Dataset: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Median
Premium plus par(100)	237	217.52	251.97	0	2350	143.5
Return on (paid-up) equity %	233	16.70	24.67	-5.49	147.35	8.27
Number of directors	265	9.53	5.93	3	37	8
Number of shareholders	265	4898	6185	170	41000	2800
Date of formation	265	1874	31.81	1694	1911	1887
Board share of votes %	265	11.98	19.9	0	100	3.4
Board share of capital %	265	7.80	11.68	0.04	71.2	2.9
Paid up Capital (£m)	265	2.63	4.77	0.05	53.17	1.4
Issued Share Capital (£m)	265	3.54	5.40	1	53.17	1.8
Volatility (risk)	237	0.23	0.26	0	1.97	0.15

Table 2 Corporate Type, Voting Rules and Sector

	Brewing	*Finance*	*Manuf'ring*	*Other*	*Rails (for'n)*	*Utilities*	*Total*
Unregulated	17	81	55	40	35	26	254
Regulated	0	20	0	3	1	18	42
Unconstrained	15	65	45	30	34	34	223
Takeover constrained	2	36	10	13	2	10	73
Total	17	101	55	43	36	44	296

Note: Total exceeds that of the main sample because only domestic rails are excluded.

Table 3 Directors of the Large Quoted Companies.

Sector	Mean number duplicating family names	Proportion duplicating family names	Maximum	Mean number with titles	Proportion with titles	Maximum
Manufacturing	2.018	0.153	12	0.907	0.101	4
Brewing	1.823	0.240	4	0.588	0.074	3
Finance	0.303	0.027	5	2.212	0.191	17
Utilities	0.186	0.026	1	1.349	0.155	8
Railways (foreign)	0	0	0	1.5	0.217	7
Other	0.547	0.063	5	1.428	0.199	5
Total	0.691	0.065	12	1.546	0.165	17

Table 4 Determinants of Corporate Governance Variables

	(i) Noofdirectors	(ii) Lnoofsh	(iii) Lnoofsh	(iv) Board share	(v) Board share	(vi) Lboardvotin	(vii) Lboardvotin
Lsize1	2.076*** (4.11)	0.805*** (14.49)	0.774*** (13.79)	-0.00804 (-1.30)	-0.0132* (-2.22)	-0.185* (-2.00)	-0.282** (-3.10)
Propdir	6.342* (2.24)	-0.490 (-0.90)		0.339*** (4.16)		3.986*** (5.80)	
Proparisto	-2.265 (-1.36)	0.00371 (0.02)		0.0293 (0.81)		-0.0802 (-0.16)	
Aristocratic			0.0510* (1.98)		0.00364 (1.55)		0.0558 (1.44)
Fam. Dir.			0.00302 (0.08)		0.0202** (2.92)		0.285*** (4.54)
Takevote	0.557 (0.69)	0.142 (1.38)	0.137 (1.35)	-0.0162 (-1.23)	-0.0161 (-1.23)	-0.113 (-0.65)	-0.0967 (-0.56)
Regco	3.355** (2.65)	-0.234 (-1.27)	-0.273 (-1.51)	0.0274 (1.22)	0.0188 (0.85)	0.740* (2.12)	0.601 (1.77)
London	0.515 (0.72)	0.296** (2.65)	0.302** (2.70)	-0.0465** (-2.91)	-0.0501** (-3.07)	-0.438* (-2.39)	-0.479* (-2.59)
Britain	1.476* (2.36)	0.432*** (3.83)	0.419*** (3.78)	0.00317 (0.25)	0.00685 (0.53)	0.0732 (0.39)	0.122 (0.67)
date	-0.00948 (-0.70)	-0.00311 (-1.49)	-0.00262 (-1.20)	0.000340 (1.68)	0.000397 (1.89)	0.00822** (2.66)	0.00890** (2.85)
part	3.407** (3.23)	0.615*** (4.08)	0.572*** (3.89)	0.00826 (0.61)	-0.00449 (-0.34)	0.291 (1.34)	0.0973 (0.49)
Manufact	2.093* (2.15)	0.189 (0.98)	0.178 (0.94)	0.0289 (1.21)	0.0284 (1.20)	0.488 (1.77)	0.474 (1.74)
Finance	2.511** (2.97)	0.0871 (0.49)	0.0941 (0.53)	-0.0346 (-1.66)	-0.0377 (-1.89)	-0.644* (-2.29)	-0.663* (-2.48)

Utilities	-0.695	0.137	0.158	-0.0499*	-0.0514*	-1.023***	-0.997***
	(-0.71)	(0.78)	(0.93)	(-2.24)	(-2.37)	(-3.41)	(-3.37)
Brewing	-2.112*	-0.401	-0.445*	0.0623	0.0965*	0.143	0.555
	(-2.46)	(-1.82)	(-2.10)	(1.39)	(2.00)	(0.27)	(1.05)
Rails (non UK)	-1.370	-0.392*	-0.348	-0.0428	-0.0463	-1.792***	-1.769***
	(-1.67)	(-2.11)	(-1.91)	(-1.79)	(-1.95)	(-5.20)	(-5.11)
N	290	268	268	265	265	263	263
r2_a	0.264	0.530	0.534	0.398	0.356	0.511	0.504
Aic	1771.3	569.5	567.2	-505.1	-487.5	822.1	825.7

Notes:

t statistics in parentheses= p<0.05 , ** p<0.01, *** p<0.001

Constant included but not tabulated. Robust standard errors

Table 5 Share premia response to corporate governance variables in 1911

	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Estimation	GMM IV	OLS	OLS	GMM IV	GMM IV	OLS
Noofdirectors	**0.0657*****	0.0366***	0.156***	0.125**	0.128***	0.157***
	(3.86)	(3.53)	(5.36)	(3.11)	(4.58)	(5.42)
Lsize1	-0.338***	-0.404***	-0.337***	-0.515***	-0.335***	-0.306***
	(-5.45)	(-6.65)	(-5.77)	(-3.67)	(-4.11)	(-5.18)
Vol	-3.776***	-3.309***	-3.202***	-3.529***	-3.322***	-3.195***
	(-6.35)	(-5.15)	(-5.06)	(-5.79)	(-5.21)	(-4.84)
Vol. sq'd	1.363**	1.087*	1.029*	1.258**	1.331**	1.025*
	(3.12)	(2.33)	(2.25)	(3.13)	(3.04)	(2.16)
Lnoofsh	0.258**	0.294***	0.270***	**0.558***	0.260***	0.257***
	(3.12)	(4.19)	(4.18)	**(2.41)**	(3.30)	(3.82)
Director sq'd			-0.00368***	-0.00321***	-0.00294***	-0.00374***
			(-4.37)	(-3.40)	(-3.80)	(-4.46)
Lboardvotin					**-0.000487**	0.0240
					(-0.00)	(0.47)
Board share					**0.276**	-0.108
					(0.12)	(-0.14)
Shea R^2	0.155			0.083	sh 0.089 lb 0.111	
KP LM under-ident.	22.923 (0.0003)			18.748 (0.0021)	10.64 (0.059)	
H-Jstat	6.912 (0.141)			5.559 (0.235)	8.26 (0.082)	
Endog. test	1.948 (0.163)			1.806 (0.179)	0.03 (0.985)	
Excluded instr. :	regco date f m br			date aristocratic part lon regco	propdir m b r part lon	
N	236	243	236	238	229	234
r2_a	0.446	0.443	0.504	0.415	0.473	0.497
aic	567.7	593.3	542.8	586.0	529.8	539.3

t statistics in parentheses ="* p<0.05, ** p<0.01, *** p<0.001"

Equations estimated with 'ivreg2' (Baum et al 2007a, b)

IV key: 'part'=capital part paid, 'propdir'= proportion of family directors, 'm'=manufacturing,

Constant included but not reported.

Endogenous variables in bold.

p values in parenthesis of IV diagnostics.

'b'=brewing, 'r'=rails, 'f'=finance, 'sh'=board share, 'br'=Britain, 'Lon'=London, 'Lb'=Lboardvotin.

Table 6 Determinants of the Return on Paid up Capital

	(i)	(ii)	(iii)	(iv)
Estimation	OLS	GMM IV	GMM IV	GMM IV
Lnoofsh	0.203***	**0.876***	-0.178	0.357***
	(3.41)	**(4.10)**	(-1.28)	(5.25)
Lsize1	-0.497***	-0.852***	-0.434***	-0.729***
	(-6.98)	(-6.39)	(-4.92)	(-9.59)
Vol	-0.215	-0.158	0.212	-0.0328
	(-0.90)	(-0.65)	(1.64)	(-0.23)
Noofdirectors	0.0190*	-0.0185	**0.144**	
	(2.27)	(-1.23)	**(3.26)**	
Lboardvotin	-0.0790*	-0.104*	-0.263**	**-0.433***
	(-2.59)	(-2.19)	(-2.86)	**(-3.49)**
Board Share	0.792	2.152*	1.117	**5.913***
	(1.45)	(2.14)	(1.59)	**(2.57)**
Shea R2		0.099	0.059	Lb 0.11 Sh 0.09
KP LM under-ident		22.5 (0.00)	9.079 (0.011)	10.99 (0.027)
H-Jstat		0.344 (0.557)	0.402 (0.526)	5.574 (0.134)
Endog. test		18.11 (0.00)	18.323 (0.00)	1.893 (0.003)
Excluded instr.		part, regco	propdir, part	propdir, lon, m, b ,r
N	206	206	201	201
r2_a	0.343	-0.0613	-0.398	0.131
Aic	375.1	473.9	494.7	398.2

Notes

t statistics in parentheses =* $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Endogenous variables in bold. Constant included but not reported. p values in parenthesis of IV diagnostics. Equations estimated with 'ivreg2' (Baum et al 2007a, b). IV key: 'part'=capital part paid, 'propdir'= proportion of family directors, 'm'=manufacturing, 'b'=brewing, 'r'=rails, 'sh'=board share, 'Lon'=London, 'Lb'=Lboardvotin.

END NOTES

[1] This draft has benefitted from the excellent research assistance of Peter Sims and from comments of two referees, Lyndon Moore and participants at the Cambridge EuroHistock, the Athens EBHA and the Dublin EHES conferences.

[2] Whether in absolute terms or relative to population or GDP

[3] A proposition that does indeed seem to hold despite the qualifications of Sylla (2006), see Hannah (2011).

[4] Contrary to the claim in the survey by Herrigel (2008).

[5] Price-earnings ratios were higher for IPOs than for private sales of businesses.

[6] Stronger 'anti-directors' rights' were required than under the Companies Acts.

[7] We are not constraining the dependent variables in the analysis by limiting the sample to large companies so problems of truncated or censored samples do not arise for this reason.

[8] With two previously inadvertently omitted companies now added. The coverage of the *Year Book* was comprehensive, with the notable exception that it (and therefore our sample) excludes most British mining companies operating overseas.

[9] In fact, we would have had to omit many domestic railways on the grounds noted in the next sentences: the *Investors Year Book,* provides only some shareholder numbers but no figures for directors' shareholdings in large British railways.

[10] The mean of the highest and lowest for the year.

[11] The other two performance indicators employed in comparable modern studies are Tobin's (average) Q and the Market to Book ratio. Q, the ratio of stock market value of the capital of a firm to its replacement cost is supposedly an indicator of whether investment of disinvestment is warranted. How long Q remains away from unity depends upon the responsiveness of the market and the marginal costs of adjusting the capital stock. In fact capital stock adjustment is erratic and therefore so will be the value of Q; a firm's high Q may reflect slower adjustment. Unlike the share premium measure Q includes the value of debt used to finance the capital stock as well as equity. As with Q and the share premium the market to book ratio includes investors' assessment of the firm's potential to earn future profits. The book value of the firm's assets usually reflects historical valuations of assets.

[12] For this reason and because OLS regression requires dependent variables to be normally distributed we take logs (prefix L) of share premium and return on equity in the analysis. No distributional assumptions are necessary for the independent variables but it may nonetheless be appropriate to use log transformations for them as well in some cases.

[13] Chandler's (1990) classification. It was personally <u>owned</u> in the sense that the Clark and Coats families who dominated the board had 50% of the voting shares, but hardly personally-<u>managed by them alone</u>: the driving force, the Managing Director, Otto Philippi, was a German immigrant, naturalised British professional manager who was no relation and meritocratically promoted.

[14] This finding parallels that of Hickson, Turner and Ye (2011) for finance firms in 1825-70. They explain it partly as a function of the additional liabilities on capital issued but not paid up, which was widespread in the financial sector and in that period sometimes actually called, and it appears to have survived into the Edwardian era (though calls on unpaid capital were then virtually extinct).

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[15] By definition a share premium cannot be calculated for firms whose ordinary shares were not quoted; and we were not able to trace all firms' profit statements in the *Economist* or the Guildhall Library's collection of company accounts.

[16] The domestic railway sector was uniformly subject to the CCCA, but is omitted from our analysis (see n? above)

[17] The measure would not pick up in-laws with different surnames and would impart the opposite bias from unrelated common surnames. It does not distinguish between two families with two directors each and one family with three directors.

[18] In the Bank of Scotland, only 9 of their 26 directors lacked a title. Unless warranted by their talents this must be current snobbery, not pandering to shareholders' tastes in IPOs: their IPO was 1695! Titled is here defined as a peerage or a baronetcy.

[19] In Bradford Dyers' 19 of the 36 directors shared seven family surnames.

[20] Under the null hypothesis that the specified endogenous regressor can actually be treated as exogenous, the test statistic is distributed as chi-squared with degrees of freedom equal to the number of regressors tested (usually one in the present case). The endogeneity test is defined as the difference of two Sargan-Hansen statistics: one for the equation where the suspect regressor is treated as endogenous, and one for the equation where the suspect regressor is treated as exogenous.

[21] See Foreman-Peck and Hannah (2011) for the reasons for the difference (principally differential voting powers of some shares).

[22] The General Method of Moments (GMM) is efficient in the presence of heteroscedasticity. It uses the moment conditions that the disturbance terms must be uncorrelated with the exogenous or instrumental variables, with equation weights chosen to achieve the lowest variance of the estimator.

[23] The Calico Printers' Association merger was notoriously over-directed on its foundation in 1899, with 84 directors (8 of them managing): "a discordant mob which only needed shillelaghs to make a Donnybrook Fair" (Macrosty 1907, p.151). However, after a few years of poor results, an investigation committee of six directors and six outside shareholders (all experienced businessmen) recommended the limitation of the board to between six and nine, with some additional purely advisory committees: a recommendation that was implemented.

[24] The possibility that the year of incorporation of a company may influence the premium systematically and bias the results was addressed by panel estimates of equations i, iii and vii from Table 5, with the data grouped by year of inauguration. A Hausman test showed the (more efficient) random effects could be accepted. The panel coefficients and standard errors were very similar to those reported. (Economists tend to restrict their grouping in data analysis to panels, where entities such as companies are tracked over time, whereas multi-level modellers (from the ANOVA approach) adopt a broader approach, as here. Random or fixed effects can be used at each of these levels. See for example Goldstein (1999).)

[25] Braggion and Moore (2011) find that in their sample of 467 British companies in 1895-1904, MPs and members of the House of Lords on boards improve performance for new-technology firms only. Cannadine, (1982) shows peers were competent at business.

[26] The diagnostics indicate the instrumental variables are appropriate - all Kleibergen-Paap LM statistic under-identification statistics are significant, as are the Shea partial R squareds, and the Hansen J statistics are not. The endogeneity tests indicate the governance variables are endogenous.

[27] By (-(.433*1.59) +(5.91*.12)=)0.02 (equation iv).

[28] For some confirming evidence, see our forthcoming article, "Why did British companies divorce ownership from control so early?"

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