The Origination and Evolution of Ownership and Control

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Abstract

In the first half of the twentieth century, the U.K. capital markets were marked by an absence of investor protection; by the end of the century, there was more extensive protection there than virtually anywhere else in the world. The U.K. therefore provides an exceptional laboratory for evaluating how regulation affects the development of securities markets and corporations. We investigate this issue by tracing the ownership and board composition of firms incorporated around 1900 over the subsequent 100 years and comparing the pattern of ownership and control with a sample incorporated around 1960. At the beginning of the century we find active securities markets, where firms were able to raise substantial outside equity finance, with rapid dispersion of ownership even in the absence of investor protection. The introduction of investor protection in the second half of the century was not associated with greater dispersion of ownership but with more trading in share blocks. We offer an explanation as to how U.K. capital markets could flourish in the absence of investor protection.

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1. Introduction

One of the best-established stylised facts about corporate ownership is that the ownership of large listed companies is dispersed in the U.K. and U.S. and concentrated in most other countries. For example, Becht and Mayer (2001) report that in more than 50% of European companies there is a single block of voting shareholders that commands a majority of shares. In contrast, in the U.K. and U.S. it is less than 3%.

How did these differences in concentration emerge? Two theories based on regulation and law have been suggested. The first attributable to Mark Roe (1994) is that U.S. legislators responded to a populist agenda in the 1930's by limiting the power that large financial conglomerates could exercise. This was accomplished by introducing legislation that restricted the control rights of large blockholders. The second, associated with La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998), argues that concentrated ownership is a response to inadequate regulation. According to their view, in the absence of adequate protection, investors seek to protect their investments through the direct exercise of control with large share blocks. Concentrated ownership is therefore a response to deficient investor protection.

Both of these law and finance theories associate dispersed ownership with weak regulation. The difference between the ownership concentrations of the U.K. and the U.S. on the one hand and Continental Europe on the other can be attributed to weak regulation in Continental Europe and strong regulation in the U.K. and U.S. La Porta et al (1998) produce data to support this conclusion. They distinguish between the common law systems of the U.K. and U.S. and the civil law systems in Continental Europe. They show that common law systems have strong minority investor protection and civil law systems have weak protection.

But it was not always like that. According to the law and finance literature differences in legal structures are deep rooted with a long history. Whether or not this is true, it is certainly not the case that investor protection has always been strong in common law systems. On the contrary, there was a landmark case of unsuccessful litigation by an injured investor in the U.K. in 1843 that rejected the notion of

minority investor protection for the greater part of the next century. The precedent set by the Foss v. Harbottle case effectively ruled out protection of minorities for the first half of the twentieth century. According to Lord Justice Hoffman, "The emancipation of minority shareholders is a recent event. For most of the first century of company law they were virtually defenceless, kept in cowed submission by a fire-breathing and possibly multiple-headed dragon called Foss vs. Harbottle. Only in exceptional cases could they claim protection of the court." (Hoffman (1999)

According to the law and finance literature, in the absence of regulation the U.K. would be expected to have undeveloped financial markets with high concentrations of ownership. Essentially one would expect the U.K. at the beginning of the century to look quite different from the U.K. today and more like Continental Europe. We would predict the persistence of high levels of concentration of ownership for much of the twentieth century at least until investor protection was introduced.

A second remarkable feature of investor protection in the U.K. is that it switched from being almost absent in the first half of the century to being one of the most stringent by the end of second half of the century. Goshen (1998) characterizes minority protection in the U.K. as a "property rule" which prevents any transaction from proceeding without the minority owner's consent. In contrast, the U.S. has a "liability rule" which allows transactions to be imposed on an unwilling minority but ensures that the minority is adequately protected in objective market value terms, primarily through the courts. According to the law and finance literature, we would therefore predict a significant increase in the rate of dispersion of ownership in the second half of the century in the U.K.

In this paper we address these questions by looking at the evolution of ownership of U.K. firms over the twentieth century. The U.K. has an unusually rich source of data for undertaking this exercise since, for more than a century, Parliament has required that companies deposit important information, including accounts and a register of shareholders, at a central depository. We select two samples of firms, one chosen from around the turn of the century and the other from 1960; virtually all these firms are traded on a stock exchange. We trace their share ownership and analyze the factors associated with changes in ownership. We also examine board control and

and evaluate the speed with which families relinquish ownership and board control. The two samples provide a laboratory for assessing how ownership and board control responds to institutional and regulatory changes.

We show that ownership for our 1900 sample becomes rapidly dispersed. Moreover, there is little evidence that rates of dispersion were different in the 1960 sample in a comparison across the first 40 years after incorporation. An important cause of dispersal, especially for the 1900 sample, is the high incidence of takeovers involving equity as the medium of exchange. Well-developed stock markets in the U.K. allowed firms to issue equity to acquire others. In the process, the shareholdings of founders and directors were significantly diluted.

These results raise questions of how dispersion of ownership could have occurred in the absence of investor protection. We suggest that it was implicit contracts enforced by informal relations of trust that encouraged participation by outside investors, largely local to the company's operations and geographically concentrated. Geographic concentration of ownership coincided with the listing of shares on local stock exchanges. To analyze this issue, we examine the factors influencing the dispersion of ownership including the initial profile of shareholdings, board representation, and takeovers. We conjecture that as firms grew by takeover, the geographical concentration of both of their activities and shareholdings diminished, leading to a weakening of relations between insiders and minority shareholders based on trust and eventually to a call for greater investor protection in the middle of the twentieth century.

If investor protection did not directly affect dispersion of ownership, what other contribution did it make? The data source is sufficiently rich to allow the names of individual shareholders to be identified. We were therefore able to examine turnover in shareholdings as well as concentrations and, in particular, the stability of coalitions of controlling shareholdings (i.e. mutation). While rates of dispersion of ownership were similar in the first and second halves of the century, rates of mutation of ownership were markedly higher in the second. The average length of membership of the controlling shareholding group diminished significantly between the first and

second half of the century. We interpret stronger investor protection as an important factor contributing to the greater liquidity and turnover in shareholdings.

The above describes the evolution of ownership in the U.K. over the last century. But, since Berle and Means (1932), much significance has been attached to the separation of ownership and managerial control. In addition to ownership, we were able to trace the composition of the boards. We find that while ownership is rapidly dispersed throughout the century, board control remains concentrated in the hands of founding families over an extended period. The Berle and Means picture of dispersed ownership being separated from a professional management is not an accurate description of the U.K. Families retained board control well beyond the sale of their ownership stake.

This is consistent with Alfred Chandler's view of U.K. firms being dominated by founding families and their offspring rather than professional management. What emerges here as even more puzzling is that this occurred in the absence of substantial ownership stakes. Control without ownership might be expected to create particularly serious problems of exploitation of private benefits by families at the expense of outside investors. We examine this issue by evaluating whether the continuing presence of families discouraged outside investor participation.

The closest paper to ours is Holderness, Kroszner and Sheehan (1999). They compare ownership in the U.S. between 1935 and 1995 and record greater ownership by officers and directors in the later than the earlier period. They attribute their result to the greater availability of risk-sharing financial instruments at the end of the century thereby allowing managers to hold equity stakes at lower cost. Their paper provides a cross-sectional comparison of ownership at two different times and, unlike ours, it does not trace the development of ownership and control over time. We believe that this paper provides the first attempt to perform such an analysis on a large sample over such an extended period.

Section 2 of the paper describes U.K. regulation over the century, section 3 presents data and methodology, section 4 records the results on dispersion and mutation of

ownership, and section 5 discusses the role of takeovers in weakening shareholder relations based upon trust. Section 6 concludes.

2. The structure and regulation of U.K. capital markets in the twentieth century

Section 2.1 reports data on the size and structure of the U.K. stock market in the twentieth century and section 2.2 describes the development of regulation over the century.

2.1 Size of capital markets and takeover activity

Rajan and Zingales (2002) examine the importance of stock markets around the world. They report the ratio of aggregate market value of equity of domestic companies to GDP for 26 countries between 1913 and 1999, at approximately ten-year intervals. Using their criterion, the U.K. has a high stock market ranking in first or second place in 6 out of the 9 decades and in the top five for the remaining three decades.

Michie (1999) reports estimates of the number of listed companies (industrial, commercial and financial) for various years between 1850 and 1914. He records that the number grew from 200 in 1853, to "many thousands" in 1914. The London Stock Exchange reports 4,409 listed companies in 1963, and 1,904[1] in 2000. If we restrict the data to industrial companies, Hart and Prais (1956) provide more precise estimates: 60 in 1885, 571 in 1907 and 1,712 in 1939. Both sets of statistics are consistent with Rajan and Zingales (2002) view of a flourishing U.K. stock market.

Whereas today the U.K. has only two stock exchanges, in the early twentieth century, there were 18 provincial stock exchanges, which collectively were as large as the London Stock Exchange.[2] According to *Phillips' Investors Manual* of 1885, 'the provincial exchanges are of almost greater importance in relation to home securities than London'. Thomas (1973) states that "the number of commercial and industrial companies quoted in the Manchester stock exchange list increased from 70 in 1885 to

[1] Excluding AIM where there are about another 800 listed companies.
[2] In order of importance: Manchester, Sheffield, Newcastle, Cardiff and some 14 others.

nearly 220 in 1906. Most of these were small companies with capitals ranging from £50,000 to £200,000" and "by the mid 1880s Sheffield, along with Oldham, was one of the two most important centres of joint stock in the country, with 44 companies, with a paid up capital of £ 12 million.'' (pages 133 and 124)

The importance of provincial stock markets has been widely recognized. According to Lavington (1921), writing on new shares issues, "local knowledge on the part of the investor both of the business reputation of the vendor and the prospects of his undertaking would do a good deal to eliminate dishonest promotion and ensure that securities were sold at fair prices fairly near their investment values." Concentrating ownership among local investors was recognised as a method of reducing information problems as well as fraud. Lavington (1921) cites the views of one broker: "the securities are rarely sold by means of a prospectus and are not underwritten, they are placed by private negotiation among local people who understand the [cotton] trade" (p. 280). Moreover there was a strong desire to trade the securities in the city where most investors resided. For example, shareholders in Manchester were anxious that the shares of the Patent Nut and Bolt Co.[3] of Birmingham should be listed in Manchester since most of the shareholders lived there (see Thomas (1973), p. 118).

In the first half of the century there was therefore geographic concentration of shareholders with informal relationships of trust between local businesses and local investors. The listings and trading of companies was often concentrated in a city that specialised in a particular industry: Birmingham was important for cycle and rubber tube stocks, Sheffield for iron, coal and steel and Bradford for wool. As Lavington (1921) describes, there was a strong link between local industry and the location of a stock market, reflecting the superior knowledge of investors about local companies and the relatively low costs that they incurred in acquiring information.

2.2 Regulation

There was a marked change in financial regulation and investor protection in the middle of the twentieth century. Although limited liability was introduced into the

[3] Patent Nut & Bolt Co. was owned by the Keen family, and merged with Dowlais Iron Company owned by the Guests which in turn developed into Guest and Keen, incorporated in Birmingham in 1900 – one of the companies in our sample and a company that we discuss further in section 5.

U.K. in the Companies Act of 1856, it was not until the landmark case of Salomon v. Salomon in 1897 that it was made effective. Such was the enhanced protection that it offered shareholders in the event of financial failure that many companies, including those in our sample, reincorporated after the 1897 ruling. Another seminal case earlier in the century, Foss v. Harbottle (1843), seriously restricted minority shareholder rights for the next hundred years. The judge made two important rulings: the proper plaintiff in an action of an alleged wrong to a company is the company itself and not the minority shareholder, and, where a transaction can be made binding by a majority of the shareholders, then no individual shareholder can sustain an action against the company. As Lord Justice Hoffman has noted, this case had repercussions for minority investor protection for over a century: "A statutory remedy was provided for the first time in 1948 but this proved relatively ineffectual. It was not until 1980 that Parliament forged the sword which is now section 459 of the Companies Act 1985 and which enables the unfairly treated minority shareholder to slay the dragon."[4]

Table 1 documents important regulatory changes categorised by minority protection rules, shareholder control thresholds, listing rules and disclosure rules.[5] As the table records, significant minority protection was not introduced until the 1948 Companies Act and coincided with changes in the London Stock Exchange's (LSE's) listing rules that were designed to improve the quality of listed companies.

In Table 1, Panel A, we list significant minority protection rules and control thresholds. The 1948 Act included anti-director provisions making it possible to remove directors by a vote of shareholders at an Extraordinary General Meeting (EGM), which could be called by 10% of shareholders. It also allowed proxy voting by mail for the first time. However, it was only in 1967 that provisions for a minority of 25% to block proposals by a majority were introduced. Still more significantly, the City Code on Takeovers and Mergers was introduced in 1967 and established the

[4] Cited in the foreword to Robin Hollington's *Minority Shareholders' Rights*, 1999, Sweet and Maxwell, London. Xu and Pistor (2002) view the introduction of regulation as a response to weak contract enforcement.

[5] See for example, Cairncross (1958 and 1953), Code Holland and Werry (1932), Davies (1979), Franks, Mayer and Renneboog (2002), Michie (1999), Morgan and Thomas (1962), Paish (1951), Sargant Florence (1947) and Schwabe and Branson (1913).

mandatory bid rule requiring a bidding company, with 30% or more of the target's shares, to tender for all remaining shares at the highest price paid for any shares purchased over the previous twelve months. Thus, it was not until 1948 that a statutory mechanism was put in place that allowed outside shareholders to replace members of the board of directors and it was not until 1967 that there was any statutory restriction on ownership of large stakes by outside shareholders.

Panel B describes changes to listing rules that were included in the 1948 Act and were accompanied by changes to LSE rules introduced in 1947. These listing rules abolished the rights of companies to have their shares traded on the LSE without being subject to the LSE's listing rules. This was designed to avoid abuses whereby a company would have its shares issued on one exchange (often without a prospectus) and arrange for its shares to be traded on the LSE (under a supplementary list). Furthermore, the new rules required newly listed companies to have a 10 years profit record, compared with 5 under 1948 Companies Act, and the support of 2 registered jobbers (i.e. market makers). The new rules also required all funds raised in the issue to be returned to subscribers if permission to deal was refused by the LSE. Withholding permission to deal therefore effectively prevented new funds being raised from the public.

Panel C describes important disclosure rules. In 1900, the Companies Act required company information to be filed at a central depositary, Companies House, where it was available for public access. Such a requirement does not exist in the US and therefore there is no central depositary for company information. In 1929, another Companies Act required the company to keep both a profit and loss account and balance sheet and both had to be filed at Companies House. In 1939, further legislation required directors to disclose contractual interests with the company. It was not until 1967 that the requirement to disclose share blocks was introduced, initially at 10%, then lowered to 5% and now currently at 3%.

Thus, the 1948 Companies Act marks a defining moment in investor protection making provision for the replacement of incumbent directors and for disclosure of outside shareholdings. These were supplemented by rules of the London Stock

Exchange, which significantly tightened requirements for trading a company's shares on the Exchange.

3. Data and methodology

3.1 Sample selection and sources of data

Our sample consists of 50 companies, 25 of which are incorporated around 1900, and 25 around 1960, respectively. 40 of these companies are extant today and the remaining 10 died during the century. In Table 2, we list the names of the companies, the city and date of incorporation, the date of the initial public offering and the exchanges on which the shares were traded. Table 2 records the fact that many companies were traded prior to a formal initial public offering (IPO). This reflects the absence of listing requirements on provincial exchanges and the London Stock Exchange (LSE) in the first half of the century. Therefore many of the formal IPOs occurred after the introduction, or in anticipation, of the more rigorous listing requirement introduced by the LSE in 1947.

We collect individual firm data on the ownership, board representation and equity issues of 50 firms incorporated around 1900 and 1960. The data have been assembled from original sources including: (i) archives of company accounts and share registers (including names and size of shareholdings) stored at Companies House in Cardiff, (ii) new issue prospectuses at the Guildhall Library in London, (iii) annual issues of the Stock Exchange Year Book which lists names of directors and the sources of any changes in issued capital, and (iv) Official Lists of trading of securities from the British Library in London. In addition, the share registers provide evidence of ownership changes that have taken place on an annual basis. The annual returns to Companies House give details of resignations of old directors and appointments of new directors.

From these data, we collect names of directors, their shareholdings (including those of their families), the date and amounts of capital issued in acquisitions, new share issues via public and private placements, and other changes in share capital, such as capitalisations of reserves. We trace the founding family ownership from incorporation until the last family member left the board by recording shareholdings

and place of residence of family members. We take account of name changes across generations, when for example the daughter of a founder married. For outside shareholdings, we limit ourselves to stakes greater than 1% of ordinary capital.[6] We use newspaper archives to document evidence of tender offers and trading in provincial Stock Exchanges, especially in the early 1900s. Finally, we collect share prices from the London Business School database.

An important feature of our 1900 sub-sample is that many firms were in existence well before incorporation (e.g. Cadbury Schweppes started in 1783, incorporated in 1886 and reincorporated in 1900). Firms that reincorporated did so to take advantage of the new court judgements on limited liability following Salomon v. Salomon (1897). With a few exceptions, Companies House does not retain records of companies that died, so firms that are still in existence in 2001, the year the study started, dominate our sample. To establish how this survivorship bias may have affected our results, we report comparisons between the surviving and non-surviving firms in our sample.

3.2 Capital structure, growth and evolution of ownership

Table 3 reports the capital structure of our sample of firms in 1920 and 1930. It records the number of firms with ordinary and preference equity and debentures, in some cases more than one class of each type of security, and the average percentage of the nominal value of total issued capital associated with each type of security. It shows widespread use of preference shares in 18 of the 25 companies, and two classes of preference in four companies, and debenture stock in just under half of the companies. Ordinary shares account for approximately 60% of the nominal value of issued capital, preference shares for 30% and debentures for only 10%.

Table 4 describes the growth of issued equity for the 1900 sample in Panel A and for the 1960 sample in Panel B. It records that the mean annual growth of equity is 6.49% over a hundred years for the 1900 sample and 22.05% for the 1960 sample

[6] Some shareholdings are held through a company.

over the remaining 40 years of the century. We examine the factors contributing to growth in issued equity, in particular IPOs, acquisitions, rights issues and placings.[7]

In the 1900 sample, IPOs contribute a modest amount to this growth and, for the regulatory reasons previously described, only appear at all post 1940. In contrast, in the 1960 sample they account for 20% of growth in equity. Placings are important in the early years of both samples of firms but diminish in significance appreciably in the later years of the 1900 sample. Rights issues account for more than 50% of growth of the 1900 sample but for less than 10% of the 1960 sample. The factor that is important in both samples is acquisitions. They contribute one-third and one-half of the growth of the 1900 and 1960 samples, respectively.

The significance of takeovers for the growth of U.K. firms is consistent with evidence from elsewhere. Figure 1 reproduces Hannah's (1976) time series of takeover activity for the U.K., which reports three major merger waves during the first half of the century, around 1900, 1920 and 1930. Meeks and Whittington (1975) have noted the importance of equity issuance in the takeover process: "in 1964-9, the giant (or mature) corporations …..typically financed almost 70% of their growth by new issues; and even the rest of the sector financed more than half (56%) of their growth through the capital market in this period…….more than half of these external funds were raised in the course of share for share exchanges on the acquisition of new subsidiaries" (p. 832).

Table 5 documents the evolution of the size of the smallest ownership coalition over the century, using 25% as our threshold. The columns headed frequency show the number of companies in which all reported shareholdings by directors or outside shareholders exceed 25% of cash flow rights. In Table A1 we reproduce the same statistics with a 50% threshold. The patterns are remarkably similar. We focus on results for the 25% threshold because other measures cannot be reproduced for higher thresholds.

[7] In the U.K., new equity can be issued either by pre-emption rights, where shares are offered first to existing shareholders, or by "placing" the shares. The placing may be offered to particular investors or to the public at large.

Panel A describes the 1900 sample and Panel B the 1960 sample. The variable, "all shareholders", is the size of the smallest coalition of directors and outsiders combined that is required to pass a 25% cash-flow threshold. The mean size of coalition is rising over most of the period, although changes in the median are much less pronounced and not monotonically increasing. The remaining columns refer to the minimum average size of coalition in those companies in which directors alone and outsiders alone respectively can cross the 25% threshold. For example, in 1990, only in two cases can directors alone cross the 25% threshold as against 21 cases for outside shareholders. The mean of 2 for directors refers to the minimum size of the coalition averaged across the two cases; and 48.33 refers to the minimum number averaged across 21 cases.

The pattern that emerges is that although the mean coalition is steadily rising for most of the century for "all shareholders" the composition of the coalition is changing, reflecting the substitution of outside for inside ownership. Up to 1930, directors are able to form a coalition of 25% in a majority of companies, but subsequently the numbers steadily fall, reflecting the decline of insider ownership. Conversely, outsiders were able to form a coalition in an increasing number of cases. However, the minimum number required to form a coalition is rising at least until the 1980's reflecting the greater dispersion of outside shareholdings.

In Panel B, the 1960 sample shows a similar pattern to the 1900 sample: the number of companies where directors can form a coalition steadily falls over the 40 years, while the number of companies with outsiders able to form a coalition rises sharply. However, the means are lower for the 1960 sample compared with the 1900 sample, and the number of outsiders required for coalitions declines from the 1970's. This points to consolidation of outside ownership in the hands of larger institutional holdings in the second half of the twentieth century.

In Table A1, we report the results of repeating the analysis for a 50% instead of a 25% cash-flow threshold. The overall picture is very similar: a declining proportion of companies in which directors can form a coalition, an increasing number of companies where outsiders can but a rising number of outsiders required to achieve these coalitions until the 1960s or 1970s.

We examine the evolution of director and outsider shareholdings in greater detail in Table 6. This records proportions of shareholdings by directors and outsiders by decade for the 1900 sample in Panel A and for the 1960 sample in Panel B. Table 7 reports the factors contributing to changes in directors' shareholdings. For example, in the decade between 1900 and 1910, Table 6 shows that directors' ownership went down by 33.64% from 91.61% in 1900 to 57.97% in 1910 and Table 7 records that 47.78% of this decrease was due to acquisitions. Therefore the 18 stock acquisitions between 1900 and 1910 accounted for a decrease in directors' ownership of 16.07% (i.e. 33.64 x 47.78). Similar computations for our 1960 sample show that the 27 acquisitions during the decade 1960-70 accounted for a decrease of 28.32% in directors' ownership.

There are a number of striking features about Tables 6 and 7. First, the decline of insider ownership is rapid in both the 1900 and the 1960 samples. Within ten years directors' shareholdings decline by around one half in both samples. The rapidity of the decline is somewhat higher in the 1960 than in the 1900 sample. Second, the main reason for the decline is not sales of shares by directors in the secondary market, at least in the first half of the century for the 1900 sample. Instead, over the period 1900 to 1950, issues of shares associated with acquisitions, rights issues and placings account for 61.6% of the decline. Third, of this decline through issues of shares, more than half (36.2% of the 61.6%) is associated with acquisitions. Issue of shares in takeovers is the single most important cause of the decline in director holdings. This raises the possibility, which we do not pursue here, that differences in takeover activity across countries explain differences in dispersion of ownership.

As previously noted, the nature of records at Companies House means that there is a preponderance of extant firms in the sample. However, 5 out of 25 of the firms in each of the 1900 and 1960 sample did not survive until the end of the century.[8] Table A2 compares evolution of ownership by directors and outsiders for the surviving and non-surviving firms. Director ownership declines more rapidly in the survivor than in the non-survivor samples, particularly in the first decade after incorporation.

[8] Of the 10 non-urviving firms 8 went into liquidation and 2 were acquired.

3.3 Family ownership and board composition

Table 8 reports the evolution of family shareholdings. Around the time of incorporation, founding families held approximately half of total shareholdings. This declined steadily in the 1900 sample to around one quarter after 40 years. The decline is much sharper for the 1960 sample, from around one half to about 4% after 40 years.

Table 9 provides evidence on the evolution of board composition in order to establish whether directors, including the chairman, were members of the founding families and the extent to which there is separation of family ownership and control. Panel A shows that the average size of the boards of our 1900 sample increased from around 6 to 8 and for the 1960 sample from 3 to 7. Family representation on the boards of firms remained high. 40 years after incorporation outside representation on boards of the 1900 sample increased by less than 20% from 48.6% to 61.6% but in the 1960 sample it increased by nearly 40% from 46.7% to 83.6%. Furthermore, the number of firms in which families retained the position of chairman declined from 20 to 14 in the 1900 sample as against from 21 to 3 in the 1960 sample. Thus, at the same time as family ownership of firms decreased rapidly, their representation on boards of firms diminished only gradually in the 1900 sample.

As a consequence, as Table 10 shows, there has been a marked change in the separation of ownership and control. We measure separation as the difference between the proportion of founding family representation on the boards of firms and share ownership. A positive number in Table 10 means that families have board representation that is disproportionate to their share ownership. It shows that at the beginning of the period, board representation was low in relation to share ownership in the 1900 sample and approximately in line with ownership in the 1960 sample. In both samples, within 40 years family board representation had become disproportionately large to their share ownership. Thus while families were relinquishing ownership, they retained control through representation on boards.

The picture that emerges is that firms grew rapidly in the first as well as the second half of the century largely through acquisitions and rights issues. As a consequence, there was rapid decline in ownership of insiders and families in both the first and

second halves of the century. However, at the same time as families' ownership of equity was being diluted, their [relative] representation on boards of firms actually increased. Separation of ownership and control therefore occurred but in a quite different way from that documented by Berle and Means (1932). Far from management becoming divorced from owners, family owners were taking disproportionate share of control of the boards of U.K. firms.

As Alfred Chandler (1990) describes, families have dominated the control of U.K. firms. However, the puzzle is that, unlike in most Continental European firms, this did not occur through ownership but through board representation. The picture of the development of the U.K. firm is therefore the mirror image of the Continental firm. Board control by families in the U.K. was intensified at the same time as ownership was rapidly dispersed.

4. Dispersion and mutation of ownership

4.1 Methodology

In Table 5 we provided the size of the smallest coalition required to pass the threshold of 25% of cash flow rights. In this section, we characterize the dynamics of corporate ownership by calculating rates of dispersion and mutation.

We compute these variables at ten yearly intervals for three groups: all shareholders, insiders and outsiders, respectively. Dispersion is a measure of changes in the size of the smallest control group and mutation is a measure of the stability of membership of such a coalition. We define the annual rate of dispersion, d, from year t to t+T as

$$d = \{Y(t+T)/Y(t)\}^{1/T} - 1$$

where Y is ownership (minimum number of shareholders required to pass the threshold of 25%), t is the calendar date and T is the length of the measurement interval (10 years in our analysis).[9]

We define mutation of ownership from year t to t+T as

$$m_o = 1 - \{Z(t+T)/Z(t)\}^{1/T}$$

[9] The rate of dispersion, d, for directors is 100% if in period t directors hold more than 25% and in period t+T their holding declines below the threshold.

where Z(t+T)/Z(t) is the proportion of members of the ownership coalition in year t+T who were present in year t.[10] Similarly, we define mutation of board control from year t to t+T as

$$m_b = 1 - \{Z(t+T)/Z(t)\}^{1/T}$$

where Z(t+T)/Z(t) is the largest proportion of directors who can command a majority of seats in year t and are still present on the board in year t+T. For example, if in year t there are 3 directors (a, b and c), there are four possible coalitions to achieve board control (ab, ac, bc, and abc). If in year t+10 the directors are (a, d, e) then there are four possible coalitions (ad, ae, de and ade) and the rate of mutation is 6.7% per year.[11]

4.2 Results for dispersion and mutation of ownership and control

In this section we compare rates of dispersion of ownership and mutation of ownership and control across the two samples of firms. The purpose of the comparison is to assess the impact of the regulatory changes introduced around 1950 and described in section 2.

Table 11 reports rates of dispersion of ownership for both samples. Panel A considers the 1900 sample, and reports the rates of dispersion for all shareholders, and for inside and outside shareholders separately. The rate of dispersion for all shareholders in the first decade is 7.86% per year. Thus, the number of shareholders required to form a coalition of at least a 25% shareholding increases at a rate of 7.86% per year over the

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[10] Another way to think about the relation between dispersion and mutation of ownership can be illustrated as follows. Let the control threshold be defined as x. The control group in period t is the smallest number of individuals i = 1 to I(t) such that:

$$\sum_{i=1}^{I(t)} \alpha(i,t) = x$$

where α(i,t) is shareholding of individual i in period t.

Let i = 1 be the founding family then we can define dilution of their ownership between t and t+1 as:

$$\alpha(1,t+1) - \alpha(1,t) = -\sum_{i=(I(t)+1)}^{I(t+1)} \alpha(i,t+1) - \left(\sum_{i=2}^{I(t)} \alpha(i,t+1) - \sum_{i=2}^{I(t)} \alpha(i,t)\right)$$

The first term is related to dispersion through broadening of the control group and the second to mutation of the existing control group. The founding family's ownership can therefore be diluted by new issues or sales of their shares to new and existing shareholders.

[11] i.e $(1-0.067)^{10} = 0.5$. The values of Z(t+10)/Z(t) corresponding to the four possible coalitions in year t (ab, ac, bc, abc) are 0.5, 0.5, 0 and 0.33 respectively. The largest value corresponding to the most stable coalition is therefore 0.5. Therefore we assume that the relevant coalition is ab or ac in year t.

decade. For example, if the number of shareholders required to meet the 25% threshold had been 5 in 1900 it would have been 10.66 in 1910.

For the 1900 sample, rates of dispersion in the first half of the century are generally higher than in the second half. They are close to zero from 1960 onwards, and actually negative in the eighties, suggesting an increase in concentration arising from the formation of blocks. Dispersion rates for directors are positive for all decades except one, and particularly high for the decades 1900 to 1940 and 1970 to 1990. The pattern is less clear for outside shareholdings where dispersion is volatile in both halves of the century.

The rates of dispersion for the 1960 sample are shown in Panel B. In Panel C, we compare directly the dispersion rates of the two samples for the first four decades after incorporation. Focusing on the comparison for 'all shareholders', we find that in two of the four decades dispersion rates are higher for the 1960 sample. Only in the second decade, is the difference statistically significant and then it is the 1900 sample that has the higher rate of dispersion. Overall, rates of dispersion over the first four decades are not statistically different in the two samples (4.19% for the 1900 sample and 3.80% for the 1960 sample). There is therefore no evidence that rates of dispersion are higher in the 1960 sample.

For the first four decades after incorporation dispersion rates for 'outsiders' are greater in the 1960 sample, and the difference is statistically significant. This result is entirely due to the first decade and reflects the relatively high number of IPOs in the 1960 sample (11 out of 25 companies) and the trading of shares post IPO (see Table 4). The fact that rates of dispersion do not differ for 'all shareholders' in the first decade for the two samples suggests that sales by directors in IPOs in the 1960 sample were purchased by large outside shareholders.[12] In other words, increases in dispersion for directors and outsiders seem to be the result of mutation, an issue to which we turn below.

[12] Although the post IPO outside blocks must have been smaller than the pre IPO blocks as indicated by the increase in dispersion of outside shareholdings.

In Table A3, we report the results of using a 50% instead of 25% ownership threshold. The picture is very similar with high rates of dispersion at the beginning of the century, and with no significant difference of overall dispersion rates between the first four decades of the 1900 and 1960 sample. However, there is now some evidence of higher rates of dispersion among directors, as well as outsiders, in the 1960 than in the 1900 sample.

In Table 12 we describe mutation of ownership and control, as defined in 4.1 above for the two samples. In Panel A, for the 1900 sample, we report higher rates of mutation in the second half of the century than in the first. On average, in the 1900 sample, 5.2% of the control group remains in place over a decade, while the corresponding figure for the 1960 sample is 0.6%. These figures correspond to the average rates of mutation of 25.64% and 40.01% in the two samples, respectively.[13] Panel C reports results from t-tests comparing rates of mutation for the four decades for both samples. The 1960 sample has strikingly higher rates of mutation than the 1900 sample, and the differences are statistically significant. One interpretation of this finding is that it was easier to sell large blocks in the second half of the century than in the first but these trades had little effect on the size of the smallest control coalition.

In Table A4 we compare dispersion rates and mutation rates between the survivors and non-survivors. Consistent with the observations on director ownership in Table A2, rates of dispersion and mutation are greater in survivors than non-survivors in both the 1900 and 1960 samples. This is particularly pronounced in the first decade after incorporation. The first two columns show that this is associated with much more rapid growth of survivors than non-survivors. We consider below the factors driving differences in both growth and dispersion rates.

4.3 Regression results

We provide further evidence on differences in dispersion and mutation between the 1900 and 1960 sample by running regressions of the average annual rates of dispersion and mutation by decade in the first four decades of each sample. Tables 14

[13] Thus $(1-0.2564)^{10} = Z(t+10)/Z(t) = .052$ or 5.2%.

and 15 report the results of regressing dispersion and mutation in ownership on a dummy signifying whether the observations relate to the 1900 sample as against the 1960 sample and several other variables. Consistent with the conclusions in the previous section, the dummy variable (columns 1 and 2) is positive but insignificant in the dispersion regression and negative and highly significant in the mutation regression. As previously noted, there is no significant difference in average levels of dispersion between the two periods but much higher levels of mutation in the 1960 sample.

We would expect initial levels of dispersion in a decade to influence subsequent dispersion and mutation in a fairly mechanical fashion: the higher the initial level of dispersion, the lower the likely rate of subsequent dispersion and the larger the likely rate of mutation of ownership.[14] We can also examine whether the nature as well as the level of ownership and board control affect subsequent evolution. The law and finance literature emphasizes the importance of regulation in limiting exploitation of minority investors by large shareholders. According to the private benefits thesis, insiders extract private benefits at the expense of external investors. Large insider shareholdings and family representation on the boards of firms would therefore be expected to diminish dispersal of ownership and trading in controlling shareholdings. We would therefore anticipate a negative relation between our dependent variables, dispersion and mutation of ownership, and two of our independent variables, director ownership and family board representation.

Columns 3 and 4 in Tables 14 and 15 include levels of ownership control at the beginning of the decade in question as measured by the number of people required to exercise 25% of votes, the proportion of director ownership and the proportion of seats on the boards of firms occupied by families at the beginning of the decade as additional variables in regressions of dispersion and mutation. As predicted above, the two columns record that lower levels of initial dispersion at the start of the decade are associated with faster rates of dispersion and lower rates of mutation in the subsequent decade. There is strong evidence of a negative relation between family

[14] For example, in the 1900 sample rates of dispersion are significantly higher in the first forty than the last forty years of the decade when levels of dispersion are much greater, while rates of mutation of significantly higher in the last forty years.

representation on the boards of firms on dispersion but not on mutation of ownership. However, contrary to the private benefit thesis, the relation with director ownership is unclear: there is some evidence that director ownership is positively related to dispersion and negatively related to mutation, but only in the absence of decade fixed effects. The 1900 sample dummy remains insignificant in the dispersion regression and significantly negative in the mutation regression.

The conditions that therefore appear to be most conducive to rapid rates of dispersion ownership are concentrated ownership at the start of the period, primarily in the hands of insiders with low representation of families on the boards. Thus dispersion is particularly rapid immediately after incorporation and in companies with high insider ownership.

In the next section, we illustrate the process by which dispersion took place via acquisition in one prominent case and then examine the extent to which takeovers can explain the rates of dispersion and mutation of ownership in our sample.

5. Takeovers and trust

During the first half of the century takeovers were usually made by the bidder approaching the directors and agreeing to purchase their shares. The directors then advertised in the newspapers informing outside shareholders of the sale of their shares to the bidder at a particular price and recommending shareholders to follow suit. In all 6 tender offers made by companies in our sample for other listed companies, the tender offer price to outside shareholders was the same as that paid to directors for their holdings and the offer was made to all shareholders. The outcome was that more than 96% and, in the majority of cases, 100% of shares were acquired. From this small sample, it appears that the U.K. did not follow the Continental European practice of purchasing a majority of shares and leaving a substantial residual minority on the market.

5.1 Case study of GKN

The case of GKN illustrates the way in which acquisitions affected ownership. Dowlais Iron Company was set up in 1759 in the village of Dowlais near Merthyr

Tydfil in South Wales. John Guest was appointed as manager of Dowlais in 1767, and his grandson became the company's sole owner in 1851. The Dowlais Iron Company was at this stage the largest iron works in the world, operating 18 blast furnaces and employing more than 7,300 people. The business was the first licensee of the Bessemer process, constructing the world's most powerful rolling mill in 1857, and producing its first Bessemer steel in 1865.

The Keen family established the Patent Nut and Bolt Company in 1856 in Smethwick, England. In July 1900, Guest, Keen and Company Limited was incorporated in Birmingham with the purpose of taking over the Dowlais Iron Company and the Patent Nut and Bolt Co., Ltd. The shareholders of the two companies received 250,000 ordinary shares. At the same time, 400,000 ordinary shares were issued via public subscription and the company was floated with 546 ordinary shareholders and more than 2000 preference shareholders. Both classes of shares were traded on the London and Birmingham Stock Exchanges. There was no evidence of the company being dispersed before 1900: the company history suggests that both Dowlais Iron Co. and the Patent Nut and Bolt were 100% owned by directors and their families. Evidence for this comes from a comparison of directors' holdings with the shareholdings of the two companies before the merger. Since directors' holdings after the flotation were 33.6% of the ordinary shares, and the newly issued shares were 400,000, compared with a pre-issue total of 250,000 we can compute a lower bound of directors' ownership pre-issue of 87.3%.

In 1902 the company acquired Nettlefold and Company, one of the world's leading manufacturers of screws and fasteners set up in Smethwick in 1854, by issuing 315,000 new ordinary shares. The new company name was then called Guest, Keen, and Nettlefolds Limited, and Mr Edward Nettlefold joined the board. By 1910, the directors held 26.4% of issued ordinary shares. In 1920, shares in Guest, Keen and Nettlefolds Ltd. (GKN) were quoted at Birmingham, Bristol, Cardiff, Edinburgh, Glasgow, Liverpool, Manchester and Sheffield, while the prices of the transactions were marked (i.e. reported) on the official list of the London Stock Exchange.

A crucial decade in the evolution of ownership and control of GKN was then about to begin (Table 13). First, the company acquired John Lysaght Limited of Bristol (also

quoted in Bristol and London) in one of the largest tender offers of the decade.[15] As a result, 99.8% of the shares in John Lysaght were tendered to GKN. The remaining minority shareholding continued to be quoted in Bristol and London until at least 1950 but little trade took place with just 4,140 ordinary shares publicly held.[16] GKN then undertook two other major tender offers in November 1923, acquiring D Davis and Sons and Consolidated Cambrian of Cardiff. In both cases 96% of the outstanding ordinary shares were exchanged.[17]

These three tender offers were representative of the acquisition pattern of the early years of the century, as reported above. "An approach through the directors, followed by controlled stock transfers on the recommendations of the directors (rather than contested takeover raids) remained the norm in these years". (Hannah (1974b), p. 68). The bidders approached the target management, negotiating a price (i.e. an exchange ratio). Subsequently, the management wrote to the shareholders stating that "the offer has been unanimously accepted by the Directors of your company for the whole of their individual shares, and they have no hesitation in recommending its acceptance to the shareholders in John Lysaght, Limited."[18] The same terms would be offered to outside shareholders as the directors.

As Hannah (1974b) has noted, "the loyalty of shareholders to directors was strong, and the directors of other companies had a natural aversion to challenging it. Even if a direct bid were to be made, the directors of the victim firm remained in a strong position relative to their own shareholders. In practice the shareholders would recognize the superiority of the directors' information and tend to take their advice on the true value of the company in relation to the bid price." (p. 70-71) "Directors felt a

[15] Details of the deal are as follows: in January 1920, GKN issued 1,989,919 new ordinary shares and 2,652,331 preference shares. Ordinary shareholders of John Lysaght Ltd were offered 4 new 2nd preference and 3 new ordinary shares in GKN for every 3 ordinary shares held.
[16] The 1948 squeeze out rule, allowing a compulsory purchase of minorities of less than 5% of the outstanding share capital, may have been used to take out the small minority.
[17] Details of both deals are as follows. First, GKN acquired D Davis and Sons of Cardiff (quoted at Cardiff, London, Birmingham and Bristol) offering 1 new ordinary share in GKN for every 5 ordinary shares in D Davis & Sons. Second, GKN acquired Consolidated Cambrian of Cardiff (quoted at Birmingham, Bristol, Cardiff, Glasgow, Liverpool, Newcastle, Newport, Sheffield and Manchester) offering 2 new ordinary shares in GKN for every 5 ordinary shares held in Consolidated Cambrian.
[18] Quote from *Financial Times*, Monday 17 January 1920.

responsibility to recommend offers to their shareholders when the bid price was pitched reasonably." (p. 68-69)[19]

As a consequence of these acquisitions there was a huge increase in the number of shareholders: GKN had about 1,000 shareholders before 1920, and more than 20,000 in 1924. At this stage, GKN was one of the largest manufacturing businesses in the world, involved in every stage of manufacturing from coal and ore extraction to iron and steel making and finally to finished products including the nuts, bolts, screws, and fasteners for which it was renowned during this period. GKN formally listed on the London Stock Exchange on June 14, 1946. By then the directors owned a negligible stake and the largest shareholder of the period was the Royal Bank of Scotland with 2.37% of issued ordinary shares. In the second half of the century, Prudential Assurance, Norwich Union Life Insurance, Schroder Investment Management, and Scottish Widows Investment Management among others alternated as the largest shareholders with stakes varying from 3% to 5.25% of issued equity capital.

This illustrates an important caveat to the conclusion that rates of dispersion of ownership were not significantly different in the second from the first half of the century. In the first half of the century, investors were predominantly individuals. In the second half, they became increasingly institutional; intermediary holdings through pension funds, life assurance firms and mutual funds came to dominate share ownership of U.K. corporations. The significance of this point is that, if ownership were traced back to the ultimate beneficiaries, dispersion would almost certainly be found to have increased. It occurred through these intermediaries rather than directly at the level of the firm.

5.2 Acquisitions and dispersion

The picture that emerges from GKN is of a firm whose shares were initially traded on local provincial exchanges, that expanded rapidly through acquisitions, broadened its shareholder base both numerically and geographically in the process, and that by the

[19] Thus, equal prices prevailed in the absence of explicit regulation and bidders acquired all shares of the target firms rather than a large or majority block as in Continental Europe. The absence of investor protection may even have discouraged shareholders from retaining minority holdings in target firms because of private benefits of control. It is therefore interesting to conjecture whether weak rather than strong investor protection accounts for the absence of share blocks and pyramids in the U.K.

beginning of the second half of the twentieth century was widely held primarily by institutional shareholders. What emerges consistently throughout this analysis is the importance of acquisitions in explaining the evolution of ownership of firms. However, this does not occur as conventionally described through changes in ownership of the target firms so much as through the shareholdings of the acquiring firm - share issuance by the acquiring firm substantially broadened its shareholder base. But there is another feature that the case study illustrates about acquisitions. Not only did they increase the number of shareholders, they also brought in shareholders from outside the locality of origination of the firm. The relevance of trading on local exchanges therefore diminished as the investor base of firms expanded nationally.

We examine this issue further by evaluating the relation between dispersion and mutation and acquisitions by firms. We include two further variables in Tables 13 and 14, namely the annual number of acquisitions by firms and the issuance of equity by firms outside their hometown. For the latter, we collected data on the geographical composition of shareholders and constructed a variable that measured the proportion of shares issued to investors outside the hometown in an acquisition or placing, divided by the firm's equity capital.[20] Columns 5 and 6 show that dispersion is positively related to both acquisitions and geographic dispersion of issues. The takeover process and issuance of shares outside the hometown were critical to the process of dispersal of ownership.

A final piece of evidence comes from comparing acquiring firms with non-acquirors. Table 16 partitions the sample into firms that undertook at least one acquisition in the decade in question and those that did not. Average annual dispersion rates of acquiring firms were appreciably higher at 15.21% in the 1900 sample and 7.74% in the 1960 sample than non-acquirors (2.08% and 1.85% respectively). Mutation but not dispersion rates are consistently higher in the 1960 than in the 1900 sample. Furthermore, takeovers account for the pronounced differences between surviving and non-surviving firms: all of the non-surviving firms in the 1900 sample were in the

[20] Unlike the other variables in the regression, number of acquisitions and geographical composition are not predetermined. They may therefore raise concerns about endogeneity. However, the number and location of acquisitions are probably for the most part driven by real rather than ownership composition considerations.

group of non-acquiring companies. In comparing evolution of ownership of different firms in the UK, a distinction between those that engaged in takeover activity and those that did not may be more pertinent than between those that survived and those that did not.

6. Conclusions

As far as we are aware, this is the first large sample analysis of evolution of firms over long periods. The U.K. is a particularly good laboratory, first, because of its rich source of data and, second, because of its remarkable development of regulation.

What emerges from this Darwinian expedition back to the source of the British corporation? The answer is not strong investor protection. On the contrary, for much of the twentieth century there was very weak investor protection. Notwithstanding this, stock markets were large and active and allowed the corporate sector to grow by issuing equity to target shareholders. Local stock exchanges and local investors created relations based on trust, and as a result firms were able to sell their paper to new shareholders, even in the absence of formal investor protection.

Thus, we conjecture that as firms expanded, they acquired companies outside their hometowns and their investor base steadily broadened to a national level. In the process, the trust relation became strained, there were prominent failures and scandals, and eventually calls for reform gave rise to the more regulated securities markets of the second half of the twentieth century. Regulation was therefore a response to rather than a cause of active financial markets.

When investor protection was eventually strengthened, it had little impact on dispersion of ownership. Instead, its main effect was on mutation. Regulation established more liquid markets, which facilitated trading in controlling stakes and, as a consequence, turnover of these stakes increased appreciably in the second half of the century. The picture of faster ownership changes was mirrored in board control: board turnover also increased in the second half of the century.

Against this background of faster mutation of ownership and control, there was one element of comparative stability and that was the persistence of representation by originating families on corporate boards. A divergence between ownership and control therefore occurred but it took the form of retention of family control without ownership as well as the emergence of outside ownership without control.

The results of this study run counter to the law and finance literature. It could, of course, be contended that the common law system provided the setting within which relations based on trust could flourish. But this paper suggests that regulation evolved to meet the changing financing needs of firms. In the case of the UK, this involved a geographically expanding pool of acquisitions. In other countries, in which acquisitions played a less significant role or took the form of purchase of share blocks rather than tender offers, regulatory requirements may have been different. This raises the intriguing question of whether the diverse set of regulatory rules that we observe across countries today is a product of the divergent forms in which corporations have grown in the past.

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Table 1 – The history of regulation of U.K. capital markets

The Table reports the evolution of capital markets regulation in the U.K. Panel A reports minority protection rules and control thresholds, Panel B reports listing rules, and Panel C reports disclosure rules.

Panel A: Minority protection rules and control thresholds

Year of rule	*Source*	*Rule*	*Description*
1843	Rule in Foss v. Harbottle	50%+	Majority of votes prevails in company law.
1948	Companies Act, S 209	90%	Squeeze out rule: large shareholder can buy out minority at bid price.
1948	Companies Act, S 11, Paras 50 & 62.	Anti-director rule	Notice of meetings with minimum of 21 days. Allows voting by proxy.
1948	Companies Act, S 184	Removal of directors	Made easier by special resolution
1948	Company law	Anti-director rule	10% of shares can force an EGM
1967+	Company law	25%	Blocking minority where there is a large shareholder
1967	Takeover Code	30%	Compulsory tender offer for remaining shares
1967	Company law	75%	Supra majority rules for mergers, equity issues to new shareholders.
1980, 1985,	Companies Act, S 89.	Pre-emption rights	New share issues must be offered to existing shareholders first.

Panel B: Listing rules – London Stock Exchange

Year of rule	*Source*	*Description*
1915	Companies Act	Government required all bargains to be recorded in Official List or Supplementary List. Former is for companies with a quotation on LSE, and second is where there is no quotations but dealings are allowed.
1921	London Stock Exchange	Stock exchange published rules covering permission to deal and quotation in the Supplementary List
Post 1928	London Stock Exchange	Rules for admission to both lists tightened up: permission to deal and entry into Official List. Followed collapse of 1928 new issue boom.
1947	London Stock Exchange	Differences between official quotation and permission to deal were abolished. Conditions for granting an Official Quotation stiffened up: 10 years profit record compared with 5 under 1948 Companies Act and support of 2 jobbers. Also, if permission to deal is refused all funds raised in the issue must be returned to subscribers. Thus, it was not possible to raise money without permission to deal.

Panel C: Disclosure rules

Year of rule	*Source*	*Nature of disclosure*	*Description*
1900	Company law	Prospectus	Filed at Companies House. Specific material included in law.
1929	Companies Act, S 122-124.	Balance sheets and P&L accounts	Company must keep proper books including a P&L account and Balance Sheet. Public companies file a balance sheet with Registrar of Companies
1929	London Stock Exchange	Balance sheets and P&L accounts	Must be sent out at least 7 days before AGM
1939	Company law	Directors' interests	Disclosure of contracts with directors
1948	Companies Act, S 38 & Fourth Schedule	Prospectus	Disclosure in prospectus and penalties for non disclosure
1967	Companies Act, S 33.	10% block	Disclosure of outside block
1967	City Code on Takeover & Mergers	15% block	Holder must express intentions to bid
1976	Companies Act, S 26.	5% block	Disclosure of outside block
1985	Companies Act, S 198.9	3% block	Disclosure of outside block

Table 2 – Sample description

The table lists the companies in our sample, their cities of incorporation, incorporation date, IPO date, and the earliest years for which we have evidence of the ordinary shares being traded at the London Stock Exchange and Provincial Exchanges for the 50 companies of our sample.

Panel A: 1897 – 1903

Company Name	*City of Inc.*	*Inc. date*	*IPO date*	*Traded (LSE)*	*Traded (provincial)*
Barnaby Foods	Walthamstow (London)	26/07/1898	-	-	-
Cadbury Brothers	Birmingham	13/06/1899	-	1968	1961 (Birmingham)
Cadbury Schweppes	London	06/05/1897	19/12/1942	1897	1897 (Manchester)
Chamberlin and Hill	Walsall	03/04/1903	25/03/1973	1973	1956 (Birmingham)
De La Rue	London	01/07/1898	27/07/1947	1926	-
European Colour	London	18/04/1900	05/08/1956	1900	-
Exel	Liverpool	06/06/1902	12/03/1965	1965	1963 (Northern)
Gkn Holdings	Birmingham	09/07/1900	14/06/1946	1900	1900 (Birmingham)
Harvey Nichols Group	London	22/01/1902	26/04/1996	1996	-
Interserve Invt.	London	16/08/1902	12/10/1966	1928	-
Interserve	London	19/04/1902	-	-	-
Johnston Group	London	14/09/1898	24/03/1958	1921	1898 (?)
John Williams Industries	Cardiff	28/11/1899	Around 1950	1950	1950 (Midlands&West)
Laird Group	Sheffield	04/01/1898	23/06/1949	1904	1905 (Sheffield et al)
Leeds Group	Leeds	21/11/1900	24/08/1965	1965	1921 (Leeds)
Manganese Bronze Holdings	London	10/03/1899	24/04/1940	1899	1920 (Leeds, Manch.)
Marconi Corpn.	London	27/09/1900	30/11/1999	1919	1921 (Birm., Manch.)
Medical Solutions	West Bromwich	14/11/1903	06/11/1989	1989	1967 (Midland&West)
Reed International	London	28/05/1903	21/04/1948	1930	-
Stewart & Wight	London	29/04/1898	25/03/1960	1921	-
Swan Hill Group	New Malden (Surrey)	07/02/1898	11/07/1960	1960	-
Tate & Lyle	London	27/02/1903	09/12/1938	1929	1928 (Liverpool)
Walker Greenbank	Donnington (Newport)	03/05/1899	17/08/1998	1899	1899 (Birmingham)
Waterdorm	Manchester	07/06/1900	1927-30?	1907	1900 (Manchester, et al)
Yorkshire Group	Huddersfield, Yorkshire	19/05/1900	08/09/1947	1921	1900 (Leeds)

Panel B: 1958 – 1962

Company Name	*City of Inc.*	*Inc. date*	*IPO date*	*Traded (LSE)*	*Traded (provincial)*
Albert Fisher Group	Nelson (Lancashire)	06/02/1961	21/09/1973	1973	1965 (Liverpool)
Allied Domecq (Holdings)	London	13/04/1961	13/05/1961	1961	1961 (Birmingham etal)
Black Arrow Group	London	01/05/1959	25/03/1974	1974	-
Bradstock Group	London	15/12/1959	09/07/1985	1985	-
Bullers	London	07/05/1959	18/06/1959	1959	-
Clarke Foods	London	22//05/1962	-	-	-
Countryside Properties	London	14/11/1958	15/11/1972	1972	-
Electrocomponents	London	22/01/1960	14/06/1967	1967	-
Hampson Industries	Wolverhampton	02/07/1959	11/11/1968	1968	1968 (Midlands&West)
HAT Group	Bristol	27/02/1961	-	-	1963 (Bristol)
Haynes Publishing Group	Yeovil (Somerset)	18/05/1960	07/11/1996	1996	-
Hill & Smith Holdings	Brierley Hill, Staffordsh.	30/09/1960	26/03/1969	1969	-
Lowland Investment	London	20/09/1960	05/04/1966	1966	-
LPA Group	Leigh-on-Sea (Essex)	14/03/1961	29/02/1996	1996	-
Merivale Moore	London	20/06/1961	10/12/1985	1985	-
MS International	Doncaster (Yorkshire)	24/03/1960	24/03/1965	1965	-
Provident Financial	Bradford (Wt Yorkshire)	31/08/1960	16/03/1962	1962	-
Provincial North West	Altrincham (Cheshire)	29/03/1961	-	-	-
R.E.A. Holdings	London	27/09/1960	05/10/1960	1909	-
Silverscreen Print	Newcastle	21/07/1959	-	-	-
Sportsworld Media Group	Birmingham	18/11/1960	29/11/1996	1996	-
Tandem Group	London	15/12/1958	27/09/2000	2000	-
Town Centre Securities	Leeds	17/03/1959	21/09/1960	1960	-
Whatman	London	23/06/1959	17/11/1960	1960	-
Xpertise Group	Dalkeith	17/11/1960	05/01/1999	1999	-

Table 3 - Capital structure

This table reports the number of companies in the 1900 sample of 25 firms with ordinary issued equity, preference equity and debentures in 1920 and 1930 and the average percentage of the nominal value of total issued capital accounted for by the different types of securities. Nominal capital is the face value (par value) of all outstanding securities.

	Equity			*Debt*	
	Ordinary	*1st Preference*	*2nd Preference*	*1st Debenture*	*2nd Debenture*
1920					
Number of firms	25	18	4	11	2
Average percentage of all nominal capital	59.23	25.87	4.74	8.93	0.54
1930					
Number of firms	25	18	4	12	2
Average percentage of all nominal capital	58.84	23.19	5.28	11.86	0.32

Table 4 – Annual Growth - Total Ordinary Capital

This table reports annual growth in total ordinary capital for our sample, and percentage contributions to annual growth in total ordinary capital from IPOs, acquisitions, rights issues, and placings. Total ordinary capital is the number of issued ordinary shares. Growth in total ordinary capital is normalized to exclude the influence of capitalization of reserves to existing shareholders. Panel A refers to the 1900 sample, while Panel B considers the 1960 sample.

Panel A: Factors contributing to annual growth in total ordinary capital for selected years, 1900 sample

	Annual growth in total ordinary capital			Factors contributing to annual growth in total ordinary capital			
	Mean	Median	n. obs	IPOs	Acquisitions	Rights Issues	Placing
1900-1910	37.47	0	25	0	94.51	0.84	4.65
1910-1920	3.25	0	25	0	33.77	48.90	17.33
1920-1930	1.91	0	25	0	59.14	28.74	12.12
1930-1940	1.15	0	25	0	11.43	88.57	0
1940-1950	2.20	0	24	34.82	2.25	62.93	0
1950-1960	4.40	0	23	0	34.22	65.78	0
1960-1970	3.22	1.59	22	28.07	43.44	28.49	0
1970-1980	2.39	2.82	21	0	15.43	84.57	0
1980-1990	3.62	1.84	21	7.47	24.23	59.03	9.27
1990-2000	3.56	2.27	19	0	14.08	73.05	12.87
Mean	6.49	0		7.04	33.25	54.09	5.62

Panel B: Factors contributing to annual growth in total ordinary capital for selected years, 1960 sample

	Annual growth in total ordinary capital			Factors contributing to annual growth in total ordinary capital			
	Mean	Median	n. obs	IPOs	Acquisitions	Rights Issues	Placing
1960-1970	69.48	44.47	25	17.23	38.88	10.48	33.41
1970-1980	3.50	1.63	21	50.97	38.57	9.03	1.43
1980-1990	4.62	0	20	3.03	84.79	8.10	4.08
1990-2000	2.38	0	20	9.89	41.71	4.21	44.19
Mean	22.05	1.65		20.28	50.99	7.95	20.78

Table 5 – Evolution of ownership

This table reports the evolution of ownership over time for the 50 companies of our sample. Ownership is defined as the minimum number of shareholders necessary to pass the threshold of 25% of cash flow rights, and is computed for all shareholders, for directors alone, and for outsiders, respectively. Frequency is the number of companies where the 25% threshold is passed by directors and outsiders, respectively. Panel A refers to the 1900 sample and Panel B considers the 1960 sample.

Panel A: Evolution of ownership – 1900 sample

	All shareholders		Directors		Outsiders		
	Mean	median	Mean	frequency	mean	frequency	n. obs
1900	1.88	1.00	1.88	25	14.33	9	25
1910	8.40	1.00	3.40	20	24.67	12	25
1920	11.16	2.00	2.00	18	28.80	15	25
1930	17.72	4.00	2.14	14	35.89	18	25
1940	17.92	7.00	2.30	10	25.00	18	25
1950	24.88	9.00	3.67	9	30.75	20	24
1960	25.87	12.00	4.43	7	31.65	20	23
1970	51.95	11.00	3.00	8	57.57	21	22
1980	57.86	8.00	1.80	5	61.24	21	21
1990	45.76	4.00	2.00	2	48.33	21	21
2000	48.45	3.00	1.67	3	53.58	19	20
mean	26.98		2.59		36.42		

Panel B: Evolution of ownership – 1960 sample

	All shareholders		Directors		Outsiders		
	Mean	median	mean	frequency	mean	frequency	n. obs
1960	1.08	1.00	1.08	25	5.00	2	25
1970	13.16	2.00	1.25	16	21.21	19	25
1980	14.14	1.00	2.00	14	18.58	19	23
1990	10.10	4.50	1.50	8	10.90	20	22
2000	3.85	3.00	1.17	5	5.25	20	20
Mean	8.40		1.38		12.33		

Table 6 – Directors' shareholdings

This table reports the evolution of directors' and outsiders' shareholdings for our sample. Panel A refers to the 1900 sample, while Panel B considers the 1960 sample.

Panel A: Shareholdings (%) held by directors and outsiders for selected calendar years, 1900 sample

	Directors		Outsiders		n. obs
	Mean	Median	Mean	Median	
1900	91.61	100	8.39	0	25
1910	57.97	57.50	42.03	42.50	25
1920	53.58	38.51	46.42	61.49	25
1930	40.86	24.24	59.14	75.77	25
1940	35.70	17.91	64.30	82.09	25
1950	28.65	11.99	71.35	88.02	24
1960	23.75	9.22	76.25	90.78	23
1970	17.80	9.43	82.20	90.57	22
1980	14.10	0	85.90	100	21
1990	8.30	0	91.70	100	21
2000	9.85	0	90.15	100	20
Mean	36.14		63.86		

Panel B: Shareholdings (%) held by directors and outsiders for selected calendar years, 1960 sample

	Directors		Outsiders		n. obs
	Mean	Median	Mean	Median	
1960	100	100	0	0	25
1970	48.42	37.57	51.59	62.43	25
1980	33.94	28.90	66.07	71.10	23
1990	20.17	18.65	79.83	81.35	22
2000	16.59	10.09	83.40	89.91	20
Mean	46.47		53.53		

Table 7 – Factors influencing changes in directors' shareholdings

This table reports the reduction of directors' shareholdings (computed from Table 6). Impact is the proportion of the reduction attributable to different factors - IPOs, acquisitions, rights issues, and placings. Panel A refers to the 1900 sample, while Panel B considers the 1960 sample.

Panel A: Factors influencing reduction in directors' shareholdings for selected years, 1900 sample

	Reduction of Directors shareholdings		Factors influencing reduction in Directors' shareholdings							
			IPOs		Acquisitions		Rights Issues		Placing	
	Mean	Median	Freq.	Impact	Freq.	Impact	Freq.	Impact	Freq.	Impact
1900-1910	33.64	42.50	0	0	18	47.78	12	1.06	8	36.73
1910-1920	4.40	18.99	0	0	3	43.30	7	0	1	2.74
1920-1930	12.71	14.28	0	0	5	35.23	7	0	2	4.79
1930-1940	5.16	6.33	3	0	3	6.27	11	45.94	0	0
1940-1950	7.06	5.92	6	0.46	1	0	4	2.38	0	0
1950-1960	4.89	2.77	4	0	10	8.50	15	2.85	0	0
1960-1970	5.95	-0.21	4	48.66	24	17.74	8	19.92	0	0
1970-1980	3.70	9.43	1	0	9	2.75	19	21.72	0	0
1980-1990	5.80	0	1	5.48	4	19.00	14	14.58	2	0
1990-2000	-1.55	0	3	65.27	3	2.92	14	49.91	10	27.63
Mean	8.47		2.20	11.99	8.00	18.35	11.10	15.84	2.30	7.19

Panel B: Factors influencing reduction in directors' shareholdings for selected years, 1960 sample

	Reduction of Directors shareholdings		Factors influencing reduction in Directors' shareholdings							
			IPOs		Acquisitions		Rights Issues		Placing	
	Mean	Median	Freq.	Impact	Freq.	Impact	Freq.	Impact	Freq.	Impact
1960-1970	51.59	62.43	11	11.42	27	54.52	17	4.61	6	21.35
1970-1980	14.48	8.67	3	17.42	23	6.32	6	4.97	3	6.74
1980-1990	13.76	10.25	2	34.22	4	12.99	10	4.85	2	9.93
1990-2000	3.58	8.56	5	4.28	4	12.73	4	22.49	5	78.34
Mean	22.57		5.25	16.84	14.50	21.64	9.25	9.23	3.25	29.09

Table 8 – Founding family shareholdings

This table reports mean and median founding family shareholdings for our sample. Panel A refers to the 1900 sample, while Panel B considers the 1960 sample.

Panel A: Founding family shareholdings for selected years, 1900 sample

	Mean	Median	n. obs
1900	53.92	34.78	25
1910	48.82	31.86	25
1920	44.62	29.01	25
1930	28.85	5.82	25
1940	25.57	4.25	25
1950	19.79	0.02	24
1960	14.87	0	23
1970	8.28	0	22
1980	2.08	0	21
1990	0.61	0	21
2000	0.80	0	20
Mean	22.56		

Panel B: Founding family shareholdings for selected years, 1960 sample

	Mean	Median	n. obs
1960	52.17	51.25	25
1970	27.83	19.45	25
1980	16.69	4.75	23
1990	6.32	0	22
2000	4.44	0	20
Mean	21.49		

Table 9 – Board composition

This table reports board size and the percentage of board members that do not come from the founding family for the 50 companies in our sample. Panel A refers to the 1900 sample, while Panel B considers the 1900 sample.

Panel A: Board composition for selected years, 1900 sample

	Board size		Family CEO	Board members outside founding family (%)		n. obs
	Mean	Median		Mean	Median	
1900	5.92	5.00	20	48.63	41.45	25
1910	6.74	5.00	20	45.92	52.75	25
1920	7.00	5.00	16	60.13	66.60	25
1930	7.40	6.00	14	63.03	72.35	25
1940	7.16	6.00	14	61.63	71.55	25
1950	7.63	6.50	12	68.40	87.50	24
1960	8.04	7.00	7	72.69	100	23
1970	9.00	8.00	4	79.12	100	22
1980	8.24	7.00	4	86.78	100	21
1990	8.24	8.00	2	90.68	100	21
2000	7.90	7.00	2	92.51	100	20
Mean	7.53		10.92	69.96		

Panel B: Board composition for selected years, 1960 sample

	Board Size		Family CEO	Board members outside founding family (%)		n. obs
	Mean	Median		Mean	Median	
1960	3.16	3.00	21	46.69	41.65	25
1970	5.72	5.00	15	67.94	77.50	25
1980	6.64	6.00	9	77.12	86.65	23
1990	7.09	7.00	4	84.14	100	22
2000	7.00	6.00	3	83.62	100	20
Mean	5.83		10.90	71.90		

Table 10 – Separation of ownership and control

This table reports mean and median separation of ownership and control for the 50 companies of our sample. Separation is defined as the difference between the proportion of founding family members on the board and family shareholdings. Panel A refers to the 1900 sample, while Panel B considers the 1900 sample.

Panel A: Separation of ownership and control for selected years, 1900 sample

	Mean	Median	n. obs
1900	-4.58	0	25
1910	3.53	0	25
1920	-7.25	0	25
1930	6.33	0	25
1940	12.79	8.21	25
1950	10.41	7.40	24
1960	12.45	0	23
1970	12.60	0	22
1980	11.13	0	21
1990	8.71	0	21
2000	6.69	0	20
Mean	6.62		

Panel B: Separation of ownership and control for selected years, 1960 sample

	Mean	Median	n. obs
1960	1.15	0	25
1970	4.23	0	25
1980	6.09	0	23
1990	9.55	0	22
2000	11.94	0	20
Mean	6.59		

Table 11 – Dispersion of ownership

This table reports the annual rates of dispersion of ownership over time. Ownership is defined as the minimum number of shareholders necessary to pass the threshold of 25% of cash flow rights. Dispersion is defined as the change in ownership. The rates of dispersion are computed for all shareholders, for directors alone, and for outsiders, respectively. Panel A refers to the 1900 sample, Panel B considers the 1960 sample and Panel C reports t-statistics of differences in means across the two samples, comparing the first four decades over the life cycle. Superscript letters a, b, c indicate significance at 1 percent, 5 and 10 percent level, respectively.

Panel A: Annual rates of dispersion of ownership – 1900 sample

	All shareholders	Directors	Outsiders	n. obs
1900-1910	7.86	17.50	6.66	25
1910-1920	2.28	9.99	12.37	25
1920-1930	4.79	16.77	11.95	25
1930-1940	1.81	16.23	-2.96	25
1940-1950	2.59	0.66	9.60	24
1950-1960	1.86	4.47	1.43	23
1960-1970	0.42	-7.47	10.03	22
1970-1980	0.07	8.81	-0.02	21
1980-1990	-5.65	13.82	-6.57	21
1990-2000	0.24	5.00	3.98	20
Mean	1.77	8.77	4.81	

Panel B: Annual rates of dispersion of ownership – 1960 sample

	All shareholders	Directors	Outsiders	n. obs
1960-1970	11.91	40.86	63.98	25
1970-1980	-1.78	1.54	8.91	23
1980-1990	6.08	31.41	9.97	22
1990-2000	-2.22	14.67	-1.13	20
Mean	3.80	22.48	22.51	

Panel C: 1900 vs. 1960 – Tests of means (t-statistics)

	First decade	Second decade	Third decade	Fourth decade	Overall
All shareholders	–0.82	2.06[b]	–0.40	1.60	0.21
Directors	–1.89[c]	0.71	–1.15	0.14	–1.20
Outsiders	–4.94[a]	0.34	0.20	–0.78	–2.87[a]

Table 12 – Mutation of ownership

This table reports the annual rates of mutation of ownership over time. Ownership is defined as the number of shareholders necessary to pass the threshold of 25%. Mutation is defined as the change in the composition of ownership. The rates of mutation are computed for all shareholders, for directors alone (both in terms of cash flows rights and of simple board majority), and for outsiders, respectively. Panel A refers to the 1900 sample, Panel B considers the 1960 sample and Panel reports t-statistics of differences in means across the two samples, comparing the first four decades over the life cycle. Superscript letters a, b, c indicate significance at 1 percent, 5 and 10 percent level, respectively.

Panel A: Annual rates of mutation of ownership – 1900 sample

	All shareholders	Directors	Outsiders	n. obs
1900-1910	4.89	0.54	18.95	25
1910-1920	14.60	9.95	24.35	25
1920-1930	19.71	14.46	24.80	25
1930-1940	18.45	21.01	25.01	25
1940-1950	30.25	32.36	24.94	24
1950-1960	24.59	8.12	25.29	23
1960-1970	21.86	23.17	40.57	22
1970-1980	33.97	26.56	24.13	21
1980-1990	55.03	26.84	60.04	21
1990-2000	42.03	30.74	42.09	20
Mean	25.64	18.87	30.35	

Panel B: Annual rates of mutation of ownership – 1960 sample

	All shareholders	Directors	Outsiders	n. obs
1960-1970	13.22	17.22	60.52	25
1970-1980	40.96	35.63	57.39	23
1980-1990	57.69	52.21	67.60	22
1990-2000	52.94	43.45	55.86	20
Mean	40.01	36.31	60.42	

Panel C: 1900 vs. 1960 – Tests of means (t-statistics)

	First decade	Second decade	Third decade	Fourth decade	Overall
All shareholders	–1.08	–2.23[b]	–3.09[a]	–2.72[a]	–4.40[a]
Directors	–2.25[b]	–2.30[b]	–3.54[a]	–1.71[c]	–4.41[a]
Outsiders	–3.38[a]	–2.60[b]	–3.14[a]	–2.45[b]	–6.05[a]
Directors (board)	–2.47[b]	–1.92[c]	–1.96[c]	–0.83	–3.59[a]

Table 13 – Case study GKN – Directors' shareholdings and measures of growth, dispersion and mutation

Panel A reports the holdings by directors and their families in Guest, Keen and Nettlefolds in 1900 (after the initial public subscription to acquire the private businesses of Dowlais Iron Co., Patent Nut and Bolt, and Guest and Co. of John Lysaght Ltd.), in 1902 (after the acquisition of Nettlefolds and Co.), and in 1930 (after the acquisition of John Lysaght Ltd., Consolidated Cambrian and D Davis and Sons). In Panel B, we compute measures of annual growth in total ordinary capital, dispersion of control, mutation (cash flow), and mutation (board) for the 1920-30 decade, while Panel C reports the contributions of acquisitions, rights issues, and placings to annual growth in total ordinary capital, dispersion of control, mutation (cash flow), and mutation (board), respectively. Total ordinary capital is the number of issued ordinary shares, normalized to hold constant the nominal value over time. Control is defined as the minimum number of shareholders necessary to pass the threshold of 25% of cash flow rights. Dispersion is defined as the change in control. Mutation (cash flow) is defined as the change in the composition of the shareholders necessary to pass the threshold of 25% of cash flow rights. Mutation (board) is defined as the change in the composition of directors necessary to pass the threshold of 50% of votes within the board.

Panel A: Directors' ownership and share turnover (IPO made in 1946)

	Directors	Share Turnover
1900	33.57	0
1902	27.77	8.95
1910	26.44	6.31
1920	19.45	7.13
1922	9.67	9.74
1930	9.34	6.07
1946	<1%	n.a.

Panel B: Measures of annual equity growth, dispersion, mutation (ownership), and mutation (board), 1920-30

Annual equity growth	8.31%	Total ordinary capital	1920	2,895,000
Dispersion	11.07%		1922	4,890,800
Mutation (cash flow)	11.77%		1930	6,304,474
Mutation (board)	0%			

Panel C: Factors contributing to annual growth in share capital, dispersion, mutation (cash flow), and mutation (board), decade 1920-30

	IPO	Acquisitions	Rights issues	Placings	Residuals (e.g. sales, inheritances, etc.)
Annual growth	0	100	0	0	0
Reduction in directors' ownership	0	70.17	0	0	29.83
Dispersion	0	83.49	0	0	16.51
Mutation (cash flow)	0	67.23	0	0	32.77
Mutation (board)	0	0	0	0	0

Table 14 – Determinants of dispersion of ownership

The dependent variable is the annual rate of dispersion of ownership by decade, for the first four decades over the life cycle. Independent variables are a 1900 sample dummy; directors' ownership, defined as the percentage of ordinary shares owned by insiders and family representation on boards are computed at the beginning of each decade. Geo, defined as the equity issued or sold outside the city of incorporation as a proportion of outstanding equity, and number of acquisitions are computed over the decade. Regressions (2), (4) and (6) include decade fixed effects (not reported). The standard errors reported in parenthesis are adjusted for heteroskedasticity using White's (1980) correction. Superscript letters a, b, c indicate significance at 1 percent, 5 and 10 percent level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
1900 Sample	0.004	0.040	0.003	0.049[c]	0.018	–0.020
	(.019)	(.026)	(.019)	(.027)	(.017)	(.043)
Directors' ownership			0.104[a]	0.051	0.081[a]	0.045
			(.035)	(.032)	(.029)	(.031)
Family representation			–0.084[a]	–0.077[a]	–0.087[a]	–0.082[a]
on boards			(.031)	(.029)	(.029)	(.027)
No. of acquisitions					0.029[b]	0.030[b]
					(.012)	(.013)
Geo					–0.008	0.021[b]
					(.007)	(.009)
Company Ownership			–0.004[c]	–0.005[c]	–0.009[b]	–0.009[a]
(i.e. no. people>25%)			(.002)	(.002)	(.004)	(.003)
Constant	0.038[b]	–0.022	0.015	–0.014	0.013	0.079[b]
	(.015)	(.021)	(.016)	(.019)	(.017)	(.040)
Decade fixed effects?	NO	YES	NO	YES	NO	YES
R^2	0.001	0.131	0.103	0.117	0.190	0.262
N obs	188	188	183	183	181	181

Table 15 – Determinants of mutation of ownership

The dependent variable is the annual rate of mutation of ownership by decade, for the first four decades over the life cycle. Independent variables are a 1900 sample dummy; directors' ownership, defined as the percentage of ordinary shares owned by insiders, and family representation on boards are computed at the beginning of each decade. Geo, defined as the equity issued or sold outside the city of incorporation as a proportion of outstanding equity and number of acquisitions are computed over the decade. Regressions (2), (4) and (6) include decade fixed effects (not reported). The standard errors reported in parenthesis are adjusted for heteroskedasticity using White's (1980) correction. Superscript letters a, b, c indicate significance at 1 percent, 5 and 10 percent level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
1900 Sample	–0.256[a]	–0.392[a]	–0.220[a]	–0.017	–0.203[a]	–0.318[b]
	(.059)	(.125)	(.058)	(.117)	(.059)	(.134)
Directors' ownership			–0.233[b]	–0.065	–0.253[b]	–0.095
			(.099)	(.126)	(.099)	(.125)
Family representation			–0.038	–0.055	–0.023	–0.043
on boards			(.113)	(.115)	(.114)	(.115)
No. of acquisitions					0.007	0.022
					(.016)	(.016)
Geo					–0.056	–0.064
					(.048)	(.069)
Company Ownership			0.014[b]	0.017[a]	0.013[c]	0.014[b]
(i.e. no. people>25%)			(.006)	(.006)	(.007)	(.006)
Constant	0.400[a]	0.577[a]	0.519[a]	0.224[c]	0.506[a]	0.537[a]
	(.050)	(.102)	(.070)	(.123)	(.071)	(.108)
Decade fixed effects?	NO	YES	NO	YES	NO	YES
R^2	0.094	0.189	0.174	0.213	0.175	0.212
N obs	190	190	184	184	182	182

Table 16 – Takeovers, growth, dispersion and mutation

This table reports growth of issued ordinary capital, rates of dispersion and mutation of ownership over the first four decades after incorporation for the 50 companies of our sample partitioned by acquiring and non-acquiring companies. Acquirers are firms making at least one takeover in the decade in question. Panel A refers to the 1900 sample and panel B consiers the 1960 sample.

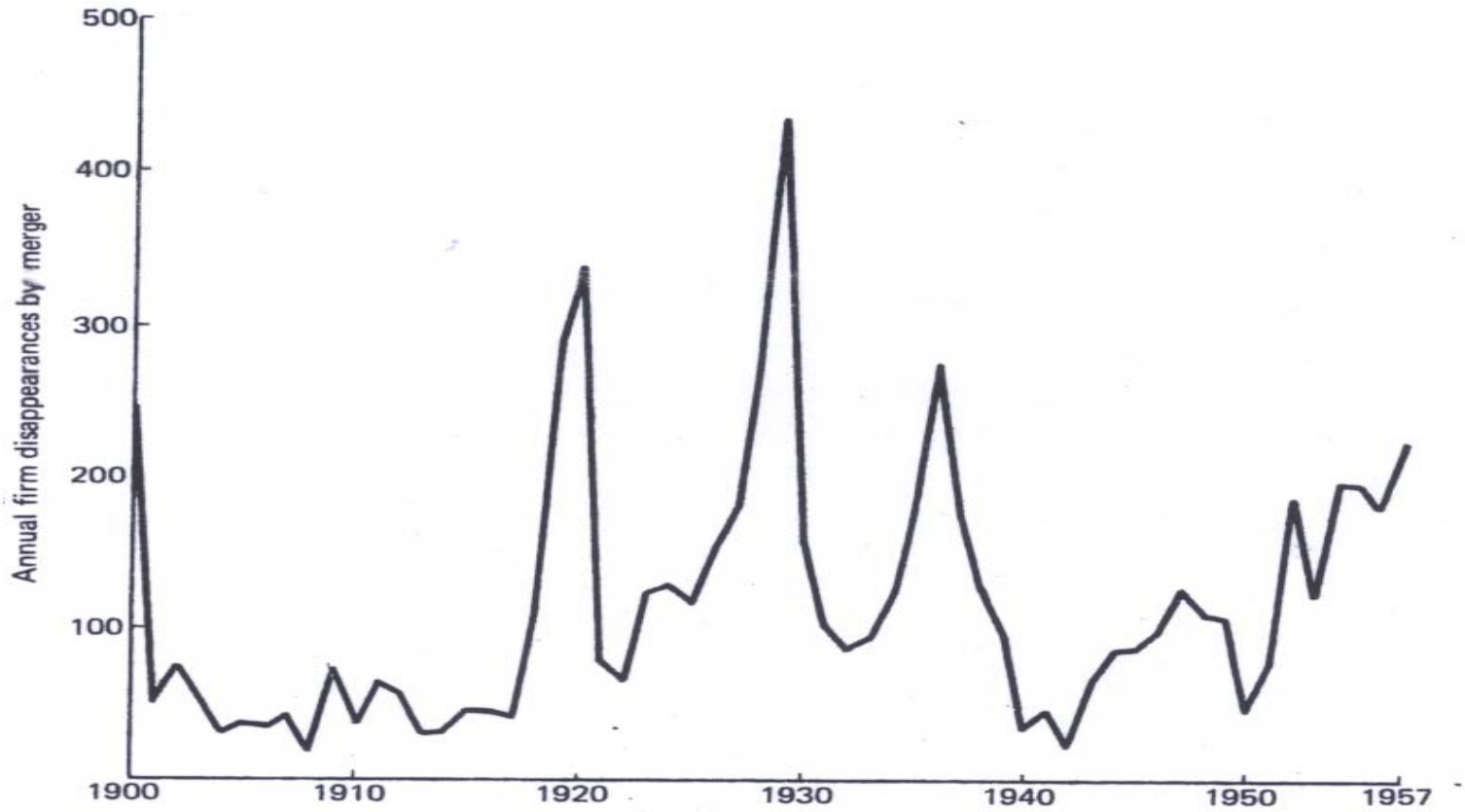
Panel A: Acquirers vs. non-acquirers – 1900 sample

	Equity Growth Rates		Dispersion Rates		Mutation Rates		No of Acquirers
	Acquirers	Non-Acquirers	Acquirers	Non-Acquirers	Acquirers	Non-Acquirers	
1900-1910	117.17	0	18.46	2.87	13.59	0.79	8
1910-1920	14.26	2.30	12.20	1.42	7.43	15.22	2
1920-1930	7.94	1.09	22.85	2.32	37.26	17.32	3
1930-1940	1.21	1.14	0.92	1.93	33.33	16.43	3
Overall	62.08	1.20	15.21	2.08	20.96	13.17	16

Panel B: Acquirers vs. non-acquirers – 1960 sample

	Equity Growth Rates		Dispersion Rates		Mutation Rates		No of Acquirers
	Acquirers	Non-Acquirers	Acquirers	Non-Acquirers	Acquirers	Non-Acquirers	
1960-1970	122.02	34.46	25.43	2.90	11.71	14.23	10
1970-1980	5.59	0.78	–2.45	–0.73	51.50	24.56	14
1980-1990	21.57	1.80	3.77	6.48	100.00	51.01	3
1990-2000	12.92	1.20	–3.34	–2.09	53.34	52.89	2
Overall	49.41	9.49	7.74	1.85	42.93	38.62	29

Figure 1 – Merger activity from Hannah (1976)



Source: Hannah (1976), appendix 1.

Fig. 5.1. Merger activity in U.K. manufacturing industry, 1900–57

Table A1 – Evolution of ownership – 50% threshold

This table reports evolution of ownership over time for the 50 companies of our sample. Ownership is defined as the minimum number of shareholders necessary to pass the threshold of 50% of cash flow rights, and is computed for all shareholders, for directors alone, and for outsiders, respectively. Frequency is the number of companies where the 50% threshold is passed by directors and outsiders, respectively. Panel A refers to the 1900 sample and Panel B considers the 1960 sample.

Panel A: Evolution of ownership, 50% threshold – 1900 sample

	All shareholders		Directors		Outsiders		
	Mean	median	Mean	frequency	mean	frequency	n. obs
1900	6.71	2	2.06	18	38.29	7	25
1910	15.00	3.5	1.69	13	41.83	12	25
1920	19.96	7.5	2.42	12	46.38	13	25
1930	25.58	18	2.36	11	49.79	14	25
1940	43.08	20	4.57	7	64.61	18	25
1950	59.92	29	5.00	5	79.47	19	24
1960	33.00	36	5.75	4	43.37	19	23
1970	83.68	33	4.00	2	99.55	20	22
1980	87.00	29	2.00	1	97.85	20	21
1990	69.14	16	2.00	1	73.65	20	21
2000	71.75	16.5	1.50	2	79.61	18	20
mean	45.41		2.65		69.01		

Panel B: Evolution of ownership, 50% threshold – 1960 sample

	All shareholders		Directors		Outsiders		
	mean	median	mean	frequency	mean	frequency	n. obs
1960	13.88	1	1.41	22	109.67	3	25
1970	20.40	5	1.58	12	49.46	13	25
1980	22.67	8	1.83	6	38.59	17	23
1990	18.25	15	1.00	2	25.15	20	22
2000	15.35	10	0.00	0	20.25	20	20
Mean	18.06		1.50		34.74		

Table A2 – Differences between survivors and non-survivors

This table reports differences in directors' and outsiders' shareholdings between surviving and non-surviving firms over the first four decades after incorporation for the 50 companies of our sample. Panel A refers to the 1900 sample and Panel B considers the 1960 sample.

Panel A: Survivors vs. non-survivors – 1900 sample

	Directors		Outsiders	
	Survivors	Non-Survivors	Survivors	Non-Survivors
1900	93.76	84.70	6.24	15.30
1910	56.40	80.77	43.60	19.23
1920	50.16	75.83	49.84	24.17
1930	35.95	70.36	64.05	29.64
Average	59.83	77.91	40.17	22.09

Panel B: Survivors vs. non-survivors – 1960 sample

	Directors		Outsiders	
	Survivors	Non-Survivors	Survivors	Non-Survivors
1960	100	97.51	0	2.49
1970	46.96	54.23	53.04	45.77
1980	33.64	39.75	66.36	60.25
1990	20.71	-	79.29	-
Average	50.40	72.59	49.60	27.41

Table A3 – Dispersion of ownership – 50% threshold

This table reports the annual rates of dispersion of ownership over time. Ownership is defined as the minimum number of shareholders necessary to pass the threshold of 50% of cash flow rights. Dispersion is defined as the change in ownership. The rates of dispersion are computed for all shareholders, for directors alone, and for outsiders, respectively. Panel A refers to the 1900 sample, Panel B considers the 1960 sample and Panel C reports t-statistics of differences in means across the two samples, comparing the first four decades over the life cycle. Superscript letters a, b, c indicate significance at 1 percent, 5 and 10 percent level, respectively.

Panel A: Annual rates of dispersion of ownership, 50% threshold – 1900 sample

	All shareholders	Directors	Outsiders	n. obs
1900-1910	5.47	21.10	21.06	25
1910-1920	4.28	5.38	4.50	25
1920-1930	4.16	12.64	12.04	25
1930-1940	3.67	5.45	5.93	25
1940-1950	1.81	8.25	8.22	24
1950-1960	0.35	0.31	–0.26	23
1960-1970	3.58	5.07	8.11	22
1970-1980	–2.03	1.61	–1.03	21
1980-1990	–4.27	0.00	–6.72	21
1990-2000	1.50	0.00	0.77	20
Mean	1.98	6.28	5.60	

Panel B: Annual rates of dispersion of ownership, 50% threshold – 1960 sample

	All shareholders	Directors	Outsiders	n. obs
1960-1970	10.97	40.92	39.93	25
1970-1980	5.03	20.22	11.28	23
1980-1990	5.50	21.05	21.73	22
1990-2000	–0.07	0.10	6.96	20
Mean	5.68	24.09	21.02	

Panel C: 1900 vs. 1960 – Tests of Means (t-Statistics)

	First decade	Second decade	Third decade	Fourth decade	Overall
All shareholders	–1.57	–0.22	–0.35	1.40	–0.75
Directors	–1.52	–1.31	–0.72	–0.59	–2.28[b]
Outsiders	–1.43	–0.60	–0.83	–0.13	–1.76[c]

Table A4 – Differences between surviving and non-surviving firms

This table reports the annual rates of growth of equity, dispersion and mutation of ownership over time for firms that survived until the end of the twentieth century (survivors) and those that did not (non-survivors). Ownership is defined as the minimum number of shareholders necessary to pass the threshold of 25% of cash flow rights. Dispersion is defined as the change in ownership and mutation as the change in the composition of ownership. Panel A refers to the 1900 sample and panel B considers the 1960 sample.

Panel A: Survivors vs. non-survivors – 1900 sample

	Equity Growth Rates		Dispersion Rates		Mutation Rates	
	Survivors	Non-Survivors	Survivors	Non-Survivors	Survivors	Non-Survivors
1900-1910	46.83	0	9.04	3.14	6.11	0
1910-1920	4.07	0	2.05	3.21	13.02	20.91
1920-1930	2.39	0	4.72	5.06	24.46	0.75
1930-1940	1.43	0	1.95	1.23	29.76	4.50
Average	13.68	0	4.44	3.16	16.59	5.70

Panel B: Survivors vs. non-survivors – 1960 sample

	Equity Growth Rates		Dispersion Rates		Mutation Rates	
	Survivors	Non-Survivors	Survivors	Non-Survivors	Survivors	Non-Survivors
1960-1970	85.67	4.71	12.36	10.11	16.19	1.34
1970-1980	3.38	4.28	-1.70	-2.26	33.12	78.24
1980-1990	4.07	15.52	6.08		57.69	
1990-2000	2.38	-	-2.22	-	52.94	-
Average	23.88	5.77	3.63	5.47	40.10	39.33