

# The limits of control: corporate ownership and control of German joint-stock firms, 1869–1945

SIBYLLE LEHMANN-HASEMEYER and ANDREAS NEUMAYER  
*University of Hohenheim*

We study the social structure of ownership of German joint-stock firms covering the period 1869 to 1945 based on a random sample of attendance lists of general meetings. We confirm previous research findings based on smaller samples that despite several changes in the economic and political environment, the majority of shares of the attendees of the general meetings remained firmly in the hands of a few male and mostly inside investors. Moreover, we closely investigate the socio-economic characteristics of the shareholders. We do occasionally find investors from lower social classes and women, but their share of votes was negligible. Adding to the discussion of whether banks strongly monitored and controlled German industrial firms, we aim to track their impact at the meetings. In about 30 per cent of the meetings, a banker or bank was the most influential shareholder and in more than 50 per cent of the meetings a banker or bank was among the three largest shareholders, remarkably without necessarily owning the shares themselves. Although we cannot evaluate whether the banks used this power to pursue their targets, they certainly were in a position to do so.

**Keywords:** ownership structure of joint-stock firms, concentration, German banks

**JEL classification:** N23, N24

## I

The separation of ownership and control ensures that companies are governed by professionals with the necessary skills and experience to maximise a firm's success. If this is done well, the owners or shareholders of a firm benefit because they get a return on their investment. Yet typical principal-agent conflicts arise if the managers and

Corresponding author: Andreas Neumayer, University of Hohenheim, Department of Economics, Schloss Osthof West 31/018, 70593 Stuttgart, Germany, email: [andreas.neumayer@uni-hohenheim.de](mailto:andreas.neumayer@uni-hohenheim.de); Sibylle Lehmann-Hasemeyer, email: [sibylle.lehmann@uni-hohenheim.de](mailto:sibylle.lehmann@uni-hohenheim.de). We thank seminar participants in Berlin, Hohenheim, Mannheim, Bonn, Belfast, Göttingen and Regensburg as well as Carsten Burhop, John Turner, Dieter Ziegler, Felix Selgert, Fabian Wahl and Jochen Streb for valuable comments and suggestions. We also thank two anonymous reviewers whose comments/suggestions helped improve and clarify this manuscript. The German Science Foundation (DFG) funded this project as part of the Priority Program 1859 'Experience and Expectations: Historical Foundations of Economic Behavior'.

## I

owners have different targets. In extreme cases, managers might only maximise their bonus, while investors are interested in short-run benefits, speculative gains, or dividends.<sup>1</sup> When ownership is concentrated in the hands of a few shareholders, the incentives and possibilities for those shareholders to control and monitor the management are larger. Past research suggests, however, that although the principal-agent problem is minimised by the presence of controlling owners, the controlling owners themselves may become another source of corporate governance issues (Burkart *et al.* 1997). Studying who owns a firm, who controls it and the legal framework for its governance is crucial since these aspects will determine the nature of those conflicts.

Except for Britain and to some extent the United States, there is little transparency about the corporate ownership structures of joint-stock companies, because comprehensive, historical corporate ownership data is rare for most countries in this period (Burhop 2019, pp. 9–11). The available evidence, however, clearly shows that in most countries except Germany we observe a rapid decline in the concentration of ownership for the period 1875 to 1945 (Franks *et al.* 2006; Foreman-Peck and Hannah 2012; Acheson *et al.* 2015).

The information on ownership structure is the most comprehensive for Britain since firms established under the 1856/1862 UK corporate law were required to submit shareholder registers to the Registrar of Companies. Using this source, Acheson *et al.* (2015) collected ownership data for five cross-sections for the period 1865 to 1900. They show that, in general, ownership concentration was lower in Victorian Britain in 1900 than in modern Britain (Acheson *et al.* 2015, pp. 919–21).<sup>2</sup> Franks *et al.* (2009) track the development of ownership structure of British companies over the twentieth century by drawing several random samples. They find that while from 1900 to 1960 it is possible to observe a rising dispersal of ownership, one can observe a concentration of ownership after 1960 (Franks *et al.* 2009, p. 4035). To what extent ownership and control of US corporations have been separated is still debated (see Cheffins and Bank 2009, for a review). However, ‘One of the best-established stylized facts about corporate ownership is that ownership of large listed companies is dispersed in the United Kingdom and the United States and concentrated in most other countries’ (Franks *et al.* 2009, p. 4009).

For Germany, Franks *et al.* (2006) have shown that concentration of ownership remained high from the nineteenth century until the 1950s. Yet estimating the true ownership concentration in German joint-stock firms is a difficult task. This is

<sup>1</sup> Jensen (1989) discusses some cases of public companies in the US, such as Uniroyal, which privatised in the 1990s to avoid financial manipulation, management greed and reckless speculation.

<sup>2</sup> For the period after 1900 and before World War I, Foreman-Peck and Hannah (2012) provide information about the ownership structure of the 337 largest listed companies. In total, the data reveal that Britain was a ‘shareholder society’ already before the Great War. In nearly all companies, they observe a separation of ownership and control (Foreman-Peck and Hannah 2012, p. 1228).

because, in contrast to the UK and US, it is not possible to observe the universe of shareholders for certain firms because most shares in German companies have been held in bearer form. Only shareholders who attended general meetings had to register their shares. Searching shareholder lists in the archives of individual companies is quite time-consuming and it is thus difficult to sample them. Some systematic evidence is available in public archives since firms had to submit attendance lists of general meetings to stock exchange officials in case of seasoned equity offerings or similar events. Franks *et al.* (2006) have based their analysis of ownership structures on 156 shareholder lists from 55 companies.

Moreover, shareholders of German firms could transfer their voting rights to banks or any third party to cast votes in their name.<sup>3</sup> This so-called proxy-voting biases measures of ownership concentration. If we observe a banker or a bank with a large share of votes it is possible that although the shares may be counted as in the hands of one investor, they might be dispersed because the banker acts as a representative for a large number of smaller investors. More importantly, in this way banks had the power to control firms without actually owning their shares. Thus, we have a third player in the room, which is potentially problematic, because banks also hold firms' debt, and thus proxy voting and direct equity ownership may not provide equivalent incentives for banks (Fohlin 2007, pp. 58–9). The dominance of large banks has been discussed extensively in Germany's financial history. There is a classic view, associated with Gerschenkron (1962), that the peculiar character of Germany's financial institutions played a critical role in its industrialisation. According to this view, one reason was the emergence of formal relationships between universal banks and non-financial firms, a typical feature of which was the appearance of bankers on the supervisory boards of non-financial firms. This way, banks arguably acquired a high degree of control over industrial enterprises (see Burhop 2011, pp. 170f.; Lehmann 2014, pp. 93f.). While their presence on the supervisory boards, often in financially dependent firms, has been shown, a causal impact of banks' presence on firms' performance or credit access could not be identified and recent research has questioned their actual impact (see, for instance, Edwards and Ogilvie 1996; Fohlin 2007; Burhop 2011, 170f.). Lehmann (2014) studies banks' dominance in the underwriting process of joint-stock firms in the nineteenth century. Her article provides quantitative and qualitative evidence that although the market for underwriters was also dominated by a small oligopoly of six large banks, there was still perceptible competition among them, which kept fees and short-run profits low. This further underlines the previous findings that although German banks held large market shares and were present on many supervisory boards and other committees, the effect of their dominance seems to have been less than Gerschenkron (1962) has famously suggested. Because of the above-discussed lack of data on shareholders, the impact of banks'

<sup>3</sup> See Aktienrechtsnovelle 1884, in *Reichsgesetzblatt für das Deutsche Reich*, 1884, vol. 22 (31.07.1884), article 190.

presence and their impact in general meetings has not been addressed from a quantitative perspective so far.

We revisit the questions of ownership and control for the period 1869–1945 to improve our understanding of the individuals present at the general meetings of German corporations, their voting influence and therefore their potential interests. We study the socio-economic characteristics of those individuals in terms of gender and social class. Moreover, we aim to identify whether they were owners themselves or whether they acted on behalf of a bank. By estimating how many of the shares were represented by bankers, we can estimate how much control the banks could have over industrial companies through the general assembly. Overall, we collected a random sample of 782 attendance lists for 272 joint-stock firms.<sup>45</sup> This sample is large enough to provide interesting new insights into corporate control, without claiming to be representative for all German joint-stock firms.

Based on this sample, we can confirm previous research findings by showing that ownership of the firms was also highly concentrated over the whole period and firmly in the hands of a small group of influential men. Moreover, we approximate the presence and impact of banks at the meetings. In about 30 per cent of the meetings, a banker or a bank was the most influential shareholder and in more than 50 per cent of the meetings a banker or a bank was among the three largest shareholders. This share is potentially even larger since it was quite a challenging task to identify banks' representatives. Bank officials did not always openly attend with a bank affiliation. Thus, we compared the names on the lists with the names of the most important private bankers and the directors of those banks as well as with bank officials who were members of industrial supervisory boards in this period.

Moreover, we provide insights into the socio-economic characteristics of the attending shareholders and thus insights into the social structure of the corporate governance of large German firms for the period 1869–1945. Bit by bit and especially after 1923, we observe more often shareholders from the middle class at the general meetings in absolute numbers, although only with small vote shares.

We also find more female representation after 1919, at the same time as women's rights improved.<sup>6</sup> However, after 1933, the National Socialists again restricted these rights. Women were confined to the roles of mother and spouse and were excluded

<sup>4</sup> Thus, we extended the work of Franks *et al.* (2006), based on similar sources. It is likely that there is an overlap in our samples since we visited the same archives – the Hessian Economic Archive, the Bavarian Economic Archive and the archive of Deutsche Bank. However, since Franks *et al.* (2006) have not provided an appendix with the names of the firms and the dates of the meetings covered, we cannot compare our sample to theirs.

<sup>5</sup> The fact that we only observe those shareholders that were present at the meeting is not problematic, since we are interested to learn about those shareholders that were focused on controlling the firms via votes at the general meeting rather than about those that held shares as an investment only.

<sup>6</sup> This was mostly reflected in the fact that they were now allowed to vote (Art. 109 Abs. 2 Weimar Constitution).

from all positions of responsibility, notably in political and academic spheres. During the Weimar Republic, women appeared more often at general meetings than before, but their ownership of shares remained very low. Although in the nineteenth century only a few women were present at the meetings, they held comparatively large shares. In our sample, the actual voting power of women was with about 4 per cent higher in the sample that covers the nineteenth century than in any other subsequent period. Moreover, 98 per cent of female investors in our sample were only engaged in a single firm. Overall, despite our observation of greater participation among women in the Weimar Republic, their increased political power was clearly not accompanied by a rise in economic power – at least not in our sample.

As well as being interesting in terms of German corporate history, inequality and social history, learning about the socio-economic characteristics is also interesting from a finance perspective, since they matter a great deal for investment decisions.<sup>7</sup> Studies testing reactions to historical events on stock markets can therefore only infer whose reactions they are actually testing.<sup>8</sup>

We also show that some of these observed findings seem to follow some general patterns. Ownership dispersion, for instance, seems to have been generally significantly lower for the largest companies as well as for those that were located further away from a stock exchange. On the other hand, broader access to capital, i.e. listing on multiple stock exchanges, seems to have reduced the concentration.

The main part of the article is organised as follows. Section II provides a short overview of the legal framework of corporate control in Germany and how legal and political factors influenced the composition of shareholders and their control. Section III introduces our dataset and gives a basic descriptive analysis of our sample of investors over time. In Section IV we calculate the concentration measures of owners who were present for each period. In this section, we also provide the shares that were represented by banks and bank officials. Section V focuses on the socio-economic characteristics of the investors, i.e. gender and social class. In Section VI we investigate general patterns of ownership and control. Section VII concludes.

<sup>7</sup> To name a few, Thorsten Lübbers (2008) and Kling (2006) studied investor reactions to firm mergers in the nineteenth century and the interwar period, Lehmann-Hasemeyer *et al.* (2014) studied how suffrage extensions to the working class affected stock market prices, and Opitz (2017) tested reactions to riots and wars.

<sup>8</sup> Portfolio theory assumes that investors form expectations about returns and risks of securities, and select portfolios according to their expectations and risk preferences (see Markowitz 1952). As a consequence, rational economic actors are expected to diversify their portfolios and trade very little. However, at least for modern periods, private investors have been shown to hold under-diversified portfolios (Goetzmann and Kumar 2008), trade frequently (Odean 1998; Barber and Odean 2000), take on highly idiosyncratic risk (Calvet *et al.* 2007) and gamble (Kumar 2009). Part of these differing investment strategies can be explained by socio-economic characteristics. Barber and Odean (2001) have shown that men take higher risks than women, and younger investors take more risks than older ones.

## II

In the period under consideration from 1869 to 1945, we observe five major legal changes that influenced investor protection, the ownership structure of joint-stock firms and the role of management and supervisory board.

The first was the introduction of the German stock corporation law amendment ('Aktienrechtsnovelle') in 1870. It contained regulations that allowed the shareholders to independently control the founding process of joint-stock firms and the management board. It made clear that the decision-making authority was held by the general assembly, i.e. the shareholders. They had to decide on changes to the articles of association, including increases and reductions of equity. The general assembly was also able to limit the power of the management board to certain areas. Furthermore, the general assembly decided on the audit and approval of the balance sheet and income statement. It was also allowed to elect the supervisory board (Selgert 2021, pp. 35ff.). However, the regulations were not binding for the articles of association, so the contractual freedom was barely restricted. Many companies established supervisory boards as their centre of power. The rights of the shareholders were limited because the law made it possible to transfer the decision-making authority (on capital increases and articles of association) to the supervisory board. The general assembly did not play the intended role of controlling the supervisory and management board, because the supervisory board could also elect the management board (Burhop 2006, p. 3 and 2009, pp. 578f.; Selgert 2021, pp. 37f.). Voting rights at the general meetings were exercised according to one share, one vote. The power to exercise the voting right, however, could be limited by a minimum number of shares. Shareholders who wanted to participate at a general meeting had to deposit their shares beforehand. Sometimes the meetings were called so late that shareholders would not have enough time to deposit their shares.<sup>9</sup> Furthermore, the law made no regulation about dividend payments to the shareholders. All in all, investors' protection was very low and the law was mostly in favour of the founding families (Selgert 2021, pp. 38ff.).

In 1884, the shareholder rights were strengthened and the power of management and supervisory board was reduced. The decision on changes to the articles of association and the decision on an increase or decrease in the share capital was now the task of the general assembly. Non-shareholders could also be elected to the supervisory board, which means that it was possible to establish independent control of the management. Moreover, shareholders were granted individual and minority rights. For instance, an individual shareholder could now sue against a resolution of the

<sup>9</sup> Burhop (2009) shows that the companies granted an average of 11 days for the deposit. However, some banks made participation in the general meetings conditional on a deposit prior to the announcement of the meeting. In these cases, only insiders or shareholders who deposited their shares permanently could attend the general meeting.

general assembly if it violated the law or the articles of association. Furthermore, a minority of shareholders could request a special audit of the activities of the managing directors. Nevertheless, the supervisory board remained the central organ of power. It was still possible for the supervisory board to control the management, because the articles of association could transfer certain decision-making powers to the supervisory board (Selgert 2021, pp. 41ff.). However, participation at the general assembly was simplified. Every general meeting had to be announced at least two weeks in advance. If shares needed to be deposited, this also had to be announced in time (Selgert 2021, pp. 41ff.).

In the reform of the Commercial Code 1897, only minor changes were made in terms of investor protection. The supervisory board remained the central organ of power and, essentially, shareholder rights remained at the level of 1884 (Selgert 2021, pp. 46f.). Companies had to inform the shareholders of the date of the general assembly as well as about resolutions and motions, for example. Important changes had to be announced two weeks in advance. Minority shareholders could still demand a general meeting, but were then obliged to bear the costs of convening it. In addition, the principle that each share had to grant at least one vote was maintained. Theoretically, however, it was now possible to control the general meeting with the help of multi-voting shares, which only made up a small part of the share capital. With the same par value as the ordinary share, these shares have multiple voting rights. There was also a new regulation about the hierarchy of dividend payments. Dividend payments had to be at least 4 per cent of the company's revenue, and only afterwards could the supervisory board receive a share in profits.

The stock corporation law was further developed in the Weimar Republic when the rights of the management board were strengthened again. This was a reaction to the period of hyperinflation that saw an increase in the number of shareholders who held shares only for speculative reasons. Thus, there was an incentive for the management to create voting rights that guaranteed the control of the firm. This was achieved with the creation of protective shares (often in the form of multiple voting shares), which allowed major shareholders or the management board to control the general assembly with little capital investment. Owners of these protective shares were mostly members of the founding family, banks or members of supervisory and management boards (Beer 1999, pp. 156ff.; Selgert 2021, pp. 51ff.). According to figures from the Statistical Office of the Reich, in 1925 almost 54 per cent of the stock corporations that were traded on a German stock exchange had multiple voting shares.

Some further resolutions were introduced at the beginning of the 1930s. Most important was the creation of an auditor, who was elected by the general meeting. This auditor examined the accuracy of the balance sheet and the annual financial statements. Shareholders thus had more detailed information at their disposal on the basis of which they could decide whether it was worthwhile for them to continue their commitment to the company. However, the law of 1931 did not improve the shareholders' active influence on strategic decisions within the company. It focused more on increasing transparency (Selgert 2021, pp. 43ff.).



Legislation during the Nazi period reduced the power of the general meeting by taking away the right to appoint and dismiss the management board, to take decisions on management and to approve the annual financial statements. These competencies were transmitted to the supervisory board, which was still elected by the general assembly (Selgert 2021, pp. 61ff.). Multiple voting shares were prohibited. However, according to Selgert (2021, pp. 64f.), the status quo of investors' protection of 1884 was no longer achieved.

### III

As mentioned in the introduction, ownership data for Germany is in short supply since until recently most shares in German companies were in bearer form and traded anonymously. Only those shareholders who attended the general meeting of the firm were required to register their names and shares. With the Stock Exchange Act of 1896, companies were legally bound to submit information about shareholders attending general meetings to the respective stock exchange on which their shares were listed (Franks *et al.* 2006, pp. 542 and 554).<sup>10</sup> Thus, it is possible to obtain these lists and therefore information on the structure of the participating shareholders after 1896. For the period before 1896, we have to rely on the voluntary provision of information. These meetings, however, were not the ordinary annual meetings but special meetings called for a particular reason, such as to focus on the rise or reduction of the share capital. Still, even after 1896 when the meetings were reported every year, the archives only kept a sample of lists. However, we can expect that for reasons of representativeness the archives kept a random sample.

The data on the meetings were collected from the Hessian Economic Archive (*Hessisches Wirtschaftsarchiv*), the Bavarian Economic Archive (*Bayerisches Wirtschaftsarchiv*), the Baden-Württemberg Economic Archive (*Baden-Württembergisches Wirtschaftsarchiv*), the Historical Archive of Deutsche Bank AG and the Historical Archive of Commerzbank AG.<sup>11</sup>

Overall, we collected 782 shareholder lists from 272 companies, covering basic information on 9,970 individual and institutional investors. The data include filings of the Berlin, Hamburg, Cologne, Düsseldorf, Essen, Augsburg, Mannheim, Frankfurt, Munich, Stuttgart and Breslau stock exchanges. We extract the name of the company, the industrial sector, the location of the headquarters and the place where the general assembly took place. Data on the share capital of a company and the stock exchanges on which the company's shares were listed are taken from the

<sup>10</sup> Besides a company's prospectus, extracts from the register of commerce, the current company status and the annual management reports, lists of shareholders attending the general assembly had to be provided to the stock exchange operator of the respective stock exchange.

<sup>11</sup> For an overview and a description of the data and the archival source, see Appendix. For a general overview of archive information about German shareholders and investors, see also Neumayer (2019, pp. 12ff.).



*Handbuch der deutschen Aktiengesellschaften*. The *Handbuch* has only been in existence since 1896, but based on the information it contains, we are able to calculate the share capital for general meetings that took place before 1896. The shareholder information includes the name of each shareholder or institution, and his/her/its city of residence. In most cases, the gender can be inferred from the name. Not all lists reveal the same degree of information. In many cases, only the name and residence of the shareholders are reported, and information on occupation or sectors is missing. In some cases, the address was also left blank. For about 55 per cent of the lists of general meetings, we have information on the number of shares owned and the number of votes that investors were able to cast. For about 25 per cent of the lists, we only have information on the vote shares and for about 12 per cent of the lists, we only have information on the owned capital. For 8 per cent of the lists, information on votes and owned capital is missing completely.<sup>12,13</sup>

As mentioned in Section I, some investors did not use their right to influence firm decisions directly by attending the general meetings but instead transferred their voting rights to their bank. In the pre-war era, proxy voting was established in two ways. The first does not bias measure of ownership concentration: shareholders could transfer their voting rights (*Stimmrechtsermächtigung*), allowing the bank or any third party (often also the voting rights were transferred to lawyers) to cast votes in their name.<sup>14</sup> In these cases, the shareholders had to reveal their identity, and these details are available in the lists of the general meetings. We will show in the section on concentration (see Table 5) that the group of shareholders that transferred their right to vote did not differ from the typical shareholders that attended the meeting. The second way, which was more important in practice, was the so-called *Bankenstimmrecht* or *Depotstimmrecht*.

<sup>12</sup> Thus, for 25 per cent of the lists, it is possible that the share of capital that we observe does not match the votes since from 1897 companies started issuing multiple vote shares. In particular, during the hyperinflation of 1923, they placed preference shares, with higher voting rights than ordinary shares, in the hands of management and friendly investors in order to prevent control of German corporations being transferred to foreign investors (Franks *et al.* 2006, p. 7; Selgert 2021, pp. 52ff.). However, the privilege of multiple vote shares was officially prohibited after 1937 (§ 12 AktG). If we focus only on the 55 per cent of the lists for which we have information on both votes and owned capital, we can identify whether multiple vote shares were granted. Indeed, we find that in only 2 per cent of the lists does the share of granted votes not match the share of owned capital. Three of these meetings took place in 1923 and shortly after. Thus, it is unlikely that multiple vote shares bias our results if we assume that the share of the owned capital matches the voting rights for those lists, where information on vote shares is missing.

<sup>13</sup> Please note that based on the shareholder lists, we only describe the potential influence based on vote shares of shareholders present at the meetings. We cannot draw conclusions about how (if at all) shareholders used their power for a certain purpose, in contrast to Rutterford (2012), who argued that there were significant differences between shareholder activism in the UK and the USA. While UK shareholders focused their interventions on management issues or social and labour matters, US shareholders concentrated their efforts on corporate governance issues.

<sup>14</sup> See Aktienrechtsnovelle 1884, in *Reichsgesetzblatt für das Deutsche Reich*, 1884, vol. 22 (31.07.1884), article 190.

According to Fohlin (2007, p. 122), many banks required their customers to transfer their votes automatically upon opening securities accounts, giving the banks widespread control over rights of equity stakes they did not own. As discussed in Section I, banks could do more or less whatever they wished with these voting rights, without being actual owners of the shares (see Fohlin 2007, pp. 122–4 and also Selgert 2021, p. 55). We will address the questions of the power of banks by providing information on the share of votes that were represented by banks or bankers.

For a subsample of 4,269 shareholders, we also have quite detailed information on title and occupation, which makes it possible to classify the investors into social classes.

Table 1, panel A reports the number of companies, the number of general assemblies and the number of shareholders divided into six time periods with significantly different economic conditions and/or political systems. The period 1869 to 1913 covers the meetings that took place during the Empire, 1914 to 1918 covers the meetings during World War I, and 1919 to 1923 covers the meetings in the first years of the Weimar Republic, with high levels of inflation resulting in the hyperinflation of 1923. The period 1924 to 1928 covers the meetings that took place during the Weimar Republic, which was characterised by relative economic and political stability but ended with the Great Depression in the subsequent years 1929 to 1933. Our last period covers the dictatorship of Adolf Hitler and World War II. We did not treat World War II separately because trading became very restricted during the Nazi regime until 1945.

Overall, our sample contains 272 joint-stock companies with 9,970 investors attending 782 general assemblies. The number of meetings and firms in our data set varies with periods. In the first period, we observe 112 general assemblies of 44 firms with 1,855 investors. The number of general meetings drops during World War I and then rises to 101 firms, with information on 3,349 investors attending 150 general assemblies, in the period of the ‘Golden Twenties’. This number drops again after 1933 to 39 firms, with information on 795 investors and 73 general assemblies. It is clearly not possible to draw reliable conclusions about changes in the ownership structure of firms over time, because each period is based on a different sample. We aim at learning more about changes over time in the last section of this article, applying regressions with firm fixed effects to study the within-firm variation over time.

Overall, quite a large share of the share capital was present at the meetings with on average about 57 per cent.<sup>15</sup> In the Empire years, however, the average attendance seems to have been much lower than in the period of the Weimar Republic. This fits the observations made by Fohlin (2007, pp. 122–4) and Franks *et al.* (2006). It also fits the legal framework during that period. As discussed in Section II, it was difficult for smaller shareholders to participate at a general meeting before 1884. Even though it was easier after 1884, attendance of smaller shareholders remained rather

<sup>15</sup> The sum of companies and investors over the different periods exceeds their total number. This is because a number of companies and investors remain in the sample over different periods.

Table 1. *Sample characteristics*

| Panel A: Distribution by period |                     |                                    |                                     |                                  |
|---------------------------------|---------------------|------------------------------------|-------------------------------------|----------------------------------|
| Decade                          | Number of companies | Number of general assemblies (GAs) | Number of shareholders <sup>a</sup> | Average share of present capital |
| 1869–1913                       | 44                  | 112                                | 1,855                               | 36.51                            |
| 1914–18                         | 16                  | 27                                 | 338                                 | 53.03                            |
| 1919–23                         | 138                 | 277                                | 3,112                               | 50.61                            |
| 1924–8                          | 101                 | 150                                | 3,349                               | 60.58                            |
| 1929–33                         | 84                  | 143                                | 1,945                               | 70.78                            |
| 1934–45                         | 39                  | 73                                 | 795                                 | 64.85                            |
| Total                           | 272                 | 782                                | 9,970                               | 57.37                            |

Panel B: Descriptive statistics of duration of the observations

|   | Mean | SD   | Median | Min | Max   |
|---|------|------|--------|-----|-------|
| Number of general meetings per company              | 2.87 | 3.33 | 2      | 1   | 24    |
| Duration for which firms are included in the sample | 4.25 | 6.44 | 1.13   | 0   | 35.06 |

*Sources:* Various; see Appendix.

<sup>a</sup>Some investors did not use their right to influence firm decisions directly, but often transferred their voting right to a representative. In this table, we count all shareholders. This number is often larger than the number of persons that actually attended the meeting. In many cases, a banker represented more than one shareholder and the information on the actual shareholders is provided in the lists.

was low (see also Burhop 2004, p. 36). Fohlin (2007, p. 124) also cites Richard Passow (1922), a contemporary observer who lists some explanations for the low attendance rates at shareholder meetings. Fohlin summarises Passow's ideas as 'rational apathy' among small shareholders: the cost of travelling to locations where the meetings took place, insufficient time to attend, the sense that news coverage provided sufficient information for small shareholders, and the presumption among small shareholders that their influence was limited. Thus, cheaper transport costs, a greater desire for first-hand information and an increasing acceptance of female shareholders were all potential drivers of the higher attendance that we observe in our sample at meetings during the Weimar Republic.

Table 1, panel B reports some further characteristics of our sample selection. On average we collected lists of three meetings per company over a period of about four years. Overall, about a quarter of our sample was not (yet) listed on a stock exchange (see Table 2). This number is fairly stable over time. Only in the Nazi period was this number relatively high. In this period many firms were forced to delist. Roughly, about half of the sample was listed on a regional stock exchange and about a third was listed on a regional stock exchange and in Berlin. Only a small part of our sample

Table 2. *Description of the sample*

| Panel A: Stock market listings (%)  |           |         |         |        |         |         |       |
|-------------------------------------|-----------|---------|---------|--------|---------|---------|-------|
| Listed                              | 1869–1913 | 1914–18 | 1919–23 | 1924–8 | 1929–33 | 1934–45 | Total |
| Not listed                          | 24        | 26      | 13      | 20     | 37      | 45      | 24    |
| Listed on a regional stock exchange | 34        | 67      | 62      | 45     | 35      | 25      | 47    |
| Listed in Berlin only               | 1         | 0       | 1       | 1      | 2       | 3       | 1     |
| Listed in Berlin and regionally     | 41        | 7       | 24      | 33     | 26      | 27      | 28    |
| Total                               | 100       | 100     | 100     | 100    | 100     | 100     | 100   |
| Panel B: Sectoral distribution (%)  |           |         |         |        |         |         |       |
| Sector                              | 1869–1913 | 1914–18 | 1919–23 | 1924–8 | 1929–33 | 1934–45 | Total |
| Banking                             | 20        | 25      | 4       | 10     | 7       | 5       | 12    |
| Insurance                           | 0         | 0       | 2       | 6      | 0       | 3       | 2     |
| Mining                              | 7         | 6       | 5       | 3      | 8       | 8       | 6     |
| Heavy industry                      | 5         | 6       | 13      | 11     | 11      | 15      | 10    |
| Light industry                      | 23        | 25      | 29      | 19     | 30      | 33      | 26    |
| Food processing                     | 20        | 13      | 17      | 9      | 8       | 8       | 14    |
| Transportation                      | 2         | 6       | 3       | 7      | 5       | 13      | 6     |
| Chemical industry                   | 7         | 0       | 3       | 4      | 1       | 0       | 2     |
| Public utility                      | 9         | 0       | 7       | 15     | 11      | 8       | 8     |
| Others                              | 7         | 19      | 17      | 17     | 19      | 8       | 14    |
| Total                               | 100       | 100     | 100     | 100    | 100     | 100     | 100   |

*Sources:* Various; see Appendix.

(about 1 per cent) was listed in Berlin only. This is certainly driven by the fact that we observe many firms from the south of Germany, which often listed in Berlin and on a stock exchange in the south such as Munich or Stuttgart. Table 2 also provides information about the sectors. Our sample consists mainly of banks, firms from the heavy and light industries, and breweries. The highest number of firms comes from the light-industrial sector. This category includes textiles, paper, glass and rubber.

Figure 1 shows the headquarters of the firms in our sample. We do have a slight bias towards the south, but also cover firms from other important areas of Germany such as the industrial Ruhr area, Berlin and Frankfurt. Most importantly, Figure 1 shows that the geographical bias of the sample is relatively stable over the different periods.

Altogether, although the sample is still rather small compared to the universe of German firms in the period under observation and varies over time, we cover the general meetings of a large variety of middle-sized and larger firms from different

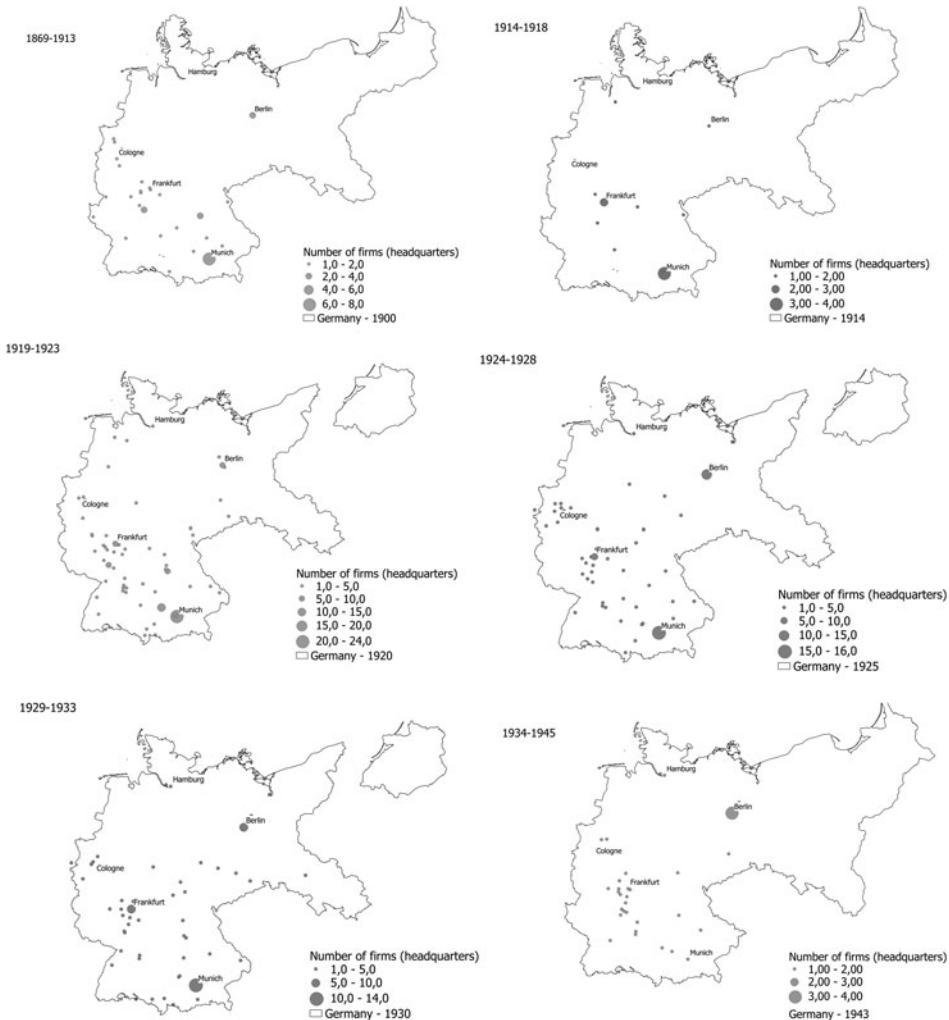


Figure 1. *Regional distribution of sample by period*

Sources: Various; see Appendix.

Note: The maps depict Germany with different state borders according to our six observation periods. These examples are for illustration purposes. We are aware that the border demarcations changed during our observation period.

sectors that were listed in Berlin and regional stock exchanges. Thus, this unique sample is well suited to provide new and yet undiscovered insights into the ownership and governance structure of German joint-stock companies in this period.<sup>16</sup>

<sup>16</sup> Table A2 in the Appendix gives an overview of our sample compared to the structure of all firms that were listed in Berlin for the sample years 1913, 1925 and 1938.

## IV

In this section, we calculate the concentration of owners, who were present, for each period. Although more than 50 per cent and sometimes up to 70 per cent of the capital was present, this was represented by a very small number of attending shareholders (Table 3). In the sample before 1913, the mean number of shareholders was 24. This number was slightly smaller with about 15 for the meetings during World War I. In the period between the hyperinflation and the Great Depression it was slightly higher and lowest in our sample covering the Nazi regime. The median was lower and more stable over the different samples, at about 11. Similar to Franks *et al.* (2006), we find that the maximum number of investors is mostly above 100, showing that the source is perfectly capable of identifying firms with large numbers of shareholders and more widespread shareholdings. The largest number of shareholders appeared at the 1927 general meeting of Allianz Versicherungs-AG, a large insurance company headquartered in Berlin and with a share capital of 30 million Reichsmark. At this meeting, 582 investors were present, representing about 27 per cent of the companies' total shares. Another example is the general meeting of Mannesmannröhren-Werke, a large steel producer headquartered in Berlin and with a share capital of 6 million Reichsmark. At this meeting in 1932, 282 investors were present, representing 46 per cent of the company's share capital. A few meetings were held between only two investors. Usually, these were smaller companies that were not (yet) listed. One typical example is the general meeting of the pencil producer Faber in September 1898, three years after it had been transformed into a joint-stock company and about two months before the firm started trading on the Berlin stock exchange. At this meeting only two of the founder's family members were present, representing 83 per cent of the share capital. Overall, we collected five more lists of general meetings for this company. By 1911 the numbers of shareholders present had increased to 11 and by 1928 there were 68 shareholders in attendance.

In Table 3, we also report different measures of ownership concentration. For each period, we use the same measures as Franks *et al.* (2006) in their seminal article. These are C1, C3 and C5 – the combined votes of the largest, the three largest and the five largest shareholders, respectively. Cthreshold is defined as the minimum number of shareholders necessary to cast 25 per cent of the present votes, and Herfindahl is the overall distribution of represented capital/votes cast per general meeting.<sup>17</sup> Similar to Franks *et al.* (2006), the concentration was fairly stable across our sample period. Indeed, if anything, concentration seems higher in the samples that cover later periods. On average, the largest shareholder held about 47 per cent of shares, which means that, in most cases, this investor alone could provide more than the threshold of 25 per cent of the votes – i.e. most firms had one shareholder who controlled the firm. C3 and C5 also indicate a strong

<sup>17</sup> The Herfindahl Index is calculated by squaring the vote share percentage of each shareholder at one general meeting then summing the resulting numbers. It ranks from close to zero if the shares are dispersed to one if all shares are in one hand.

Table 3. *Ownership concentration over time*

|           | Combined<br>votes of the<br>largest<br>shareholders<br>(C1) | Combined<br>votes of the<br>three largest<br>shareholders<br>(C3) | Combined<br>votes of the<br>five largest<br>shareholder<br>(C5) | Min.<br>shareholders<br>necessary to<br>cast 25% of the<br>present<br>(Cthreshold) | Herfindahl | Number of<br>shareholders/<br>representatives,<br>who attended<br>meeting (mean) | Number of<br>shareholders/<br>representatives,<br>who attended<br>meeting (median) | Number<br>of general<br>meetings |
|-----------|---|---|---|--|------------|--|--|----------------------------------|
| 1869–1913 | 0.44  | 0.69  | 0.79  | 1.39   | 0.32       | 23.7   | 19   | 112                              |
| 1914–18   | 0.46  | 0.71  | 0.83  | 1.04   | 0.31       | 15.4   | 9  | 27                               |
| 1919–23   | 0.46  | 0.77  | 0.87  | 1.18   | 0.34       | 15.2   | 11   | 277                              |
| 1924–8    | 0.48  | 0.75  | 0.87  | 1.12   | 0.35       | 23.1   | 11   | 150                              |
| 1929–33   | 0.47  | 0.77  | 0.86  | 1.28   | 0.34       | 18.9   | 9  | 143                              |
| 1934–45   | 0.46  | 0.75  | 0.87  | 1.27   | 0.33       | 12.1   | 8  | 73                               |
| 1869–1945 | 0.47  | 0.75  | 0.85  | 1.22   | 0.34       | 18.3   | 11   | 782                              |

Source: See Appendix, authors' own calculations,

Note: Some investors did not use their right to influence firm decisions directly, but often transferred their voting right to a representative. In this table, all calculations are based on the number of persons who actually attended the meeting. For example, if we have the information that one attending person was the representative for one or more shareholders, we count all shares for one person.



concentration of power in only a few hands. Over the whole observation period, we rarely find firms with widespread share ownership. This is also reflected in the Herfindahl Index.<sup>18</sup> Given that the median number of investors is fairly stable, the fact that more capital was represented at the shareholder meetings in the later years may indicate a rising concentration in the form of a growing number of shares owned by the attending investors, not a rise in the number of smaller shareholders attending the meetings.

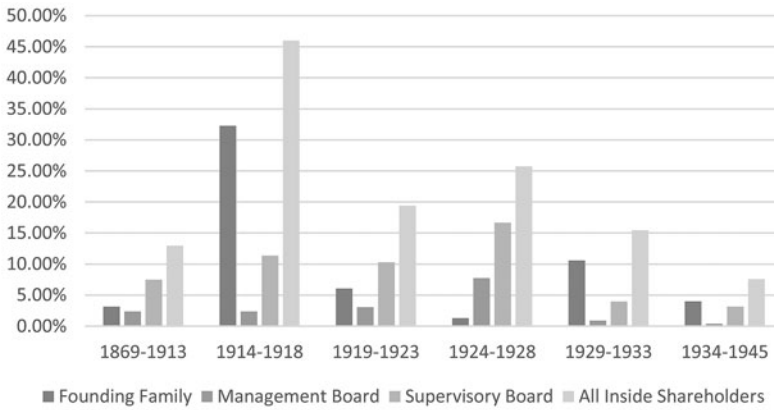
These first findings show that German joint-stock firms were mainly controlled by small groups of shareholders or their representatives and that this was fairly stable over the different samples. Very few firms have had a more widespread share ownership at a general meeting. In the next step, we learn more about the most influential investors. Figure 2 shows the percentage of shareholdings of inside shareholders and whether they were among the largest, and therefore most influential, shareholders. Inside shareholders are classified as members of the management board (*Vorstand*) or the supervisory board (*Aufsichtsrat*), as well as the founders of a company and members of the founding families. We identified members of the founding families based on the names. Thus, these estimates constitute the lower bound of the share of family members, since we cannot identify members that changed their name due to marriage in the generations to come.

Overall, all three groups of inside shareholders were highly represented at the meetings. On average, about 21 per cent of the share capital was held by inside shareholders. It is also interesting to note that the probability of investors attending such meetings was higher for those who lived in the same region in which the general assembly took place (see also Neumayer 2018). However, larger shareholders who had a strong voting impact also travelled longer distances – thus, it is unlikely that travel costs significantly influenced control of the firms.

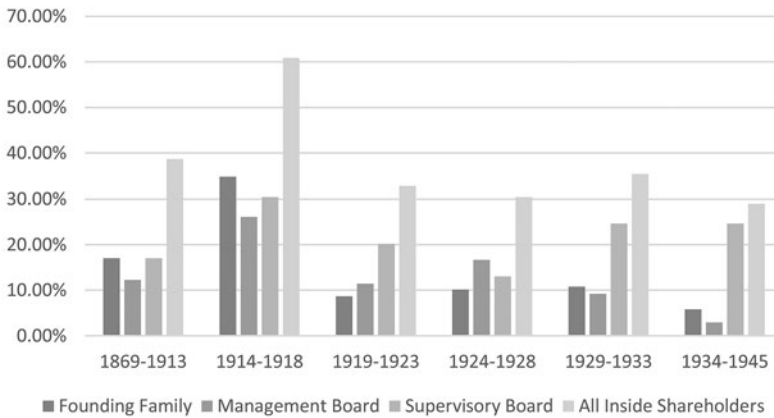
However, the numbers of inside shareholders in our sample vary between the periods. The share capital of management shareholders was the highest during the period of the Golden Twenties (about 8 per cent). This fits the observation of Selgert (2021, p. 57) that the management board became more important during this period. The supervisory members also held, on average, about 9 per cent of the present capital, and the founders and their family members, on average, about 9.5 per cent. In our sample, however, members of a founding family seem to have had the highest influence in the period during World War I. This value is again smaller in the sample directly after the War, but again higher in the following periods. In the years 1929–33, founding family members held, on average, 10.6 per cent of the present capital. Only during the Nazi period was their share really small. This is likely to have been a consequence of the expropriation of the property

<sup>18</sup> Overall, we find a much lower rise than Franks *et al.* (2006), but higher overall values: the average Herfindahl calculated by Franks *et al.* (2006) ranges between 0.23 and 0.29 in the period 1900–20, whereas we measure average levels of 34 per cent.

2a Share capital as a percentage of the capital present at the GM



2b Percentage of GMs in which this category was the largest shareholder



2c Percentage of GMs in which this category was among the three largest shareholders

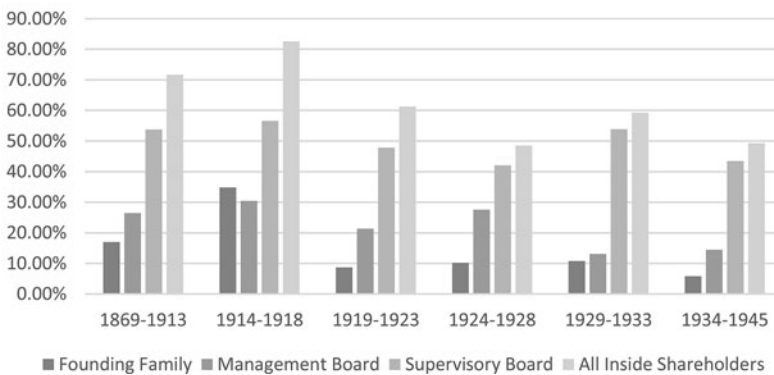


Figure 2. Power structure among inside shareholders  
Sources: Various; see Appendix.

of Jews and other victims and opponents of the National Socialists. However, please note that the decrease in the capital share of founding families may also be related to name changes in the decades after the foundation.<sup>19</sup>

Figures 2b and 2c further show that inside shareholders were indeed able to strongly influence a firm's fate. In more than 30 per cent of the meetings, an inside shareholder held the largest share, and in more than 48 per cent at least one inside shareholder was among the three largest shareholders. The dominance of management and supervisory boards is also noteworthy. There is very little separation between executive power and control in the general meetings and, more importantly, this seems to be persistent over the 60 years of our observation period. Although shareholder rights were strengthened after 1884, management and supervisory board were still the central organs of power. This is reflected in the high share of inside traders.<sup>20</sup> At the same time, the figure shows that many joint-stock corporations changed from owner-led companies to more manager-led companies.

Moreover, we try to improve our knowledge about the influence of banks by identifying banks and bank representatives at the meetings. As discussed above, the option of proxy voting often gave the banks a large number of votes, although they did not actually own the shares. We approximate the impact of banks as far as possible. This is done by first counting all shares that were represented by a bank representative. Moreover, in some cases, we have information about the occupational status of the shareholder. We also count the share if the occupation indicates that the shareholder was a banker or a lawyer working for a bank, even if we do not know for which bank or whether he was there to represent his own shares or the bank's shares or proxy vote shares. In most cases, there was no information about the occupational status. However, a bibliographical search on the individuals that appear at the meetings of more than one firm revealed that banks would often send a representative who would appear on the list under his own name, not indicating that he was attending on behalf of a bank. Thus, it is possible that if we rely on the provided occupation or announced representation only, we underestimate the influence of banks. We therefore compared the names on the list with the names of the most important private banks and their directors (an overview of the most important private banks in the twentieth century can be found in Wixforth and Ziegler 1997, p. 220, and Ziegler 2003, p. 44). We also compared the names on the lists with the names of the most influential bankers and private bankers who were members of industrial supervisory boards (see Wixforth and Ziegler 1997, p. 221.).

Figure 3 provides an overview of the shares that we were able to trace back to banks – note that here we have excluded the meetings of banks and focus only on the meetings

<sup>19</sup> In contrast to Franks *et al.* (2006), our values are much lower. For example, according to Franks *et al.*, in 1890, members of supervisory boards exercised about 50 per cent of the votes at general meetings (see Franks *et al.* 2006, pp. 565–8). Bol (2018) also finds lower values for inside shareholders of the Deutsche Bank for the period from 1870 to 1930.

<sup>20</sup> For a discussion see Selgert (2021).

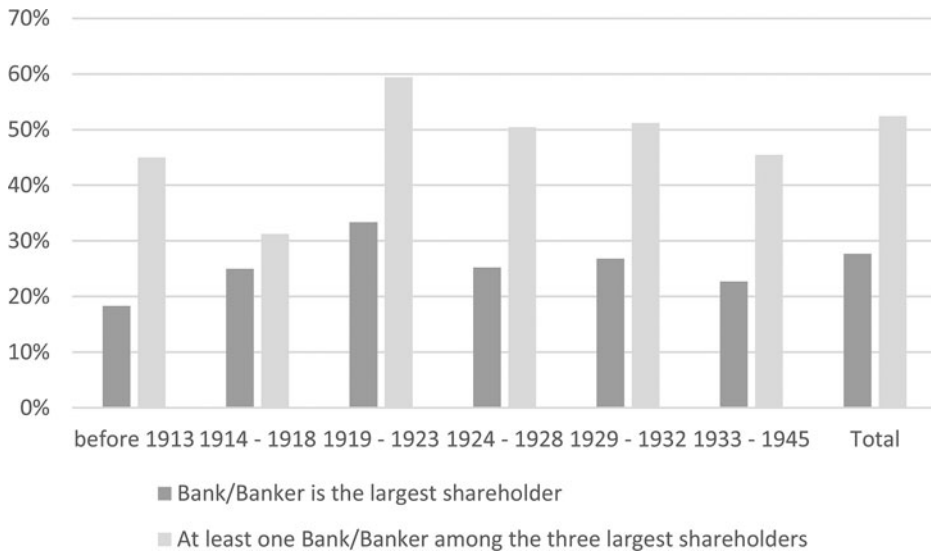


Figure 3. *Banks and bankers among the most influential shareholders*

*Note:* We count all shares that were represented by a bank or a banker (information taken from the attendance list). Moreover, we identified more bankers, who most likely were present on behalf of a bank, by comparing the names on the list with the names of the most important private banks and their directors (an overview of the most important private banks in the twentieth century can be found in Wixforth and Ziegler 1997, p. 220, and Ziegler 2003, p. 44). We also compare the names on the lists with the names of the most influential bankers and private bankers who were members of industrial supervisory boards (see Wixforth and Ziegler 1997, p. 221). Please note that for this figure, we excluded the meetings of banks.

of non-financial firms. Clearly, the figure confirms that banks were very influential over all periods. In about 30 per cent of the meetings, a banker or a bank was the most influential shareholder and in more than 50 per cent of the meetings a banker or a bank was among the three largest shareholders. This influence was fairly stable over the sample periods and potentially even larger if we assume that there were also individuals working for a bank, who we could not identify.

To highlight the difference between ownership and control, we estimate the upper bound of dispersed ownership. This is done by assuming that all the shares represented by a banker or a bank and all capital that was not present at the general meeting was in fact owned by small shareholders. Table 4 provides the percentage share of attending capital that was represented by a bank or a banker, the average share of capital that was not present and the combined estimate of potentially dispersed capital. The share of capital represented by banks was firmly stable over the samples; however, the overall turnout at the meetings seems to have increased. Thus, the upper bound of the share of the capital that

was potentially dispersed, which was 60 per cent on average, seems to have declined.

Overall, German joint-stock firms were controlled by a small number of influential shareholders. This is stable over the different samples in the different periods. Inside shareholders and banks in particular could easily control the fate of the companies. If anything, the concentration of power seems to have increased over time, although this may be driven by a sample selection bias. We will try to address this issue in the last section. Moreover, although it seems contradictory, it is likely that ownership was actually quite dispersed but that this did not translate into power due to the proxy voting of banks, which concentrated the voting power in their hands without actually owning shares. We cannot judge whether they actually used the power. According to Selgert (2021, pp. 52f.), contemporaries reported that banks often voted in the interests of management.

## V

Until now, the socio-economic characteristics of German shareholders have not been studied in a quantitative way.<sup>21</sup> Other studies that provide information on the social structure of shareholders covering our observation period study British and American shareholders (Green *et al.* 2011; Ott 2011; Rutterford 2012; Rutterford *et al.* 2017; Sotiropoulos and Rutterford 2018).

We primarily use names to identify gender and to establish whether an investor was an individual or an institution. Following this procedure, we observe a total of 666 female investors, of whom 23 were classified as widows. Furthermore, we observe 9,321 male investors and 1,362 institutional investors. In four cases, married couples were mentioned as investors. We assigned these cases to female investors under the assumption that the wives had a say if they were named. In 45 other cases, we only have information that a representative of a group of heirs or communities acted as investors. These are summarised in the category ‘Unspecified’.

These total numbers certainly underestimate the impact of institutional investors, since while most other investors appeared only once or twice, some institutional investors appeared every year for more than one firm and held larger shares. This is better reflected in the shares of votes per period (Table 5, panel A).

Table 5 shows the average share of votes for the different groups. In most cases, we have the number of votes for each investor. If we do not have the number of votes, we assume that the share of capital equals the share of votes. Overall, the majority of vote

<sup>21</sup> Pross (1965) gives a brief insight into the social background of shareholders and provides evidence that they mostly came from highly educated classes and were officials or academics. Also, he argues that the aristocracy began to buy shares at the end of the nineteenth century. In contrast to Pross, Schäffle (1885, cited by Pross 1965, p. 63) assumes that shareholders came from all classes of society. Bauer (1991) provides a sketch of the financial ascent of a large merchant family from Prussia. Pohl (1987) describes the first buyers of the Deutsche Bank AG.

Table 4. *Estimates of shares that were either absent or potentially represented by a banker/bank*

| Period      | Percentage share of present capital held or represented by bank/banker | Share of capital not present | Overall share of potentially dispersed capital <sup>a</sup> |
|-------------|--|------------------------------|---|
| before 1913 | 44.0   | 63.5                         | 82.7  |
| 1914–18     | 33.3   | 47.0                         | 63.6  |
| 1919–23     | 28.2   | 49.4                         | 62.5  |
| 1924–8      | 28.9   | 39.4                         | 56.5  |
| 1929–33     | 28.9   | 29.2                         | 48.9  |
| 1934–45     | 28.0   | 35.2                         | 53.3  |
| Total       | 30.5   | 42.6                         | 59.4  |

<sup>a</sup>Assuming that all shares represented by a bank or banker and all capital not present at a general meeting was in fact owned by small shareholders.

shares in our sample were held by male investors (about 54 per cent). In comparison, only about 3 per cent of the vote shares were held by women. It is interesting to note that women held the highest shares during the period of the German Empire; this also corresponds to the proportion of shares held by women present at the general meetings. In this period about 3 per cent of the investors present at the meetings were women, who held about 4 per cent of the votes. In the period after 1923, the proportion of women attending the meetings rose to nearly 10 per cent, which translated into only about 1.6 per cent of the votes.<sup>22</sup> The low proportion of female shareholders is not surprising and fits well the observation that only a few women were actively involved in large companies (see, for instance, Hlawatschek 1985).<sup>23</sup>

Altogether, cross-ownership is rare in our sample. Most shareholders appeared only at the meetings of one firm (92 per cent) and about 5 per cent at the meetings of two firms. Moreover, these numbers are relatively stable over the observed periods.<sup>24</sup> Only eight women held shares in more than one company. These women were often members of the founding family or married to prominent industrialists. Anna Langheinrich, for instance, held shares in Graphitwerke Kropfmühl AG in 1925. In that year she was also the official director of Graphitwerke Kropfmühl AG and therefore one of the few female entrepreneurs of the time (see *Deutsches Aktienhandbuch* 1925, p. 549). Two further examples are the female shareholders of the

<sup>22</sup> For the proportion of female investors present at general meetings, see Appendix Table A3.

<sup>23</sup> Female entrepreneurs and business women in this period have not attracted much interest so far. Hlawatschek (1985) presents quite a few biographies of business women who were, however, mainly to be found in small- and medium-sized enterprises. To our knowledge, we are the first to study female shareholders in Germany. For the investment behaviour of women in the UK, see e.g. Acheson *et al.* (2021).

<sup>24</sup> See Appendix Table A1.

Table 5. *Gender and social class: average vote share of the whole group and sample comparison*

|           | Panel A: Full sample, gender |       |                         |             | Panel C: People and institutions that were represented by someone else, gender |       |                         |             |
|-----------|------------------------------|-------|-------------------------|-------------|--|-------|-------------------------|-------------|
|           | Women                        | Men   | Institutional investors | Unspecified | Women  | Men   | Institutional investors | Unspecified |
| 1869–1913 | 4.60                         | 63.78 | 25.99                   | 0.14        | 0.69   | 7.76  | 28.98                   | 0.18        |
| 1914–18   | 1.73                         | 51.97 | 29.27                   | 2.22        | 0.63   | 9.32  | 27.41                   | 2.60        |
| 1919–23   | 2.51                         | 58.76 | 29.41                   | 0.05        | 1.66   | 7.43  | 32.63                   | 0.07        |
| 1924–8    | 1.67                         | 48.45 | 41.93                   | 0.01        | 0.84   | 9.93  | 45.37                   | 0.01        |
| 1929–33   | 2.45                         | 51.96 | 36.49                   | 0.09        | 0.75   | 10.28 | 42.56                   | 0.01        |
| 1934–45   | 4.17                         | 54.22 | 36.53                   | 0.42        | 1.72   | 13.18 | 43.57                   | 0.57        |
| Total     | 2.85                         | 54.86 | 33.27                   | 2.93        | 1.05   | 9.65  | 36.75                   | 0.57        |

|           | Panel B: Full sample, social class |                              |                             |                        | Panel D: People and institutions that were represented by someone else, social class |                              |                             |                        |
|-----------|------------------------------------|------------------------------|-----------------------------|------------------------|--|------------------------------|-----------------------------|------------------------|
|           | Share of upper class               | Share of higher middle class | Share of lower middle class | Share of working class | Share of upper class   | Share of higher middle class | Share of lower middle class | Share of working class |
| 1869–1913 | 40.03                              | 10.95                        | 8.99                        | 0.00                   | 9.38   | 0.00                         | 0.00                        | 0.00                   |
| 1914–18   | 46.38                              | 3.72                         | 0.92                        | 0.00                   | 11.77  | 2.34                         | 0.49                        | 0.00                   |
| 1919–23   | 41.83                              | 7.92                         | 13.13                       | 0.03                   | 9.24   | 9.05                         | 0.80                        | 0.00                   |
| 1924–8    | 35.02                              | 4.19                         | 5.36                        | 0.00                   | 13.80  | 3.73                         | 0.39                        | 0.00                   |
| 1929–33   | 40.91                              | 7.94                         | 6.13                        | 0.05                   | 14.77  | 12.24                        | 0.06                        | 0.00                   |
| 1934–45   | 44.50                              | 15.87                        | 2.15                        | 0.00                   | 24.03  | 0.00                         | 0.00                        | 0.00                   |
| Total     | 41.44                              | 8.43                         | 6.12                        | 0.04                   | 13.83  | 6.84                         | 0.43                        | 0.00                   |

Sources: Various; see Appendix.



Papierfabrik August Koehler AG in Oberkirch and the Papierfabrik Wilhelm Euler in Bensheim. With Anna Maria Goetz and Wilhelmine Rettner we see two women of the founding families who were members of the supervisory board of both companies, since both companies had holdings together (Krämer 2007).

Overall, about 9 per cent of the men held shares in more than one company. However, most of them only held shares of one more company. The men who invested in more than five firms were mostly bankers: Hermann Scholz, Otto Kleesattel, Richard Brosien as well as Albert Katzenellenbogen. Albert Katzenellenbogen was a member of the executive bodies of banks, textile companies and chemical groups in various German cities. As chairman of the board he directed the Mitteldeutsche Creditbank and later also the Commerzbank AG (see Graf 2007, pp. 453–4 or Reitmayer 2011 or Herbst *et al.* 2004, pp. 29 and 327). The other men who held shares in more than five firms were entrepreneurs: for example, Georg Gaill, who was a famous cigarette manufacturer, or Hugo Himmer, who was a factory owner (see e.g. Volz 1930, p. 517).

We then classify the investors into social classes depending on occupation and academic title. Thereby, we follow the existing classification scheme outlined by Schüren (1989, p. 313). Schüren defined this very detailed classification scheme in order to study social mobility in Germany in the nineteenth and twentieth centuries. His work represents one of the largest and most comprehensive investigations into the possibilities for socio-economic ascent and descent in two centuries of German social history. His classification is intertemporally valid and finds consensus among social historians such as Hartmut Kaelble and Jürgen Kocka (see Schüren 1989, p. 313). Based on occupation, Schüren (1989) distinguishes four main groups: the working class, the lower middle class, the upper middle class and the upper class. The working class contains unskilled and skilled workers, craftsmen, skilled industrial workers, and lower civil servants and employees. The lower middle class contains small farmers, merchants, masters/hosts and middle civil servants and employees. The upper middle class contains full-time farmers, entrepreneurs of medium-sized firms, senior civil servants and top officials. The upper class contains mostly land-owners, large manufacturers, top academics and senior officials. The classification scheme is very detailed and even very particular occupations are easy to categorise since Schüren provides the classification for more than 6,500 occupational groups. In instances where we only have information about the title of an investor (e.g. *Prof.*, *Dr.*, *Ing.*), we classify their occupation based on the title. For most cases this was relatively easy, because most of the titles are academic titles that we can easily assign to the group of academics and the upper class. We also assign investors with a title of nobility (e.g. *Exzellenz*, *Graf*, *Freiherr von*) to the upper class, even if there is no indication of their profession in our data.

In total, the sample contains 4,269 investors for whom we have information about their occupation. The majority came from the upper class (90.53 per cent of the observed investors). About 7 per cent of 4,269 came from the upper middle class, 3 per cent from the lower middle class, and only 0.06 per cent from the working

class.<sup>25</sup> Looking again at the vote shares of the different groups, we find that the vote share from the upper class seems to have been the highest for all groups. Table 5 reveals that in the nineteenth century, control of the company's strategic decisions was clearly in the hands of men of the upper class. This changes only slightly in the 1920s, when ownership became increasingly available to the lower social classes, which is reflected in the higher shares of investors from the higher and lower middle classes. If we consider that the overall turnout increased, it is possible that the ownership did not change but that more people from the middle class decided to use their vote in the general elections. Moreover, this does not necessarily mean that poorer classes did not own shares at all, merely that they were not represented at the general meeting. It is likely that the shareholders who held a small share of capital and who came from the lower social classes did not attend the meetings because of the travel costs or because their influence was too small to give an incentive to attend. Some may have been represented by bankers.

The votes in Table 5, panel B do not sum up to 100 because of the institutional investors, some of which were banks. As mentioned earlier, shareholders could transfer their voting rights for a particular meeting to a bank (*Stimmrechtsermächtigung*), allowing the bank or any third party to cast votes in their name. In contrast to the proxy voting in these cases, the shareholders had to reveal their identity and this was recorded in the lists of the general meetings. Table 5, panels C and D show the characteristics of the shareholders that transferred their right to vote compared to the characteristics of the full sample. Overall the differences are not large. However, men and companies more often transferred their right to vote. We do not observe a higher vote share of lower social classes transferring rights, in fact the opposite seems true. The group of represented shareholders seems to have a higher likelihood of belonging to the upper class.

In Table 6 we look at the institutional investors in more detail to get a better idea of their profile. Here, we divide the investors into different industries, following Lehmann-Hasemeyer and Opitz (2019).<sup>26</sup> The highest percentage (52.06) of institutional investors comes from the banking sector, which is surely driven by the proxy voting. Thus, the banks held substantial control over joint-stock firms through proxy voting, as described above. All other institutional investors were fairly equally distributed among sectors. Some companies held shares in more than one firm. In most cases, this was banks. However, we also find large mining companies, such as the Metallgesellschaft AG from Frankfurt am Main or the Gelsenkirchener Bergwerksverein.

<sup>25</sup> See Appendix Table A3 for the shares as a percentage of shareholders present. Table 5 contains only the share in votes.

<sup>26</sup> The branches are divided into 11 categories: banking, insurance, mining, heavy industry, light industry, food processing, transportation, chemical industry, public utilities, diverse, and not assignable if we could not assign the investors to a certain category.

Table 6. *Institutional investors – descriptive statistics*

| Sector          | 1896–               | 1914– | 1919– | 1924– | 1929– | 1934– | Total |            |  |
|-----------------|---------------------|-------|-------|-------|-------|-------|-------|------------|--|
|                 | 1913                | 18    | 23    | 8     | 33    | 45    | N     | Percentage |  |
|                 | Panel A: Percentage |       |       |       |       |       |       |            |  |
| Banking         | 62.59               | 88.89 | 47.27 | 43.74 | 47.01 | 70.91 | 708   | 52.06      |  |
| Insurance       | 0.72                | 3.70  | 1.45  | 3.55  | 0.00  | 1.36  | 24    | 1.76       |  |
| Mining          | 0.00                | 3.70  | 1.82  | 3.31  | 4.10  | 1.36  | 34    | 2.50       |  |
| Heavy industry  | 4.32                | 11.11 | 6.18  | 4.26  | 6.72  | 4.09  | 71    | 5.22       |  |
| Light industry  | 7.19                | 0.00  | 4.73  | 7.57  | 3.73  | 4.09  | 74    | 5.44       |  |
| Food processing | 5.04                | 0.00  | 2.18  | 1.89  | 4.10  | 0.45  | 33    | 2.43       |  |
| Transportation  | 1.44                | 0.00  | 1.09  | 0.95  | 2.24  | 2.27  | 20    | 1.47       |  |
| Chemistry       | 0.00                | 0.00  | 1.45  | 1.42  | 0.75  | 0.00  | 12    | 0.88       |  |
| Public utility  | 0.72                | 0.00  | 2.91  | 5.91  | 7.09  | 6.82  | 68    | 5.00       |  |
| Diverse         | 5.76                | 0.00  | 28.00 | 21.51 | 22.01 | 5.91  | 248   | 18.24      |  |
| Not assignable  | 15.11               | 0.00  | 3.64  | 6.15  | 3.36  | 0.91  | 68    | 5.00       |  |
| Total           | 10.51               | 2.13  | 20.37 | 31.18 | 19.93 | 15.88 | 10.51 | 100        |  |

*Source:* Authors' own calculation.

*Note:* The sectoral classification is from Lehmann-Hasemeyer and Opitz (2019, p. 79). The heavy industry category contains engineering firms, metalworking and railway requirements. Light industry contains the textile sector, paper industry, glass industry and rubber industry. Food processing contains breweries and mills. Public utility contains electricity, gas and water. Diverse contains hotel companies, terrain companies and mortgage banks.

Altogether, rising democracy and price disturbances after the period of hyperinflation were accompanied by investors from lower social classes turning up at the meetings. Their share of votes, however, remained low.<sup>27</sup> Although, initially, we observe a drop in the share of female investors after the hyperinflation, the share steadily increases again in the years to come. However, their influence remains low. Thus, while these observations support the hypothesis that stocks became more available to other social classes and women, they also confirm that the joint-stock firms were still firmly in the hands of a few investors from the upper class, and of institutional investors, which were mostly banks.

## VI

Overall, the descriptive statistics show little variation in the ownership/governance structure of firms over the whole observation period of 77 years. The firms in our sample were securely in the hands of men of the upper class. Inside shareholders and banks also controlled large shares. Moreover, the evidence suggests that – if

<sup>27</sup> Dividends were high and stable until the Great War, but deteriorated afterwards. Missing dividend payments may have motivated smaller shareholders to participate at a general meeting.

anything – ownership dispersion declined over time. However, we may be missing patterns of variation due to a selection bias of our sample between the periods.

To address this issue and to learn more about overall patterns, we aggregate the data at the level of general meetings and test some hypotheses that might explain different levels of power concentration. More precisely, since we observe, on average, about three meetings per firm, we construct an unbalanced panel, where the identifier is the firm and the time variable is the year of the general meeting. Thus, we are able to run regressions with firm fixed effects to learn more about changes over time that are only within-firm changes.

We closely follow Acheson *et al.* (2015), who tried to find patterns of ownership concentration in Victorian Britain and test hypotheses to explain patterns in the ownership structure. The variables that we aim to explain in our multivariate regressions are the logs of the percentage of capital and/or voting rights held by inside shareholders, the percentage held by the largest five shareholders and the Herfindahl Index.

The first variable that we expect to impact the ownership structure is the size of the firm. Large firms need more capital. We assume that the acquisition of capital increases the overall number of shareholders and consequently lowers ownership concentration. Furthermore, we expect new shareholders, particularly from lower social classes that buy shares for the first time, to have less information than experienced investors. Thus, they might be drawn to large and well-established firms. We use the log of the share capital as a measure for size.

With a similar argument, we assume that firms listed on more stock exchanges had a more dispersed ownership. We use several dummies to test this hypothesis – one dummy that is equal to one if the firm was listed on a regional stock exchange, another dummy that is equal to one if the firm was listed in Berlin, and another dummy that is equal to one if the firm was listed in Berlin and on at least one regional stock exchange. We also control for the total number of stock exchanges the shares were listed at. Similarly, we also include a dummy variable if the firm was headquartered in Berlin. We assume that firms located in Berlin had a more diffuse ownership, since they potentially had access to a larger capital market and a larger number of investors.

Moreover, the sector might be significant (Demsetz and Lehn 1985). Companies located in an industry for which it is more difficult to assess and monitor managerial performance should have a more concentrated ownership. This is more likely to be the case in financial institutions (due to asymmetric information) and, for instance, in mining industries, which were often located further away from stock markets. Thus, we use sector dummies to identify sectors in which the ownership is particularly concentrated or dispersed. We also control for type of meeting (ordinary vs extraordinary). We also include several period dummy variables, to see whether there is an overall trend or whether there are huge differences between the different periods of investors' protection as outlined in Section II.

The results are reported in Table 7. The first four regressions report the OLS regressions, regressions (5) to (8) the ones with firm fixed effects revealing determinants of within-firm variation.

Table 7. *Regression results*

| Variables   | (1)                          | (2)  | (3)                        | (4)                              | (5)                         | (6)   | (7)                       | (8)                             |
|---|------------------------------|--|----------------------------|----------------------------------|-----------------------------|---|---------------------------|---------------------------------|
|   | % held by<br>insiders<br>OLS | % held by the<br>largest 5<br>investors<br>OLS | Herfindahl<br>Index<br>OLS | Number of<br>shareholders<br>OLS | % held by<br>insiders<br>FE | % held by the<br>largest 5<br>investors<br>FE | Herfindahl<br>Index<br>FE | Number of<br>shareholders<br>FE |
| Size (share capital)  | -0.000702<br>(0.00236)       | 0.0355***<br>(0.00874)                         | 0.0698**<br>(0.0275)       | -0.151<br>(0.950)                | -0.00399<br>(0.00344)       | 0.0163*<br>(0.00843)                          | 0.0102<br>(0.0291)        | 0.815<br>(0.597)                |
| Listed on a regional<br>stock exchange                        | -0.0400***<br>(0.0118)       | 0.0490<br>(0.0400)                             | 0.136<br>(0.0896)          | -5.528<br>(4.340)                | -0.0307<br>(0.0194)         | -0.0961<br>(0.0771)                           | 0.0128<br>(0.191)         | 8.124<br>(8.079)                |
| Listed in Berlin  | -0.0514***<br>(0.0113)       | 0.0705<br>(0.0953)                             | 0.541*<br>(0.311)          | -3.791<br>(6.196)                | -0.0674<br>(0.0431)         | -0.259**<br>(0.115)                           | -0.326<br>(0.276)         | 22.22**<br>(11.22)              |
| Listed in Berlin and<br>regionally                            | -0.0537***<br>(0.0176)       | 0.0924<br>(0.0720)                             | 0.126<br>(0.142)           | 5.524<br>(7.674)                 | -0.0941**<br>(0.0440)       | -0.231*<br>(0.135)                            | -0.292<br>(0.289)         | 34.09**<br>(17.10)              |
| Total number of stock<br>exchanges, the<br>shares were listed | 0.00237<br>(0.00404)         | -0.0270<br>(0.0193)                            | 0.00170<br>(0.0301)        | 3.208**<br>(1.510)               | 0.00453<br>(0.00609)        | 0.0552<br>(0.0349)                            | 0.0830<br>(0.0795)        | -6.407<br>(5.442)               |
| Extraordinary meeting   | -0.00614<br>(0.00460)        | -0.0110<br>(0.0260)                            | -0.0665<br>(0.0669)        | 5.919*<br>(3.395)                | -0.00202<br>(0.00354)       | 0.00424<br>(0.0216)                           | -0.00800<br>(0.0707)      | 0.408<br>(2.114)                |
| Firms with<br>headquarters in<br>Berlin                       | -0.00900<br>(0.00836)        | 0.0719<br>(0.0450)                             | 0.0880<br>(0.150)          | -5.474<br>(10.32)                |                             |   |                           |                                 |
| Age of the firm   | -0.000186<br>(0.000193)      | -0.00113*<br>(0.000631)                        | -0.00250<br>(0.00214)      | 0.206***<br>(0.0724)             |                             |   |                           |                                 |
| 1885-96   | 0.0510**<br>(0.0217)         | 0.0224<br>(0.100)                              | 0.400*<br>(0.222)          | -11.10***<br>(2.459)             | 0.0253***<br>(0.00181)      | 0.134***<br>(0.00336)                         | 0.587***<br>(0.0153)      | -6.572***<br>(0.314)            |
| 1897-1931   | 0.0479**                     | -0.291***                                      | -0.338                     | 5.407                            | 0.0424***                   | 0.191***                                      | 0.781***                  | -9.115**                        |

*Continued*

Table 7. *Continued*

| Variables                         | (1)                       | (2)                                      | (3)                     | (4)                           | (5)                      | (6)                                     | (7)                    | (8)                          |
|-----------------------------------|---------------------------|--|-------------------------|-------------------------------|--------------------------|---|------------------------|------------------------------|
|                                   | % held by insiders<br>OLS | % held by the largest 5 investors<br>OLS | Herfindahl Index<br>OLS | Number of shareholders<br>OLS | % held by insiders<br>FE | % held by the largest 5 investors<br>FE | Herfindahl Index<br>FE | Number of shareholders<br>FE |
| 1932–7                            | (0.0233)<br>0.0475**      | (0.0883)<br>−0.203**                     | (0.245)<br>−0.181       | (9.226)<br>3.411              | (0.00483)<br>0.0164      | (0.0465)<br>0.254***                    | (0.0738)<br>0.841***   | (3.556)<br>−9.814**          |
| 1938–45                           | (0.0234)<br>0.0663*       | (0.0814)<br>−0.0604                      | (0.234)<br>0.161        | (8.950)<br>−0.632             | (0.0140)<br>0.0151       | (0.0531)<br>0.201***                    | (0.117)<br>0.563***    | (4.016)<br>−5.205            |
| Constant                          | (0.0388)<br>0.0399**      | (0.105)<br>0.0155                        | (0.307)<br>−1.197***    | (9.784)<br>1.819              | (0.0535)<br>0.0531**     | (0.0618)<br>−0.419***                   | (0.156)<br>−2.168***   | (4.537)<br>24.19***          |
| Sector fixed effects              | (0.0198)<br>y             | (0.0669)<br>y                            | (0.173)<br>y            | (6.712)<br>y                  | (0.0240)                 | (0.0757)                                | (0.150)                | (4.132)                      |
| Firm fixed effects                |                           |  |                         |                               | y                        | y                                       | y                      | y                            |
| R-squared                         | 0.151                     | 0.108                                    | 0.069                   | 0.246                         | 0.059                    | 0.044                                   | 0.026                  | 0.088                        |
| Observations (number of meetings) | 718                       | 653                                      | 718                     | 781                           | 708                      | 643                                     | 708                    | 771                          |
| Number of firms                   | 253                       | 240                                      | 253                     | 272                           | 253                      | 240                                     | 253                    | 272                          |

Standard errors clustered by firm, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The first interesting result is that, in contrast to the findings of Acheson *et al.* (2015), vote concentration and size seem to be related, but not in the way we had expected. The larger a firm, the higher the concentration of capital present at the meetings seems to be. In the OLS regressions, size has a positive and significant impact on the capital of the five largest shareholders, as well as a positive and significant impact on the Herfindahl Index. In the fixed effects regressions (5) to (8), we observe a similar effect, albeit less significant. The share of capital held by the largest five investors rose with the rise in share capital if we consider within-firm variation. The large German joint-stock firms that were the major players in the German economy were firmly in the hands of a small group of industrialists.

Access to capital also seems to matter. Firms that were listed on a stock exchange seem to have had inside shareholders, with a lower overall share of votes (regressions (1) and (5)) and a more dispersed ownership structure (regressions (3), (4) and (8)).

The sectoral structure, however, does not really influence the ownership structure (not reported). Banks and insurance companies were the only sectors in which we observe a robust effect. The ownership structure here was more dispersed. However, insurance companies were often not traded freely on the market. They often issued *vin-kulierte Namensaktien* – i.e. registered shares with restricted transferability (Gelman and Burhop 2008, p. 49). These results should therefore be treated with caution.

In terms of regulation, we introduced dummies that control for differences in the legal framework. From 1897 onwards, investors' rights were strengthened, but the period dummies show that ownership concentration even rose in our sample, in particular, if we look at the within variation (regressions (5) to (8)).

Altogether, we find some interesting patterns in our sample: the largest companies seem to have a less dispersed ownership structure than smaller firms. Ownership concentration even seems to decline with rising size. On the other hand, broader access to capital – i.e. listing on more stock exchanges – partly offset the rise in concentration. Sectors seem to matter little. Other firm- and meeting-specific variables also do not seem to matter. Most importantly, a better legal framework, more transparency and improved investor protection did not reduce ownership concentration – at least not in our sample.

## VII

Previous research has shown that in most countries except Germany, we observe a rapid decline in the concentration of ownership of joint-stock firms for the period 1875 to 1945 (Franks *et al.* 2006; Foreman-Peck and Hannah 2012; Acheson *et al.* 2015). We revisit the questions of ownership and control of joint-stock firms based on a randomly selected unique data set for the period 1869 to 1945, covering a selection of 782 general meetings of 272 firms and information on 9,970 individual investors.

We contribute to our knowledge about shareholders and ownership concentration in three ways: first, based on our larger sample, we can confirm previous findings from Franks *et al.* (2006) that the concentration of power remained high, regardless of



political, economic and legal conditions. Overall, the joint-stock firms in our sample were controlled by a small number of influential men, who were in most cases inside shareholders. Moreover, it turns out that the largest companies in our sample had a higher capital concentration at the general meetings than the smaller ones. This was only partly offset by the fact that better access to capital via stock exchanges led to a more dispersed ownership.

Second, we provide new insights into the socio-economic characteristics of the shareholders by studying the share of women and lower social classes. Although we find that ownership among the lower social classes and women steadily increased in absolute numbers, their share of ownership remained low and did not translate into power.

Third, we estimate the impact of banks. We do find that in about 30 per cent of the meetings, banks were among the largest five shareholders. Since it is not always possible to identify a person as a banker, this is the lower bound, and banks' impact is likely to have been higher. This also means that although control was concentrated in a few hands, it is likely that the actual ownership – not the control – was quite dispersed. It simply did not translate into power due to the proxy voting of banks. It is difficult to judge from our analysis whether and how banks used this power. Similar to studies on the supervisory board presence of banks, we can only provide information on the scope of possibilities of the banks to influence a firm's fate. We do not know whether they used the power. To do so, we would need to study the decisions and the decision-making process at the general meetings. However, the protocols are in most cases not available and if they are, there are no votes on important topics cast by name. However, considering the findings from previous research (see, for instance, Edwards and Ogilvie 1996; Fohlin 2007), where no causal impact of banks' presence on supervisory boards on firm performance or credit access could be identified, it is certainly possible that banks did not abuse their voting power at the general meetings.

How do our findings relate to the picture of the development of the German stock exchange and its shareholders? Burhop, Chambers and Cheffins (2018) have recently made a strong case for Germany having a well-regulated stock market and argue that this was a major reason why the Berlin exchange was able to compete with other international stock exchanges in the nineteenth century (see also Hannah 2019, table 1, p. 173). In particular, they emphasise shareholder protection and voting powers as well as good listing requirements. They do not specifically refer to the fact that large joint-stock banks were controlled by a small group of wealthy shareholders and banks. Moreover, recent papers have further emphasised that some of the shareholders were often well-connected and influential (Lehmann-Hasemeyer and Opitz 2019). Perhaps this particular feature of the German stock market gave the joint-stock firms an advantage because the wealthy governed them very well. This could have been because they had aligned incentives (big shareholdings) as well as information and power advantages due to the fact that large shareholders were often bankers, founding family members, management or supervisory board members of the firm and/or other firms in the same sector. Arguably this was superior to the Anglo-Saxon model of more dispersed ownership with often badly informed

and powerless investors. This fits the observation that many public companies in the US, such as Uniroyal, privatised in the 1990s to avoid fundamental and powerful financial manipulation, management greed and reckless speculation (Jensen 1989). Moreover, the recent success of firms such as Amazon, for which Jeff Bezos is not only the CEO but also the largest shareholder, further supports the hypothesis that a clear separation of ownership and control is not always superior.

Submitted: 15 August 2021

Revised version submitted: 16 April 2022

Accepted: 25 April 2022

## References

- ACHESON, G., CAMPBELL, G., TURNER, J. and VANTEEVA, N. (2015). Corporate ownership and control in Victorian Britain. *Economic History Review*, **68**, pp. 911–36.
- ACHESON G., CAMPBELL, G., GALLAGHER, Á. and TURNER, J. (2021). Independent women: investing in British railways, 1870–1922. *Economic History Review*, **74**, pp. 471–95.
- BARBER, B. and ODEAN, T. (2000). Trading is hazardous to your wealth: the common stock investment performance of individual investors. *Journal of Finance*, **55**, pp. 773–806.
- BARBER, B. and ODEAN, T. (2001). Boys will be boys: gender, overconfidence, and common stock investment. *Quarterly Journal of Economics*, **116**, pp. 261–92.
- BAUER, F. (1991). *Bürgerwege und Bürgerwelten: Familienbiographische Untersuchungen zum deutschen Bürgertum im 19. Jahrhundert*. Göttingen: Vandenhoeck & Ruprecht.
- BEER, J. (1999). *Der Funktionswandel der deutschen Wertpapierbörsen in der Zwischenkriegszeit (1924–1939)*. Frankfurt am Main and New York: Europäische Hochschulschriften. Reihe V, Volks- und Betriebswirtschaft 2406.
- BOL, A. (2018). Die Aktionärsstruktur der Deutschen Bank, 1870–1929. *Jahrbuch für Wirtschaftsgeschichte/Economic History Yearbook*, **59**, pp. 135–56.
- BURHOP, C. (2004). *Die Kreditbanken in der Gründerzeit*. Stuttgart: Schriftenreihe des Instituts für bankhistorische Forschung e.V. 21.
- BURHOP, C. (2006). Banken, Aufsichtsräte und Corporate Governance im Deutschen Reich (1871–1913). *Bankhistorisches Archiv*, **32**, pp. 1–25.
- BURHOP, C. (2009). No need for governance? The impact of corporate governance on valuation, performance and survival of German banks during the 1870s. *Business History*, **51**, pp. 569–601.
- BURHOP, C. (2011). *Wirtschaftsgeschichte des Kaiserreichs 1871–1918*. Göttingen: Vandenhoeck & Ruprecht.
- BURHOP, C. (2019). Corporate governance. In C. Diebolt and M. Hauptert (eds.), *Handbook of Cliometrics*, vol. 2. Heidelberg: Springer.
- BURHOP, C., CHAMBERS, D. and CHEFFINS, B. (2018). The rise and fall of the German IPO Market, 1870–1938. *Jahrbuch für Wirtschaftsgeschichte/Economic History Yearbook*, **59**, pp. 9–37.
- BURKART, M., GROMB, D. and PANUNZI, F. (1997). Large shareholders, monitoring, and the value of the firm. *The Quarterly Journal of Economics*, **112**, pp. 693–728.
- CALVET, L., CAMPBELL, J. and SODINI, P. (2007). Down or out: assessing the welfare costs of household investment mistakes. *Journal of Political Economy*, **115**, pp. 707–47.
- CHEFFINS, B. and BANK, S. (2009). Is berle and means really a myth? *Business History Review*, **83**, pp. 443–74.
- DEMSETZ, H. and LEHN, K. (1985). The structure of corporate ownership: causes and consequences. *Journal of Political Economy*, **93**, pp. 1155–77.
- EDWARDS, J. and OGILVIE, S. (1996). Universal banks and German industrialization: a reappraisal. *Economic History Review*, **49**, pp. 427–46.

- FOHLIN, C. (2007). *Finance Capitalism and Germany's Rise to Industrial Power*. Cambridge: Cambridge University Press.
- FOREMAN-PECK, J. and HANNAH, L. (2012). Extreme divorce: the managerial revolution in UK companies before 1914. *Economic History Review*, **65**, pp. 1217–38.
- FRANKS, J., MAYER, C. and WAGNER, H. (2006). The origins of the German corporation – finance, ownership and control. *Review of Finance*, **10**, pp. 537–85.
- FRANKS, J., MAYER, C. and ROSSI, S. (2009). Ownership: evolution and regulation. *Review of Financial Studies*, **22**, pp. 4009–56.
- GELMAN S. and BURHOP, C. (2008). Taxation, regulation, and the information efficiency of the Berlin stock exchange, 1892–1913. *European Review of Economic History*, **12**, pp. 39–66.
- GERSCHENKRON, A. (1962). *Economic Backwardness in Historical Perspective: A Book of Essays*. Cambridge, MA: Harvard University Press.
- GOETZMANN, W. and KUMAR, A. (2008). Equity portfolio diversification. *Review of Finance*, **12**, pp. 433–63.
- GRAF, F. W. (2007). Scholz, Hermann. *Neue Deutsche Biographie*, **23**, pp. 453–4.
- GREEN, D. R., OWENS, A., MALTBY, J. and RUTTERFORD, J. (2011). *Men, Women, and Money: Perspectives on Gender, Wealth, and Investment 1850–1930*. Oxford: Oxford University Press.
- HANNAH, L. (2019). Corporate governance, accounting transparency and stock exchange sizes in Germany, Japan and Anglo-Saxon economies, 1870–1950. *Zeitschrift für Unternehmensgeschichte*, **64**, pp. 157–86.
- HERBST, L. and WEIHE, T. (2004). *Die Commerzbank und die Juden – 1933–1945*. Munich: C. H. Beck.
- HLAWATSCHKE, E. (1985). Die Unternehmerin (1800–1945). Die Frau in der deutschen Wirtschaft. *Zeitschrift für Unternehmensgeschichte*, Beiheft 35, pp. 127–46.
- JENSEN, M. C. (1989). Eclipse of the public corporation. *Harvard Business Review*, **67**, pp. 61–74.
- KLING, G. (2006). Does the merger paradox exist even without any regulations? Evidence from Germany in the pre-1914 period. *Empirica*, **33**, pp. 315–28.
- KRÄMER, E. (2007). *200 Jahre Koehler 1807–2007: Geschichte eines Familienunternehmens*. Oberkirch: Achertäler Druckerei.
- KUMAR, A. (2009). Who gambles in the stock market? *Journal of Finance*, **64**, pp. 1889–1933.
- LEHMANN, S. (2014). Taking firms to the stock market: IPOs and the importance of large banks in imperial Germany, 1896–1913. *Economic History Review*, **67**, pp. 92–122.
- LEHMANN-HASEMEYER, S., HAUBER, P. and OPITZ, A. (2014). The political stock market in the German Kaiserreich – do markets punish the extension of the suffrage to the benefit of the working class? Evidence from Saxony. *Journal of Economic History*, **74**, pp. 1140–67.
- LEHMANN-HASEMEYER, S. and OPITZ, A. (2019). The value of active politicians on supervisory boards: evidence from the Berlin stock exchange and the parliament in interwar Germany. *Scandinavian Economic History Review*, **67**, pp. 71–89.
- LÜBBERS, T. (2008). Shareholder value mining: wealth effects of takeovers in German coal mining, 1896–1913. *Explorations in Economic History*, **45**, pp. 462–76.
- MARKOWITZ, H. (1952). Portfolio selection. *Journal of Finance*, **7**, pp. 77–91.
- NEUMAYER, A. (2018). There's no place like home: investors' home bias in Germany, 1898–1934. *Jahrbuch für Wirtschaftsgeschichte*, **59**, pp. 447–96.
- NEUMAYER, A. (2019). Investors and investment behavior, 1869–1955. Dissertation, University of Hohenheim.
- ODEAN, T. (1998). Volume, volatility, price, and profit when all traders are above average. *Journal of Finance*, **53**, pp. 1887–1934.
- OPITZ, A. (2017). Comrades, let's march! The revolution of 1905 and its impact on financial markets. *European Review of Economic History*, **22**, pp. 28–52.
- OTT, J. C. (2011). *When Wall Street Met Main Street: The Quest for an Investors' Democracy*. Cambridge, MA, and London: Harvard University Press.
- PASSOW, R. (1922). *Die Aktiengesellschaft: eine wirtschaftswissenschaftliche Studie*. No. 5. Jena: G. Fischer.
- POHL, M. (1987). *Ausgewählte Dokumente zur Geschichte der Deutschen Bank. Beiträge zu Wirtschafts- und Währungsfragen und zur Bankengeschichte*. Mainz: V. Hase & Koehler.
- PROSS, H. (1965). *Manager und Aktionäre in Deutschland. Untersuchungen zum Verhältnis von Eigentum und Verfügungsmacht. Frankfurter Beiträge zur Soziologie*, 15. Frankfurt am Main: Europäische Verlagsanstalt.

- REITMAYER, M. (2011). *Bankiers im Kaiserreich Sozialprofil und Habitus der deutschen Hochfinanz. Kritische Studien zur Geschichtswissenschaft Band 136*. Göttingen: Vandenhoeck & Ruprecht.
- RUTTERFORD, J. (2012). The shareholder voice: British and American accents, 1890–1965. *Enterprise and Society*, **13**, pp. 120–53.
- RUTTERFORD, J., SOTIROPOULOS, D. and VAN LIESHOUT, C. (2017). Individual investors and local bias in the UK, 1870–1935. *Economic History Review*, **70**, pp. 1291–1320.
- SCHÜREN, R. (1989). *Soziale Mobilität: Muster, Veränderungen und Bedingungen im 19. und 20. Jahrhundert*. St Katharinen: Scripta Mercaturae.
- SELGERT, F. (2021). *Macht und Kontrolle im Unternehmen: Die politische Ökonomie des Aktionärschutzes im Deutschen Reich, 1870–1945*. Göttingen: Vandenhoeck & Ruprecht.
- SOTIROPOULOS, D. and RUTTERFORD, J. (2018). Individual investors and portfolio diversification in late Victorian Britain: how diversified were Victorian financial portfolios? *Journal of Economic History*, **78**, pp. 435–71.
- VOLZ, R. (1930). *Reichshandbuch der deutschen Gesellschaft: Das Handbuch der Persönlichkeiten in Wort und Bild*, vol. 1: A–K. Berlin: Deutscher Wirtschaftsverlag.
- WIXFORTH, H. and ZIEGLER, D. (1997). Deutsche Privatbanken und Privatbankiers im 20. Jahrhundert. *Geschichte und Gesellschaft*, **23**, pp. 205–35.
- ZIEGLER, D. (2003). Geschäftliche Spezialisierung deutscher Privatbankier in der Zwischenkriegszeit: ein vergeblicher Überlebenskampf? *Bankhistorisches Archiv Beiheft*, **41**, pp. 27–47.

### Official publications

- Aktienrechtsnovelle 1884, in *Reichsgesetzblatt für das Deutsche Reich*, 1884 vol. 22 (31.07.1884), article 190.
- Handbuch der deutschen Aktiengesellschaften. Ein Hand- und Nachschlagebuch für Bankiers, Industrielle, Kapitalisten, Behörden etc.*, 1914–15, vols. I–II (Berlin: Verlag für Börsen- und Finanzliteratur AG, 1914/15).
- Handbuch der deutschen Aktiengesellschaften. Ein Hand- und Nachschlagebuch für Bankiers, Industrielle, Kapitalisten, Behörden etc.*, 1925, vols. I–IV (Berlin: Verlag für Börsen- und Finanzliteratur AG, 1925).
- Handbuch der deutschen Aktiengesellschaften. Ein Hand- und Nachschlagebuch für Bankiers, Industrielle, Kapitalisten, Behörden etc.*, 1932, vols. I–IV (Berlin: Verlag für Börsen- und Finanzliteratur AG, 1932).
- Handbuch der deutschen Aktiengesellschaften*, 1943, vols. I–IV (Berlin: Hoppenstedt & Co, 1943).

## Appendix

### A1: Archive sources and signatures of archive files

Baden-Württemberg Economic Archive (WABW)

| Signature                        | Name of the firm  |
|----------------------------------|---|
| B 26 / 50–67                     | Bleicherei, Färberei und Appreturanstalt GmbH, Uthingen |
| B 30 / 153                       | A. Stotz AG, Stuttgart                                  |
| B 40 / 17, 226                   | Koehler AG, Oberkirch                                   |
| B 40 / 228                       | W. Euler Maschinenpapierfabrik AG, Bensheim             |
| B 49 / 228                       | Koehler AG, Oberkirch                                   |
| B 150 / 1744–1749,<br>2347, 2371 | Salamander AG, Kornwestheim                             |
| B 150 / 2371                     | J. Sigel & Cie. Schuhfabrik AG, Kornwestheim            |
| B 2001 / 10, 136                 | Elektrizitätswerke Argen AG, Wangen im Allgäu           |
| B 2007 / 263                     | Kraftwerke Untere Mindel AG, Burgau                     |
| B 2023 / 15–16                   | Württembergische Sammelschienen AG, Stuttgart           |

Bavarian Economic Archive (BWA)

| Signature           | Name of the firm  |
|---------------------|---|
| V 5 / 3             | Aktienbrauerei zum Löwenbräu, München   |
| V 5 / 8             | Deutsche Lebensversicherungsbank Arminia AG, München  |
| V 5 / 16            | August Riedinger Ballonfabrik AG, Augsburg  |
| V 5 / 17            | Aktienbrauerei Augsburg AG, Augsburg  |
| V 5 / 19            | Paulanerbräu Salvatorbrauerei AG, München   |
| V 5 / 22            | Allgäuer Baumwollspinnerei und Weberei<br>(vorm. Heinrich Gyr), Blaichach                         |
| V 5 / 26, 504       | Ziegelei Augsburg, Augsburg   |
| V 5 / 29            | Artes-Verlag AG, München  |
| V 5 / 49            | Buntpapierfabrik AG, Aschaffenburg  |
| V 5 / 51            | AG für Maschinenpapierfabrikation, Aschaffenburg  |
| V 5 / 52            | Niederrheinische Zellstoff AG, Walsum am Rhein  |
| V 5 / 66-67         | Nationalbank für Deutschland, Berlin  |
| V 5 / 70            | Deutsch-Asiatische Bank, Shanghai   |
| V 5 / 74            | Bayerische Notenbank, München   |
| V 5 / 84I, 82, 84I  | Barmer Bankverein, Barmen   |
| V 5 / 87            | Bayerische Bodenkreditanstalt, Würzburg   |
| V 5 / 90            | Bayerische Celluloidwarenfabrik<br>(vorm. Albert Wacker AG), Nürnberg                             |
| V 5 / 91            | Bayernwerke für Holzverwertung AG, München  |
| V 5 / 96            | Balnea AG für Reiseandenken und Fotochrombilder, Nürnberg   |
| V 5 / 101           | Schuhfabrik E. Heimann Aktiengesellschaft, Schweinfurt  |
| V 5 / 104, 997      | Bayerisches Portlandzementwerk Marienstein AG, München  |
| V 5 / 107           | Bayerische Rumpplerwerke AG, Augsburg   |
| V 5 / 110           | Bürgerliches Brauhaus, Ingolstadt   |
| V 5 / 111           | Bayerische Wolldeckenfabrik Bruckmühl AG, München   |
| V 5 / 128, 132      | Bamberger Mälzerei AG (vorm. Carl J. Dessauer), Bamberg<br>und Mälzfabrik Stuttgart AG, Stuttgart |
| V 5 / 129           | Bürstenfabrik Erlangen AG (vorm. Emil Kränzlein), Erlangen  |
| V 5 / 130           | Brauerei Geismann AG, Fürth   |
| V 5 / 135           | Bleistiftfabrik vorm. Johann Faber AG, Nürnberg   |
| V 5 / 139           | Bayerische Bauindustrie AG, München   |
| V 5 / 141-143       | Bayerische Granitaktiengesellschaft, Regensburg   |
| V 5 / 151, 153-154  | Gebrüder Bing AG, Nürnberg  |
| V 5 / 155, 157      | Bürstenfabrik Pensberger & Co. AG, München  |
| V 5 / 158, 160      | Bruckmann AG, München   |
| V 5 / 163-164I, 166 | Bergmann Elektrizitätswerke AG, Berlin  |
| V 5 / 169           | Bayerische Aktiengesellschaft für Energiewirtschaft, Bamberg                                      |
| V 5 / 171           | Continente Gesellschaft für elektrische Unternehmungen,<br>Nürnberg                               |

*Continued*

*Continued*

| Signature                  | Name of the firm  |
|----------------------------|---|
| V 5 / 172-173              | Chemische Werke Brockhues AG, Niederwalluf am Rhein                         |
| V 5 / 175                  | AG für chemische Produkte (vorm. H. Scheidemandel),<br>Landshut             |
| V 5 / 217                  | Deutsch-Luxemburgische Bergwerks- und Hütten AG, Berlin                     |
| V 5 / 219                  | Druckerei und Kartonagen (vorm. Gebrüder Obpacher AG),<br>München           |
| V 5 / 221, 745             | Direction der Disconto-Gesellschaft, Berlin                                 |
| V 5 / 222                  | Danubia AG für Mineralölindustrie, Regensburg                               |
| V 5 / 224, 245I, 245II     | Elektrizitäts-AG (vormals Schuckert & Co.), Nürnberg                        |
| V 5 / 227-228              | Elsenthal Holzstoff- und Papierfabrik AG, Grafenau                          |
| V 5 / 241                  | Grünerbräu AG, Fürth  |
| V 5 / 248-249              | Polyphonwerke AG, Leipzig   |
| V 5 / 250, 252             | Graphitwerk Kropfmühl AG, München   |
| V 5 / V253                 | Aktiengesellschaft für Gasindustrie, Augsburg                               |
| V 5 / 258-260              | Gesellschaft für elektrische Unternehmungen Ludwig<br>Loewe & Co AG, Berlin |
| V 5 / 263                  | Solenhofer Aktienverein AG, Altendorf bei Sonhofen                          |
| V 5 / 265                  | Julius Sichel & Co. Kommanditgesellschaft a. Aktien, Mainz                  |
| V 5 / 266                  | Süddeutsche Metallwerke AG, München   |
| V 5 / 271                  | Schlossbrauerei Planegg AG, Planegg   |
| V 5 / 278-279              | Süddeutsche Holzindustrie AG, München                                       |
| V 5 / 280-298              | AG für Seilindustrie (vormals Ferdinand Wolff),<br>Mannheim-Neckarau        |
| V 5 / 294, 295I, 295II     | AG Eisenwerk-Gesellschaft Maximilianhütte, Rosenberg                        |
| V 5 / 305                  | Hotel Aktiengesellschaft, München   |
| V 5 / 308                  | Hauser & Sobotka Getreide AG, München                                       |
| V 5 / 309-310              | F. H. Hammersen Aktiengesellschaft, Osnabrück                               |
| V 5 / 312-313, 316,<br>318 | Johannes Haag Maschinen- und Röhrenfabrik AG, Augsburg                      |
| V 5 / 333                  | Georg Müller Verlag AG, München   |
| V 5 / 334                  | Mohr & Co. AG, München  |
| V 5 / 336                  | Mandruck AG, München  |
| V 5 / 348                  | Mechanische Baumwoll- Spinnerei und Weberei, Kaufbeuren                     |
| V 5 / 349                  | Minimax AG, Berlin  |
| V 5 / 350-351              | Münchener Export Malzfabrik München AG, München                             |
| V 5 / 361                  | Mannheimer Versicherungsgesellschaft AG, Mannheim                           |
| V 5 / 374                  | Spinnerei und Weberei Kottern, Kottern                                      |
| V 5 / 441                  | Mechanische Flachs-Spinnerei Bayreuth, Laineck                              |
| V 5 / 501-502              | Aktiengesellschaft Zuckerfabrik, Offstein                                   |
| V 5 / 505                  | Zwirnerei und Nähfadenfabrik Göggingen                                      |
| V 5 / 539                  | Lobers Fleischwerke AG, Augsburg  |

*Continued*

*Continued*

| Signature            | Name of the firm  |
|----------------------|---|
| V 5 / 541-542        | Aktiengesellschaft für Lederfabrikation, München  |
| V 5 / 545I           | Landshuter Keks- und Schokoladenfabrik AG, Landshut                                       |
| V 5 / 549            | Localbahn AG, München   |
| V 5 / 551            | Lußsche Industrierwerke AG, Ludwigshafen am Rhein   |
| V 5 / 555-557        | Lithoponefabrikation, Triebes   |
| V 5 / 559            | Ulmer Brauereigesellschaft, Ulm   |
| V 5 / 587            | Aktiengesellschaft Waggonfabrik Jos. Rathgeber,<br>München-Moosach                        |
| V 5 / 589I           | Eisenwerkgesellschaft Maximilianshütte, München   |
| V 5 / 613, 2015-2016 | Lech-Elektrizitätswerke AG, Augsburg  |
| V 5 / 626            | Wollwaarenfabrik Mercur, Liegnitz   |
| V 5 / 627-628, 630   | Wayss & Freytag AG, Frankfurt am Main   |
| V 5 / 696            | Vereinigte Zwieseler & Pirnaerfarbenglaswerke AG, München                                 |
| V 5 / 718            | Vereinigte Fabriken landwirtschaftlicher Maschinen<br>(vormals Epple & Buxbaum), Augsburg |
| V 5 / 726            | Vereinigte Landsberger Pflug- und Münchener<br>Eggenfabriken AG, München-Pasing           |
| V 5 / 728            | Lithographisch-Artistische Anstalt, München   |
| V 5 / 740            | Ostbayerische Stromversorgung AG, München   |
| V 5 / 754            | Vereinigte Glaswerke AG, Augsburg   |
| V 5 / 756-757        | AG Verlagsanstalt, München  |
| V 5 / 814, 822, 833  | Terraingesellschaft Neu-Westend AG, München   |
| V 5 / 815            | München-Pasinger Terraingesellschaft AG, München  |
| V 5 / 821            | Aktiengesellschaft Petuel'sche Terrain-Gesellschaft,<br>München-Riesenfeld                |
| V 5 / 824-829        | Teisnacher Papierfabrik, Teisnach   |
| V 5 / 836            | Terrain-Aktiengesellschaft Herzogpark-München-Gern,<br>München                            |
| V 5 / 837            | Terraingesellschaft München-Friedenheim AG, München                                       |
| V 5 / 844I           | Phoenix AG für Bergbau und Hüttenbetrieb, Düsseldorf                                      |
| V 5 / 862-865        | Vereinigte Schuhfabriken Berneis-Wessels AG, Augsburg                                     |
| V 5 / 867            | Vereinigte Fränkische Schuhfabriken, Nürnberg   |
| V 5 / 875            | Aktiengesellschaft für Bleicherei, Färberei, Appretur &<br>Druckerei, Augsburg            |
| V 5 / 844I           | Gelsenkirchener Berkwerksgesellschaft, Essen  |
| V 5 / 906            | Kunstmühle Tivoli AG, München   |
| V 5 / 959            | Oberpfalzwerke AG für Elektrizitätsversorgung, Regensburg                                 |
| V 5 / 961, 963       | Ostbayerische Überlandzentrale AG, München  |
| V 5 / 964, 966       | Ostwerke AG, Berlin   |
| V 5 / 984            | Prinzregentenplatz AG, München  |
| V 5 / 988, 990       | Papierfabrik Hegge, Kempten   |

*Continued*



*Continued*

| Signature        | Name of the firm                                |
|------------------|---|
| V 5 / 994        | Porzellanfabrik Tirschenreuth AG, Tirschenreuth |
| V 5 / 998        | Bayerische Trasswerke AG, München               |
| V 5 / 1001       | Süddeutsche Bank, Mannheim                      |
| V 5 / 1023, 1025 | Aktiengesellschaft Jesuitenbrauerei, Regensburg |
| V 5 / 1028       | Rhein-Main-Donau AG, München                    |
| V 5 / 1588       | Deutsche Hypothekenbank, Weimar (Meiningen)     |
| V 5 / 1619       | Diamalt AG, München                             |
| V 5 / 1709       | Fränkische Überlandwerk AG, Nürnberg            |
| V 5 / 1746       | Grosskraftwerk Franken AG, Nürnberg             |
| V 5 / 1763       | Hackerbräu AG, München                          |
| V 5 / 1771       | Hanfwerke Füssen-Immenstadt AG, Füssen          |
| V 5 / 1913, 1915 | Ampferwerke Elektrizitäts-AG, München           |
| V 5 / 2022       | Leonische Drahtwerke AG, Nürnberg               |
| V 5 / 2084       | Mannesmannröhren-Werke, Düsseldorf              |
| V 5 / 2111       | Gesellschaft für Markt- und Kühlhallen, Hamburg |

Hessian Economic Archive (HWA)

| Signature          | Name of the firm  |
|--------------------|---|
| HWA 101 / 41, 1020 | Nassau-Selterser Mineralquellen AG, Oberselters (Nassau)                        |
| HWA 115 / 26       | Hartmann & Braun AG, Frankfurt am Main  |
| HWA 115 / 30       | Zellstofffabrik Waldhof, Mannheim-Waldhof                                       |
| HWA 115 / 50       | Illkircher Mühlenwerke AG (vorm. Baumann freres),<br>Strasbourg                 |
| HWA 115 / 65       | Vereinigte Schuhfabriken Berneis-Wessels AG, Augsburg                           |
| HWA 115 / 81       | M. Melliand Chemische Fabrik AG, Mannheim                                       |
| HWA 115 / 87       | Emil Herminghaus AG, Velbert  |
| HWA 115 / 90       | Metallwerke Unterweser AG (Friedrich-August-Hütte),<br>Oldenburg                |
| HWA 115 / 116      | Deutsche Gold- und Silber-Scheideanstalt<br>(vorm. Roessler), Frankfurt am Main |
| HWA 115 / 122      | Dampfkesselfabrik (vorm. Arthur Rodberg), Darmstadt                             |
| HWA 115 / 123      | Rheinische Stahlwerke Essen, Duisburg-Meiderich                                 |
| HWA 115 / 126      | Rhenser Mineralbrunnen Fritz Meyer & Co. AG, Rhens am<br>Rhein                  |
| HWA 115 / 144      | Kahlgrund-Eisenbahn AG, Schöllkippen  |
| HWA 115 / 145      | Messingwerke AG, Elberfeld  |
| HWA 115 / 147      | Zuckerfabrik Offstein AG, Offstein  |
| HWA 115 / 151      | Zementfabrik Bernhard Löhr, Frankfurt am Main                                   |

*Continued*



*Continued*

| Signature     | Name of the firm  |
|---------------|---|
| HWA 115 / 160 | Maschinenbaugesellschaft, Karlsruhe   |
| HWA 115 / 165 | Uhrenfabrik (vorm. L. Furtwängler Söhne AG), Furtwangen                             |
| HWA 115 / 170 | Union Aktienbrauerei (vormals C. Ueberle & E. Charlier), Trier                      |
| HWA 115 / 179 | Hansa Loyd Werke AG, Bremen   |
| HWA 115 / 186 | Süddeutsche Zucker AG, Mannheim   |
| HWA 115 / 188 | Salzwerk Heilbronn, Heilbronn   |
| HWA 115 / 189 | Hüttenwerk Niederschöneweide AG<br>(vorm. J. F. Binsberg), Berlin-Niederschöneweide |
| HWA 115 / 194 | Sachtleben AG für Bergbau und Chemische Industrie, Köln                             |
| HWA 115 / 196 | Verein chemischer Fabriken, Mannheim  |
| HWA 115 / 197 | Vereinigte Königs- und Laurahütte, Berlin   |
| HWA 115 / 199 | Kalle & Co AG, Wiesbaden-Biebrich   |
| HWA 115 / 201 | Lämmerspieler Metallwaren und Schraubenfabrik<br>Melber & Co AG, Lämmerspiel        |
| HWA 115 / 203 | Verein deutscher Oelfabriken, Mannheim  |
| HWA 115 / 205 | Kasseler Verkehrsgesellschaft<br>(vorm. Große Kasseler Straßenbahn AG), Kassel      |
| HWA 115 / 207 | H. Hildebrand & Söhne Rheinmühlenwerke AG<br>(vorm. Rheinmühlenwerke AG), Mannheim  |
| HWA 115 / 208 | Mitteldeutsche Stahlwerke AG, Riesa   |
| HWA 115 / 219 | Westdeutsche Jutespinnerei und Weberei, Beuel am Rhein                              |
| HWA 115 / 222 | C.H. Knorr AG, Heilbronn  |
| HWA 115 / 237 | Helios Elektrizitäts AG, Köln   |
| HWA 155 / 240 | Vereinigte Strohstofffabriken AG, Dresden   |
| HWA 115 / 250 | Vereinigte Stahlwerke AG, Düsseldorf  |
| HWA 115 / 254 | Danziger Elektrische Straßenbahnen AG, Danzig                                       |
| HWA 115 / 262 | Löhnberger Mühle AG, Siegen   |
| HWA 115 / 271 | Deutsche Vereinsbank, Frankfurt am Main   |
| HWA 115 / 279 | Klöckner Werke AG, Berlin   |
| HWA 115 / 293 | Lothringen Portland-Cement Werke, Metz  |
| HWA 115 / 311 | Schultz-Grünlack AG, Rüdesheim am Rhein   |
| HWA 115 / 318 | Schaffner & Albert AG, Frankfurt am Main  |
| HWA 115 / 333 | Darmstädter Herdfabrik und Eisengieserei<br>Gebrüder Roeder AG, Darmstadt           |
| HWA 115 / 336 | Harpener Bergbau AG, Dortmund   |
| HWA 115 / 338 | Vereinsbank Filiale Hamburg   |
| HWA 115 / 344 | Dresden-Leipziger Schellpressen Fabrik AG,<br>Kötzschenbroda-Naundorf               |
| HWA 115 / 350 | Gesellschaft für Lindes Eismaschinen AG, Wiesbaden                                  |
| HWA 115 / 358 | Lüdenscheider Metallwerke AG (vorm. Jul. Fischer & Basse),<br>Lüdenscheid           |

*Continued*

*Continued*

| Signature      | Name of the firm  |
|----------------|---|
| HWA 115 / 361  | Mannesmannröhren-Werke, Düsseldorf  |
| HWA 115 / 362  | Gebrüder Lutz AG, Darmstadt   |
| HWA 115 / 364  | Vereinigte Fassfabriken, Kassel   |
| HWA 115 / 370  | Leander Schuhfabrik AG<br>(vorm. Ochsenhirt & Behrens), Offenbach am Main   |
| HWA 115 / 374  | Lußsche Industrierwerke AG, Ludwigshafen am Rhein   |
| HWA 115 / 375  | Heinrich Lanz AG, Mannheim  |
| HWA 115 / 391  | Heidelberger Federhalter Fabrik Koch Weber & Co., Heidelberg  |
| HWA 115 / 394  | Dresdner Bank Filiale Frankfurt am Main   |
| HWA 115 / 395  | Kommunales Elektrizitätswerk Mark AG, Westfalen   |
| HWA 115 / 400  | Vereinigte Jute-Spinnerei und Webereien AG, Hamburg   |
| HWA 115 / 401  | Rudolf Karstadt Aktiengesellschaft, Hamburg   |
| HWA 115 / 410  | Holzverkohlungs-Industrie AG, Konstanz  |
| HWA 115 / 518  | Deutsche Steinzeug- und Kunststoff<br>Warenfabrik AG, Mannheim-Friedrichsfeld   |
| HWA 115 / 557  | Nassau-Selterser Mineralquellen AG, Oberselters (Nassau)  |
| HWA 115 / 582  | Kraftwerk Altwürttemberg, Beihingen am Neckar   |
| HWA 115 / 825  | Löwenbräu München AG, München   |
| HWA 115 / 834  | Heidelberger Straßen- und Bergbahn AG, Heidelberg   |
| HWA 115 / 854  | Veith Gummiwerke AG, Sanbach (Höchst)   |
| HWA 115 / 981  | Elektrische Licht- & Kraftanlagen AG, Berlin  |
| HWA 115 / 982  | Elektrizitäts-Lieferungs-Gesellschaft AG, Hannover  |
| HWA 115 / 984  | Enzinger Union Werke AG, Mannheim   |
| HWA 115 / 1053 | Aktiengesellschaft für Glasindustrie (vorm. Friedrich Siemens),<br>Dresden<br>und Stralauer Glashütte AG, Berlin                            |
| HWA 115 / 1079 | Dyckerhoff & Widmann AG, Wiesbaden  |
| HWA 115 / 1247 | Hedderheimer Kupferwerk & Süddeutsche<br>Kabelwerke AG, Frankfurt am Main   |
| HWA 115 / 1361 | Württembergische und Badische Vereinigte<br>Versicherungsgesellschaft AG, Heilbronn   |
| HWA 115 / 1539 | Aktiengesellschaft für Verkehrswesen, Berlin  |
| HWA 115 / 1543 | Accumulatoren-Fabrik AG, Berlin   |
| HWA 115 / 1655 | Grün & Bilfinger AG, Mannheim   |
| HWA 115 / 1662 | Main-Kraftwerke AG, Höchst  |
| HWA 115 / 1741 | Stuttgarter Vereins Versicherungs-AG, Stuttgart<br>und Allianz Versicherungs-AG, Berlin<br>und Stuttgarter Berliner Versicherung, Stuttgart |
| HWA 115 / 1764 | AG für Seilindustrie (vormals Ferdinand Wolff),<br>Mannheim-Neckarau  |
| HWA 115 / 1771 | Allgemeine Lokalbahn- und kraftwerke-AG, Berlin   |

*Continued*

*Continued*

| Signature      | Name of the firm  |
|----------------|---|
| HWA 115 / 1787 | Stuttgart-Lübeck Lebensversicherungs AG, Stuttgart<br>und Stuttgarter Lebensversicherungsbank AG,<br>Stuttgart            |
| HWA 115 / 1953 | Brauerei Schwartz-Storchen AG, Speyer   |
| HWA 115 / 1980 | Bank für Brau-Industrie, Berlin   |
| HWA 115 / 2005 | Bierbrauerei Durlacher Hof AG (vorm. Hagen), Mannheim   |
| HWA 115 / 2018 | Buntpapierfabrik AG, Aschaffenburg  |
| HWA 115 / 2019 | Brauerei Wulle AG, Stuttgart  |
| HWA 115 / 2037 | Chemische Fabrik Milch AG, Oranienburg<br>und Chemische Produkten-Fabrik AG, Pommernsdorf                                 |
| HWA 115 / 2285 | Deutsch-Asiatische Bank, Shanghai   |
| HWA 115 / 2286 | Deutsch-Atlantische Telegesellschaft, Berlin  |
| HWA 115 / 2287 | Deutsche Eisenbahn-Betriebs-Gesellschaft AG, Berlin   |
| HWA 115 / 2288 | Überseeische Bank, Berlin   |
| HWA 115 / 2324 | Spinnerei und Weberei Ettlingen   |
| HWA 115 / 2392 | Düsseldorf-Ratinger Röhrenkesselfabrik (vorm. Dürr & Co.),<br>Ratingen  |
| HWA 115 / 2480 | Frankona Rück- und Mitversicherungs-AG, Berlin  |
| HWA 115 / 2487 | Frankfurter Bank, Frankfurt am Main   |
| HWA 115 / 2619 | Hamburg-Amerikanische Packetfahrt AG, Hamburg   |
| HWA 115 / 2622 | Brauerei Henninger AG, Frankfurt am Main  |
| HWA 115 / 2651 | Hanfwerke Füssen-Immenstadt AG, Füssen  |
| HWA 115 / 2669 | Hochtief AG (vormals Gebr. Helfmann), Essen   |
| HWA 115 / 2808 | Ilse Bergbau- Actiengesellschaft, Bückgen bei Großbräschen  |
| HWA 115 / 2844 | Chr. Adt. Kupferberg & Co., Mainz   |
| HWA 115 / 2845 | Kaliwerke Neu-Stassfurt Friedrichshall AG, Neu-Stassfurt<br>und Rhenania-Künheim Verein Chemischer Fabriken AG,<br>Berlin |
| HWA 115 / 2939 | Mainzer Aktien Bierbrauerei AG, Mainz   |
| HWA 115 / 2952 | Hafenmühle, Frankfurt am Main   |
| HWA 115 / 3003 | Mansfeld Aktiengesellschaft für Bergbau und Hüttenbetrieb,<br>Eisleben  |
| HWA 115 / 3028 | Neu Guinea Compagnie, Berlin  |
| HWA 115 / 3052 | Adler & Oppenheimer AG<br>(ab 1940 Norddeutsche Lederwerke AG), Berlin  |
| HWA 115 / 3145 | Otavi Minen- und Eisenbahngesellschaft, Berlin  |
| HWA 115 / 3282 | Pfälzische Mühlenwerke, Mannheim  |
| HWA 115 / 3283 | Frankfurter Maschinenbau AG<br>(vorm. Pokorny & Wittekind), Frankfurt am Main   |
| HWA 115 / 3534 | Schriftgiesserei D. Stempel AG, Frankfurt am Main   |
| HWA 115 / 3550 | Schramm Lack- und Farbenfabriken AG, Offenbach am Main  |

*Continued*

*Continued*

| Signature                | Name of the firm  |
|--------------------------|---|
| HWA 115 / 3737           | Voltohm, Seil- & Kabelwerke AG, Frankfurt am Main   |
| HWA 118 /<br>1102-1108   | Vereinigte Deutsche Metallwerke AG, Einsal (Altona)   |
| HWA 118 / 1174           | AG Hedderheimer Kupferwerk (vorm. F. A. Heße Söhne),<br>Heddernheim                           |
| HWA 118 / 1499 -<br>1500 | Berg-Heckmann-Selve AG, Frankfurt am Main   |
| HWA 119 / 161            | Berg- und Metallbank AG, Frankfurt am Main  |
| HWA 119 /<br>1667-1670   | Metallhütte AG, Duisburg  |
| HWA 166 / 19             | Schwarz & Ulrich A.G., Friedberg  |
| HWA 167 / 1              | Metallbank AG, Frankfurt am Main  |
| HWA 167 / 1+2            | Metallbank und Metallurgische Gesellschaft AG, Frankfurt am<br>Main                           |
| HWA 173 / 159            | Main-Kraftwerke AG, Höchst  |
| HWA 173 / 202-216        | Lahnkraftwerke AG, Wiesbaden  |
| HWA 179 / 52             | Berliner Notruf Aktiengesellschaft, Berlin  |
| HWA 179 / 76             | Berliner Privat-Telefon GmbH, Berlin  |
| HWA 179 / 224            | Hanseatische Notruf AG, Hamburg   |
| HWA 187 / 187-209        | Firma Goebel AG, Darmstadt  |
| HWA 203 / 4-5            | Vereinigte Kapselabriken Nackenheim Beyerbach<br>Nachfolger Aktiengesellschaft, Nackenheim    |
| HWA 217 / 3-8-62         | Rheinischer Aktienverein für Weinbau und Weinhandel<br>Dilthey Sahl & Co., Rüdesheim am Rhein |
| HWA 2017 / 83            | Dürener Metallwerke AG, Düren   |
| HWA                      | Gas und Elektrizitätswerke AG, Nassau am Lahn   |

## Historical Archive of the Commerzbank AG

| Signature                   | Name of the firm                                    |
|-----------------------------|---|
| HAC 1 / 143, 143I,<br>143II | Commerz- und Privatbank AG, Berlin / Hamburg        |
| HAC 1 / 468                 | Commerz- und Privatbank AG, Filiale Plauen          |
| HAC 1 / 669                 | Buderu'sche Eisenwerke, Wetzlar                     |
| HAC 1 / 675                 | Georg Geiling und Co. AG, Bacharach am Rhein        |
| HAC 3 / 56                  | Mitteldeutsche Kreditbank, Frankfurt am Main        |
| HAC 4 / 23                  | Barner Bank-Verein Hinsberg Fischer & Comp., Barmen |

## Historical Archive of the Deutsche Bank AG

| Signature    | Name of the firm  |
|--------------|---|
| F 038 / 0340 | Zwirnerei & Nähfadenfabrik AG, Göggingen                                  |
| K 1 / 949    | Norddeutsche Bank, Hamburg  |
| K 1 / 984    | Albingia Versicherungs AG, Hamburg  |
| K 9 / 6      | Süddeutsche Disconto-Gesellschaft, Mannheim                               |
| K 9 / 12     | Deutsche Bank AG, Berlin  |
| K 15 / 9-17  | Bergisch Märkischen Bank, Elberfeld                                       |
| K 19 / 48    | Hildesheimer Bank, Hildesheim   |
| P 00705      | Bergbau AG Lothringen, Bochum   |
| P 01178      | Finow Kupfer & Messingwerke AG, Finow                                     |
| P 02985      | Gothaer Waggonfabrik AG, Gotha  |
| P 03547      | Zugtelefonie AG, Berlin   |
| P 04500      | Thüringische Glasinstrumentenfabrik Alt, Eberhardt & Jäger<br>AG, Ilmenau |
| P 04682      | Vereinigte Brauereien AG, Meiningen                                       |
| P 05299      | Berliner Lombardkasse AG, Berlin  |
| S 4020       | Rheinische Creditbank, Mannheim   |

## A2: Tables

Table A1. *Cross-ownership (percentage)*

| Appear on the list of n firms | 1869-1913 | 1914-18 | 1919-23 | 1924-8 | 1929-33 | 1934-45 | Total |
|-------------------------------|-----------|---------|---------|--------|---------|---------|-------|
| 1                             | 96.7      | 90.8    | 91.6    | 93.8   | 89.6    | 94.1    | 92.9  |
| 2                             | 2.9       | 5.0     | 6.2     | 4.1    | 6.9     | 4.0     | 5.0   |
| 3                             | 0.3       | 3.0     | 1.1     | 1.3    | 1.6     | 0.9     | 1.1   |
| 4                             | 0.2       | 0.9     | 0.5     | 0.2    | 0.8     | 0.1     | 0.4   |
| More than 5                   | 0.1       | 0.3     | 0.6     | 0.7    | 1.1     | 0.9     | 0.6   |
| Total                         | 100       | 100     | 100     | 100    | 100     | 100     | 100   |

Source: Authors' own calculation.

Table A2. Firm characteristics by sector and period, firm listed in Berlin compared to sample

| Sector            | Panel A1: Characteristics of all firms listed in Berlin 1913 |  |                 | Panel A2: Characteristics of sample 1896–1918, for which we have attendance lists |  |                 |
|-------------------|--|--|-----------------|---|--|-----------------|
|                   | Firm age in years  | Mean nominal share capital in million M/RM | Number of firms | Firm age in years   | Mean nominal share capital in million M/RM | Number of firms |
| Banking           | 38.1   | 42   | 63              | 21.4**  | 62.7                                       | 11              |
| Insurance         | 53.5   | 6.3  | 49              | 0   | 0  | 0               |
| Mining            | 32.5   | 17.8                                       | 103             | 18.5  | 3.7  | 4               |
| Heavy industry    | 20.9   | 5.1  | 178             | 24.3  | 10   | 3               |
| Light industry    | 24   | 3.5  | 123             | 22.5  | 3.7  | 11              |
| Food processing   | 25.2   | 2.8  | 86              | 18.6**  | 1.6  | 10              |
| Transportation    | 25.2   | 13   | 70              | 5.5   | 2.1  | 2               |
| Chemical industry | 25.7   | 9.3  | 36              | 36.7  | 4.5  | 3               |
| Public utility    | 21.2   | 30.1                                       | 34              | 21.3  | 19.8                                       | 4               |
| Diverse           | 22.7   | 6.9  | 133             | 9.5   | 5.7  | 6               |
| Total             | 28.9   | 13.68                                      | 875             | 17.23**   | 11.4*                                      | 54              |

*Continued*

Table A2. *Continued*

| Sector            | Panel B1: Characteristics of all firms listed in Berlin 1925 |  |                 | Panel B2: Characteristics of sample 1919–32, for which we have attendance lists |  |                 |
|-------------------|--|--|-----------------|---|--|-----------------|
|                   | Firm age in years  | Mean nominal share capital in million M/RM | Number of firms | Firm age in years   | Mean nominal share capital in million M/RM | Number of firms |
| Banking           | 47   | 16   | 51              | 49.8  | 87.9**                                     | 15              |
| Insurance         | 64.88  | 4.8  | 43              | 24.3  | 9.6  | 8               |
| Mining            | 39.71  | 27   | 86              | 23.4**  | 162.6**                                    | 11              |
| Heavy industry    | 28.2   | 5.4  | 245             | 24.5  | 48.8**                                     | 25              |
| Light industry    | 30.44  | 4.9  | 200             | 32.8  | 11.4**                                     | 50              |
| Food processing   | 37.14  | 4  | 77              | 30.3*   | 11.7**                                     | 31              |
| Transportation    | 37.88  | 13   | 67              | 24.3**  | 16.7                                       | 13              |
| Chemical Industry | 32   | 17   | 53              | 33.1  | 12.3                                       | 7               |
| Public utility    | 27.63  | 21   | 63              | 20.5*   | 54.3                                       | 22              |
| Diverse           | 29.6   | 3.8  | 179             | 23.9*   | 37.5**                                     | 34              |
| Total             | 37.45  | 11.69                                      | 1064            | 32.9**  | 23.2**                                     | 216             |

| Panel C1: Characteristics of all firms listed in Berlin 1938 |                   |  | Panel C2: Characteristics of sample 1933–45, for which we have attendance lists |                   |  |                 |
|--|-------------------|--|---|-------------------|--|-----------------|
| Sector   | Firm age in years | Mean nominal share capital in million M/RM | Number of firms   | Firm age in years | Mean nominal share capital in million M/RM | Number of firms |
| Banking  | 58.94             | 24   | 50  | 47.5              | 51   | 2               |
| Insurance  | 72.43             | 3.8  | 37  | 102               | 2  | 1               |
| Mining   | 46.57             | 58   | 37  | 49.17             | 110  | 6               |
| Heavy industry   | 40.11             | 6.9  | 79  | 23.4              | 18.5                                       | 7               |
| Light industry   | 44.07             | 12   | 94  | 35*               | 6.6  | 17              |
| Food processing  | 47.72             | 5.4  | 65  | 46.5              | 6.5  | 6               |
| Transportation   | 52.32             | 32   | 50  | 40                | 13   | 6               |
| Chemical industry  | 43.06             | 333  | 31  | 0                 | 0  | 0               |
| Public utility   | 40.77             | 37   | 26  | 38.33             | 23.1                                       | 4               |
| Diverse  | 40                | 6.5  | 52  | 46.3              | 14   | 4               |
| Total  | 48.6              | 51.86                                      | 521   | 43.6**            | 24.4                                       | 53              |

Source: Data were taken from *Handbuch der deutschen Aktiengesellschaften*, various years.

Note: \* indicates that our sample differs significantly at 5% from the Berlin listed firms in the respective year, \*\* indicates that the sample differs at 1% significance level.

Table A2 gives an overview of our sample compared to the structure of all firms that were listed in Berlin for the sample years 1913, 1925 and 1938, as documented by the *Handbuch der deutschen Aktiengesellschaften*, a stock market manual. We calculated t-tests for size and age of firms by industry and by periods if we have more than 10 firms in our sample for the given time period and industry.

In 1913, the firm age and the total share capital do not differ statistically between the two samples. For the period 1919–32, the t-tests show that we observe, on average, slightly younger firms, but this is only driven by a few sectors. However, in this period, on average, we seem to observe larger firms. This is a result of inflated capital during the hyperinflation of 1923 and again does not apply to all sectors. The t-test of panel C again shows that our sample is representative in terms of age, but that we observe slightly younger firms.



Table A3. Gender and social class, based on number of individuals – not vote shares – descriptive statistics and sample comparison

|           | Panel A: Full sample, gender (present at general meeting) |       |                         |             | Panel C: People and institutions represented by someone else, gender |       |                         |             |
|-----------|---|-------|-------------------------|-------------|--|-------|-------------------------|-------------|
|           | Women   | Men   | Institutional investors | Unspecified | Women  | Men   | Institutional investors | Unspecified |
| 1869–1913 | 3.67  | 87.65 | 7.76                    | 0.92        | 9.30   | 65.99 | 22.45                   | 2.27        |
| 1914–18   | 1.48  | 89.64 | 8.58                    | 0.30        | 5.00   | 51.67 | 41.67                   | 1.67        |
| 1919–23   | 4.92  | 85.99 | 8.90                    | 0.19        | 11.71  | 59.06 | 28.48                   | 0.74        |
| 1924–8    | 9.82  | 77.16 | 12.69                   | 0.33        | 20.26  | 52.01 | 27.17                   | 0.56        |
| 1929–33   | 4.06  | 81.59 | 13.93                   | 0.41        | 4.96   | 43.25 | 51.52                   | 0.28        |
| 1934–45   | 4.03  | 68.55 | 27.17                   | 0.25        | 3.99   | 27.57 | 68.11                   | 0.33        |
| Total     | 5.85  | 81.81 | 11.95                   | 0.39        | 12.67  | 52.45 | 34.07                   | 0.82        |

|           | Panel B: Full sample, social class (present at general meeting) |                              |                             |                        | Panel D: People and institutions that were represented by someone else, social class |                              |                             |                        |
|-----------|---|------------------------------|-----------------------------|------------------------|--|------------------------------|-----------------------------|------------------------|
|           | Share of upper class  | Share of higher middle class | Share of lower middle class | Share of working class | Share of upper class   | Share of higher middle class | Share of lower middle class | Share of working class |
| 1869–1913 | 94.89   | 3.45                         | 1.66                        | 0.00                   | 100.00   | 0.00                         | 0.00                        | 0.00                   |
| 1914–18   | 96.22   | 2.70                         | 1.08                        | 0.00                   | 90.00  | 5.00                         | 5.00                        | 0.00                   |
| 1919–23   | 89.91   | 6.95                         | 3.07                        | 0.07                   | 92.64  | 6.20                         | 1.16                        | 0.00                   |
| 1924–8    | 89.78   | 7.56                         | 2.67                        | 0.00                   | 94.58*   | 3.97                         | 1.44                        | 0.00                   |
| 1929–33   | 88.97   | 7.61                         | 3.20                        | 0.22                   | 86.60  | 10.31                        | 3.09                        | 0.00                   |
| 1934–45   | 88.29   | 8.71                         | 3.00                        | 0.00                   | 100.00   | 0.00                         | 0.00                        | 0.00                   |
| Total     | 90.53   | 6.68                         | 2.72                        | 0.06                   | 93.93  | 4.71                         | 1.36                        | 0.00                   |

Sources: Various; see Appendix.