

Political economy and stock markets in long-term perspective



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Introduction

Political events usually have a noticeable impact on financial markets. For instance, the victory of the Turkish conservative government on 1 November 2015 induced both stock market prices and the value of the Lira to increase significantly.¹ Such behaviour of investors has also been frequently noted in political and historical literature (Leblang and Mukherjee 2005; Bechtel 2009; Turner and Zhan 2012). Likewise, firms-specific events like mergers (Moeller et al. 2005) or earnings announcements (Garfinkel and Sokobin 2006) result in large share price reactions. The notion that share prices reflect relevant information is condensed under the efficient market hypothesis by Eugene Fama (1970) which, in its semi-strong form, states that financial markets incorporate all available information instantly. In other words, a price is determined, in addition to its behaviour in the past, by publicly-known political and economic events.²

This thesis considers one specific historical market in most parts: the Berlin Stock Exchange. This stock exchange is considered to have been largely information efficient since as early as the late 19th century, both in the low (Baltzer 2006; Gehrig and Fohlin 2006; Gelman and Burhop 2008),³ and the semi-strong form (Burhop 2011, Lehmann-Hasemeyer et al. 2014, etc.).⁴ Given a largely efficient market and, moreover, rational and profit-maximising market participants, one can in turn infer from their investment behaviour. Such an approach is the basis of the studies presented here. The investor's reaction to various political news allows, by implication, for a precise assessment of that information – therefore, this thesis aims to add to the commonly-known historical or theoretical economic view by adding the view of (well-informed) contemporaries. Two broad research questions are addressed: First, in how far did firms benefit from a political connection? And second, did historical financial markets react to various political events?⁵

¹ Frankfurter Allgemeine Zeitung 2 November 2015.

² In the weak form, only historical data is relevant for price formation. A strongly information-efficient market incorporates even non-public (insider) information. For an overview of the vast literature, see Malkiel (2003).

³ Gelman and Burhop (2008) find returns at the Berlin stock exchange prior to World War I to be largely autocorrelated. The extent of price predictability matches that of modern stock markets. Gehrig and Fohlin (2006) detect a strikingly low spread of returns. Baltzer (2006) discovers a low price differential between Vienna and Berlin considering Austrian-based companies. In fact, the Berlin stock exchange was decisive for price formation. Its general importance for German economic development is further emphasised by Lehmann (2014).

⁴ The underpricing of IPOs was induced mainly by the information available to underwriters in the form of incorporators' rights (Burhop 2011). Lehmann-Hasemeyer et al. (2014) perform an event study with regard to a change in electoral law. According to their study, the prices of affected firms react quite sensitively to political or economic information.

⁵ While the former question is quite straightforward, the latter needs to be applied to a more specific setting. See the third chapter.

As illustrated by the above examples, markets can be affected at both the micro and the macro level. The former situation is utilised in the first two chapters. There, for a single firm, the possible benefits arising from a link to politics are considered. These comprise many aspects, ranging from mere signalling effects and preferential access to information to actual political corruption like the placing of government contacts. Such deceptive practices made massive waves in the considered period. Some huge scandals in interwar Germany relate directly to the advantages arising from close ties between businessmen and high-ranking officials.⁶ The protagonists involved some illustrious personalities of that time like the former chancellor, Gustav Bauer (Malinowski 1996; Geyer 2014).⁷

Connections between business and politics are also the subject of contemporary public debates. One of the most notable is probably Richard Cheney's move to the private sector. As the former US Secretary of Defence and an influential politician for many years he turned out to be highly valuable for his new employer (Fisman et al. 2012). In the German context, former Chancellor, Gerhard Schröder, comes to mind. When he became the chairman of the supervisory board of a Russo-German pipeline operator, the event was extensively discussed in the media.⁸ Empirical literature on the issue finds a connection to be highly beneficial in terms of market performance. To which extent a firm can benefit depends largely on the political environment of a market, such as the quality of legal institutions, the level of corruption or possible restrictions on investment (Pantzalis et al. 2000; Faccio 2006). Accordingly, many authors have focussed on developing countries in Asia such as Indonesia, Thailand or Malaysia (Fisman 2001; Bunkanwanicha and Wiwattanakantang 2009; Chen et al. 2013). Also, connections to the Communist Party of China provide excellent opportunity to test their effectiveness (Li et al. 2006, 2008; Feng et al. 2015).⁹ There are a substantial number of studies on the United States as well. There, personal affiliations to central political figures have proven highly valuable (Fisman et al. 2012; Acemoglu et al. 2013). Ferguson and Voth (2008) explore early connections to the National Socialist Party. This most extreme setting offers an ideal occasion to exploit links to the ruling party – accordingly, the advantages for connected firms were huge. In Britain, Braggion and Moore (2013) find gains from a link to politics as early as Victorian times. Still, the German historical context is largely unexplored in that regard. The first study

⁶ These scandals have become generally known under the names of *Sklarz*, *Barmat* and *Sklarek*, respectively.

⁷ Newspapers have speculated about an involvement of further well-known figures like President Friedrich Ebert or Chancellor Philipp Scheidemann. Regardless of the veracity of such reporting, these cases won exceptional notoriety. All the ingredients for a substantial scandal were at hand: excessive luxury, wild festivities and an expansive lifestyle of the involved persons.

⁸ See Frankfurter Allgemeine Zeitung 12 December 2005 and Frankfurter Allgemeine Zeitung 3 April 2006.

⁹ Its many provinces offer large variation in explanatory factors to exploit.

aims at closing that gap by giving an overall picture of political connections in the pre- and interwar period. This particular survey period allows us to make a clear statement on the effectiveness of a connection under monarchy, democracy and dictatorship, respectively. In contrast to cross-country studies, this panel-like approach considers the political environment in one and the same country, keeping the economic and social conditions mostly constant. In fact, a sizeable share of firms in the sample remains the same. The dataset is most comprehensive, as it covers all companies listed on the Berlin Exchange in each period. In contrast to, for example, Faccio (2000) or Ferguson and Voth (2008), a connection is defined in a very straightforward manner: a firm is considered connected if one of its supervisory board members is a current or former member of parliament.¹⁰ The data sources further allow us to take account of the quality of a connection: economic and political heavyweights are expected to have different impacts. Likewise, the affiliated party can play a decisive role for firm performance (Santa-Clara and Valkanov 2003): performance should improve to a special degree if the connected party is part of the current government. However, an actual parliamentary government existed only in the Weimar Republic. The Imperial parliament was relatively weak, whereas the power of the ruling National Socialist party was the most far-reaching: again, the various regime types are crucially important for stock market performance.¹¹ The same applies for general firm characteristics (Boubakri et al. 2008). Several of these are controlled for in the analysis, which comprises an ordinary least squares regression setup as well as further robustness checks. In addition, a survival analysis of firm failure reveals how a political connection can increase the chances of remaining in the market. A close affiliation to politics appears to be particularly beneficial in that regard. Such an affiliation is often accompanied by preferential access to credit via state-controlled banks and other governmental institutions (Li et al. 2008; Chan et al. 2012). Moreover, the chance of receiving a bailout by the government in case of financial problems is largely increased (Faccio et al. 2006; Blau et al. 2013; Grossman and Woll 2014).

While the first paper is descriptive in large parts, the second tries to establish a causal link between firm performance and political connections. The overall setting resembles the all-regime case, however, only the democratic Weimar period is considered. This appears particularly suited for several reasons: First, for the first time in its history Germany was an

¹⁰ The mentioned authors also incorporate financial donations or other personal links. Given the size of the sample, as well as the variety of political parties, such an approach seems virtually impossible.

¹¹ In addition, accounting performance in terms of the returns on assets is considered.

actual parliamentary democracy which included a wide landscape of political parties. Furthermore, large anecdotal evidence suggests the effectiveness of links to politics. Finally, the young republic underwent severe economic crises. In these, the firms' need for capital was exceedingly high and political support promised to be of great assistance in reducing investment risk in times of instability.¹² Therefore, such a period provides an ideal occasion to test the actual impact of a connection. In particular, the years 1922 to 1924 are considered in a difference-in-differences-like setting, where the hyperinflation in 1923 serves as an exogenous shock to the economy. A sample of the 30 largest firms – taken from the blue-chip index of Ronge (2002) – is evaluated with regard to firm performance during and in the aftermath of the crisis.

The third study of this thesis concerns the overall market effects of political events. It uses Imperial Russia as a setting, specifically the period around the Revolution of 1905. This period was quite troubled in many aspects: it involved far-reaching political upheaval as well as a military engagement, in which Russia suffered an unexpected defeat. The Revolution of 1905 constitutes some remarkable changes in the country's political history, including the establishment of a parliament and the granting of extensive civil rights. However, these were revoked shortly afterwards. The surprise character of most happenings allows to effectively apply event study methodology. An assessment of the immediate market reaction to political and war-related events has various implications: First, it reveals the investor's attitude towards democratic change in general. Literature on this issue finds their view to be rather negative (Turner and Zhan 2012; Lehmann-Hasemeyer et al. 2014). In theory on the other hand, a positive effect can arise from the easing of political pressure by the masses. The revolutionary character of various events allows to particularly address this threat of revolution hypothesis brought forward by Acemoglu and Robinson (2000).

Regarding the state of democratisation in Imperial Russia, the view of historians is inconsistent (Walkin 1964, Fröhlich 1981 or Bradley 2002). The result of this study can help to answer the question of whether the country could possibly have followed other western European states and gradually adopted democratic rights. After all, in the view of involved protagonists like Sergey Witte, the revolution resulted from the Tsar's '...wavering and not from Russia's desire for revolution' (Frankel 2007, p. 57).

¹² See the above-mentioned literature on firm survival.

The second set of events, relating to the Russo-Japanese War – yet unutilised in this context – is evaluated referring to the existing studies on the economic impact of wars. The literature comprises basically two conflicts, the American Civil War (Willard et al. 1996; Brown and Burdekin 2000) and World War II (Frey and Kucher 2000; Oosterlinck 2003). All authors find financial markets to be largely affected, however, not always in line with historical narrative. Finally, since the paper considers two government bonds traded on both the Berlin and the Saint Petersburg Stock Exchange, these two markets can be compared. The former has been found to be largely efficient, as can be seen from the above literature. The efficiency of the latter, on the other hand – though the major financial market in Russia – has been questioned (Papp 2001; Borodkin et al. 2006). However, it is as yet largely unexplored. A comparison of the respective price movement allows a statement to be made about the efficiency of the Saint Petersburg Stock Exchange at the turn of the century.

The main findings of all three studies are outlined in the conclusion at the end of this thesis.

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Contemporary newspapers

Frankfurter Allgemeine Zeitung 12 December 2005

Frankfurter Allgemeine Zeitung 3 April 2006

Frankfurter Allgemeine Zeitung 2 November 2015

Chapter I

–

‘Survival of the knittest’

The value of political connections in pre- and interwar Germany¹³

This paper finds widespread connections between firms and the parliament in pre- and interwar Germany. We also give a comprehensive overview of respective firm and party characteristics. Unlike previous work, the sample includes three different periods, representing three distinct political systems. We show that regime type mattered a lot, since connections did not add value to a firm homogeneously during monarchy, democracy and dictatorship. They proved effective in general only under National Socialist rule, consistent with previous literature. In the Weimar Republic, only political and economic heavyweights paid off, while in Imperial Germany firms could not benefit from a link to the parliament. In addition, we consider the probability of a firm to remain on the market and come to another substantial finding: connected firms were more likely to survive than their non-connected counterparts, especially in times of crisis.

Keywords: Political Connections; Germany; Stock Market Performance; survival analysis

¹³ This paper is co-authored with Sibylle Lehmann-Hasemeyer (University of Hohenheim).

Introduction

Connections between the economic sphere and politics have been repeatedly making the headlines in recent decades. Newspapers are usually keen to report whenever a high-ranking official gets appointed in private business, with comments ranging from simple discussions on the possible advantages for involved sides to the suspicion of actual deceptive practices. A recent example is Daniel Bahr, the former German Minister of Health, who was appointed executive board member of the private health insurance *Allianz* in 2014.¹⁴ Even less transparent was the designation of ex-Chancellor Gerhard Schröder as chairman of the supervisory board of the Russo-German pipeline operator *Nordstream*. There was an extensive debate over whether an engagement of such dimensions was inappropriate for a former leader of a country and, moreover, whether it provided the company with actual benefits – in the form of government credit guarantees granted shortly afterwards.¹⁵ Probably one of the most prominent cases of lobbying was the decision of Richard Cheney, former US Secretary of Defence and an influential politician for many years, to join the private sector. When the oil field service company *Halliburton* nominated him as CEO, the consequences were extensively discussed both in public as well as in academia (Fisman et al. 2012).¹⁶

However, the presence of a politician in business or vice versa is not a new phenomenon. Gustav Stresemann, for instance, later German Chancellor and minister of foreign affairs, started his career as a representative of an industrial association. After joining the National Liberal Party in late Imperial Germany, his influence on both a political and an economic level proved highly effective (Stegmann 1976; Pohl 1995).

For the involved firm, a link with politics could be highly profitable. A prominent example is the Hamburg-based tobacco company *Reemtsma*. Due to its political ties, it obtained information on a planned amendment well before its competitors. *Reemtsma* was able to adjust to the new legal situation early, which resulted in large profits (Klein 2014, pp. 421). Another case of interconnection of business and politics caused a large scandal in interwar Germany. Companies owned by the brothers *Barmat* obtained substantial loans by state-controlled banks. When these defaulted, the close relations between firm owners and high-ranking politicians came to light (Malinowski 1996, pp. 46).

¹⁴ See *Süddeutsche Zeitung*, 29 September 2014.

¹⁵ See *Frankfurter Allgemeine Zeitung* 12 December 2005 and *Frankfurter Allgemeine Zeitung* 3 April 2006.

¹⁶ See *The New York Times*, 11 August 1995.

Hiring an influential politician does not come for free.¹⁷ Firms must have clear expectations about the resulting advantages. However, in which way a possible benefit can materialise is not always obvious.¹⁸ To begin with, a connected politician might influence legislation directly on behalf of the firm. Though this way requires the least phantasy, it is also the least plausible one.¹⁹ A more likely benefit is a preferential treatment in the placing of public contracts. However, such practices are limited to certain branches like, for instance, public services or transportation. Multiple advantages arise from improved access to political information.²⁰ Finally, in case of financial problems, firms linked to politics might receive public support more easily – for instance, in the form of a bailout.

Prior research found political connections to be highly beneficial for involved firms. The aim of this study is to identify political connections in pre- and interwar Germany. In addition, we assess whether these proved advantageous for a firm, both with regard to its market performance and also its ability to survive over time.²¹ Unlike most other work on this issue, we follow a highly comprehensive approach: First, the dataset includes all joint stock companies listed on the Berlin Stock Exchange. Also, we survey these at three different points of time, in 1913, 1925 and 1938. Even though the time horizon is relatively short, it includes three totally different regime types, which enables us to precisely determine the effectiveness of a connection in each of these: Monarchy, democracy and dictatorship. Here, the general

¹⁷ The regular salary for board members differed among firms in Germany at that time (Saling 1921, p. 123). Excessive compensation of board members was subject to intensive discussions during the first half of the 20th century (Lieder 2006, pp. 198). Aside from this, other implicit past or current benefits might have played a role. In his profound study of corporate-political interaction, Mark Mizruchi (1992) illustrates, among other things, the determinants and effects of campaign contributions in the US.

¹⁸ The literature identifies various channels of transmission. See the next section for an overview.

¹⁹ First, the impact of a single person on the legislative process is likely to be overrated. Furthermore, in most cases a law does not affect single firms. Rather, it pertains to the economy or at least parts of it as a whole, which leads to a classical free rider problem: Competitors could profit in an equal manner from a connection without facing its costs. For that reason, influencing regulation and legislation is mainly left to industry-specific interest groups, as suggested by theoretical (Kroszner and Stratmann 1998) as well as historical evidence (DiLorenzo 1985). Attempts to directly influence legislation was common practice even in the highest circle of politics, as the case of alleged bribery of the German President Hindenburg illustrates. In return for the gift of the manor *Neudeck* he supposedly favoured the benefactors in the allocation of state financial aid (Klein 2014, pp. 450).

²⁰ For instance, the altering of regulation can greatly affect business. A connected firm is likely to receive respective information at an early stage. Accordingly, it adjusts more quickly than its competitors. Further indirect benefits might arise from signalling: An affiliation to a politician suggests high integrity, which in turn can facilitate business and access to capital.

²¹ To our knowledge, this is the first application of survival analysis methodology with respect to political connections.

impact of the political environment with regard to connections is revealed more accurately than in previous (cross-country) studies, as our setting remains largely the same.²²

Amongst stock companies in pre- and interwar Germany, links to politics were widespread. However, they did not pay off equally in all regime types in terms of market performance. We only detect an impact on the share prices for the Weimar Republic and the National Socialist rule. The size of that effect further depends on the quality of the connection itself. A major finding is derived from survival analysis: The probability of a firm to stay in the market is significantly increased by the prevalence of a political connection.

The study is organised as follows. The next section reviews the literature and hypotheses. Also, the three different time periods are briefly depicted along with some stylised features. After the dataset has been introduced, the prevalence of political connections in Germany becomes manifest in the descriptive section. How these affected actual firm performance is evaluated by the following ordinary least square regression including various robustness checks. Further, a survival analysis further reveals the higher probability of connected firms to remain on the market. A final section outlines the results.

The value of a political connection

Generally, we expect a connection to be beneficial for a firm. Possible channels of transmission are well-documented in both literature and by historical examples.²³ For instance, political information might provide a competitive edge in the market. As mentioned in the introduction, such a case is well illustrated by the cigarette producer *Reemtsma*, which gained a sizable advantage by adapting early to a change in tax legislation on tobacco. In 1925 the government attempted to alleviate its chronic shortage of money by imposing a tax on the warehousing of raw tobacco. If stored inside a company, the tobacco was from then on assessed for taxation. Well before the law got enacted, *Reemtsma* got access to details of the drafting by a political side. By then, the company had outsourced its material stock and was able to avoid taxation – unlike many of its competitors. Its alleged connection to the government proved valuable once

²² So did the various German stock companies on which the analysis is based.

²³ There is a lot of evidence in the interwar period. In Imperial Germany, explicit cases of taking advantage due to a connection to the parliament or a political party are rare, probably as a consequence of their lacking competences. However, this does not hold for political corruption in general. For a much-debated example of explicit bribery of the public authorities by the steel producer *Krupp*, see Bösch (2005).

more in the following years when the firm was greatly backed in a case of tax fraud (Klein 2014, pp. 421).

Most of the literature on political connections employs event study methodology. That draws on the reaction of companies' share prices – reflecting the expectations of investors. There seems to be a considerable payoff for firms that are linked to politics, returns on their shares are much above the average market. The magnitude of such 'abnormal' stock returns further depends on the degree of political and economic freedom prevalent in the respective market (Pantzalis et al. 2000). In less free countries the effect appears to be more pronounced, which might be the reason for the large emphasis that has been put on developing countries. Many studies have focussed on south-east Asia. Raymond Fisman (2001) draws on firms connected to President Suharto in Indonesia, Cailian Chen et al. (2013) follow a similar approach for Malaysia. Both of these event studies detect positive abnormal returns for firms linked to the government. Pramuan Bunkanwanicha and Yupana Wiwattanakantang (2009) take Thailand as the setting of their research and come to the same finding.²⁴

There is substantial work on China after the period of liberalisation of its economy in the early 1990s. Its many provinces provide an excellent framework to test for different determinants of a connection and, furthermore, which of those turned out to be valuable (Li et al. 2006). An affiliation with the communist party – despite the lack of ideological consistency – does indeed increase the stock market performance of a firm (Li et al. 2008; Feng et al. 2015). Just as in cross-country studies, the institutional environment is highly relevant. Weak legal as well as weak regulatory institutions obviously provide an incentive for a firm to establish a connection. Of the highly developed countries the most emphasis has been placed on the United States. Authors focus mainly on personal affiliations to important politicians. For instance, connections to Vice-President Richard Cheney appear quite useful. Any event that widens or just backs up his position a rise of corresponding share prices (Fisman et al. 2012).²⁵ Likewise, affiliations to the Secretary of the Treasury, Timothy Geithner, have a positive impact on market performance (Acemoglu et al. 2013). US Senator James Jefford embodies another rewarding example for such a relation (Jayachandran 2006). Also, if links to a political party as a whole are taken into

²⁴ Unlike the other two studies, Bunkanwanicha and Wiwattanakantang (2009) focus only on firms owned by influential business families. If one of their members run for an election, the firm performs significantly better in the capital market.

²⁵ The relation also holds vice-versa. Potentially negative events, like Cheney's two heart attacks, resulted in a negative price reaction of corresponding shares.

consideration, the effect persists. Stock market investors appreciate the presence of a political connection (Goldman et al. 2009; 2013).

Studies in a historical context are, unfortunately, rather scarce. Fabio Braggion and Lyndon Moore (2013) conducted an event study based on connected firms in late Victorian Britain. They detected significant positive abnormal returns only for ‘new technology’ firms with links to a member of parliament.²⁶ The existence of a connection largely facilitated the raising of new capital: both new shares and debt issues could be placed at the London Stock Exchange in favourable conditions.

The work by Thomas Ferguson and Hans-Joachim Voth (2008) is the most famous in a historical German context. They conducted an event study based on companies that were linked to the National Socialist German Workers’ Party (NSDAP) before Adolf Hitler came to power. The market performance of these firms exceeded that of non-connected ones to a great measure – after the seizure of power in 1933. An event as extreme as this constitutes a perfect natural experiment. It illustrates the impact a connection can have if the corresponding political party is able to exercise supreme rule. Our sample also includes the period of National Socialist rule. The results of Ferguson and Voth provide an excellent benchmark to compare our results to, although the research design differs slightly.²⁷

In order to identify the impact of political connections in pre- and interwar Germany, we first investigate their general prevalence. Moreover, the performance of connected firms is assessed – regarding both stock market valuation and actual profitability. For this purpose we employ ordinary least squares (OLS) and fixed-effects panel regression models. Moreover, two matching procedures are used to check the robustness of the results. Given the above literature, our general expectations with regard to the value of a connection condense to the following hypothesis:

Politically connected firms outperform their non-connected counterparts.

That primarily refers to market performance as reflected in share prices. Surprisingly, considering the actual accounting performance the picture appears contrary: Mara Faccio (2010) finds that connected firms display significantly lower returns on assets than their non-

²⁶ New technology firms in the considered period of time are those operating in the chemical industry, electricity supply, electricity generation and bicycle as well as motorcar production.

²⁷ So does the definition of a political connection. See Ferguson and Voth (2008, pp. 108).

connected counterparts. Checking across countries, Narjess Boubakri et al. (2008, p. 667) come to quite similar results. Marianne Bertrand et al. (2006, p. 24) see such a negative correlation investigating French stock companies. By reference to Malaysia, Heather Mitchel and Saramma Joseph (2010) detect an at best weak positive relationship between links to politics and profitability. Joseph Fan et al. (2007) document a poor post-privatisation performance for connected firms in China. Accordingly, we expect accounting overall performance in terms of the return on assets to be weak at best.

An additional direct benefit of a connection consists of the preferential treatment in the placing of public contracts on grounds of political ties. A remarkable suchlike case concerns the supply of the municipality of Berlin with workwear. In the late 1920s lucrative contracts were given exclusively to firms owned by three brothers named *Sklarek*. To close these deals, they utilised a widespread network to the municipal government. Again, as in the case of *Reemtsma*, the result was huge profits for the affiliated firm (Klein 2014, p.298). Eitan Goldman et al. (2013) evaluate such practise empirically in the US. There, connected firms are much favoured in public procurement.²⁸ The above hypothesis can be adjusted accordingly: As certain sectors are impacted in particular, their performance is expected to gain most through a connection.²⁹

Whether a firm seeks the proximity to politics depends not just on the environment but also on the firm itself. Boubakri et al. (2008) discover a set of firm characteristics to be important: Its size, the location of the headquarters, the leverage, and the number of employees are apparently significant determinants of connectedness. Apart from geographic location the ownership structure appears to influence the relation of the political links and the value of a firm (Faccio and Parsley 2009). Braggion and Moore (2013) find that the age of a company plays a role. In this study we control for firm characteristics with respect to joint stock capital, firm age, location of a firm and the sector of business activity, all of which are available in our data sources.

A firm's choice of appointing a politician is likely to depend on his political background. In present-day Germany, for instance, liberal parties are interlinked with business far more often than their – particularly left-wing – counterparts (Niessen and Ruenzi 2010). However, final evidence of the actual market performance has not yet been established. Some work examines

²⁸ More specifically, Goldman et al. (2013) analyse public procurement after elections for both the US House of Representatives and Senate. Firms connected to the winning party receive increased access to public contracts and vice versa.

²⁹ In our sample these are public utility and transportation companies. Also, the sole prevalence of connections should be exceedingly high in these sectors.

elections and other political events and thereby tries to assess the benefits that accompany a specific political party. However, the impact of such party effect is inconsistent, at least across different countries. In the US, market reactions seem to depend on the specific party affiliation (Lobo 1999; Santa-Clara and Valkanov 2003). Investors in Germany, on the other hand, do not differentiate between left-wing and right-wing governments in terms of trading behaviour (Döpke and Pierdzioch 2006).³⁰

We can clearly identify the political party of any connection. For reasons of clarity – a general model of party influence is difficult to establish – we distinguish only between two broad categories: A connection to any member of parliament (MP) and a connection via a politician that is a member of the currently governing party. In general, we expect the latter to improve firm performance to a far larger extent. Access to the government and the state bureaucracy can extend the scope of influence on legislation, as well as on regulatory issues.

An actual parliamentary government existed only in the Weimar Republic.³¹ In Imperial Germany, the government was installed by the Emperor alone. The passage of a bill, however, still required a majority of votes in the parliament. As a consequence, the continuous search and formation of coalitions was a distinct feature of the Imperial period. We consider those parties which were usually supportive of the government and as a consequence had an influence over a large part of legislation as governmental. Over time, these alliances between government and parties varied a lot. A well-known example of the early years was Bismarck's shift from a liberal to a conservative political orientation in 1879. That brought with it a break with the hitherto 'governing' National Liberal Party (Wehler 1994, p.68). In the years prior to World War I, the cooperation of the Conservatives and Centre Party – known as the 'blue-black bloc' – was the basis of most of the legislation (Huber 1969, p. 322). Therefore, these two parties are considered as governing ones in the sample year 1913.

It is straightforward to determine that in 1938 the government was solely composed of members of the National Socialist Party. In fact, that was the only legal party at all at that time. Table 6 provides an overview.

Apart from party background, it seems hardly realistic that the value added by a political connection is homogeneous. Rather, it depends on the involved politician's position, his influence at the party level, the size of his political and business network, and so on. Therefore,

³⁰ The impact of different political parties is examined in greater detail in part II of this thesis: As only in the Weimar Republic a larger spectrum of political parties existed, this period provides an ideal setting. The other sample periods are less appropriate to analyse. In Imperial times, an actual political party structure was not yet developed – except for the Social Democracy. The last period – 1938 – is even less suitable as only one political party was existent.

³¹ At that time the government consisted of BVP, DDP, DVP and Centre Party, see table 6.

a number of key figures are taken into consideration. They represented the core of the economic and – whether active or former members of parliament – the political scene in Germany. The outstanding position of a few MPs which hold several board seats is also emphasised in contemporary newspaper reports. (Morus 1925). Supposedly, these heavyweights possessed by far the largest influence among all connections. Accordingly, firms affiliated to such a pivotal figure should have benefitted the most.³²

The effectiveness of a political connection is dependent on the political party and the position of the affiliated person. Members of the governing party and political and economic heavyweights are expected to add most to a firm's value.

The very same protagonists as previously mentioned, the brothers *Sklarek*, were further involved in a notorious lending scandal. It became known to the public that Sklarek-owned firms were granted sizeable loans by a state bank – without any substantial collateral (Klein 2014, pp. 298).³³ Such practice is exemplary of one of the most effective channels through which a connection can generate value: facilitated access to capital. First, a connection has a signalling effect for other market participants – whether at the stock market or bank level: A well-known politician on the board of a firm increases its creditworthiness. As just delineated, capital can also be raised by means of actual corruption. There is further anecdotal evidence of the granting of credit without sufficient coverage, i.e. on the basis of political ties only, during the interwar period. Mainly state-owned banks, as well as diverse politicians, were involved in these more or less corrupt deals. The alleged misuse of the *Ruhrhilfe*, for instance, originally intended for those who had been afflicted with the French occupation of the Ruhr area, led to heated debates in and outside the parliament. Finally, a parliamentary commission concluded that governmental credits were to be given in favour of big business only – of course well interlinked with high-ranking officials (Klein 2014, pp. 226). Another example of preferential access to bank loans is given by the brothers *Barmat*. They had established close ties to the highest ranks of politics, including former Chancellor Gustav Bauer.³⁴ As a result, Barmat-

³² We employ two measures for the value of single politicians – the first refers to the economic and the second to political value. A detailed description can be found in the data section.

³³ The case of Sklarek won exceptional notoriety as it comprised all the ingredients for a substantial scandal: excessive luxury, wild festivities and an expansive and comfortable lifestyle of all persons involved.

³⁴ Also, newspapers speculated about a connection to President Friedrich Ebert. The whole case was scandalised to great extent by the right-wing and anti-democratic camp. First, the involved politicians were Social Democrats. Moreover, the Barmats had a Jewish background. Bot factors provided ideal occasion to reveal the alleged weakness of the system.

owned firms received large credit by state-controlled banks did not check the coverage sufficiently (Malinowski 1996, pp. 48).³⁵

In line with anecdotal evidence, a large part of the literature on political connections emphasizes the access to capital as a main benefit. The majority focusses on emerging markets. For example, Chinese businessmen with a communist party membership have access to a largely enhanced amount of loans given by state-controlled banks and other governmental institutions (Li et al. 2008). Kenneth Chan et al. (2012) come to the same result examining Shanghai-listed stock companies. As for Pakistan, Asim Khwaja and Atif Mian (2005) find a highly increased share of borrowed capital if a firm has a political connection. Moreover, the access to credit via government-controlled banks is apparently given independently of any economic factors, but simply due to the connection itself.³⁶ An even negative relationship between economic performance and connectedness is observed by Christian Leuz and Felix Oberholzer-Gee (2006): Indonesian firms affiliated with the regime of President Suharto have much less access to foreign capital markets as a consequence of their poor accounting. At the same time, these firms are strongly supported by the government and therefore have greatly facilitated access to credit via domestic banks. Also, their performance in times of crisis is inferior to their non-connected counterparts. Mark Bliss and Ferdinand Gul (2012) report the same relation for Malaysia: connected firms are characterised by higher leverage and a lower return on assets. Also Narjess Boubakri et al. (2008, p. 667) detect a particularly poor accounting performance.³⁷ In sum, one incentive to link up with politics – not only in times of crises – might be to avoid competition with other, more profitable firms. First, a politician can increase the trustworthiness of a company simply with his good name. Moreover, he might provide access to large investors. Accordingly, politically connected firms exhibit a higher share of institutional investors in their ownership structure (Wahab and Rahman 2009, p.153). This in turn increases the probability of a firm to survive, particularly in economically difficult times (Filatotchev and Toms 2003, pp. 912).³⁸

³⁵ Later on, that loan defaulted. Unlike many other cases of political corruption, this one had severe juridical consequences for the involved persons.

³⁶ The default rates of credit given to connected firms is about 20 percentage points above market average. Apparently, decisions by government-controlled banks were often politically driven, whereas profitability was of less importance.

³⁷ The existence of a connection can, in turn, lower the efficiency of a firm. Serdar Dinç (2005) provides evidence of an increased lending activity of government-influenced banks during election times. Such behaviour seems to fulfil the interests of politicians rather than economic rationality and is likely to result in high costs for the involved institutes. However, this relation does not apply to developed economies.

³⁸ Igor Filatotchev and Steve Toms (2003) investigate the chances of a firm's survival in the British cotton textile industry after World War II. Since that time that was in steady decline, as it failed to face increasing competition in both the export and domestic market. Access to institutional investors helped firms to postpone failure in a declining industry.

A related form of firm support is a bailout by the government in case of financial problems. Interlinked firms are more likely to be bailed out in general. The connection therefore works as a kind of political insurance against firm failure (Faccio et al. 2006). This applies particularly in times of crisis, when state support is often given on a massive scale. During the financial crisis of 2008 those institutes that were interlinked with politics were more likely to receive government aid via the *Troubled Asset Relief Program* (Igan et al. 2011; Blau et al. 2013; Grossman and Woll 2014). The fact that these studies relate to the United States suggests that the effectiveness of a connection is not confined to developing countries. Likewise, Mara Faccio et al. (2006, pp. 2611) find country-specific factors to be less decisive with respect to the chance of receiving a bailout – as opposed to the other potential advantages of having a political connection.³⁹ Unlike the granting of credit or the assignment of public contracts, state aid for a financially troubled firm is widely accepted among the people and is rarely considered a form of corruption.⁴⁰

Both improved access to capital and a higher chance of a bailout should induce connected firms to get through troubled times. We test this assumption by examining whether the probability to ‘survive’ is affected. More precisely, we check whether connected firms have a better chance of remaining listed on the stock market.⁴¹ Unlike other strategies that have frequently been adopted in past research, survival analysis looks at the issue from a new angle. The probability to avoid failure and – in addition – to be involved in firm consolidation constitutes a quite concrete outcome. This allows for a profound evaluation of the effectiveness of the credit/bailout channel. We aim to contribute to the literature by introducing this new approach for the assessment of the value of political connections. The corresponding hypothesis reads as follows.

Politically connected firms have increased access to capital and a higher chance of receiving a bailout. Therefore, they are expected to have a higher chance of surviving, particularly in times of crisis.

³⁹ As described above, the value of a politically connection in terms of share prices is largely dependent on a country’s political and economic environment (Faccio 2006).

⁴⁰ In fact, politicians often vociferously orchestrate such kinds of action in order to gain popularity. Most famous in recent German history is probably the bailout of the construction company *Philipp Holzmann* in 1999, which was used by Chancellor Gerhard Schröder to emphasize his labour market expertise. See *Die Welt*, 26 November 1999.

⁴¹ Not just staying in the market, but even entering it is greatly facilitated as well. Qigiu Liu et al. (2013) find that new firms with links to politicians have better chances of placing their shares on the stock exchange.

To which extent it can take advantage depends, however, on the political environment: links between business and politics are more widespread in countries characterised by comparably high levels of corruption, by weak legal institutions, by a high political fractionalisation and by restricted capital mobility (Faccio 2006; Boubakri et al. 2008).⁴² Apparently, the political environment, and consequently the political system itself, is of large importance. In order to take account of that, this study comprises three different periods of time: Late Imperial Germany, the Weimar Republic and finally the period of National Socialist rule, each representing – in a stylised way – a specific type of government or regime: monarchy, democracy and dictatorship.

The dataset includes all firms listed on the Berlin Stock Exchange at the respective point of time. By surveying firms in this regime-spanning manner, we avoid falling victim to firm selection bias and are able to give quite a broad picture of the German economy in the particular period. The dates are chosen such that they represent the heyday of the respective regime. The German Empire was continuously expanding its economic potency. Per capita income, output and labour productivity reached its peak in 1913, shortly before the outbreak of World War I (Burhop 2011b, pp. 31). The Weimar Republic in contrast was most of the time shaken by economic and political crises. From 1925, however, it experienced a few relatively quiet and prosperous years. Finally, 1938 represents the third period under review. By then, the rule of the National Socialists was well established – both politically (Jessen and Richter 2011, pp. 52) and economically⁴³ (Overy 1994, pp. 68): Adolf Hitler was at the height of his peace-time popularity and World War II was not yet looming.⁴⁴

An analysis as comprehensive as this is advantageous compared to other (cross-country) studies of political connections. First, we do not compare hugely different economic settings. In fact, many of the actual objects of investigation, i.e. companies, remain in the sample over time.⁴⁵ Furthermore, the intervals between survey periods are comparably short. For that reason

⁴² Unsurprisingly, those countries that restrain the business activities of politicians possess a lower share of connected firms. Faccio (2006) analysed a huge sample of firms over 47 countries, representing about 8 percent of world market capitalisation. Her definition of a connection is, however, much broader than the one we apply in this study. Boubakri et al. (2008) follow a similar approach. However, they employ a much smaller sample of firms and focus on the firm rather than on political characteristics as determinants of a connection.

⁴³ How much of the economic success actually reached the people in terms of material well-being is, however, disputed in literature, see Spoerer and Streeb (2013).

⁴⁴ Latest in 1939, most parts of the German economy were directly or indirectly involved in the production of military goods (Overy 1994, pp. 259). A point of time too close to the war does not give a ‘normal’ picture of the National Socialist economy.

⁴⁵ Which additionally enables us to conduct a fixed-effects panel estimation.

probable differences in the value of a political connection can be attributed mainly to the respective political system.⁴⁶

Monarchy, democracy and dictatorship in Germany

Germany experienced three different forms of government within a considerably short period of time. The first all-German constitution was effective until the end of World War I when it was replaced by a new, genuinely democratic constitution which lasted until the National Socialists assumed power in 1933.

Imperial Germany was a federal parliamentary monarchy, in which the Emperor kept the dominant position. He alone appointed the federal government and was further authorised to sign international treaties, including declarations of war.⁴⁷ The parliament, in contrast, had no direct means to control the government and could also be dissolved by the emperor at any time.⁴⁸ Moreover, laws could only be passed with the consent of the federal council. The *Bundesrat* in turn was dominated by Prussian aristocracy and the Emperor.⁴⁹ There were some progressive elements, however: In contrast to the German state parliaments, where often undemocratic franchises were in effect,⁵⁰ the federal *Reichstag* was elected on the basis of a universal and equal suffrage for all men above the age of 25.⁵¹ Furthermore, no act could be issued without its approval.⁵² The same applied to the yearly federal budget.⁵³ The parliament's constitutional competences included social, trade, transport and communication policy, as well as law and military issues.⁵⁴

The actual influence of the parliament and the state of democracy in Imperial Germany is not undisputed. There is, however, consent over the fact its importance grew over time. Initially

⁴⁶ We assume that any country-specific (unobserved) factors were changing only slightly in-between. In this regard, our study can be read as a panel analysis as compared to a cross-sectional one. To our knowledge, this is the first investigation of such a kind.

⁴⁷ §§11–19 of the imperial constitution of 1871. In the following, footnotes refer to this document, which can be found in Huber (1961, pp. 384).

⁴⁸ That permanent thread of dissolution indeed put severe pressure on the members of parliament to cooperate with the government (Berghahn 1994, p.191).

⁴⁹ §5 constitution; the exact composition of the *Bundesrath* is specified in §§6–10 of the constitution. The German Emperor was at the same time sovereign in Prussia, which possessed a critical voting weight in the federal council.

⁵⁰ The most prominent was certainly the three-class franchise in Prussia that effectively maintained the influence of the aristocracy, industry and upper bourgeoisie. Though it usually received a majority of votes, the Social Democratic Party – representing the lower and working classes – was effectively kept out of legislation. For a detailed overview of the franchise and its impact on political culture see, for instance, Kühne (1994).

⁵¹ §20 constitution

⁵² §5 constitution

⁵³ §69 constitution

⁵⁴ §4 constitution. The other areas of policy were, according to the federal structure of the German Empire, matters of the individual states.

intended to be a democratic veneer rather than an autonomous constitutional organ, the *Reichstag* became a vital element in the process of legislation. Cooperation at least with the weightiest parliamentary groups in the parliament became indispensable for any government in power (Wehler 1994, p. 61).⁵⁵ Alongside growing voter turnout, increased levels of education and the advent of modern mass media, the importance of federal elections also grew. That development was reflected in expensive electoral campaigns and an advancing mobilisation of the masses (Ullman 1999, p. 25).⁵⁶ Hans-Ulrich Wehler (1994, pp. 63) distinguishes between two broadly defined periods: According to Wehler, Imperial Germany was initially characterised by *Bonapartist rule* with Bismarck in its centre. After those first two decades, the Empire became more polycratic, beginning in the early 1890s: however, the political scene was still dominated by the old elites – and Germany was far from being a true parliamentary democracy. Likewise, Christoph Schönberger (2001) points to the low grade of parliamentarisation before World War I: The political system was characterised by a dualism, as government and parliament mostly worked against each other – to the disadvantage of the latter.⁵⁷ Manfred Rauh (1973, pp. 243), on the other hand, detects a pronounced emancipatory development of the *Reichstag* around the turn of the century. In contrast to Wehler he considers parliamentarism, or at least its basis, to be largely developed after 1909 (Rauh 1973, pp. 351; 1977, pp. 147). Anyway, it seems to be a fair assumption that the power of the parliament was relatively weak prior to World War I compared to the following period. Aristocratic elites, and to some extent economic interest groups, acted as the main political players. They had a large influence on legislation, the German bureaucracy and the public (Stegmann 1976).⁵⁸ Accordingly we expect a connection to the *Reichstag* to be least effective in 1913.

In the Weimar Republic the situation was contrary. Particularly after the replacement of the worker and soldiers councils—which played a pivotal role during the revolutionary years—the parliament took a central part in politics. According to the new constitution, the legislative period was shortened to four years and the voting age was also reduced. Most important in that

⁵⁵ The growing self-confidence of the parliament led to increased conflicts with the government especially in the late Imperial period, see Huber (1969, pp. 325).

⁵⁶ While the turnout in the first election 1871 was only about 51 percent, it reached nearly 85 percent in the last election in 1912 (Ritter 1980, pp. 38). The shares of votes of the most important parties are illustrated in the appendix. Altogether, the imperial political landscape was highly polarised. A ‘national’ faction on the one side was opposed by the Catholic Centre Party and the Social Democratic Party on the other side (Ullmann 1999, p. 7).

⁵⁷ At the same time, the general degree of Democratisation in the Imperial society was quite high. The participation of large parts of the population was not reflected in the influence of the *Reichstag* however. According to Schönberger (2001, p. 624), ‘parliamentarisation was outpaced by democratisation’.

⁵⁸ For an overview of interest groups in pre- and interwar Germany, see Ullmann (1988).

respect was surely the altering of the electoral mode towards a proportional representation and the introduction of women's suffrage.

However, over time the significance of the parliament diminished and its authority was undermined: Mainly due to the political fragmentation and the resulting lack of common consent, the de facto political power was transferred to the President.⁵⁹ His person represented a large monarchical element which was incorporated into the Weimar constitution.⁶⁰ The President, directly elected by the people, was given far-reaching constitutional competences (Huber 1981, pp. 23; pp. 307; pp. 350).⁶¹ Still, altogether the position of each single member of parliament was greatly strengthened. The same applied to the political parties.⁶² Moreover, recent literature has reconceived the role of the *Reichstag* in Weimar times. Sibylle Lehmann (2010) emphasizes the relative efficiency of this institution – as opposed to the classical view which suggests a rather chaotic parliament (Falter et al. 1986).⁶³ Unlike in Imperial times a modern party scheme became established across the whole political spectrum (Huber 1981, pp. 129). The state expanded greatly during World War I and maintained its central role in many fields. Not only was the parliament equipped with greater competences than before, but also the legislation itself – including economic policy – was now made within the Reichstag (Ullmann 1988, pp. 124). Consequently, we expect political connections – and particularly those to the government – to be quite effective in this period. The career of Gustav Stresemann appears to be consistent with that expectation. He started as a representative for the *Bund der Industriellen*, one of the three large economic interest groups in Imperial Germany. With the new democratic regime in place, it appeared more promising to switch to the parliamentary side. Stresemann from then on acted as a delegate. Finally, he became the party chairman of the National Liberal Party and its successor, the DVP, respectively (Stegmann 1976).⁶⁴ In line with such prominent biography, there is large anecdotal evidence for the effectiveness of political connections in Weimar times.⁶⁵

⁵⁹ Which resembled quite the situation of Imperial Germany in a strange fashion. Instead of the Emperor, it was the President who installed a government.

⁶⁰ In order to account for national identity, the new constitution tried to take tradition into account and to maintain a certain continuity wherever possible (Huber 1981, pp. 25).

⁶¹ Particularly the right to dissolve the parliament and to rule by means of emergency law provided the President with a very a powerful tool.

⁶² This holds especially for the considered period. In the late years of the Weimar republic, the parliament was effectively circumvented. Presidential cabinets installed by the president were common after 1930. In fact, the corresponding constitutional provision did not stabilise the system, but contributed to the failure of the first German democracy (Huber 1984, pp. 731).

⁶³ Legislation worked quite efficient and coherently among parties; Lehmann locates the sources of instability of the political system rather outside the parliament.

⁶⁴ That position led him to high ranking political positions. Highly respected nationally as well as internationally, Stresemann served as foreign minister and even as Chancellor (Thimme 1956).

⁶⁵ See the following section.

The third period considered in this study – the National Socialist rule – features a completely altered political background. The Enabling Act of 24 March 1933 concentrated all legislative power in the hands of the government. The Chancellor, in the person of Adolf Hitler, could pass legislation without the approval of the parliament. Moreover, the remaining federal structure was completely removed (Boldt 1990, pp. 261). By virtue of the law of 14 July 1933, only some months after the Enabling Act, all parties but the NSDAP were banned (Thamer 2002, pp. 142).⁶⁶ Accordingly it was the only party that was left in the *Reichstag*. In fact, some important politicians even defected to the new holder of power.⁶⁷ In November 1933 federal elections were held once again. After these the composition of the parliament was finalised in favour of the new rulers. In the end, only members of the NSDAP were delegated in the highest German legislative organ (Boldt 1990, p. 263). Within a short period of time the National Socialists established an absolute rule on the fundamentals of the Weimar constitution (Neumann 1984, pp. 68). The parliament as such – though still an official institution – was basically left without any authority.⁶⁸ The political agenda of the National Socialist Party also included the crackdown of corruption as an alleged characteristic of the old democratic regime. Indeed, many cases of political corruption were taken to the court after 1933. According to the new rulers, there was no room for any interconnection of business and politics in National Socialist Germany (Ludwig 1998, pp.185).

Still we expect political connections to be beneficial during National Socialist rule, probably even more than before: First, the proceedings against political corruption and the related show trials came to an end soon. Once their power was consolidated, the National Socialists aligned with the old economic elites. That new government proved to be extremely vulnerable to fraudulent practices. The abolishment of most democratic institutions left party bureaucracy basically without surveillance. Political and personal abuse of power was widespread among the NS party ranks (Bajohr 2001, 137 pp.). Moreover, the parliament as such was not dissolved, but still officially represented the law-making body.⁶⁹ Despite the absence of actual parliamentary power, a politician could moreover have wielded much influence more directly. The new regime was characterised by a dualism of party and state, since the National Socialist party occupied the most important positions (Neumann 1984, pp. 93). Accordingly, direct

⁶⁶ In fact, many parties vanished from the political scene ‘freely’ by means of self-dissolution. For a detailed picture of the disappearance of the democratic political scene see, for instance, Matthias and Morsey (1960).

⁶⁷ Sometimes under the odd designation of ‘guest of the NSDAP’ (Hubert 1992, pp. 70).

⁶⁸ The *de facto* power was completely concentrated on Adolf Hitler, who ruled basically on the basis of emergency regulations. *De jure*, the old federal institutions were still in effect (Hubert 1992, pp. 214).

⁶⁹ Apparently the *Reichstag* was intended have a relevant role in future times. The counting of parliamentary terms, for instance, was started over in March 1933. That was certainly no indication of a gradual expiration of this institution (Hubert 1992, p.129).

access to the ruling NSDAP promised great opportunities. The party pervaded many parts of economic life, firms and labour unions.⁷⁰ The situation resembles communist China, as described by Hongbin Li et al. (2008). There, the positive effect of a connection manifests via direct access to the ruling party. A theoretical foundation for the reciprocity of business and politics is further given by Jay Choi and Marcel Thum (2009). In their model, a country's political and constitutional setting determines the impact of political networks. These turn out to be profitable in autocratic regime types only.

A highly profitable business, specific for this period, was the expropriation of Jewish assets and firms. Usually, these could be acquired far below its actual value, to the benefit of the acquirer. In 1936 the National Socialist Party was officially in charge of this procedure and decided who was qualified to takeover a Jewish firm or parts of it (von der Malsburg 2015, pp. 284).⁷¹ The share of Jewish ownership was particularly large in private banking and amounted to nearly 50 percent of all institutes in 1933. Correspondingly, the banking sector was highly involved in the process of *Aryanisation* (Köhler 2005, p. 89; pp. 201). Relating to this, a political connection to the NSDAP should have proven beneficial, especially for banks.

Also, other sectors could utilize such linkage. The chemical and metal processing company Degussa, which benefitted to a huge extent from its proximity to the National Socialist rulers, gives us one such outstanding example. During the 1930s nearly all of its executives joined the NSDAP, which gave the company an edge in many ways: Takeovers of Jewish capital and firms were greatly facilitated. Owing to their ties to the National Socialist leaders, the company was further involved in the processing of large amounts of expropriated gold and silver, resulting in large profits during the first years of the regime. In wartime, Degussa was a main producer of the chemicals used for genocide. Also this involvement originated mainly on the ground of the political activity of one of its leading managers, Gerhard Peters (Hayes 2006).⁷² Another case of corruption in that period refers to the consumer goods industry. Once more, the *Reemtsma* tobacco company was involved. It was contributing regular contributor to the NSDAP even before its seizure of power. In return, the firm received favourable treatment when it came to acquisitions and were government-backed in various legal disputes.⁷³ Being on good terms with

⁷⁰ For an overview see von Prollius (2003) or Schneider (1999). Furthermore, there is a vast literature on the interconnection of economy and party on a regional level, like, for instance, the work of Clemens Vollnhals (2002) or Christian Dirninger (2014).

⁷¹ Beforehand, many Jewish enterprises were taken over with the use of private contracts, leaving at least some scope for the expropriated. For a detailed picture of the total displacement of Jews from economic life in Germany during the National Socialist rule, see (Genschel 1966). Private banking as a particularly affected business is investigated extensively by Ingo Köhler (2005).

⁷² Furthermore, the Degussa extensively employed forced workers in its production.

⁷³ Which underlines the impact of weak legal institutions for a connection to be effective.

the new rulers helped *Reemtsma* to maintain their dominant market position (Bajohr 2008).⁷⁴ Broader empirical evidence of the high value of a connection to the National Socialist Party is given by Ferguson and Voth (2008).

Altogether, we expect the effect of a connection to the *Reichstag* to be weakest in Imperial Germany. During the Weimar Republic, in contrast, the parliament became the central element of legislation. The impact of ties there accordingly should be much larger. The expectations for the last period are not plain. Admittedly, the parliament as such was basically powerless. On the other hand, access to the ruling party promised a huge direct influence on politics.⁷⁵

Political connections of Berlin-listed stock companies

This study is based on a unique dataset which contains all firms listed on the Berlin Stock Exchange in three different periods. The information was hand-collected from the *Handbuch der Deutschen Aktiengesellschaften*, a stock market manual. Along with the supervisory board members, it contains basic firm characteristics, such as joint stock capital, the year of formation and the location of the headquarters. That latter measure – converted into distance to Berlin – is a proxy for asymmetric information. We assume that firms farther away from Berlin may use a political connection to reduce information costs. Lampe and Ploeckl (2014), for instance, have shown that even a theoretically ‘weightless’ communication like phone calls faced substantial distance cost similar to physically transported mail. Further, there is information on firms’ core business activity and the stock exchanges on which it was listed. We make use of the end-of-year prices in percentage of nominal share value and the return on assets in order to get a performance measure.⁷⁶ Table 1 gives an overview of the three considered periods.⁷⁷ The number of firms listed in Berlin varied a lot over time. It increased by about 25 percent after World War I, before dropping by half until the NS dictatorship was fully established in 1938. The average joint stock capital was distributed among the various periods in a reverse manner, while the distance to the German capital remained approximately constant over time. Within the 12 years between the first two periods, the average firm age increased by six years, implying

⁷⁴ The company had great experience in that practice. As delineated earlier, in Weimar times it had already extensively established close ties to politics.

⁷⁵ Such an outcome is also in line with the only historical study of political connections in Germany (Ferguson and Voth 2008).

⁷⁶ In the following simply referred to as ‘price’ or ‘share price’. In the analyses we use the logarithmised form of this measure.

⁷⁷ For a more details on the distribution of the variables employed, see the appendix.

that many newly-founded firms entered the market. By contrast, firm age kept pace with calendar time after 1925. The economic and political situation in late Weimar Republic as well as under National Socialist rule apparently was not a favourable time for a start-up to enter the stock market. The share of firms actually seated in Berlin did not vary much and amounted to 22.89 percent, 22.65 percent and 24.18 percent, respectively.

Table 1: Average firm characteristics

	1913	1925	1938
Number of firms	843	1.064	521
Firm age in years	27.7	33.6	47.7
Joint stock capital	11.1	9.2	18.1
Distance to Berlin in km	246	245	244

Own calculations; for data, see text. Joint stock capital in million Reichsmark

Firm characteristics differed to a large extent between the various branches of the economy. Since the dataset comprises three periods, it reveals the sectoral change over time quite well. See tables 2 to 4 for an overview. Though the broad pattern is consistent among the various regime types, there are some remarkable differences. The banking sector, for instance, held a dominant position in terms of stock capital in Imperial Germany. In 1925, by contrast, banks were much less capitalised. A plausible reason might be the financial crises and the hyperinflation that shook Germany in its early years of democracy (Ritschl 2013, p. 3). At the same time, there was a massive concertation in the banking industry in the wake of World War I. After that large Berlin-based banks dominated the market (Abs 1978, pp. 45). This trend becomes manifest in the highly reduced average distance to the German capital. The growing importance of certain branches like the chemical industry is clearly visible in its average firm size.

Table 2: Firm characteristics by sector 1913

Sector	Firm age in years	Joint stock capital	Distance to Berlin in km	Number of firms
Banking	38.1	42.1	259	63
Insurance	53.2	6.5	201	48
Mining	33.0	17.7	324	100
Heavy industry	21.8	5.1	249	168
Light industry	24.7	3.6	268	118
Food processing	25.2	2.9	255	86
Transportation	25.8	13.1	222	68
Chemical industry	26.4	9.2	252	35
Public utility	22.3	30.7	196	32
Others	23.7	7.0	186	125
All firms	27.7	11.1	246	843

Table 3: Firm characteristics by sector 1925

Sector	Firm age in years	Joint stock capital	Distance to Berlin in km	Number of firms
Banking	47.0	16.3	186	51
Insurance	64.9	4.8	221	43
Mining	39.7	26.8	287	86
Heavy industry	28.2	5.4	254	245
Light industry	30.4	4.9	278	200
Food processing	37.1	4.0	305	77
Transportation	37.9	13.1	217	67
Chemical industry	32.0	17.5	244	53
Public utility	27.6	20.8	214	63
Others	29.6	3.8	195	179
All firms	33.6	9	245	1064

Table 4: Firm characteristics by sector 1938

Sector	Firm age in years	Joint stock capital	Distance to Berlin in km	Number of firms
Banking	58.9	23.9	265	50
Insurance	72.4	3.8	244	37
Mining	46.6	58.1	258	37
Heavy industry	40.1	6.9	286	79
Light industry	44.1	11.6	225	94
Food processing	47.7	5.4	294	65
Transportation	52.3	32.4	238	50
Chemical industry	43.1	32.9	191	31
Public utility	40.8	37.1	264	26
Others	40.0	6.5	153	52
All firms	47.7	18.1	244	521

Own calculations; for data, see text. Joint stock capital in million Reichsmark

There is a remarkable jump in the stock capital of the mining industry under National Socialist rule, possibly reflecting the fostering of the supply of domestic resources. The transportation sector underwent a similar development, whereas public utility companies played an important role throughout.

One weakness in the literature is certainly the lack of coherence in the definitions of political connections between different studies. For instance, a firm is considered connected if it provided financial donations or political support to a party, as in the case of Ferguson and Voth (2008). Both of these criteria are difficult to consistently survey, however. Especially for a sample like ours, consisting of various smaller parties, such task is virtually impossible.⁷⁸ Other authors like Daron Acemoglu et al. (2013) take the number of business interactions or any broadly defined ‘personal links’ to a politician as a proxy. An even vaguer criterion are family ties, as employed by Fisman (2001), Bunkanwanicha and Wiwattanakantang (2009) or Feng et al. (2015). Though they certainly do play an important role, especially in Asian countries, the arbitrary character of such a definition remains unsatisfactory.

In order to avoid these difficulties, we define a political connection in a simple but straightforward manner. A firm is considered connected if at least one member of the supervisory board is a current or a former member of parliament. Both of these groups are fully identifiable in official sources. Technically speaking, we determined connections by matching board members of every firm with MPs in the *Reichstag*. Information on these is listed in the *Reichstaghdbücher*.⁷⁹ Connections to the government arise simply out of the corresponding party affiliation.

Note that the supervisory board possessed a pivotal position in German stock company law. Since a direct monitoring of the management by single shareholders was impracticable, a powerful supervisory body was considered vital for an efficient and successful organisation of business (Burhop 2006, pp. 4). Most boards were dominated by large capital owners and representatives of banks or other companies. Main duties involved the supervision of executives and legal representation towards these in case of corporate litigation. However, in practice it even intervened in daily business from time to time (Lieder 2006, pp. 189). The shareholders elected the first supervisory board of a company. Afterwards, new board members could be designated by the board itself (Bayer and Burhop 2009). The actual amount of compensation

⁷⁸ Ferguson and Voth (2008) examine connections to the National Socialist Party, on which there is a vast amount of historical research.

⁷⁹ Along with the personal information of MPs, these parliamentary almanacs comprise the various laws that were passed, electoral and party statistics and the like. This matching was tremendously facilitated by the *Bayerische Staatsbibliothek*, which published an online database containing all relevant information.

was based on profit and was matter of extensive debate. Though there were differences across sectors, a considerable share of profit was spend to reward the board members. Also, the total amount increased over time (Burhop 2006, pp. 9).⁸⁰ The legal basis for board composition changed only moderately over time. An essential altering was certainly the new commercial code from 1937. The implementation of the *Führer* principle curtailed the supervisory board's power, also a maximum number of board members was set (Lieder 2006, pp. 331).

We can further subclassify a political connection, as our data distinguishes between links to both current and former members of parliament. Based on this information one can define three mutually exclusive categories: first, firms connected only to a politician which serves as MP for the first time in the current legislative period. Second, firms with a board member that was a former MP and third those, which were connected to a current MP that had been sitting in parliament for a longer than one legislative period (continuous MP).⁸¹ The respective shares are displayed in table 5 and illustrated graphically in figures 2 and 3. The lower part refers to connections to the governing party. Note that by definition, the share of such connected firms is lower or equal compared against all connections.

Table 5: Share of connected firms in the various periods

All connections	1913	1925	1938
Share of firms connected altogether	11.51	12.31	21.31
Share of firms connected only to former MP	7.83	6.20	7.87
Share of firms connected only to current MP	0.83	1.50	1.34
Share of firms connected to continuous MP	2.85	4.61	12.09
Connections to the governing party			
Share of firms connected altogether	5.22	10.43	14.20
Share of firms connected only to former MP	4.03	5.36	0.77
Share of firms connected only to current MP	0.24	1.41	1.34
Share of firms connected to continuous MP	0.95	3.67	12.09

Own calculations; for data see text.

In order to take into account the importance of a single politician, two measures of his potential political influence are built. First, we simply take the number of years a person served as a delegate. In many cases, there was a longer period of absence in-between. Therefore, we calculate in a second step the ratio of this time spent as an MP and the time since the first

⁸⁰ As per commercial code of 1987, board compensation could be paid from a company's profit that exceeded four percent of the paid-up capital (Burhop 2006, p. 8). Burhop (2006) investigates the mining and the manufacturing sector in Imperial Germany. In the latter, about 10 percent of profit were paid as board compensation.

⁸¹ There is a break in tracing former members of the Reichstag at World War I due to theoretical and practical considerations. Politicians during Weimar and NS time which were MP in Imperial times are not taken into account. However, their share was quite small.

election. This weighting scheme allows for possible times of absence from parliament, in which no political influence could have been gained.⁸² Second, we can identify the connected board members by name. That enables us to ascertain the total number of board seats held by a single person in our sample. Figure 3 displays the corresponding histograms. The distribution appears highly positively skewed: A vast majority of MPs represented only one firm, however, a few maintained a huge network of firm connections.⁸³ In 1913, for instance, *Georg Waldemar Mueller* – at that time however only a former MP – held board seats of no less than 17 companies listed on the Berlin Stock Exchange. In Weimar times, *Hermann Fischer* was linked to 15 firms in all. The weightiest connection to the National Socialist Party was *Emil Georg von Stauff* who occupied eight board seats in 1938.⁸⁴ Note that one highly interlinked person corresponds to multiple companies. In the case of *Waldemar Mueller*, for instance, 17 firms could take advantage from the network of this ‘heavyweight’.⁸⁵ The importance of such central figures becomes especially salient in the instance of industrialist *Albert Vögler*, whose rise began in late Imperial times as a confidant of steel tycoon *Hugo Stinnes*.⁸⁶ He intensified his political career in the 1920s, serving as long-term delegate for the DVP. Quite early, *Vögler* established links to the National Socialists, making him one of the weightiest economic leaders in the whole of interwar Germany (Rasch 2003).⁸⁷ Though over time the general distribution of board seats held appears very similar, the figure appears somewhat denser in 1938. One reason is given by the nature of the data itself. At that time, the total number of firms listed on the Berlin Stock Exchange was remarkably smaller. Only half the sample size compared to 1913 would involve an average drop in total board seats held by a single MP in equal measure.⁸⁸

⁸² By definition, this measure of political value is between zero and one. In the following analysis, the variable is denoted ‘tenure’.

⁸³ Note that personal interlocks were widespread among large German companies (Marx and Krenn 2012). However, here we consider not just business but also political networks.

⁸⁴ His prominence is reflected in the large reporting on his person in contemporary newspapers. See, for instance, *Deutsche Allgemeine Zeitung*, 3 October 1923; *Industrie- und Handelszeitung*, 6 October 1927 *Berliner Börsenzeitung*, 6 October 1937.

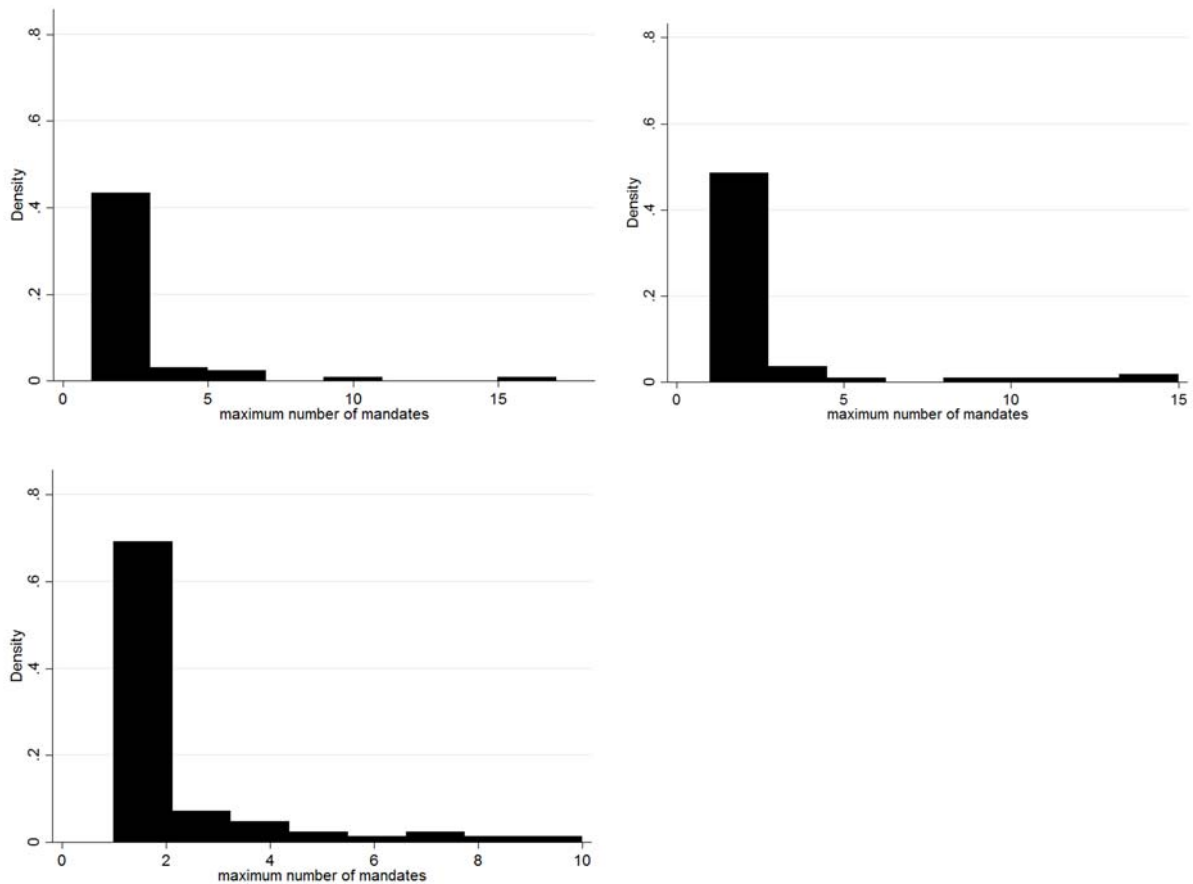
⁸⁵ Naturally, the distribution of the firms connected to MPs with multiple connections looks quite different from those presented here.

⁸⁶ *Hugo Stinnes*, internationally labelled ‘the octopus of German commerce’ (The Times, 12 July 1920), gained notoriety by his business practises during inflation. For a detailed picture of public perception of this outstanding figure see, for instance, Feldman (1998).

⁸⁷ In our sample *Albert Vögler* is quite well connected: he possessed board seats of 12 different companies in 1925. In the following period *Vögler* was still linked to 10 firms.

⁸⁸ Assuming that boards seats were randomly ‘drawn’ by MPs.

Figure 1: Distribution of maximum number of board seats held by connected MPs



Own calculations; the upper-left graph refers to 1913, the upper-right to 1925 and the lower-left to 1938.

As previously suggested, an important determinant of political influence is the respective party an MP is associated with. The weightiest in terms of political power was certainly the National Socialist Party after Hitler’s seizure of power in 1933. In time industry and commerce were gradually restructured on behalf of the NSDAP. Thus, the National Socialists were able to expand their purview in economy and society in a way that was unmatched by any government ever before in Germany (Zumpe 1978, pp. 123).⁸⁹ Prior to World War I the Social Democratic Party showed a reverse image. Although it held a majority of parliament seats – see figure 4 – and despite its modern party structure, it remained politically isolated throughout Imperial times (Berghahn 1994, pp. 201).⁹⁰ Likewise, the SPD was barely integrated in the economic field: no socialist delegate occupied a board up until the end of World War I.

⁸⁹ The party wielded influence in various ways. For instance, the *Schutzstaffel* played a central role in the Germany economy. It was involved in the formation of new domestic and abroad businesses and in the large-scale exploitation of forced labour. See Kaienburg (2003) for a comprehensive view. Seebold (1981, pp. 236) gives a detailed picture of the tight relationship between business and the National Socialist Party at firm level, as well as its implications and consequences using the example of the steel producer *Bochumer Verein*.

⁹⁰ On the basis of mainly ideological reason, it was successfully kept out of any government affairs. While at least at the federal level the party was not officially discriminated, the situation at the state level was quite different. There, the design of the franchise often resulted in an extremely low share of parliamentary seats despite a majority

A look at the evolution of connections in table 5 – illustrated graphically in Figure 1 – gives a first impression of which political links appeared most promising. Though the parliament in 1925 was far more powerful than in Imperial Germany, firms did not intensify their effort to establish links in terms of quantity of connections. In contrast, the share of interlinked firms nearly doubled in the last period. In 1938, about 20 percent of firms were connected, although the formal power of the parliament after the passage of the Enabling Act was virtually nil.⁹¹ Figure 2 gives a similar picture. It displays the connections to the governing party over time. The relatively lower amount in 1913 compared to 1925 is simply due to the fact that the government coalition was much broader in Weimar times.⁹² Being connected apparently promised some additional benefits under National Socialist rule. However, an alternative explanation for this pattern corresponds to the ability of a firm to survive. If a link to politics significantly increased the probability to remain listed after 1925, the corresponding share would be much higher in the final period.⁹³

in votes for the Social Democrats. For more details see, for instance, Lehmann-Hasemeyer et al. (2014) or Jones and Retallack (1992, pp. 49).

⁹¹ Political pressure by the National Socialist Party that tried to gain influence on the economy might well be a reason for the enlarged share of connected firms. Though plausible, as such, this argument is not documented in the literature. From a formal point of view, the choice of board members was still a privilege of the company's shareholders only (Lieder 2006, pp. 358).

⁹² As previously mentioned, there was no actual government in place in Imperial Germany. For an overview of governing parties, see table 6.

⁹³ That thesis is tested more explicitly the following section.

Figure 2: Share of connected firms by year

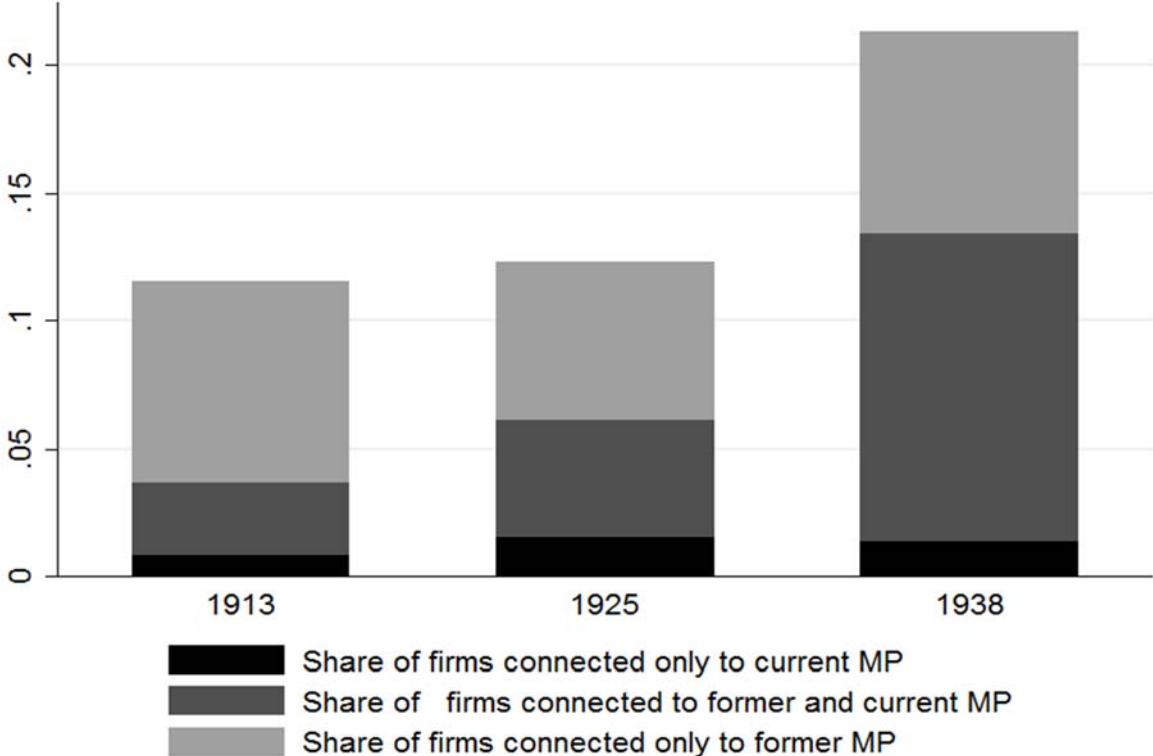
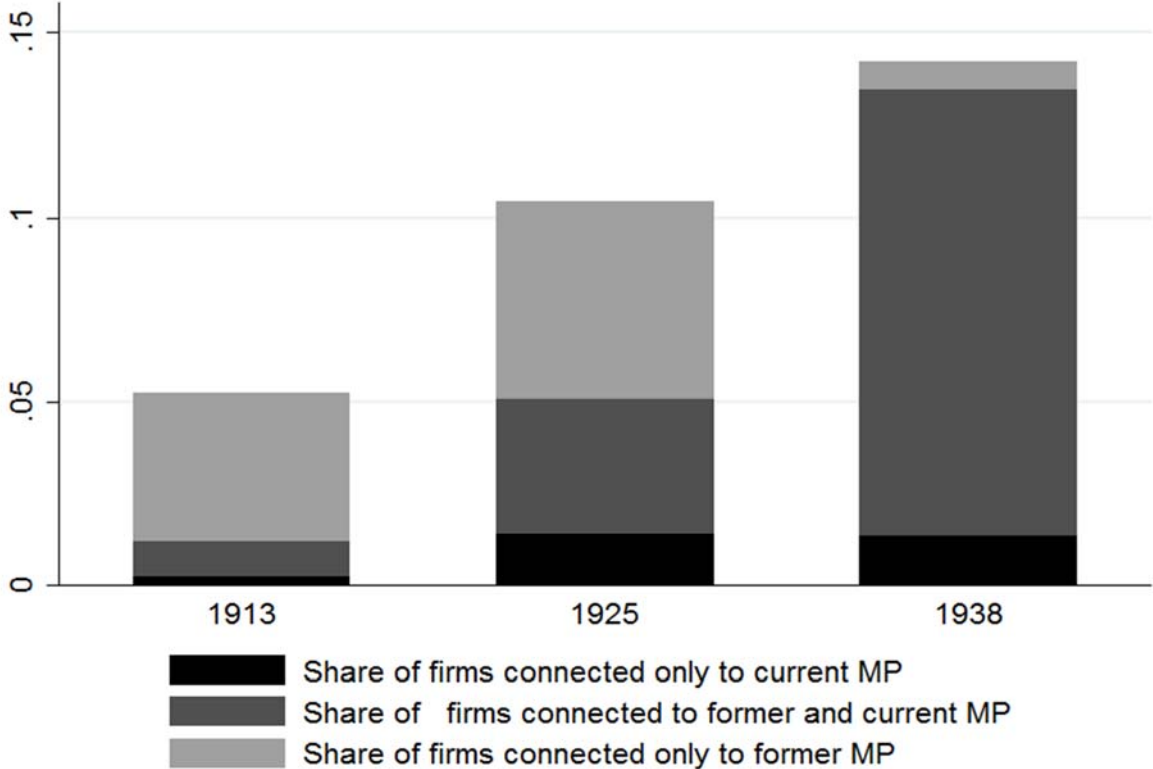


Figure 3: Share of government connected firms by year



Own calculations; for data, see text.

Table 6: Political parties with a connection to a firm

Party	number of connected firms	percentage of connected firms	governing party
Conservatives	25	24.0	yes
Left Liberals	31	29.8	
National Liberals	33	31.7	
Centre Party	12	11.5	yes
no party affiliation	3	2.9	
Total 1913	104	100.0	
BVP	2	1.5	yes
DDP	43	33.1	yes
DNVP	7	5.4	
DVP	55	42.3	yes
NSDAP	0	0.0	
SPD	12	9.2	
Centre Party	11	8.5	yes
Total 1925	130	100.0	
BVP	0	0.0	
DDP	5	4.5	
DNVP	2	1.8	
DSP	1	0.9	
DVP	21	18.9	
NSDAP	73	65.8	yes
SPD	0	0.0	
Centre Party	9	8.1	
Total 1938	111	100.0	

Own calculations, based on any type of connection to a party, including former ones; for data, see text.

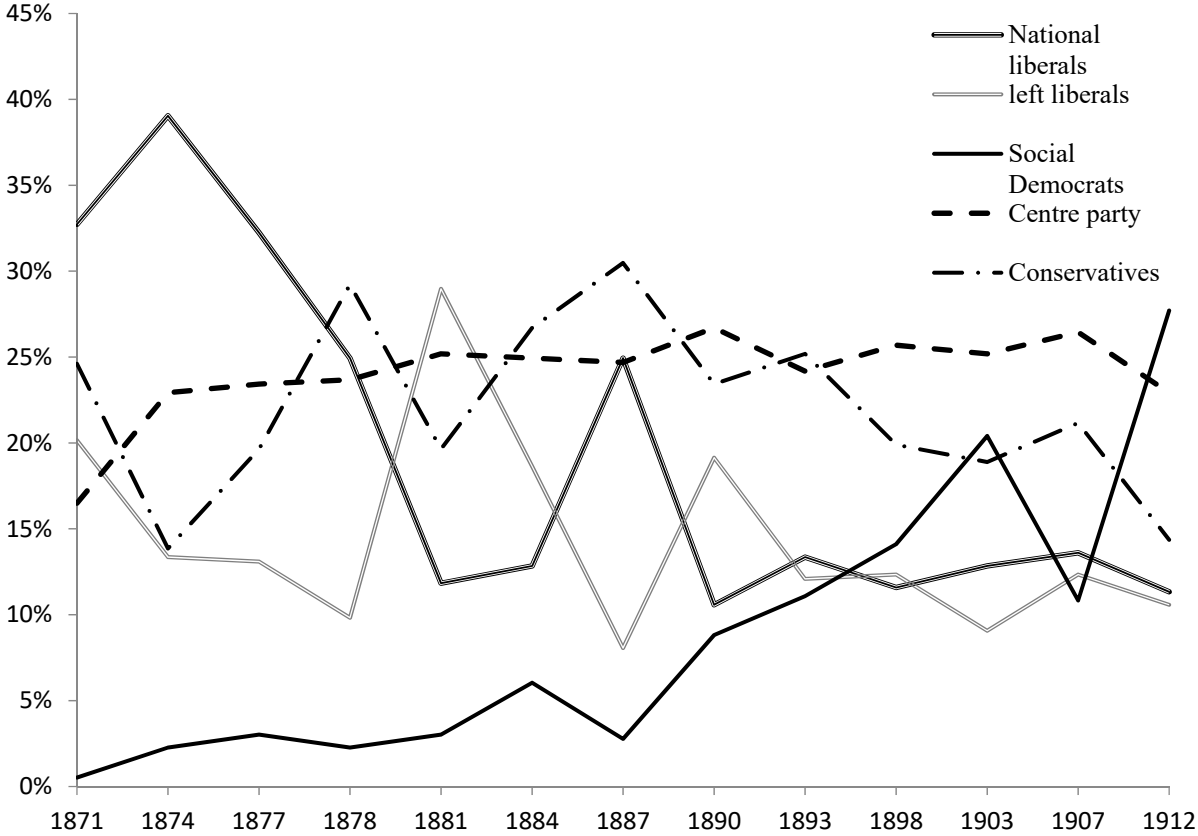
Political connections were not distributed among all parties in an equal manner. As mentioned before, the Social Democrats became the largest parliamentary group in the Reichstag after the election in 1912 – see figure 4. Still, no single stock company held a ‘socialist connection’ in Imperial Germany. The programmatic structure of the party was in fact not really favourable to big business. The SPD consisted in large parts of workers and members from the lower middle classes⁹⁴ (Berghahn 1994, pp. 208). Its basic political demands were practical social reforms along with a definite redistribution policy on the one hand and the implementation of Marxism on the other. The actual party programmes varied only slightly over time.⁹⁵ To a lesser extent,

⁹⁴ Nevertheless, Social Democratic Party was a role model for modern type of party. Tightly organised, the SPD was quite different from the other parties at that time, which were rather loose assemblies of notables. Also, it was widely integrated in everyday life and the social milieu of its voters – an equally high level of identification was only achieved by the Catholic Centre Party (Wehler 1994, pp. 83).

⁹⁵ Up until Weimar times, the *Erfurt Party Manifesto* of 1891 provided an ideological guideline that emphasized both practical and theoretical ideas. In the atmosphere of secession of left-wing parts of the Social Democrats, a

but similarly underrepresented, was the Catholic Centre Party. It possessed about 10 percent of all connections, while at the same time more than 20 percent of seats in parliament.⁹⁶ In contrast, the two liberal parties were linked to business to a great degree. Table 6 reveals that each of these accounted for roughly one third of all connections. A reason for this might be – in addition to the conception that a liberal legislation is generally beneficial for economic activity – that these two parties actively advanced the interests of large companies (Pohl 1995).

Figure 4: Distribution of parliament seats in Imperial Germany



Source: Ritter 1980, pp. 38.

In 1925 the picture had changed to a certain degree. Especially in the initial years following World War I, the Social Democratic Party was very supportive of the state. In fact, it became an integral part of the political system in the newly established democracy. As a consequence, it obviously looked promising for a firm to establish a link to the SPD as well.⁹⁷ The imbalance

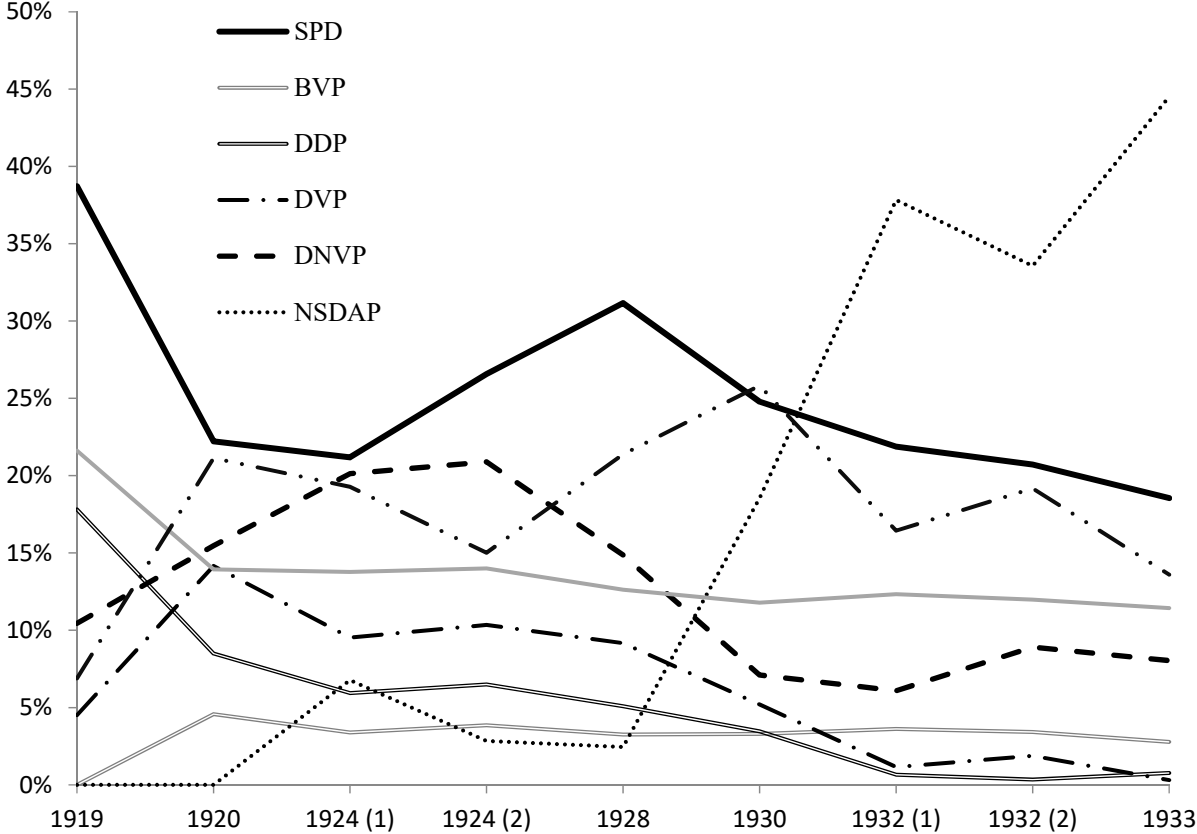
party convention in Görlitz agreed upon more conservative elements. Finally, in 1925 the main political objective was re-established: A society based on Marxist principles. For details of the various party manifestos see Treue (1954).

⁹⁶ That outcome is the more surprising, as the Centre Party proved to be very supportive of the government and was accordingly considered a ‘governing’ party in 1913.

⁹⁷ Still, the political atmosphere was far from being peaceful, without however arriving at a level of animosity as was existent during Imperial times (Lau 2008, pp. 30).

between the share of votes and the share of connections is not as distinct as in Imperial times, see figure 5. However, the dominant parties in terms of connectedness were still the right and left liberal parties, the DVP and DDP.

Figure 5: Distribution of parliament seats in the Weimar Republic



Source: Falter et al. 1986, p. 41. The figure in 1919 refers to the constituent National Assembly. In 1924 two elections were held (in May and December), just as in 1932 (July and November).

Such pattern seems to be persistent over time. Also in present day Germany, politicians of a conservative and liberal party are more likely to be affiliated to a company than their left-wing counterparts (Niessen and Ruenzi 2010).⁹⁸ That difference can be driven by ideology, as reflected in the respective party programme and the attitude towards economic policy in general. Naturally it seems irrational for an investor to link itself to a party which is opposed to business. However, the actual policy could largely differ from the public image drawn during campaigning. The National Socialist Party, for instance, often used anti-capitalist slogans (Lau

⁹⁸ The share of Social Democratic delegation with firm affiliation is surprisingly similar to that in Weimar with about 12 percent. As well, the best connected party is the liberal FDP.

2008, pp. 329; pp. 372).⁹⁹ At the same time, the NSDAP received substantial financial support from the German industry, at least in the late years of the Weimar Republic (Trumpp 1983).¹⁰⁰ Similarly, with regard to political parties, political connections are of varying importance for the different sectors of the economy. Table 7 displays the share of interlinked firms within the respective branches.

Table 7: Share of connections within sectors

	1913	1925	1938
Banking	41.3	15.7	30
Insurance	14.6	23.3	27
Mining	17	25.6	40.5
Heavy industry	7.7	7.3	15.2
Light industry	5.1	7.5	18.1
Food processing	2.3	9.1	12.3
Transportation	10.3	22.4	26
Chemical industry	8.6	7.5	16.1
Public utility	34.4	23.8	34.6
Others	4	9.5	13.5
All firms	11.5	12.3	21.3

Own calculations; for data, see text. Table contains the percentage share of overall connected firms in the respective within the respective sector.

There are some remarkable changes between the three periods. The overall increase of connected firms in 1938 – see figures 2 and 3 – is detectable also across branches. While in many cases there is only moderate altering, some sectors vary largely. Banks, for instance, highly interlinked in Imperial Germany, report a sharp drop until 1925. In the last period the share of connected banks recovered to a level that was, after all, 50 percent above average. That fits in well with the recent cross-country study by Matías Braun and Claudio Raddatz (2009). They find banks to be particularly prone to political ties. The importance of connections among insurances, on the other hand, grew steadily over time – as reflected in the pure share of connected firms. Two branches in our sample – public utility and transportation companies – are by the nature of their business dependent on local politics and the placing of public contracts. The transportation sector in particular is, moreover, subject to regulation as its business activity

⁹⁹ In particular, the paramilitary *Sturmabteilung* (SA), which played a decisive role during the seizure of power, had largely anti-capitalist and anti-establishment beliefs. However, in a large-scale purge at their highest level of command in 1934 the influence was basically eliminated. The National Socialists finally sided with the old elites (Rassow 1987, pp. 663).

¹⁰⁰ However, the actual importance of these financial donations is disputed in literature (Turner 1985).

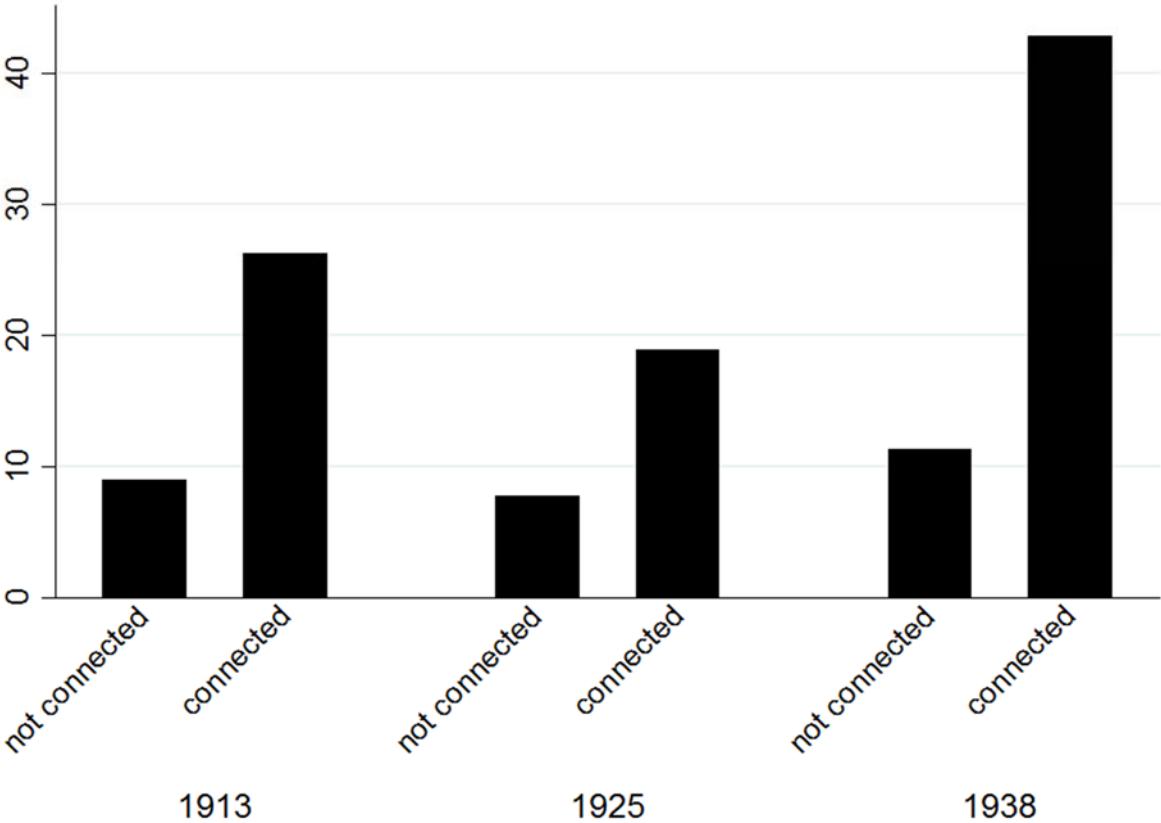
often requires governmental concessions or the like. Consequentially, these two sectors were highly interlinked.

After the National Socialists had seized power in 1933, they instantly took vigorous steps to strengthen the defence economy and to push the armament of the German military (Thomas 1966, p.62). The preparation of a large-scale military engagement potentially stressed the economy as a whole. However we assume that certain sectors were particularly affected. In our sample these were supposedly mining, heavy industry and chemical industry. As for the armament, the competences in National Socialist Germany were not distinctly set between military and civil bureaucracy, which led to an ongoing dispute (Bagel-Bohlen 1975, pp. 33). Whether the placing of contracts in that field was within the ambit of the party is therefore not clear, neither is the existence of any effect on firm performance. Indeed, the key armament sectors show remarkable figures in 1938. About 40 percent of mining companies were connected, which is the highest value of all industries. Though at a lower level, heavy and chemical industry were also highly connected. These possessed twice as many board members in parliament as in the period before. Apparently firms adapted to the new armament policy by securing many connections in the respective field. However, a deliberate appointment of National Socialist Party delegates in these key industries seems a plausible explanation for such outcome.

In addition to this general classification, we check how political connections were determined by firm characteristics in the following. Presumably, different kinds of companies were confronted with various incentives to establish a link to the parliament. As a consequence, firm characteristics differed largely in that regard. Already in Victorian Britain, older and larger firms were more likely to establish links with politics (Braggion and Moore 2013, pp. 156). Such result is also attained by Ferguson and Voth (2008). They detect firms connected to the National Socialist Party to be by far more capitalised than those without connection. This relationship applies not just in historical context, but also for recent times: Boubakri et al. (2008, pp. 660) and Faccio (2010, pp. 909) find firm size to be positively correlated with connectedness, in addition to other firm characteristics.¹⁰¹ Most of the studies considering a single country have the same findings.

¹⁰¹ Like the size of the supervisory board, leverage and number of employees. These are unfortunately not available for our historical dataset.

Figure 6: Joint stock capital by connectedness



Own calculation; Joint stock capital in million Reichsmark.

Figure 6 illustrates how much connected firms differed from others when it came to size. Though this measure is most salient, further firm characteristics are likely to determine the prevalence of a connection. Table 8 reports the respective mean values of various firm variables, subdivided into connected and non-connected. A simple t-test of difference in means indicates the probable differentials between those two groups regarding firm age, joint stock capital and geographic location of the headquarters.

Connected firms were significantly larger in terms of share capital throughout all periods. In 1938 the gap is most distinct, with connected firms found to be four times as large as non-connected ones – consistent with the findings of Ferguson and Voth (2008, p. 111). Though on average a connected firms was older in all regimes, the difference is significant only in 1925. The location of the headquarters – as expressed in distance to the seat of the parliament – did not vary significantly.

Table 8: T- test of difference in mean between of connected and non-connected firms

	Non-connected firms	Connected firms	Difference	t-statistic	p-value
1913					
Firm age in years	27.55	28.91	-1.36	-0.79	0.43
Joint stock capital	9085194	26270767	-17185572	-6.52	0
Distance to Berlin in km	244.68	255.24	-10.56	-0.53	0.59
1925					
Firm age in years	33	37.77	-4.77	-2.71	0.01
Joint stock capital	7794968	18909089	-11114121	-5.85	0
Distance to Berlin in km	246.53	235	11.53	0.67	0.5
1938					
Firm age in years	47.17	49.69	-2.53	-1.19	0.23
Joint stock capital	11374527	42767465	-31392937	-4.28	0
Distance to Berlin in km	240.31	259.44	-19.12	-0.94	0.35

Own calculations; for data, see text.

This relation is somewhat unexpected, other studies find the prevalence of a connection to be quite dependent on the location of a firm (Boubakri et al. 2008, p. 659). Moreover, a firm's geographical location has been emphasized in recent (historical) finance literature. Carsten Burhop and Sibylle Lehmann-Hasemeyer (2014) detect that the distance between the headquarters and stock exchange has a large influence of the listing decision of a firm. They believe that the reason lies in the asymmetric information between issuer and investor. Quite plausibly, such an asymmetry can be assumed when it comes to political information. In that respect a remotely located firm might have a disadvantage. As a consequence, it might be tempted to place one of its board members in the centre of political power.

This argument might be particularly relevant for smaller firms with fewer capacities to compile information in other ways. At the same time, the resources to appoint a politician might be given only to large companies. In order to clarify the relation we check whether there is an interaction effect of firm size and distance to Berlin.

Table 9: Logit regression of having any type of political connection

	1913		1925		1938	
Firm age in years	-0.00345 (0.647)	-0.00476 (0.539)	0.0101** (0.0473)	0.0107** (0.0377)	0.00911 (0.108)	0.00839 (0.161)
Distance to Berlin	0.000408 (0.523)	-0.000246 (0.730)	-0.000385 (0.493)	0.000135 (0.826)	0.000476 (0.411)	-0.000989 (0.167)
Joint stock capital	1.70e-08*** (0.00103)	1.10e-08** (0.0399)	1.57e-08*** (0.00243)	2.38e-08*** (4.25e-06)	9.11e-09 (0.407)	2.06e-09 (0.385)
Distance x Capital		3.31E-11 (0.120)		-3.16e-11 * (0.0645)		9.67e-11*** (0.000446)
Constant	-2.296*** (0)	-2.131*** (0)	-2.407*** (0)	-2.567*** (0)	-2.037*** (2.90e-08)	-1.842*** (1.85e-07)
N	843	843	1,064	1,064	521	521

Table shows regression coefficients of a logit regression of being connected at all. Branch dummies included. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 9 shows a logit regression of connectedness on various firm characteristics. The results are consistent with the differences in means as reported in table 8. Larger firms had a higher chance of being connected while firm age played a role in the Weimar Republic only. These relations did not change when including the interaction term. While not significant in Imperial Germany, in 1925 it was slightly negative, indicating that the advantage of size disappeared for distant firms. 1938 shows a reverse relation. A more accurate view reveals a sample split into four distance categories, as displayed in table 10. In 1913 larger firms were significantly better connected, regardless of their geographic location. During the following period such a relation holds only for the two subsamples that are nearest to Berlin. In 1938 that result is reproduced in mirror image: Only between the two groups remotely located from Berlin did the amount of a firm's share capital increase the probability of having an MP on its supervisory board. The thesis that political ties are established mainly by the major players is only valid for the German Empire and probably for a monarchy in general.¹⁰²

¹⁰² In that sense the result is in line with a common conception of Imperial Germany. This emphasizes the role of a small elite that dominated both the economic and the political sphere (Wehler 1994, pp. 56).

Table 10: Logit regression, segmented into distance categories

Distance to Berlin in km	up to 150	150 - 300	300 - 450	450 - 683
1913				
Joint stock capital	1.10e-08**	2.13e-08**	3.88e-08**	1.47e-08**
	-4.73E-09	-1.03E-08	-1.58E-08	-7.38E-09
Firm age in years	-0.017	-0.00816	-0.00258	0.0103
	-0.0124	-0.0265	-0.0244	-0.0136
Constant	-1.684***	-2.298***	-3.008***	-2.141***
	-0.484	-0.531	-1.112	-0.642
N	284	218	172	169
1925				
Joint stock capital	1.88e-08***	4.92e-08***	1.65E-08	2.93E-09
	-4.04E-09	-1.23E-08	-1.06E-08	-4.91E-09
Firm age in years	0.00678	0.0167	0.0111	0.0124
	-0.0078	-0.0114	-0.00884	-0.00985
Constant	-2.194***	-3.464***	-2.546***	-2.386***
	-0.339	-0.455	-0.324	-0.512
N	352	305	190	217
1938				
Joint stock capital	1.94E-09	1.89E-08	7.79e-08*	2.93e-08**
	-2.65E-09	-1.58E-08	-3.98E-08	-1.35E-08
Firm age in years	0.00458	0.0136	-0.00028	0.0107
	-0.00629	-0.012	-0.0148	-0.0139
Constant	-1.573***	-2.566***	-2.367***	-2.070***
	-0.433	-0.663	-0.729	-0.724
N	189	126	86	120

Table shows regression coefficients of a logit regression of being connected at all. Branch dummies included. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

In the first German democracy, the alliance of large business and high politics moved closer to Berlin. The major players in the province could not, however, exercise their influence until the National Socialist regime came into power. Apparently, in dictatorships, where decision-making does not take place transparently, political information is an extremely valuable asset.

Performance of politically connected firms

Whether political connections actually pay off is not solely reflected in their absolute or relative frequency. A view on firm performance allows for a more precise assessment of possible benefits. As described beforehand, most authors use event study methodology in order to appreciate the impact of a link to politics. The emergence of such a link is usually cases accompanied by a positive reaction of stock market investors. In the following, the impact on both market and accounting performance is studied by regressing corresponding measures on connectedness.

We use logarithmised end-of-year share prices as a simple market performance proxy. Note that share prices generally are not necessarily reflecting the actual performance of a firm, but rather the expectation of investors with regard to future development. However, given that these are profit maximising, the prevalence of a connection - if valuable - should have increased demand for a share: first, the respective information was open to the public. Contemporary press extensively publicised board memberships of members of the Reichstag. For instance, a journalist under the pseudonym *Morus* gave detailed information on the extent of firm affiliation of MPs and explicitly mentioned well-known political figures at that (Morus 1925; 1928). His articles were based on *Adressbuch der Direktoren und Aufsichtsräte*, a widely used handbook that listed all directors and supervisory board members of German stock companies. Also, more conservative and liberal newspapers reported on firm and industry affiliation of high-ranking politicians. There, various political careers were appreciated – along with the respective business positions. The list included some central figures like the leader of the National Liberal Party Ernst Bassermann (*Rheinisch Westfälische Zeitung*, 25 July 1917), the former Minister of the treasury Georg Gothein (*Deutscher Aussenhandel*, 13 August 1927) or the above mentioned vice speaker of parliament, Emil Georg von Stauß (*Berliner Börsen-Zeitung*, 6 October 1937). Moreover, annual company reports explicitly listed all persons of the supervisory board along with a possible parliament membership.¹⁰³ Even an average informed investor must have been aware of the existence of political connections. The Berlin Stock Exchange in the early 20th century was already largely efficient, even compared to today's standards.¹⁰⁴ Accordingly, a simple ordinary least squares regression displays the impact of a

¹⁰³ See, for instance, *Disconto-Gesellschaft. Geschäftsbericht für das Jahr 1927*. Such annual reports were often published in daily newspapers. Also, the stock manual used in this study was readily accessible to investors.

¹⁰⁴ Baltzer (2006), Gehrig and Fohlin (2006) or Gelman and Burhop (2008) detect weak information efficiency as defined by Fama (1970). Also, referring to the semi-strong form, prices reacted quite sensitively to political or economic information, see Burhop (2011a) or Lehmann-Hasemeyer et al. (2014)

political connection from an investors view. In addition, we measure accounting performance by taking return on assets as an additional dependent variable.¹⁰⁵ The effect of various political connection measures is estimated on the basis of the following equation:

$$Performance_i = \alpha + \beta * connection_i + \gamma * X_i + \varepsilon_i$$

The different types of political connections have been delineated above: an addition to overall links to politics, three mutually exclusive subcategories are included: These are defined as a board member which was a current MP only, a former MP only and a person that was continuously delegated respectively. Tables 11 to 16 contain the results. The outcome relating to the basic connection types are presented in models (1) and (2). Furthermore, governing parties are considered separately in (4). Those MPs with a large network, i.e. a large number of maximum board seats held, are included in model (3), in addition to the tenure variable. That contains the time a board member spent as a delegate, adjusted by possible breaks in-between. X_i represents the firm-specific control variables in our sample. These are the age of the firm, joint stock capital and distance from the headquarters to Berlin. Additionally, dummy variables are included for each sector.¹⁰⁶ Finally in models (5) and (6), these indicator variables are interacted with the connection dummy in order to identify the specific effect for each branch, both regarding overall connections and those to the governing party.

The number of observations in the regression model is smaller as compared to the whole sample of firms, for the most part since insurances are excluded: Their shares could only be traded under great restrictions as they only issued registered shares with limited transferability (Gelman and Burhop 2008, p. 4).¹⁰⁷ Also, the data availability is sometimes limited – historical records are rarely without any gap.

For Imperial Germany, our findings differ from most other studies. A political connection did not improve firm performance in any way. Regarding accounting, firms with a connection to a

¹⁰⁵ By regressing performance on various firm variables, including connectedness, we follow the same approach as the authors mentioned above. Of these, Mitchel and Joseph (2010, p. 467) and Faccio (2010, p. 914) also employ return on assets as a profitability measure. Using the end-of-year share price as performance proxy resembles the vast event study literature in that field.

¹⁰⁶ These performed quite differently over time. However, there is a broad pattern. The whole manufacturing sector plus mining and chemical companies were performing well on the stock exchange. Banks, on the other hand, showed a comparably low market value in all regime types. The other sectors behave inconsistently over time. The same holds for firm profitability in the form of returns on assets, which is far less affected by branch affiliation.

¹⁰⁷ Any transfer of such shares – *vinkulierte Namensaktien* – required the approval of the company.

heavyweight (number of board seats) even underperformed, which is, however, in line with the literature. Generally, larger firms were more successful in terms of both market valuation and profitability. The latter measure also took higher values for firms which were remotely located from Berlin. Though overall connections did not have an effect, the single sectors show significant variation. The food processing and the chemical industry, and, to a lesser extent, mining companies and light industry especially benefitted in terms of both share price and profitability, whereas banks and heavy industry underperformed if interlinked. This result applies almost equally to government connections. The results are a good fit to our expectation of the impact of a connection to the parliament in a monarchy and support Hans-Ulrich Wehler's argument of a relatively powerless Reichstag.

In 1925 profitability was not affected by either firm characteristics or any type of connection. The regression of share prices, however, reveals a large differences. A connection to an MP as such was insignificant.¹⁰⁸ Those firms connected to an MP whose party was part of the current government were rated much better on the Berlin Stock Exchange. If controlling for this type of political link, the sole connection effect even becomes negative. In contrast to Imperial times the government was an actual parliamentary one. Investors apparently realised that this widened influence could be utilised by a related politician – for the first time in German history. Moreover, those MPs with a large network could bring additional value to the firms they were linked with. Of all branches, banks were the biggest profiteers. Their share prices were much higher in case of a connection, even more so if that involved the governing party.¹⁰⁹ After times of huge monetary uncertainty, the stock market was apparently neuralgic with respect to financial institutes. The overall branch effect is, accordingly, strongly negative. A tie to politics, however, promised some safety for the investment in the corresponding share. The demand for security particularly regarding financial institutes has also been delineated in the literature, alongside the positive effect of a respective political connection (Acemoglu et al. 2013). Finally, both larger and older firms were assessed favourably in 1925.

Under National Socialist rule, the general characteristics in terms of share capital, age and location of a firm lost their relevance for market performance. In that final period, however, political connections did not just became widely established, as previously shown, but also proved quite effective. As the *Reichstag* itself was just a false front of parliamentarism and

¹⁰⁸ That refers to overall connectedness as well as to the various subcategories. A board member that was a current MP was not regarded more advantageous than a former politician or vice versa.

¹⁰⁹ Also mining and light industry could enjoy some advantages from such a connection. For most other sectors, however, there was no distinct effect.

without any decisive power, such outcome had to be driven by either improved access to political information or a probable direct exercise of power.

Taking a closer look, the insignificant effect of a government connection does not fit the mould. At first sight it even looks counter-intuitive. A link to the National Socialist Party, now ruling with absolute power, did not have an impact on the market valuation of a firm. Controlling for that, the effect of the simple connection actually increases.¹¹⁰ There is a reasonable interpretation however, considering the previous period. There, long-serving and influential business leaders were believed to give a firm an advantage. Most of these persons dropped out of the parliament after the seizure of power. From then on the Reichstag basically comprised veteran National Socialist Party members (Hubert 1992, pp. 361). The old economic elites rarely were NS party members but mainly former MPs (of other parties). Accordingly, this category of connection brought along the most benefits. Firms connected to only current on the other hand did not perform well.¹¹¹ Instead of NS veterans, investors have realised the advantage of an established economic network, indicating their preference for stability in times of (political) change. Likewise, the impact on prices is quite pronounced when the economic heavyweights are considered. As a consequence thereof, the probable benefit of a connection can be mostly attributed to favourable access to a network and the consequential information. A direct influence on politics on the other hand does not correspond to our outcome. The result is broadly consistent with Ferguson and Voth (2008). In an analogy to their finding that only an early ‘bet’ on Hitler paid off, we do not reveal a distinct effect for sole connections to the NSDAP. The economic *Mitläufer* were not particularly well-off in National Socialist Germany. Banks, considered separately, did perform relatively well if connected. The respective interaction term shows the least negative coefficient.¹¹² Though consistent with the share price regression, an expropriation effect of Jewish assets still seems implausible. Due to the favourable acquisitions in the wake of *Aryanisation*, involved banks are expected to display great degree of profitability. Such a relation is not reflected in the outcome in table 16: all connection measures remain insignificant with regard to the return on assets in 1938. Firms potentially affected by the German armament attempts were highly connected in the last period, see table 7. However, they could not utilise a political connection if in place. The interaction terms of mining, heavy and chemical industry do not differ substantially from other branches.

¹¹⁰ Note that the only legal party at that time was the NSDAP. Therefore, long-lasting and ‘weighty’ connections, which also include other parties, have a higher probability to be found in the overall connection group.

¹¹¹ Over time, the composition of the parliament was barely altered (Hubert 1992, pp. 361). Accordingly, the share of firms connected to only current MPs amounted to only 1.24 percent.

¹¹² The net effect of a bank connection is – as for most other sectors – positive, given the large positive impact of the connection dummy itself.

Firms which were directly dependent on public contracts – like transportation and public utility companies – performed relatively poorly in terms of both prices and the return on assets, no matter whether related to any politician or to the government. Under the two prior regimes there is no distinct positive impact, either. Preferred access to public contracts due to a connection is not detectable in our data – despite fierce public discussion about such affairs (Klein 2014, pp. 109, pp. 298). Such a direct form of political corruption at a high level was apparently not widespread in Germany in the first half of the 20th century.

In neither regime can we detect a pronounced effect on actual firm profitability. Political connections did not have a real impact on performance in terms of returns on assets, which is well in line with previous work. Instead, these links to the parliament worked as a signal for stock market investors and end-of-year share prices were affected. However, that effect depended on various factors. Unlike most of the literature, we fail to find an overall positive impact of a political connection. The hypothesis of effectiveness of a connection cannot be corroborated fully, but is valid in certain regimes only. A link to politics mattered in the democratic Weimar Republic as well as under National Socialist rule. In a monarchy like Imperial Germany, it was of no value.

Whether a political connection actually paid off depended heavily on the political environment in the previous literature. Our particular sampling allows for reformulating this point: looking at the very same country, the value of a political connection does depend on the specific regime type.

Firm characteristics are another important factor. Likewise, in accordance with our hypothesis, different types of connections were of varying impact. This depended heavily on the position of the respective MP. Political and economic heavyweights mattered mostly for the value of a political connection.

Table 11: OLS regression of share prices 1913

VARIABLES	(1) logp	(2) logp	(3) logp	(4) logp	(5) logp	(6) logp
Joint stock capital	3.85e-09*** (0.00978)	3.86e-09*** (0.00876)	3.95e-09*** (0.00895)	3.81e-09** (0.0113)	3.78e-09*** (0.00963)	3.70e-09** (0.0111)
Firm age	0.000748 (0.675)	0.000742 (0.669)	0.000688 (0.697)	0.000755 (0.671)	0.000779 (0.669)	0.000803 (0.660)
Distance to Berlin	0.000209 (0.240)	0.000208 (0.244)	0.000209 (0.237)	0.000208 (0.250)	0.000193 (0.269)	0.000191 (0.281)
Connected altogether	-0.00128 (0.987)			-0.0228 (0.764)	-0.359*** (1.16e-08)	-0.418*** (4.61e-05)
Connected only to current MP		0.00553 (0.980)				
Connected only to former MP		0.00892 (0.912)				
Connected to continuousMP		-0.0312 (0.775)				
No of board seats			-0.00391 (0.399)			
Tenure			0.0151 (0.906)			
Connected to governing party				0.0474 (0.629)		0.0838 (0.249)
Interaction Banking					0.226*** (9.02e-06)	0.251*** (9.71e-05)
Interaction Mining					0.568*** (7.56e-10)	0.587*** (3.29e-08)
Interaction heavy industry					0.286*** (6.49e-10)	0.316*** (1.81e-06)
Interaction light industry					0.409*** (1.21e-08)	0.440*** (8.19e-08)
Interaction food processing					1.170*** (1.79e-10)	1.230*** (7.37e-08)
Interaction transportation					0.353*** (3.42e-06)	0.364*** (4.29e-06)
Interaction chemical industry					1.018*** (3.77e-10)	1.023*** (7.40e-10)
Interaction public utility					0.173*** (1.53e-05)	0.195*** (0.000246)
Constant	4.595*** (0)	4.595*** (0)	4.597*** (0)	4.595*** (0)	4.617*** (0)	4.617*** (0)
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.074	0.074	0.074	0.074	0.089	0.090
N	825	825	825	825	825	825

Table contains OLS regression results of the logarithmised share price on various connection und firm characteristic measures. For details see text. Firm age in years, distance in kilometres, and stock capital in Reichsmark. The sector indicator variable 'others' is omitted. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 12: OLS regression of profitability 1913

VARIABLES	(1) RoA	(2) RoA	(3) RoA	(4) RoA	(5) RoA	(6) RoA
Joint stock capital	1.72e-10** (0.0389)	1.77e-10** (0.0355)	2.02e-10** (0.0304)	1.67e-10* (0.0604)	1.72e-10* (0.0572)	1.66e-10* (0.0790)
Firm age	-0.000342 (0.277)	-0.000346 (0.258)	-0.000356 (0.253)	-0.000342 (0.276)	-0.000363 (0.243)	-0.000361 (0.243)
Distance to Berlin	4.10e-05** (0.0420)	4.03e-05** (0.0455)	4.12e-05** (0.0396)	4.08e-05** (0.0438)	3.81e-05** (0.0476)	3.78e-05** (0.0478)
Connected altogether	-0.00732 (0.404)			-0.00987 (0.428)	-0.0585*** (3.78e-08)	-0.0657*** (0.000357)
Connected only to current MP		-0.00208 (0.883)				
Connected only to former MP		-0.00231 (0.819)				
Connected to continuousMP		-0.0230 (0.290)				
No of board seats			-0.00140* (0.0849)			
Tenure			0.000897 (0.932)			
Connected to governing party				0.00542 (0.719)		0.00869 (0.541)
Interaction Banking					0.0342*** (8.79e-07)	0.0378*** (0.000242)
Interaction Mining					0.0612*** (8.90e-09)	0.0639*** (9.34e-07)
Interaction heavy industry					0.0498*** (4.98e-10)	0.0540*** (3.13e-05)
Interaction light industry					0.0413*** (1.29e-09)	0.0457*** (0.000173)
Interaction food processing					0.110*** (2.85e-09)	0.117*** (7.36e-06)
Interaction transportation					0.0826*** (2.57e-07)	0.0848*** (3.37e-07)
Interaction chemical industry					0.156*** (0)	0.158*** (9.78e-11)
Interaction public utility					0.0352*** (1.64e-07)	0.0382*** (8.36e-05)
Constant	0.0502*** (0.000507)	0.0501*** (0.000494)	0.0506*** (0.000436)	0.0501*** (0.000504)	0.0536*** (0.000336)	0.0537*** (0.000321)
Sector Dummies	Yes	Yes	Yes		Yes	Yes
R-squared	0.084	0.085	0.086	0.084	0.099	0.099
N	797	797	797	797	797	797

Table contains OLS regression results of the logarithmised share price on various connection und firm characteristic measures. For details see text. Firm age in years, distance in kilometres, and stock capital in Reichsmark. The sector indicator variable 'others' is omitted. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 13: OLS regression of share prices 1925

VARIABLES	(1) logp	(2) logp	(3) logp	(4) logp	(5) logp	(6) logp
Joint stock capital	9.01e-09*** (0.00789)	9.01e-09*** (0.00958)	8.14e-09*** (0.00524)	8.47e-09*** (0.00727)	8.65e-09*** (0.00720)	8.02e-09*** (0.00656)
Firm age	0.0133*** (0.00173)	0.0134*** (0.00217)	0.0135*** (0.00153)	0.0134*** (0.00195)	0.0138*** (0.00182)	0.0139*** (0.00193)
Distance to Berlin	0.000265 (0.375)	0.000265 (0.372)	0.000250 (0.381)	0.000246 (0.401)	0.000231 (0.443)	0.000218 (0.464)
Connected altogether	0.181 (0.255)			-0.770* (0.0518)	-0.735*** (1.78e-08)	-1.619*** (0.00399)
Connected only to current MP		0.0932 (0.866)				
Connected only to former MP		0.0755 (0.694)				
Connected to continuousMP		0.376 (0.256)				
No of board seats			0.0377* (0.0888)			
Tenure			0.0520 (0.849)			
Connected to governing party				1.079** (0.0326)		1.105* (0.0585)
Interaction Banking					1.730*** (2.09e-09)	1.840*** (1.28e-08)
Interaction Mining					1.124*** (2.96e-09)	0.906*** (1.62e-05)
Interaction heavy industry					0.876*** (3.99e-09)	0.868*** (2.82e-09)
Interaction light industry					1.193*** (0)	1.048*** (3.41e-07)
Interaction food processing					0.736*** (0)	0.515*** (0.000932)
Interaction transportation					0.950*** (1.39e-07)	0.864*** (4.02e-07)
Interaction chemical industry					0.408*** (1.25e-06)	0.467*** (2.55e-06)
Interaction public utility					0.917*** (2.24e-06)	0.800*** (8.81e-06)
Constant	1.423*** (1.27e-06)	1.422*** (1.47e-06)	1.427*** (1.68e-06)	1.434*** (1.40e-06)	1.481*** (1.20e-06)	1.485*** (1.41e-06)
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.185	0.186	0.189	0.191	0.193	0.199
N	887	887	887	887	887	887

Table contains OLS regression results of the logarithmised share price on various connection und firm characteristic measures. For details see text. Firm age in years, distance in kilometres, and stock capital in Reichsmark. The sector indicator variable 'others' is omitted. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 14: OLS regression of profitability 1925

VARIABLES	(1) RoA	(2) RoA	(3) RoA	(4) RoA	(5) RoA	(6) RoA
Joint stock capital	-6.11e-09 (0.401)	-6.06e-09 (0.402)	-6.48e-09 (0.396)	-6.22e-09 (0.400)	-6.75e-09 (0.395)	-6.98e-09 (0.393)
Firm age	0.0372 (0.328)	0.0374 (0.327)	0.0375 (0.327)	0.0373 (0.329)	0.0370 (0.332)	0.0371 (0.333)
Distance to Berlin	-0.000662 (0.264)	-0.000663 (0.268)	-0.000708 (0.263)	-0.000670 (0.271)	-0.000724 (0.266)	-0.000740 (0.273)
Connected altogether	-0.356 (0.304)			-0.488 (0.466)	-0.0271*** (0.00480)	-0.252 (0.537)
Connected only to current MP		-0.614 (0.348)				
Connected only to former MP		-0.244 (0.386)				
Connected to continuousMP		-0.410 (0.323)				
No of board seats			0.0283 (0.334)			
Tenure			-0.578 (0.259)			
Connected to governing party				0.157 (0.749)		0.325 (0.576)
Interaction Banking					-0.422 (0.335)	-0.398 (0.329)
Interaction Mining					-0.00890 (0.814)	-0.108 (0.591)
Interaction heavy industry					0.125 (0.282)	0.123 (0.280)
Interaction light industry					-2.315*** (1.07e-06)	-2.387*** (5.48e-08)
Interaction food processing					-0.529 (0.339)	-0.635 (0.367)
Interaction transportation					0.438 (0.289)	0.368 (0.275)
Interaction chemical industry					-0.162 (0.350)	-0.264 (0.439)
Interaction public utility					0.0421 (0.527)	-0.0325 (0.812)
Constant	-0.908 (0.357)	-0.912 (0.355)	-0.910 (0.356)	-0.906 (0.356)	-0.918 (0.361)	-0.917 (0.361)
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.008	0.008	0.008	0.008	0.009	0.009
N	684	684	684	684	684	684

Table contains OLS regression results of the logarithmised share price on various connection und firm characteristic measures. For details see text. Firm age in years, distance in kilometres, and stock capital in Reichsmark. The sector indicator variable 'others' is omitted. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 15: OLS regression of share prices 1938

VARIABLES	(1) logp	(2) logp	(3) logp	(4) logp	(5) logp	(6) logp
Joint stock capital	2.98e-10 (0.127)	3.03e-10 (0.120)	2.68e-10 (0.243)	2.99e-10 (0.126)	3.17e-10 (0.118)	3.18e-10 (0.119)
Firm age	0.00105 (0.416)	0.00102 (0.439)	0.000931 (0.457)	0.00105 (0.413)	0.00105 (0.445)	0.00106 (0.445)
Distance to Berlin	7.10e-05 (0.518)	7.03e-05 (0.537)	6.62e-05 (0.542)	6.75e-05 (0.553)	6.65e-05 (0.574)	6.38e-05 (0.602)
Connected altogether	0.0970*** (0.00152)			0.137** (0.0142)	0.212*** (3.43e-06)	0.228*** (5.67e-06)
Connected only to current MP		0.130 (0.204)				
Connected only to former MP		0.120*** (0.00717)				
Connected to continuousMP		0.0783** (0.0456)				
No of board seats			0.0199** (0.0376)			
Tenure			0.00862 (0.820)			
Connected to governing party				-0.0598 (0.392)		-0.0381 (0.643)
Interaction Banking					-0.0533* (0.0625)	-0.0415 (0.389)
Interaction Mining					-0.116** (0.0256)	-0.101 (0.173)
Interaction heavy industry					-0.150*** (0.000290)	-0.131* (0.0625)
Interaction light industry					-0.0967*** (9.60e-05)	-0.0973*** (5.85e-05)
Interaction food processing					-0.136*** (9.55e-05)	-0.128*** (0.00422)
Interaction transportation					-0.109*** (0.000451)	-0.0967** (0.0494)
Interaction chemical industry					-0.148*** (0.00103)	-0.148*** (0.000907)
Interaction public utility					-0.287*** (1.01e-07)	-0.266*** (0.000383)
Constant	4.593*** (0)	4.591*** (0)	4.604*** (0)	4.591*** (0)	4.577*** (0)	4.577*** (0)
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.141	0.142	0.143	0.142	0.146	0.146
N	473	473	473	473	473	473

Table contains OLS regression results of the logarithmised share price on various connection und firm characteristic measures. For details see text. Firm age in years, distance in kilometres, and stock capital in Reichsmark. The sector indicator variable 'others' is omitted. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 16: OLS regression of profitability 1938

VARIABLES	(1) RoA	(2) RoA	(3) RoA	(4) RoA	(5) RoA	(6) RoA
Joint stock capital	-2.13e-12 (0.863)	-1.34e-12 (0.916)	-4.65e-12 (0.689)	-1.98e-12 (0.878)	-1.02e-11 (0.426)	-9.98e-12 (0.436)
Firm age	-8.12e-05 (0.739)	-8.27e-05 (0.735)	-9.02e-05 (0.710)	-7.93e-05 (0.742)	-5.97e-05 (0.817)	-5.68e-05 (0.824)
Distance to Berlin	-4.92e-06 (0.828)	-5.15e-06 (0.820)	-5.76e-06 (0.802)	-5.48e-06 (0.809)	-6.38e-06 (0.779)	-6.84e-06 (0.765)
Connected altogether	0.00433 (0.457)			0.0115* (0.0682)	0.00269 (0.468)	0.00553* (0.0656)
Connected only to current MP		0.00619 (0.301)				
Connected only to former MP		0.00893 (0.180)				
Connected to continuousMP		0.00124 (0.839)				
No of board seats			0.00180* (0.0704)			
Tenure			-0.00472 (0.523)			
Connected to governing party				-0.0106 (0.103)		-0.00674 (0.168)
Interaction Banking					-0.00341 (0.503)	-0.00132 (0.828)
Interaction Mining					0.0270** (0.0232)	0.0297** (0.0234)
Interaction heavy industry					-0.00490 (0.363)	-0.00155 (0.823)
Interaction light industry					0.0173*** (6.94e-05)	0.0172*** (5.47e-05)
Interaction food processing					0.00713* (0.0947)	0.00852* (0.0793)
Interaction transportation					-0.0263*** (1.95e-05)	-0.0240*** (0.000231)
Interaction chemical industry					0.00429 (0.574)	0.00417 (0.579)
Interaction public utility					-0.0117*** (0.000436)	-0.00785* (0.0716)
Constant	0.0464*** (0.000158)	0.0461*** (0.000187)	0.0473*** (0.000129)	0.0460*** (0.000174)	0.0460*** (0.000280)	0.0460*** (0.000258)
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.011	0.011	0.012	0.012	0.015	0.015
N	480	480	480	480	480	480

Table contains OLS regression results of the logarithmised share price on various connection und firm characteristic measures. For details see text. Firm age in years, distance in kilometres, and stock capital in Reichsmark. The sector indicator variable 'others' is omitted. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

One could argue that the results of the above analysis are driven by the fact that politicians selected themselves in the largest and most successful firms. Table 7 reveals significant differences between connect and non-connected firms in all three periods. In order to address a possible selection bias, further tests are applied.

First, we consider only those 265 firms which were continuously listed at Berlin over the entire period of sampling.¹¹³ By doing so we obtain a balanced panel dataset which allows for a fixed-effects estimation. The general model resembles the ordinary least squares regression equation. However, time-invariant variables drop out.¹¹⁴ Along with these, unobserved firm-specific factors are controlled for. The impact of the various regime types is tested by interacting a respective indicator variable with connectedness. The outcome with regard to logarithmised share prices is presented in table 17. Just as before, we consider simple connections and those to the government. Including interaction terms of connectedness and sector affiliation in models (2) and (4) barely alters the coefficients. Also, the respective sectors were largely unaffected.¹¹⁵ An overall impact of a political connection is non-existent considering continuously listed firms only. The different regime types show some variation however. The Imperial period exhibits the highest levels of share prices. In 1925 by contrast, these were exceptionally low. There, interlinked firms did not perform differently. Under National Socialist rule a significant effect manifested. That however is diametrically opposed to the OLS results. All types of political connections had a negative effect on firm performance. '

Considering the continuously listed firms only reveals no explicit benefit with regard to share prices. Returns on assets show no significant results at all. These are reported in the appendix. Altogether we fail to reproduce the previous results. Admittedly, the selection of firms into the panel dataset is strongly biased. Listing decisions over time were not fully random, but in fact depended on performance itself. Further, there is strong evidence that a political connection had large influence on the probability of a firm to remain listed and accordingly enter the panel.¹¹⁶ This is examined separately in a survival analysis of firms in the following section.

¹¹³ These are 265 firms in total. The share of those connected to any MP and to the government respectively are 13.7 and 6.7, which compare approximately to the single periods.

¹¹⁴ These are distance to Berlin, sector affiliation and firm age, which is just another measure for the time period. Stock capital on the other hand varies over time and therefore is included.

¹¹⁵ Only the chemical industry was affected significantly. There, a government connection had an even negative effect.

¹¹⁶ Among other authors, Filatotchev and Toms (2003), Faccio et al. (2006) or Grossman and Woll (2014) provide direct or indirect evidence.

Table 17: Fixed effect panel data regression of share prices

	overall connections		connections to the governing party	
	(1)	(2)	(3)	(4)
Joint stock capital	2.73e-09 (0.126)	2.42e-09 (0.227)	2.48e-09 (0.181)	3.58e-09* (0.0907)
Connection	0.179 (0.294)	0.0852 (0.797)	0.908 (0.151)	0.433 (0.565)
1925	-2.142*** (0)	-2.138*** (0)	-2.122*** (0)	-2.122*** (0)
1938	-0.164*** (0.000373)	-0.163*** (0.000458)	-0.182*** (3.70e-06)	-0.185*** (3.58e-06)
Interaction x 1925	0.189 (0.434)	0.248 (0.265)	-0.555 (0.422)	-0.363 (0.486)
Interaction x 1938	-0.415** (0.0408)	-0.435** (0.0221)	-1.154* (0.0753)	-1.133** (0.0403)
Constant	4.981*** (0)	4.986*** (0)	4.989*** (0)	4.974*** (0)
Branch interaction		yes		yes
Observations	767	767	767	767
R-squared	0.723	0.728	0.723	0.730
Number of firms	265	265	265	265

Table contains fixed-effects (within) regression results of the logarithmised share price on various connection and firm characteristic measures. The group variable is firm. For details see text. Firms' age in years, stock capital in Reichsmark. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

In addition, we check the robustness of our results by applying a propensity score matching. Introduced by Rosenbaum and Rubin (1983), it helps to identify the causal effect of a certain treatment on individuals. While common in medical research, this technique is now also well-established in social sciences mainly in the evaluation of policies such as labour market programmes (Heckman et al. 1999; Imbens and Wooldridge 2009). Faccio et al. (2006) use matching for the valuation of political connections regarding a potential bailout, using a slightly different approach however.

The general principle is relatively simple and straightforward: instead of comparing the performance of connected firms with all unconnected ones, only those with very similar characteristics are taken as a reference. If one assumes that the overall performance is reflected in these characteristics, the profit- or prestige-seeking politician should have chosen the reference firm with equal probability and no selection bias would occur.

More precisely, every firm that was given the ‘treatment’ of a political connection is matched with one or more firms that exhibit very similar characteristics but did not receive that treatment. Subsequently, the two groups are compared regarding the outcome variables in order to assess the effect of a political connection. The central aspect, the matching itself, consists of two parts. First, the probability of being in the treatment, that is, the connected group is estimated using a logit-model based on the basic firm characteristics. The results of that estimation are shown in the appendix. From this, a propensity score for every single firm is derived, reflecting the probability of receiving a treatment of having a certain political connection. Second, every connected firm is matched with those three non-connected firms whose propensity score is closest. Using more than one match reduces the risk of an accidental result. As our sample is relatively small, so is the set of covariates. We therefore also match the connected firms with their three closest competitors.¹¹⁷ This so-called nearest neighbour matching creates a control outcome variable which can be interpreted as the firm’s counterfactual performance. A standard t-test for the difference between the two means can then be interpreted as the sole treatment effect.

Tables 18 and 19 present the final outcome regarding logarithmised share price and the return on assets, respectively. For of all three regime types, connected firms are checked against their counterparts – matched on the basis of propensity scores. In addition, firm characteristics of treated and matched firms are compared in order to check that the latter are a good fit.¹¹⁸ The results basically resemble those obtained by OLS. Firm probability in terms of the return on assets is completely unrelated to political connections – considering both regular MPs and members of the governing party.

With regard to share prices, a connection in Imperial Germany remains ineffective, even when the connected MP is a member of the governing party, i.e. Centre Party or Conservatives. In the Weimar Republic a mere connection to just any politician did not improve market performance. However, the share price of a firm linked to the government was significantly higher. To that effect, the democratic nature of the Weimar constitution is also reflected, quite precisely, in the propensity score matching specification.

¹¹⁷ Using two and four – or even more than four – matched firms yields similar results.

¹¹⁸ An appropriate control group requires the firm characteristics to be as similar as possible.

Table 18: Propensity score matching results regarding logarithmised share price

	Firms treated with connection	Matched firms	t-stat/z-stat	Firms treated with government connection	Matched firms	t-stat/z-stat
1913						
Joint stock capital	27	28	-0.19	35	34	0.11
Firm age	26	26.7	-0.28	26.2	25.1	0.31
Distance Berlin	254.5	274	-0.68	265.6	133	0.75
log price	4.85	4.86	-0.18	4.91	4.84	1.06
1925						
Joint stock capital	23	20	0.65	25	25	0.04
Firm age	36.3	38	-0.69	35.7	36.5	-0.06
Distance Berlin	315.6	310.8	0.18	224.17	208.2	-0.57
log price	2.61	2.39	1.64	2.79	2.51	1.69*
1938						
Joint stock capital	34	27	0.95	42	32	0.9
Firm age	48.4	49.1	-0.23	48.4	51.5	-0.88
Distance Berlin	259.8	256.6	0.11	245.5	398.5	-1.35
log price	4.87	4.81	1.81***	4.86	4.79	1.38

The table compares firms whose board members are MP or MP of the governing party with non-connected one by means of standard t and z-tests respectively; Joint stock capital in million Reichsmark; significance level indicated by p-values: *** p<0.01, ** p<0.05, * p<0.1

The picture in 1938 reads analogous to our previous results as well. A connection to the ruling NSDAP did not bring any improvement in share price, whereas a simple connection did. The propensity score matching is consistent with the OLS regressions in all periods. It broadly confirms our finding that it is not a link to politics as such that mattered. Only access to an important political figure can add value to a firm.

Table 19: Propensity score matching results regarding return on assets

	Firms treated with connection	Matched firms	t-stat/z-stat	Firms treated with government connection	Matched firms	t-stat/z-stat
	1913					
Joint stock capital	28	29	-0.29	35	34	0.08
Firm age	25.8	25.5	0.11	26.2	26.1	0.02
Distance Berlin	253.4	238.8	0.5	265.6	224.7	0.94
RoA	0.044	0.05	-0.76	0.049	0.038	0.86
	1925					
	1935					
Joint stock capital	20	19	0.28	23	21	0.35
Firm age	34.3	33	0.48	33.6	31.8	0.68
Distance Berlin	220.4	212	0.29	236.2	238.9	-0.09
RoA	0.0283	0.034	-1.2	0.029	0.03	-0.01
	1938					
	1938					
Joint stock capital	34	27	0.95	40	31	0.95
Firm age	48.7	49	-0.1	48.9	51.5	-0.73
Distance Berlin	260.4	270.9	-0.38	255.4	293.7	-1.17
RoA	0.029	0.025	0.72	0.025	0.036	-1.03

The table compares firms whose board members are MP or MP of the governing party with non-connected one by means of standard t and z-tests respectively; Joint stock capital in million Reichsmark; significance level indicated by p-values: *** p<0.01, ** p<0.05, * p<0.1

Propensity score matching does not provide exact matches for each observation. Given the mostly continuous covariates in our data this seems virtually impossible. In such case a parametric model is still preferable to a simple test of differences in means with regard to any causal inference.¹¹⁹ For that reason we implement coarsened exact matching (CEM), as described by Iacus et al. (2011), as an additional robustness check. This method restricts the data in a way that common support is empirically given. The matching algorithm simply coarsens each variable in the data thereby creating a set of variable-specific strata around the exact values. The bandwidth of these can be set manually, if desired.¹²⁰ In the next step, all strata which do not contain both a treated and a control group observation are dropped. The remaining variables are the basis for further evaluation of the actual impact of treatment. In principle this procedure simply reduces imbalances between the treated and the control group ex-ante. Afterwards, common parametric models can be applied, for instance an OLS regression either using a reduced or weighted sample. Figure 7 illustrates how the imbalance disappeared. The left side show the means values of the whole sample, the right side refers to the reduced sample only. Most distinct was the difference in joint stock capital, whereas firm age and location of the headquarters was quite balanced before matching.

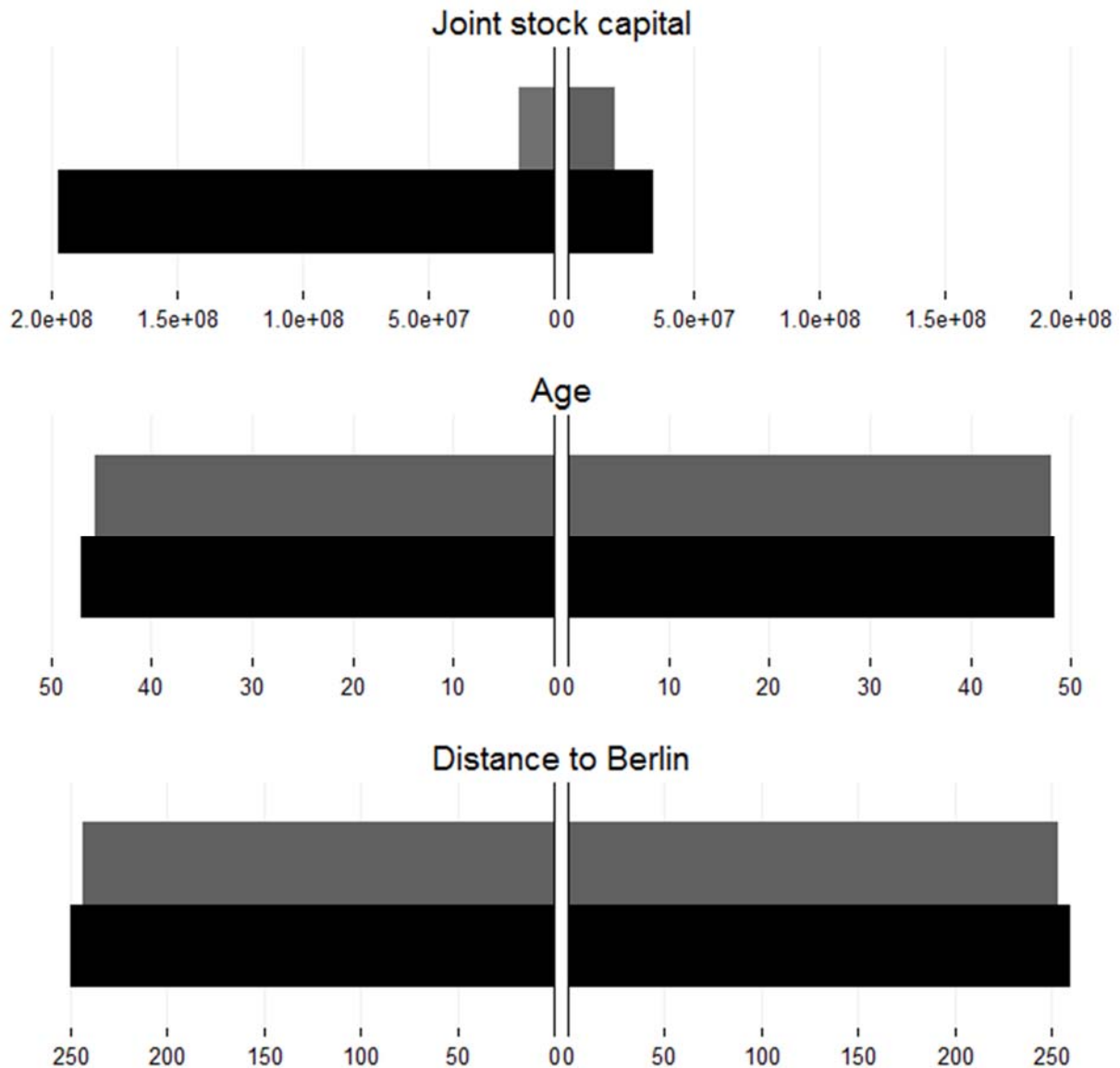
Moreover, the CEM algorithm assigns weights to each observation reflecting different strata sizes. These are used in a weighted OLS regression, displayed in table 20. Just as the original OLS regression, it includes a set of variables to control for the remaining imbalance within a stratum.¹²¹ Models 1 and 3 use the CEM weights, while models 2 and 4 are based on so-called k-to-k matching. In that specification only those strata containing an equal number of treated and control units are considered. As a result of this, the number of observations is greatly reduced in these models.

¹¹⁹ For a more detailed overview of the advantages of coarsened exact matching, see King et al. (2011).

¹²⁰ Natural breaks in (mainly discrete) variables give a point to a manual calibration of strata. For instance, using schooling data, in most cases years of education are equivalent to a specific level of education. In such case it is reasonable to set the breakpoints manually in order to avoid implausible matches.

¹²¹ Note that the inclusion of all covariates in the regression does barely change the outcome, indicating that the matching has worked well. For reasons of clarity we only include the full model here.

Figure 7: change in sample means of covariates as a result of CEM in 1938



Figures refer to firms with a connection to the government in 1938 (grey) and without a connection (black) before CEM matching on the left side and after on the right side.

Overall, the outcome resembles largely the standard OLS results: there is no effect of a plain connection in neither Imperial times nor in the Weimar Republic. In model (3), direct links to the government were valuable in 1925. Also, the older firms tend to be significantly higher connected. Under National Socialist rule, only overall political connections were beneficial. Just as in the previous analyses, returns on assets are barely affected, find the corresponding table in the appendix. Altogether, the close resemblance to the standard OLS results indicates that this was already well-specified.

Table 20: Regression result after Coarsened Exact Matching – share prices

	overall connections		connections to the governing party	
	1913			
	(1)	(2)	(3)	(4)
Connection	-0.0281 (0.729)	0.157 (0.304)	0.113 (0.310)	0.216 (0.270)
Joint Stock Capital	7.25e-09* (0.0779)	5.08e-09* (0.0827)	8.12e-09 (0.154)	-1.55e-10 (0.976)
Firm age	0.00391 (0.167)	0.000420 (0.898)	0.00530* (0.0667)	0.00891 (0.184)
Distance Berlin	0.000424 (0.216)	0.000124 (0.776)	0.00108** (0.0392)	0.000892 (0.172)
Constant	4.223*** (0)	4.123*** (0)	4.100*** (1.15e-10)	3.678*** (9.19e-08)
Observations	462	132	270	60
R-squared	0.168	0.170	0.277	0.353
	1925			
Connection	0.224 (0.207)	0.168 (0.241)	0.408* (0.0969)	0.290 (0.341)
Joint Stock Capital	1.14e-08 (0.430)	1.66e-08 (0.106)	9.93e-09 (0.481)	1.09e-08 (0.285)
Firm age	0.0169** (0.0311)	0.0114*** (0.00296)	0.00948* (0.0642)	-0.00383 (0.397)
Distance Berlin	0.000992 (0.111)	0.000917 (0.295)	0.00121* (0.0627)	1.24e-05 (0.988)
Constant	1.039*** (0.000109)	0.538*** (0.00639)	1.310*** (2.14e-06)	1.476*** (0.000850)
Observations	685	166	673	144
R-squared	0.228	0.333	0.238	0.294
	1938			
Connection	0.121** (0.0312)	0.102 (0.194)	0.0507 (0.133)	0.0158 (0.600)
Joint Stock Capital	2.41e-09 (0.149)	1.77e-09 (0.290)	1.71e-09 (0.230)	2.74e-09 (0.179)
Firm age	-1.08e-05 (0.996)	0.00185 (0.498)	-0.00252 (0.150)	-0.00436* (0.0609)
Distance Berlin	1.14e-05 (0.958)	-0.000175 (0.331)	8.46e-05 (0.723)	6.20e-05 (0.823)
Constant	4.498*** (0)	4.669*** (5.82e-10)	4.698*** (0)	4.888*** (0)
Observations	327	142	255	93
R-squared	0.237	0.241	0.298	0.406

Table contains OLS regression results of the logarithmised share price on various connection und firm characteristic measures after Coarsened Exact Matching. For details see text. Firm age in years, distance in kilometres, and stock capital in Reichsmark. Sector indicator variables included, 'others' is omitted. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Survival analysis

In the following, an assessment of another, more implicit type of market performance is conducted: The chance of a firm to survive over time, i.e. to remain listed on the Berlin Stock Exchange. In particular we examine how far this is affected by the prevalence of a political connection.

The probability to survive in the market is estimated using survival analysis methodology.¹²² Technically, this approach assesses the likelihood of a certain event – denoted as failure – to take place.¹²³ The assessment is based on the actual observed time until the occurrence of the event – in the stochastic model represented by the nonnegative random variable T .¹²⁴ Unlike the implicated by the term ‘failure’, the event itself does not necessarily need to be negative and can be defined in any way. The analysis itself is quite intuitive and is based on the estimation of a survivor and a hazard function, respectively. The former is defined simply as the reverse cumulative distribution function of the time until failure $F(t)$.

$$S(t) = 1 - F(t) = \Pr(T > t)$$

The hazard function $h(t)$ or conditional failure rate, reflects the risk of the event to occur in a given period.¹²⁵ It is defined as the probability that failure will happen in the specified time interval – given that the object of investigation has survived until the start of that interval – divided by the length of that:

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t + \Delta t > T > t | T > t)}{\Delta t} = \frac{f(t)}{S(t)}$$

Note that $f(t)$ is simply the derivation of $F(t)$ regarding time t . The total amount of risk to fail is reflected in the cumulative hazard function $H(t)$. That, in turn, is inversely related to the probability of survival.

¹²² For a detailed overview see Cleves et al. (2010).

¹²³ These denotations stem from the traditional application of survival analysis in medical or engineering science. There, a main concern is the examination of mortality or mechanical lifetime.

¹²⁴ The main reason for not simply applying an OLS regression of time until the event on the variables of interest is the non-normality of the error term. That is non-symmetric in a way, which is hardly matched by any OLS specification (Cleves et al. 2010).

¹²⁵ The hazard rate ranges from zero – no risk to fail at all – to infinity, implying certainty of failure.

$$H(t) = \int_0^t h(u)du = \int_0^t \frac{f(u)}{S(u)} du = -\ln\{S(t)\}$$

The hazard function $h(t)$ is estimated using a set of covariates, given the respective dataset. In order to do so, the basic structure of the function must be defined. Here we employ some of the most common parametric models. Specifically, we assume $h(t)$ follows an exponential, a Gompertz and a Weibull distribution, respectively. Parameters are fitted by maximising the corresponding likelihood function.¹²⁶ Finally, the impact of the variable of interest, i.e. the existence of a political connection, on the probability of a firm to survive is revealed in a regression framework.¹²⁷ For the plotting of the functions we employ the semi-parametric Kaplan-Meier estimator, which can be found in Cleves et al. (2010, pp. 93).

In addition to relevant information on the object of investigation – in our case firms – the estimation of survivor functions requires very little additional data. In fact, we needed to collect information on whether firms survived at all, i.e. remained listed in the market and further, in case of failure, the time until that point. Beginning in 1925, we checked which firms in our sample left the market within the following 10 years. Some firms were liquidated, others just ceased to be listed on the Berlin Stock Exchange. Another major cause for a share being cut off from being listed were mergers and acquisitions. These are treated separately and constitute another form of ‘failure’.¹²⁸ The interpretation in this case is different, however, and so is the outcome.

The considered period is particularly interesting to analyse since it includes both a relatively stable period and a full-scale economic crisis that began at the latest in 1929.¹²⁹ Germany’s monetary and financial stability was severely shaken when early information on the Young Plan was made public in 1929. Under that new reparation agreement German transfer protection was cancelled. This clause in the hitherto running Dawes reparation scheme effectively turned corresponding claims into junior debts and thereby considerably lowered the fiscal burden for

¹²⁶ For an exact description of the respective parameterization, see Cleves et al (2010, pp. 232). Find the general form of the likelihood function in Cleves et al (2010, pp. 245).

¹²⁷ The method can be applied equally to firm failure. Note that the definition of this event is arbitrary.

¹²⁸ Given the historical source – *Handbuch der Deutschen Aktiengesellschaften* – it is not possible to further differentiate between mergers and acquisition. Though it is certainly of great interest, an exploration of every individual firm is far beyond the scope of this study.

¹²⁹ 1929 is generally regarded as the beginning of the worldwide Great Depression. However, the economic situation in Germany was already deteriorating in 1927 (Clavin 2000, p. 88; Ritschl 2002). After the so-called Black Friday at the Berlin Stock Exchange in the wake of an intervention of the German central bank, investment – just as stock prices – remained at a strikingly low level (Voth 2003).

the federal government. The concessions given in return did not outweigh the disadvantage – Germany was effectively cut off from international capital markets. The economic and political disturbances shook the German society in the subsequent years, ultimately leading to the rise of the National Socialists (Ritschl 2013, pp. 4). Moreover most of the industrialised countries were affected by the Great Depression and international trade was disrupted.¹³⁰ How to survive in times of economic crises was certainly not a trivial issue, but it required all the stops to be pulled out. As hypothesised previously, we expect connected firms to have better access to capital. Also, they are more likely to receive a bailout. Accordingly, we expect the chances of survival to be highest for interlinked firms during such troubled times.¹³¹

The other two sample periods 1913 and 1938 were both followed by a World War a short time afterwards and therefore not suitable as a starting point for survival analysis. During world World War I, trading at the German stock exchanges was heavily restricted (Saling 1921, p. 315). Similarly, all shares were subject to strict price controls in 1941 at the latest (Bittlingmayer 1998). The German economy was largely reorganised and affected by extensive state planning activity in order to meet the war time requirements.¹³² As the analysis comprises all stock companies that were listed in Berlin in 1925, it does not cover firms that entered the market after that time. Even though political connections appear to have implications for these newly-listed firms in particular (Fan et al. 2007), we expect the effect to be negligible given the large size of our sample.¹³³ Moreover, setting a fix starting point prevents the data to be left-censored.¹³⁴ An overview of firm survival is given in table 21.

¹³⁰ An overview of the ‘Great Depression’, alongside its exact beginning in the various countries is given by Thomas Hall and David Ferguson (1998), Harald James (2002) or Patricia Clavin (2000).

¹³¹ Generally, extreme events or periods provide excellent grounds for testing a hypothesis. See Ferguson and Voth (2008) or Acemoglu et al. (2013) for some outstanding examples.

¹³² For an extensive view on the total alignment of the German economy to wartime and the armament, see for instance Herbst (1982) or Overy (1994). What drives firm survival during wartime constitutes a relevant research question indeed. However, this study concerns the general value of a political connections, i.e. during peacetime

¹³³ Fan et al. (2007) examine the post-IPO performance of connected firms in China. There, connected firms performed particularly poor.

¹³⁴ Since we define the unit of observation as ‘all firms listed in 1927’. By definition our data is right-censored of type 1. Such data structure occurs when there are still surviving objects at the end of the interval. In our case not all firms left the market until 1935.

Table 21: Life table of surviving firms

period	connected firms		non-connected firms	
	rate of surviving firms	cumulative failure rate	rate of surviving firms	cumulative failure rate
1925–26	0.9991	0.0009	0.9989	0.0011
1926–27	0.9981	0.0019	0.9938	0.0062
1927–28	0.9947	0.0053	0.9866	0.0134
1928–39	0.9934	0.0066	0.9807	0.0193
1939–30	0.9934	0.0066	0.9727	0.0273
1930–31	0.9915	0.0085	0.961	0.039
1931–32	0.9890	0.0110	0.9524	0.0476
1932–33	0.9855	0.0145	0.9426	0.0574
1933–34	0.9682	0.0318	0.9244	0.0756
1934–35	0.9511	0.0489	0.8879	0.1121

Own calculations; Data see text.

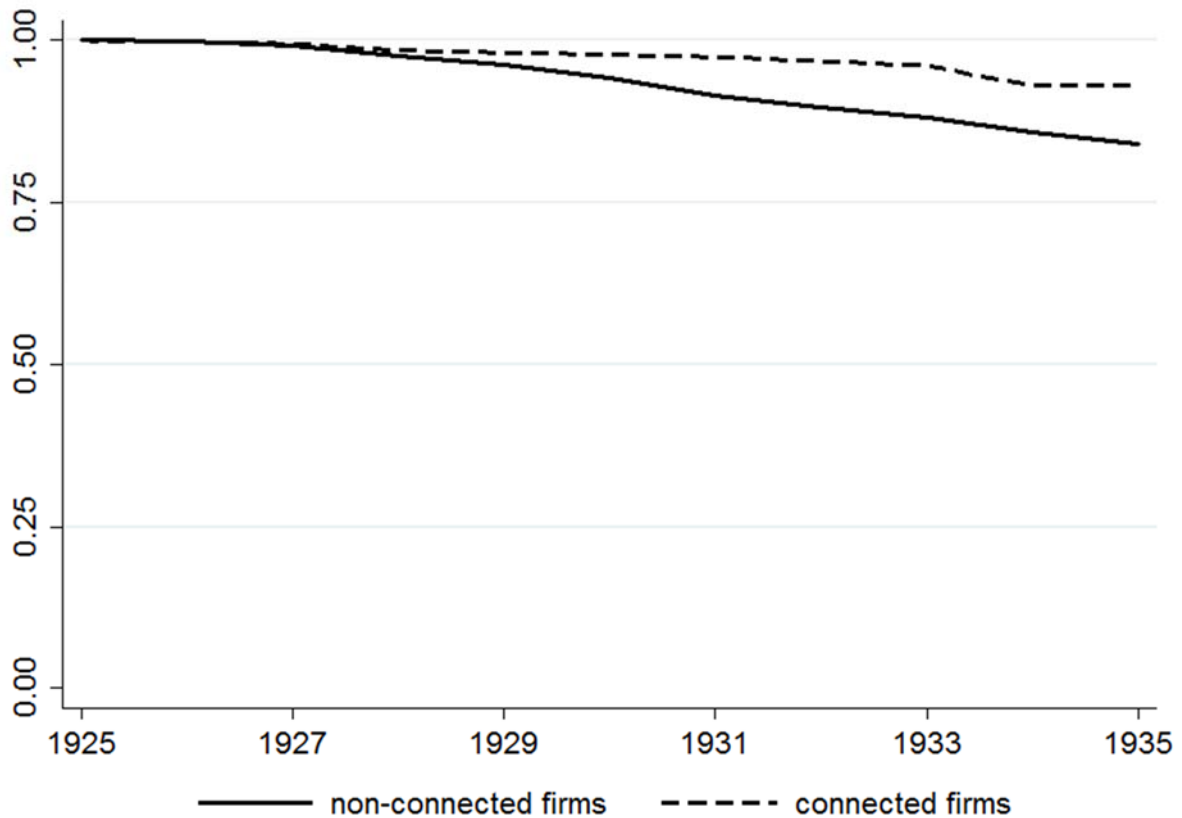
There is a salient difference between connected and non-connected firms with respect to the rates of survival and failure respectively. We performed a series of tests of differences in the survivor functions, all of which rejected the null-hypothesis of equality of the two groups.¹³⁵ Connected firms remained listed on the market at a significantly higher degree. The difference is also clearly visible in figure 8, which displays the Kaplan-Meier estimate for the survivor function.¹³⁶

The survival model regression models, controlling for further variables, produce similar results. Estimates are presented in table 22. The prevalence of a connection significantly lowers the chance of dropping out of the market in all three models applied. Firm characteristics are of large importance as well: Older firms tend to persist – tradition pays off in the market. Likewise, a high capital stocks seems to increase the resistance against failure.

¹³⁵ To be precise we performed a log-rank test, a Cox test, a Wilcoxon test, a Tarone-Ware test and a Peto-Peto-Prentice test on the equality of survivor functions. For an explicit description on these tests, see Cleves et al. (2010, pp. 122).

¹³⁶ The Kaplan-Meier estimator is particularly efficient in the case of right-censored data and a relatively small share of failures, both of which applies to our data (Miller 1983).

Figure 8: Survival estimates connected vs. unconnected firms



Own calculations; the (smoothed) survival rates are derived from the Kaplan-Meier estimator.

Table 22: Parametric survival model regression, failure-time form

	(1)	(2)	(3)
Model	exponential	gompertz	weibull
Connection	-0.734*** (0.000300)	-0.755*** (3.27e-10)	-0.756*** (0.000244)
Joint stock capital	-6.60e-08** (0.0315)	-6.82e-08*** (0)	-6.82e-08** (0.0306)
Distance to Berlin in km	0.000360 (0.279)	0.000380** (0.0111)	0.000380 (0.264)
Firm age in years	-0.00888** (0.0400)	-0.00921*** (2.55e-08)	-0.00920** (0.0409)
Constant	-3.504*** (0)	-4.608*** (0)	-5.677*** (0)
Number of firms	1000	1000	1000
chi2	22.81	420.8	23.86
P	0.000138	0	8.51e-05

The three models represent, an exponential, a Gompertz and a Weibull regression, respectively. Robust pval in parentheses; *** p<0.01, ** p<0.05, * p<0.1

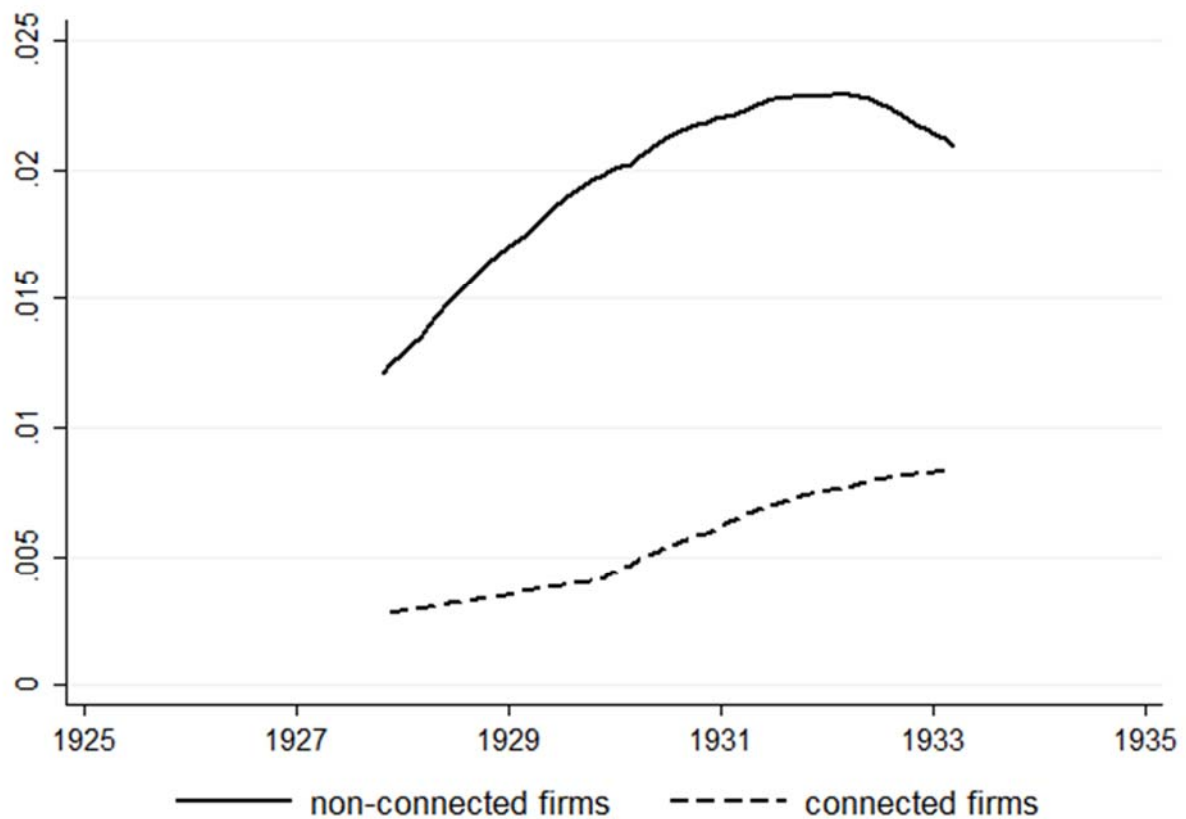
The visualisation of the hazard rate in figure 9 reveals an interesting trend. First, it offers a good reflection of the impact of the economic crisis beginning at the latest in 1929. Hazard rates of all firms increased notably over time. However, the increase is much sharper for non-connected ones. Also, connected firms responded much later to the Great Depression. A break in the hazard curve is not detectable before 1930. Connections obviously bought a firm time during the crisis. That corresponds well with the literature, which emphasizes the higher chance of a bailout and a better supply of capital due to a connection. However, these benefits were not unlimited. The German state was to a large extent financially constrained by its reparation commitments (Wehler 2003, pp. 240). Furthermore, the German economy was generally in extremely poor condition already since 1927 (Clavin 2000, p. 88; Ritschl 2002; Voth 2003).¹³⁷ That becomes visible in the slopes of the hazard curves, which start to gradually align after 1930.¹³⁸ The decline at the end of the time horizon indicates a relaxation of the economic downturn as early as 1933.¹³⁹ That is also in line with the literature, which locates the start of the recovery in Germany – in contrast to most other countries – in that very same year (Clavin 2000, pp. 171; Fisher and Hornstein 2002, pp. 103). Survival analysis reveals the great benefits of a political connection. This worked as an implicit insurance against firm failure.

¹³⁷ In fact, the German budget was highly restricted during the whole Weimar Republic. For details of the extensive public debt in that period, see Bachmann (1996).

¹³⁸ The advantage for connected firms amounted to approximately two years. It seems plausible that the effect might be even larger in countries with healthy public finances.

¹³⁹ Bear in mind that at the end of the sample period the selection bias is largest, as the analysis is based solely on firms that were listed on the Berlin Stock Exchange in 1925.

Figure 9: Smoothed hazard estimates of connected vs. non-connected firms



The (smoothed) survival rates are derived from the Kaplan-Meier estimator.

In interwar Germany, mergers and acquisitions were greatly facilitated by political connections. Some of the most important German mining and steel producing companies merged into the *Vereinigte Stahlwerke AG* in 1926, which constituted one of the largest steel producers in Europe. A formation of this magnitude required in-depth preparation on both the firm and the political level (Reckendrees 2000, pp. 222). The fact that two of the five initiating directors were members of the parliament supposedly facilitated the endeavour. Along with other high-ranking managers these persons were key figures in the realisation of the merger.¹⁴⁰ Anita Klein (2014, pp. 426) gives a further example from the considered period. Again, the *Reemtsma* Company was involved. The realisation of a planned takeover was greatly facilitated by the firm's political ties. In 1929 the by then large-scale tobacco company acquired the smaller cigarette producer *Batschari*, which had cumulated a huge tax debt. Due to the decision of Reemtsma-affiliated persons in the ministry of finance that debt was cancelled after the acquisition. *Reemtsma* made a sizable profit.

¹⁴⁰ The connected board members were Fritz Thyssen of Thyssen&Co and Albert Vögler of Deutsch-Luxemburgische Bergwerks- und Hütten AG (Reckendrees 2000, p. 149; own dataset).

Beng-Soon Chong et al. (2006, pp. 3229) provide empirical evidence. By examining Malaysian banks, they find that politically connected institutes are more likely to be taken over by others. Jiatao Li and Cuili Qian (2013) get to similar results analysing Chinese firms: Political connections significantly increase the chance of a takeover taking place.¹⁴¹ Paul Brockman et al. (2013) underline the general importance of political connections for merger and acquisition activity.¹⁴² Though the event of interest is denoted as failure, following survival analysis diction, mergers and acquisitions do not necessarily involve an economic loss.¹⁴³ The shares of involved companies are usually withdrawn from the market or swapped for shares of the acquiring company. After all, usually both sides expect to benefit. As implied by the literature, political connections have been utilised frequently to bring forward such deals. Altogether, we expect the merger activity of connected firms to be significantly higher.¹⁴⁴ The newly formed company is obviously larger in size. Highly capitalised firms in turn have generally a much better chance to survive on the market (Audretsch et al. 2000; Disney et al. 2003; Geroski et al. 2010), which leads to an indirect benefit of a connection¹⁴⁵ – The hypothesis reads quite comparable to the above case, though in reverse direction: High failure rates of connected firms would support our notion of a connection functioning as insurance against firm failure.

¹⁴¹ Their sample is much broader than the one of Chong et al. (2006), as they employ all publicly listed Chinese firms between 1998 and 2007.

¹⁴² However, the institutional setting plays a crucial role. Merging activity itself as well as firm performance after such a deal are highly dependent on the level of corruption or the legal environment in a country (Brockman et al. 2013).

¹⁴³ Particularly shareholders of the target firms benefitted. See Lübbers (2008) for a profound study of takeovers in coal mining in Imperial Germany.

¹⁴⁴ Which implies a significantly higher rate of failure for connected firms in this setting.

¹⁴⁵ There are various underlying reasons for the increased survival rates, which comprise increased economies of scale, better access to funds, a higher diversity of business activities or better managerial capabilities (Geroski et al. 2010, pp. 511). The literature on post-merger efficiency is ambiguous, however. Some authors find a positive effect (Healy et al. 1992; Powell and Stark 2005), others find a merger to be negative (Knapp et al. 2005; Sharma 2016). Others, like Ghosh (2001) or Abbas et al. (2014) detect no effect at all. Brockman et al. (2013) find large differences across different institutional settings.

Table 23: Life table of merging firms

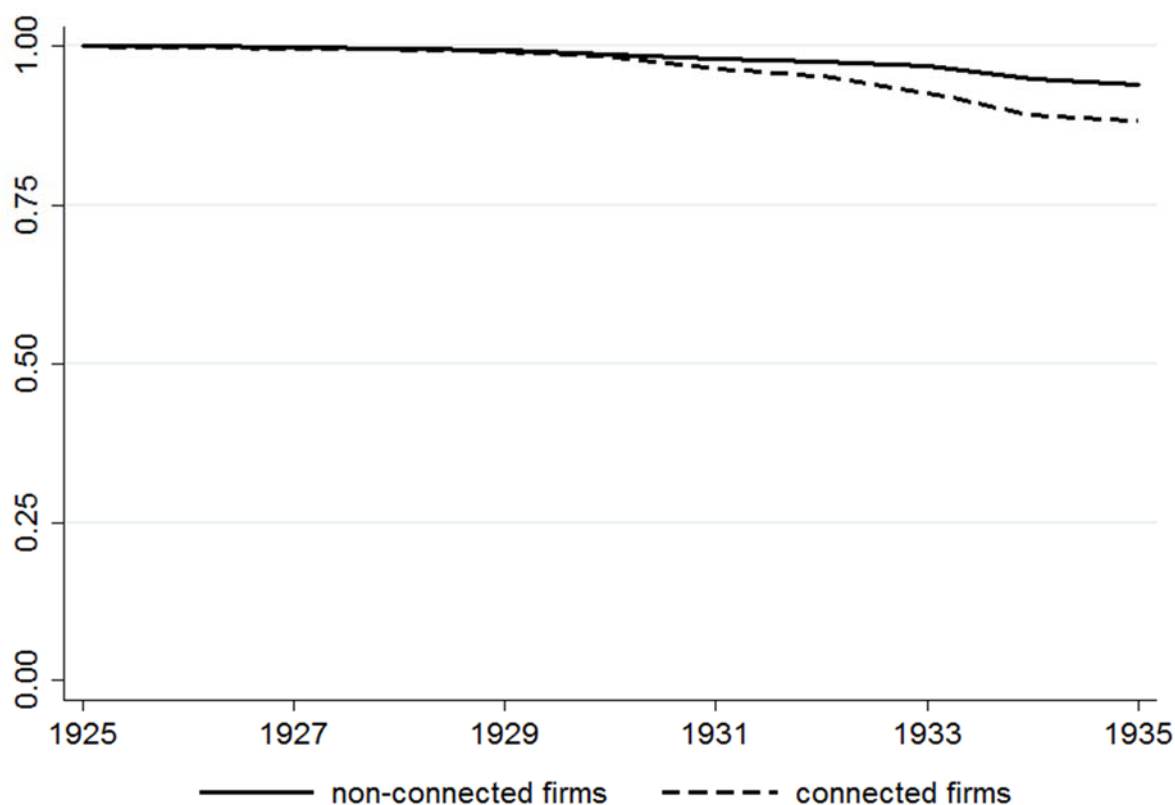
period	connected firms		non-connected firms	
	rate of surviving firms	cumulative failure rate	rate of surviving firms	cumulative failure rate
1925–26	1	0	0.9998	0.0002
1926–27	1	0	0.9996	0.0004
1927–28	0.9978	0.0022	0.9983	0.0017
1928–39	0.9966	0.0034	0.9969	0.0031
1939–30	0.9935	0.0065	0.9949	0.0051
1930–31	0.9861	0.0139	0.9926	0.0074
1931–32	0.9813	0.0187	0.9904	0.0096
1932–33	0.9677	0.0323	0.9867	0.0133
1933–34	0.9395	0.0605	0.9717	0.0283
1934–35	0.9227	0.0773	0.9537	0.0463

Own calculations; Data see text.

Indeed, figure 10 shows a reverse relation than in the case of actual firm failure, i.e. dropping out of the market. Though in the first two periods there are no connected firms involved in a merger, their share increases much faster than for non-connected firms. At the end of the assessment period, it is nearly twice as high (see table 23).

The results are validated when controlling for further firm characteristics. Table 24 displays the parametric survival model regressions. All the coefficients are reverse to those in table 21. In the merger setting a political connection increased the chance of failure. Connected firms tend to merge at a significantly higher amount, regardless of the model applied. The same holds also for older firms, for which it is difficult to give a reasonable interpretation. Joint stock capital has a significant effect only in the Gompertz (2) model. There, large firms have a higher chance of merging. The same applies for distance to Berlin. Remote firms also tend to be involved to a higher degree.

Figure 10: Kaplan-Meier survival estimates connected vs. unconnected firms; Merger



The (smoothed) survival rates are derived from the Kaplan-Meier estimator.

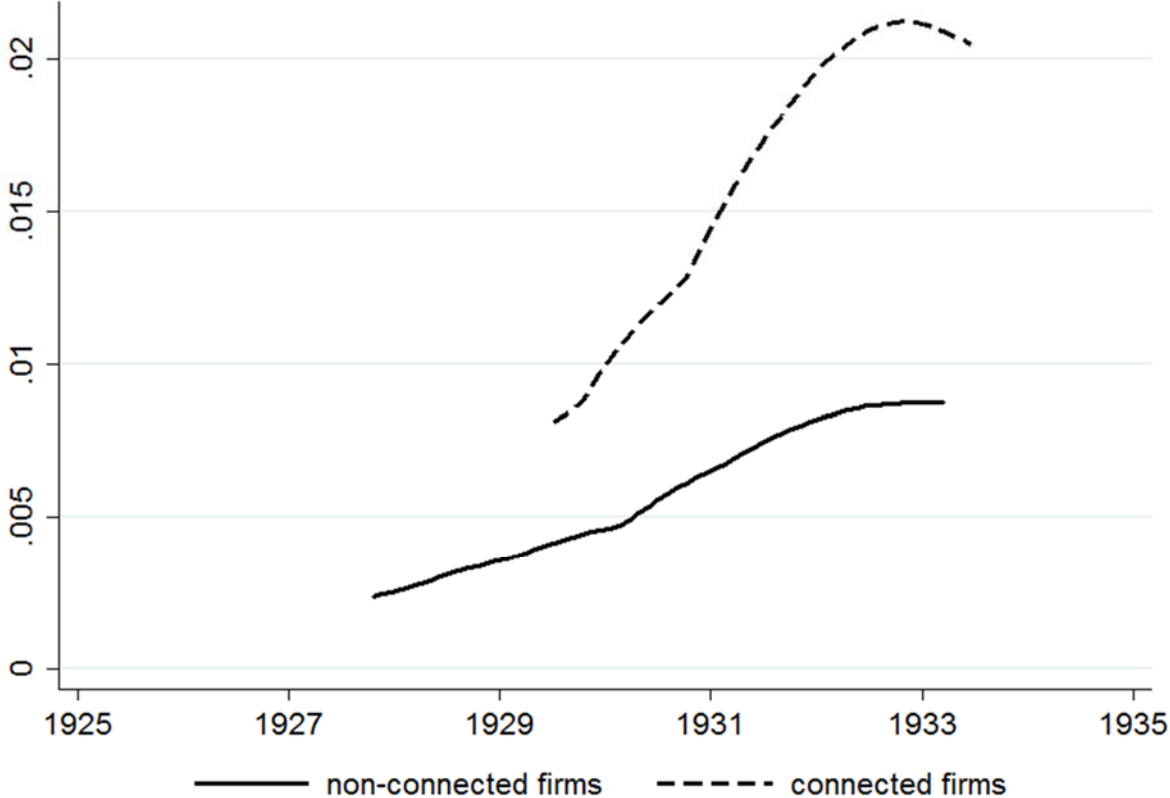
Table 24: Parametric survival model regression, failure-time form; Merger

model	(1) exponential	(2) gompertz	(3) weibull
connected	0.560** (0.0160)	0.582*** (9.11e-10)	0.579** (0.0153)
Joint stock capital	6.32e-09 (0.124)	6.26e-09*** (1.62e-10)	6.27e-09 (0.127)
Distance to Berlin in km	0.000811 (0.170)	0.000838*** (5.78e-05)	0.000833 (0.162)
Firm age in years	0.00940** (0.0343)	0.00944*** (1.61e-07)	0.00943** (0.0379)
Constant	-5.710*** (0)	-8.093*** (0)	-10.40*** (0)
N	1064	1064	1064
chi2	23.33	131.6	22.98
p	0.000109	0	0.000128

The three models represent, an exponential, a Gompertz and a Weibull regression, respectively. Robust pval in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Figure 11 shows the smoothed hazard rates. Considering firms without political linkage it grew steadily over time – at a relatively low speed. In contrast, the hazard rate for connected firms sharply increased after 1929. Just as the hazard ratios of the actual firm failure shown above, it reflects the start of the Great Depression quite well. Also, both curves are stagnating after 1933. Firm consolidation dramatically increased during the crisis – apparently fostered greatly by a political connection, which constitutes an additional benefit: by creating larger companies in the first place, a link to politics increases the chance of survival in the following time.

Figure 11: Smoothed hazard estimates all connected vs. unconnected firms, merger



The (smoothed) survival rates are derived from the Kaplan-Meier estimator.

Conclusion

In this study we comprehensively survey the political connections between firms and parliament in pre- and interwar Germany. The respective periods of time comprise three different regimes. The first, Imperial Germany, was a parliamentary monarchy. Next, we considered the Weimar Republic, representing the first actual all-German democracy. The rule of the National Socialist in our final sample period exemplifies a prototypical dictatorship. In a further step, we aim to evaluate the prevalence of a connection in the various regimes with respect to firm value and firm performance, including the likelihood of failure.

Overall, interlinked firms i.e. firms which had at least one of its board members as a delegate in the *Reichstag*, were relatively widespread. Even in Imperial Germany, where the influence of the parliament was quite limited, nearly 12 percent of all Berlin-listed stock companies established a connection. That share remained relatively constant until 1925. In the last period, 1938, it nearly doubled – every fifth stock companies possessed a political connection. Admittedly, the number of firms listed on the Berlin Stock Exchange varied largely over time, as did the average firm characteristics. A view on the various sectors of the economy shows some interesting insight. For instance, those branches particularly affected by the armament during National Socialist rule exhibited a remarkable increase in connections. Also, those sectors subject to public awarding of contracts and regulation were highly interlinked. Connections were not spread equally among the various political parties. Their distribution was generally heavily biased towards liberal parties. Unsurprisingly, the last period was dominated by the National Socialist Party. Other relevant political forces such as the Centre Party and even more so the Social Democrats were clearly underrepresented.

The probability of a having a connection further depended on various firm features, most notably size, in terms of joint stock capital. That result resembles the literature (Boubakri et al. 2008; Ferguson and Voth 2008). Moreover, given the size of our sample, this paper gives a comprehensive view of the composition of the Berlin Stock Exchange in the first half of the 20th century.

Though the majority of politicians possessed a board seat of only one firm, a few represented a number of companies – up to 17 in Imperial times. These political and economic heavyweights proved quite rewarding: share prices of the affiliated companies were significantly higher in 1925 and 1938. Altogether, the value of a political connection in interwar Germany was not

homogeneous. In fact, it was highly dependent on both type of connection and the political system. Except for extreme settings, we do not discover a general benefit. Connections affected firm valuation in terms of share prices only under dictatorship, which is broadly consistent with the findings of Ferguson and Voth (2008). Just as in their work, it is the early link that pays off. Being just a *Mitläufer* did not bring about additional value, since a simple NSDAP linkage was worthless – the long-term connections were the ones that mattered.

In the Weimar Republic only those firms affiliated to a governing party performed better in terms of share prices. After Germany had become a true parliamentary democracy for the first time in its history, investors utilised the advantage to forge links with the government. Also, that result corresponds to those of the literature (Fisman 2001; Bunkanwanicha and Wiwattanakantang 2009; Chen et al. 2013).¹⁴⁶ In Imperial Germany, political connections were basically of no value. This finding supports the conception of a weak *Reichstag* during that era, as prompted by Wehler (1994).

The various sectors of the economy could not exploit a connection to an equal extent. Banks, for instance, were affected to a great degree. The effect was particularly pronounced in 1925, emphasizing the investors' need for security after times of monetary uncertainty. However, we fail to find a distinct *Aryanisation* effect for banks under National Socialist rule. An *armament effect* is not detectable in our data. A connected firm in the respective sectors did not outperform the others. Neither can we find a preferential treatment in the placing of public contracts due to political links. Given these findings, it seems highly improbable that firms could benefit directly from a connection. Rather, access to political information or to an established political and economic network are qualified as channels of transmission.

Actual firm profitability in terms of the return on assets is barely affected by the prevalence of a political connection.¹⁴⁷

In addition, we follow an alternative approach, yet unutilised in that context. A survival analysis provides further insight into possible advantages of politically connected firms. These had a much better chance of remaining listed on the Berlin Stock Exchange over time. Such results support the argument of facilitated access to credit and an increased chance of being bailed out

¹⁴⁶ Still, the impact of a connection in a democracy, featured by a powerful parliament, requires a more precise assessment. Part II of this thesis gives a detailed picture of the performance of connected firms, particularly in times of crises.

¹⁴⁷ That is broadly in line with the literature, which finds connected firms to even underperform (Leuz and Oberholzer-Gee 2006; Boubakri 2008; Bliss and Gul 2012).

due to close political ties.¹⁴⁸ Likewise, the probability of being involved in a merger or an acquisition is significantly higher if a firm is affiliated to the parliament. Also, that outcome fits quite well with the anecdotal and empirical evidence on that issue. Presumably, the newly-founded companies are more likely to persist, which further amplifies the survival effect of a political connection.

Altogether, survival analysis reveals an additional benefit arising from such connection. A link to politics can effectively function as an implicit insurance against firm failure – particularly in times of crisis.

¹⁴⁸ As described among others by Khwaja and Mian (2005), Li et al. (2008), Faccio et al. (2006) or Blau et al. (2013). The effect we find seems to be limited to a certain timespan and is driven – aside from connectedness – by further firm characteristics, in particular joint stock capital. Whether this is due to poor state finances in the Weimar Republic requires additional investigation – for instance, by examining countries which were better-positioned in terms of fiscal condition.

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Appendix

Table A1: Firms characteristics 1913

1913	mean	SD	Min	Max
Firm age in years	27.70	15.89	4	101
Joint stock capital	1.106e+07	2.502e+07	570,000	3.000e+08
End-of-year price	147.3	85.94	3.400	612
Distance to Berlin in km	245.9	183.6	0	681.9
Return on assets	0.0566	0.0730	-0.572	0.850

Own calculations; for data, see text.

Table A2: Firms characteristics 1925

1925	mean	SD	Min	Max
Firm age in years	33.58	18.94	1	160
Joint stock capital	9.163e+06	2.068e+07	25,000	3.000e+08
End-of-year price	21.50	30.94	0.100	390
Distance to Berlin in km	245.1	183.5	0	682.2
Return on assets	0.492	12.33	-0.267	331.6

Own calculations; for data, see text.

Table A3: Firms characteristics 1938

1938	mean	SD	Min	Max
Firm age in years	47.71	19.84	3	126
Joint stock capital	1.806e+07	6.970e+07	216,000	1.106e+09
End-of-year price	128.2	41.05	3	400
Distance to Berlin in km	244.4	190.4	0	681.9
Return on assets	0.0289	0.0983	-0.691	1.236

Own calculations; for data, see text.

Table A4: Share of political connections by sector 1913

	Share of firms connected altogether	Share of firms connected only to current MP	Share of firms connected only to former MP	Share of firms connected to continuousMP
Banking	41.3	6.3	21	14.3
Insurance	14.6	0.0	10	4.2
Mining	17.0	1.0	12	4.0
Heavy industry	7.7	0.6	5	2.4
Light industry	5.1	0.0	4	0.8
Food processing	2.3	0.0	1	1.2
Transportation	10.3	0.0	9	1.5
Chemical industry	8.6	0.0	6	2.9
Public utility	34.4	3.1	31	0.0
Others	4.0	0.0	3	0.8
All firms	11.5	0.8	8	2.8

Own calculations; for data, see text.

Table A5: Share of political connections by sector 1925

	Share of firms connected altogether	Share of firms connected only to current MP	Share of firms connected only to former MP	Share of firms connected to continuousMP
Banking	15.7	0.0	6	9.8
Insurance	23.3	0.0	16	7.0
Mining	25.6	0.0	16	9.3
Heavy industry	7.3	0.8	5	1.2
Light industry	7.5	1.0	4	2.5
Food processing	9.1	2.6	3	3.9
Transportation	22.4	7.5	9	6.0
Chemical industry	7.5	1.9	2	3.8
Public utility	23.8	3.2	11	9.5
Others	9.5	1.1	3	5.6
All firms	12.3	1.5	6	4.6

Own calculations; for data, see text.

Table A6: Share of political connections by sector 1938

	Share of firms connected altogether	Share of firms connected only to current MP	Share of firms connected only to former MP	Share of firms connected to continuousMP
Banking	30.0	0.0	8	22.0
Insurance	27.0	2.7	16	8.1
Mining	40.5	2.7	8	29.7
Heavy industry	15.2	3.8	3	8.9
Light industry	18.1	0.0	11	7.4
Food processing	12.3	0.0	5	7.7
Transportation	26.0	0.0	10	16.0
Chemical industry	16.1	0.0	10	6.5
Public utility	34.6	0.0	4	30.8
Others	13.5	3.8	8	1.9
All firms	21.3	1.3	8	12.1

Own calculations; For data, see text.

Table A7: Fixed effect panel data regression of returns on assets

	(1)	(2)	(3)	(4)
Joint stock capital	-0 (0.928)	-0 (0.826)	-0 (0.886)	-0 (0.864)
Connection	0.00760 (0.555)	-0.0135 (0.535)	-0.0117 (0.771)	0.0118 (0.740)
1925	-0.0317*** (1.77e-06)	-0.0318*** (1.50e-06)	-0.0357*** (3.49e-10)	-0.0357*** (4.61e-10)
1938	-0.0339*** (0.000865)	-0.0340*** (0.000852)	-0.0357*** (8.54e-05)	-0.0358*** (9.02e-05)
Interaction x 1925	-0.0229 (0.463)	-0.0127 (0.614)	0.0226 (0.585)	0.0155 (0.676)
Interaction x 1938	-0.0151 (0.424)	-0.00488 (0.755)	0.00746 (0.861)	-0.00991 (0.789)
Constant	0.0728*** (0)	0.0731*** (0)	0.0740*** (0)	0.0742*** (0)
Branch interaction		yes		yes
Observations	707	707	707	707
R-squared	0.067	0.079	0.066	0.069
Number of nr	265	265	265	265

Table contains fixed-effects (within) regression results of the logarithmised share price on various connection and firm characteristic measures. The group variable is firm. For details see text. Firms' age in years, stock capital in Reichsmark. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A8: PSM - logit regression of section into treatment 1913

Treatment	Logarithmised share price		return on assets	
	Member of the supervisory board was or is currently MP	Member of the supervisory board was or is currently MP for a governing Party	Member of the supervisory board was or is currently MP	Member of the supervisory board was or is currently MP for a governing Party
Joint stock capital	7.79e-09** (3.61e-09)	1.14e-08*** (3.94e-09)	8.11e-09** (3.65e-09)	1.11e-08*** (3.94e-09)
Firm age	-0.0207** (0.00865)	-0.0202* (0.0119)	-0.0218** (0.00892)	-0.0188 (0.0120)
Distance Berlin	9.34e-05 (0.000641)	0.000729 (0.000878)	-2.73e-05 (0.000650)	0.000666 (0.000878)
Banking	2.594*** (0.503)	1.461** (0.626)	2.717*** (0.528)	1.405** (0.625)
Mining	1.425*** (0.485)	0.814 (0.601)	1.532*** (0.513)	0.807 (0.600)
Heavy Industry	0.403 (0.481)	-0.370 (0.647)	0.526 (0.505)	-0.407 (0.647)
Light Industry	-0.0343 (0.575)	-0.861 (0.851)	0.107 (0.596)	-0.891 (0.851)
Food Processing	-0.763 (0.817)	-	-0.613 (0.832)	-
Transportation	0.711 (0.560)	0.397 (0.693)	0.885 (0.582)	0.400 (0.694)
Chemical industry	0.520 (0.722)	0.369 (0.865)	0.684 (0.739)	0.366 (0.865)
Public Utility	2.212*** (0.536)	1.360** (0.659)	2.223*** (0.566)	1.343** (0.660)
Constant	-2.521*** (0.440)	-3.033*** (0.543)	-2.587*** (0.469)	-2.995*** (0.546)
Observations	825	739	797	714

The table shows the regression coefficients of a logit regression of being connected, which is the treatment in propensity score matching. The sector indicator variable 'others' is omitted. Robust p values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A9: PSM – logit regression of section into treatment 1925

Treatment	Logarithmised share price		return on assets	
	Member of the supervisory board was or is currently MP	Member of the supervisory board was or is currently MP for a governing Party	Member of the supervisory board was or is currently MP	Member of the supervisory board was or is currently MP for a governing Party
Joint stock capital	1.25e-08*** (4.08e-09)	7.10e-09 (4.77e-09)	1.20e-08*** -4.53E-09	7.92e-09 (5.67e-09)
Firm age	0.00976 (0.00682)	0.00818 (0.0103)	-0.00117 -0.00705	-0.000447 (0.0102)
Distance Berlin	-0.00112* (0.000629)	-0.00127 (0.000930)	-0.000405 -0.000662	-0.000846 (0.000958)
Banking	-0.884* (0.512)	-0.131 (0.782)	-0.463 -0.52	-0.146 (0.810)
Mining	-1.322*** (0.392)	-1.169 (0.721)	-1.345*** -0.474	-2.314** (1.146)
Heavy Industry	-1.117*** (0.398)	-0.333 (0.641)	-1.141** -0.451	-0.458 (0.686)
Light Industry	-1.053** (0.518)	0.113 (0.724)	-1.144 -0.811	-0.441 (1.159)
Food Processing	-0.443 (0.471)	0.278 (0.722)	0.0147 -0.459	0.680 (0.672)
Transportation	-1.434** (0.601)	-0.00266 (0.769)	-1.922** -0.813	-0.357 (0.900)
Chemical industry	0.0432 (0.437)	0.924 (0.646)	0.153 -0.454	0.799 (0.660)
Public Utility	-1.362*** (0.445)	-0.747 (0.727)	-1.037** -0.449	-0.480 (0.693)
Constant	-1.380*** (0.422)	-2.859*** (0.683)	-1.172*** -0.451	-2.477*** (0.695)
Observations	887	887	684	684

The table shows the regression coefficients of a logit regression of being connected, which is the treatment in propensity score matching. The sector indicator variable 'others' is omitted. Robust p values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A10: PSM – logit regression of section into treatment 1938

Treatment	Logarithmised share price		return on assets	
	Member of the supervisory board was or is currently MP	Member of the supervisory board was or is currently MP for a governing Party	Member of the supervisory board was or is currently MP	Member of the supervisory board was or is currently MP for a governing Party
Joint stock capital	2.49e-08*** (5.77e-09)	2.26e-08*** (5.47e-09)	2.59e-08*** (5.80e-09)	2.36e-08*** (5.52e-09)
Firm age	0.00434 (0.00716)	0.00505 (0.00835)	0.00576 (0.00705)	0.00677 (0.00820)
Distance Berlin	0.000691 (0.000657)	0.000261 (0.000784)	0.000704 (0.000651)	0.000315 (0.000776)
Banking	0.534 (0.554)	1.016 (0.733)	0.506 (0.553)	0.972 (0.733)
Mining	0.528 (0.594)	1.078 (0.758)	0.433 (0.589)	0.981 (0.755)
Heavy Industry	0.0453 (0.523)	0.823 (0.693)	0.0207 (0.522)	0.792 (0.692)
Light Industry	0.109 (0.500)	0.0123 (0.727)	0.0740 (0.500)	-0.0272 (0.727)
Food Processing	-0.222 (0.566)	0.237 (0.765)	-0.229 (0.566)	0.223 (0.765)
Transportation	0.562 (0.544)	0.829 (0.739)	0.577 (0.538)	0.891 (0.728)
Chemical industry	-0.148 (0.682)	0.0264 (0.949)	-0.126 (0.684)	0.0434 (0.950)
Public Utility	0.430 (0.632)	1.241 (0.778)	0.410 (0.634)	1.212 (0.780)
Constant	-2.304*** (0.515)	-3.178*** (0.699)	-2.378*** (0.513)	-3.272*** (0.697)
Observations	470	470	477	477

The table shows the regression coefficients of a logit regression of being connected, which is the treatment in propensity score matching. The sector indicator variable 'others' is omitted. Robust p values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A11: Regression results after Coarsened Exact Matching – return on assets

	overall connections		connections to the governing party	
	1913			
	(1)	(2)	(3)	(4)
Connection	-0.0121 (0.201)	-0.0188* (0.0530)	0.00139 (0.909)	0.00733 (0.670)
Joint Stock Capital	9.49e-11 (0.555)	3.91e-10** (0.0133)	4.08e-10 (0.493)	-7.51e-10 (0.274)
Firm age	-1.79e-05 (0.957)	-9.47e-05 (0.844)	0.000433 (0.392)	0.000290 (0.448)
Distance Berlin	5.00e-05** (0.0466)	7.73e-05 (0.123)	0.000167* (0.0514)	4.99e-05 (0.290)
Constant	0.0154** (0.0340)	0.0268** (0.0101)	-0.00596 (0.653)	0.00290 (0.783)
Observations	449	128	265	59
R-squared	0.175	0.233	0.258	0.442
	1925			
Connection	-0.00552 (0.293)	-0.00933 (0.246)	-0.00309 (0.534)	0.00540 (0.361)
Joint Stock Capital	6.22e-11 (0.534)	0 (0.678)	0 (0.796)	1.75e-10 (0.124)
Firm age	-6.67e-08 (1.000)	-0.000250 (0.235)	8.16e-06 (0.969)	-0.000108 (0.434)
Distance Berlin	-7.42e-06 (0.534)	-4.17e-07 (0.977)	-1.08e-06 (0.945)	-1.75e-05 (0.383)
Constant	0.0410*** (7.18e-05)	0.0398*** (3.51e-05)	0.0398*** (0.000874)	0.0275*** (0.000932)
Observations	526	143	516	117
R-squared	0.025	0.074	0.018	0.101
	1938			
Connection	0.0103** (0.0454)	0.0127** (0.0179)	0.00486 (0.136)	0.00718 (0.141)
Joint Stock Capital	1.28e-10 (0.332)	-0 (0.900)	-1.43e-10 (0.439)	0 (0.917)
Firm age	0.000104 (0.736)	0.000180 (0.273)	0.000220 (0.276)	0.000243 (0.339)
Distance Berlin	-2.36e-05 (0.348)	2.47e-06 (0.886)	-1.85e-05 (0.289)	1.51e-05 (0.541)
Constant	0.0202 (0.144)	0.0147 (0.118)	0.00259 (0.729)	-0.0162 (0.344)
Observations	330	146	260	96
R-squared	0.027	0.183	0.022	0.176

Table contains OLS regression results of returns on assets on various connection and firm characteristic measures after Coarsened Exact Matching. For details see text. Firm age in years, distance in kilometres, and stock capital in Reichsmark. Sector indicator variables included, 'others' is omitted. Robust standard errors, clustered at sector level, in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Chapter II

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‘With a little help of my friend’

Political Connections as risk insurance for investment in times of instability – evidence from interwar Germany¹⁴⁹

In the interwar years, quite a large number of firms had active or former politicians on their supervisory boards. We show that especially large and established firms had political connections in this form. We further provide anecdotal and empirical evidence that political connections to a governing party functioned in a way like a risk insurance for investment, since the market value of connected firms was not just higher than the value of unconnected firms, connected firms also seemed to recover quicker and with lower volatility after the hyperinflation in 1923.

Keywords: Political Connections; Interwar Germany; Stock Market Performance

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¹⁴⁹ This paper is co-authored with Sibylle Lehmann-Hasemeyer (University of Hohenheim).

Introduction

In July 2015 the German parliament passed a law that introduced a waiting period of 18 months before a resigned politician could accept a job offer from a private firm or lobby group. This law was the result of the recently re-opened debate on the potential conflict of interest of politicians, which started with Peer Steinbrück, Angela Merkel's main competitor for the chancellorship in the election in 2013. In the same year, Steinbrück was still a board member of Thyssen Krupp – a large industrial concern. In a board meeting, the members discussed various possibilities to reduce energy prices. During this discussion, he promised political support. In the following weeks, it was heavily discussed whether a politician was authorized to openly support the interest of a particular firm, especially since he was paid from the firm for being a member of the board (see, for instance, *Die Zeit*, 10 January 2013). Firms' connections in the form of supervisory board memberships of politicians have been recognised and debated among citizens, journalists, economists and political scientists for many years and several academic papers have documented that links between politics and business are, and were, quite widespread and seem to add considerable value to firms (see Faccio 2006).

However, although there is broad literature on more recent periods, research dealing with the quantifiable impact of political connections in Germany does not relate to periods prior to 1950, with the exception of Ferguson and Voth (2008)¹⁵⁰. These authors quantify the impact of an extreme political connection — the one to the National Socialist Party (NSDAP). They compare stock market performance of firms listed on the Berlin stock exchange that already had substantial links to the National Socialist German Workers' Party (NSDAP) before Hitler came to power in 1933 with firms that had no connection. They show that firms that were connected to the NSDAP through party affiliation or financial donations by directors, managers or supervisory board members, performed disproportionately well in 1933 – after Hitler took over. Examining 1932 and 1933, they picked a time in German history when the first democracy was wheezing its last breath and the coming leadership of Adolf Hitler was more than just a threat. As Faccio (2006) has shown, political connections matter most in systems of restricted democracy, high levels of corruption, barriers to foreign investment and weak institutions, and

¹⁵⁰ Further research in this area has studied the existence and impact of bankers on supervisory boards as well as on connections between different firms via supervisory board members (see, for instance, Fohlin 2007; Windolf 2006; Windolf and Beyer 1997; Krenn and Marx 2012), but not on the value added by having politicians on the boards.

Ferguson and Voth's (2008) results fit in very well here.¹⁵¹ The potential conflict of interest and possible advantages of a political connection was not a new phenomenon of the early 1930s. Contemporaries in Germany were aware of these networks well before the rise of the National Socialists. A journalist with the pseudonym Morus wrote in a left wing weekly newspaper in 1925: *'Schau einer an, die sitzen gar nicht am Königsplatz, um das ganze deutsche Volk zu betreuen, die wollen nur das Brauereigewerbe oder die Klempnerinnung oder den Großgrundbesitz oder die Metallarbeiter versorgen?'*¹⁵² (Morus 1925, 29). Furthermore, he mentions that member journals of economic associations proudly reported the number of politicians that were members of its organisation or board members of a firm organised in this very organisation (Morus 1928).

In this paper, we provide a first systematic quantitative overview of the political connections of firms that were listed on the Berlin stock exchange in the first German democracy. Our benchmark year is 1925. Overall, about 12 percent of the firms had a politician in the supervisory board. We further show that larger and older firms had a higher likelihood to establish political connections. The most active politicians on supervisory boards were often well-known industrialists, like Hugo Stinnes, who tried to benefit directly by gaining political power and influence. They are also known as important networkers. Aside from the work of Ferguson and Voth (2008) this is the first quantitative research on the existence and the impact of political networks via supervisory boards in Germany before 1950 and should be seen as a starting point for further research on the degree and impact of political connections in Europe in the long run.

In general, we assume that political connections paid off since they ensured that the interest of the firms were represented politically – similar to the recent case of Steinbrück and Thyssen. This support can have many different faces, which we discuss in detail in the section following the introduction. Altogether, previous research on other countries and periods as well as anecdotal evidence suggests that investors believed that political connections improved firms performance via information advantages, support of business activities in general and protection against prosecution. In that sense, they served as an insurance and reduced

¹⁵¹ For earlier periods, one study provides evidence for Britain that political connections already paid off in the 19th Century (Braggion and Moore 2013).

¹⁵² *"Look at that, they are not sitting in this particular square (square of kings) to take care of the needs of all German people. They just care about Breweries, the guilds of plumbers, great land owners or metal workers?"* The "Königsplatz" (today's Platz der Republik) is the square where the parliament was located.

investment risk and should matter most in periods of instability and insecurity. To test this hypothesis for the economic crisis that came along with re-stabilizing the German currency after hyperinflation, we select a sample of firms and analyse their longer run performance in the period 1922, 1923 and 1924. While the breakdown of the economy in 1923 and early 1924 lead to the downfall and bankruptcy of many firms, some people benefitted in these years. Especially investors, who were in possession of large amounts of foreign capital, were able to buy a number of other firms in a very short period. After the inflation, they needed large amounts of capital to run these enterprises. However, after the hyperinflation, capital became scarce and firms with the need for large credits were dependent on political support (Klein 2014, 221).

Overall, our results fit well our expectations. We find that a former or current politician of a governing party increased the overall value of firms. We further show that connected firms seem to recover quicker after the hyperinflation in 1923, since the market value was above the value of unconnected firms and the volatility of the shares was lower than the volatility of unconnected firms.

The paper is organised as follows. In the first section, we discuss the literature on political connections and provide anecdotal evidence for the interwar years. We show that both, previous research and anecdotal evidence suggest that political connections function like a risk insurance on investment. In the next section, we provide descriptive statistics about the political connections, the connected politicians and parties and main differences between connected and unconnected firms for the benchmark years 1925 and 1928. Next, we apply a simple OLS setting in order to see whether political connections paid off and if there were differences between the types of connections. In the fourth section, we study the impact of political connections in times of crisis. The last section concludes.

Political connections as risk insurance

Generally, we assume that political connections paid off since they ensured that the interest of the firms were represented politically. As mentioned above, this support can have many different faces. Political connections might have helped, for instance, to get preferential access to credit as Cull and Xu (2005) have shown for present-day China and Khwaja and Mian (2005) for present-day Pakistan. Faccio et al. (2006) have further provided evidence in a cross-country-

study including 35 countries in the period 1997-2002 that connected firms received better treatment by the government in times of crisis, with a higher likelihood to get bailed out. Backman (1999) for example, provides evidence of preferential treatment by government-controlled banks. Evidence of tax discounts is documented by De Soto (1989). Regulatory benefits enjoyed by politically connected firms are discussed by Stigler (1971) and De Soto (1989). Most studies on political connections focus on emerging markets and developing countries and provide similar results.

There are numerous historical examples that indeed show that some of the above links mattered in Interwar Germany and that contemporary observers were well aware of these potential advantages.¹⁵³ A well know example for preferential access to credit is the famous Barmat affair (see for instance Klein 2014, pp. 239). The two brothers Barmat, who were the owners and CEOs of the Barmat concern made large profits during the hyperinflation 1923, when they continued to expand their business and bought other firms. The largest firm in their firm group was Amexima, a firm that mainly imported food to Germany. However, during the hyperinflation they expanded and bought other firms (König 1924). After 1923, when the hyperinflation was banned, it suddenly became much harder to get access to credits and the liquid capital was not sufficient to meet the needs of the newly acquired firms and estates.

In 1924, it became public that the two brothers Barmat solved this problem by bribing officials and politicians with private credits or board memberships. Despite some private banks, the central bank (Reichsbank) and the post, which also granted loans, were involved. The postmaster general, Anton Höfle (Center party), for instance received a private credit from Barmat. This credit was arranged with the help of fellow Member of Parliament for the same party group, Hermann Lange-Hagemann. Lange-Hagemann was board member of several firms that were part of the Barmat-concern. In exchange, Höfle granted a large credit to the Barmat concern. Although Höfle had already repaid his private credit before he signed the credit for Barmat, he lost immunity and was arrested in 1924. He died in prison three month later. Hermann Lange-Hagemann left the Center party, but stayed in parliament. Overall, many other politicians from different parties were involved in the affair. The most famous actor was the former chancellor Gustav Bauer from the Social Democrats.

In the aftermath of this scandal, there was a heated debate in the Prussian parliament put forward by the communist party. They accused the government of preferring to bail out firms, whose

¹⁵³ Klein (2014) has recently collected famous cases of corruption in Interwar Germany.

leaders had well established relationships to politicians¹⁵⁴. In this debate the bailout of the Hugo Stinnes AG, which severely struggled after the death of its eponym, was discussed (Klein, 2014, 223). In the same year, Reemtsma, the producers of cigarettes also seemed to benefit from his political connections. The state increased taxation on warehousing of raw tobacco, which was only applicable if tobacco was stored within a company. Reemtsma already had learned from the changes while the law was debated. When the law came into effect, the company had already secretly outsourced its material stock, unlike many competitors. Moreover, rumour has it that established political connections to the government prevented the firm from being accused of tax fraud (Klein 2014, pp. 421). A few years later, Reemtsma again benefitted from his good relationships with the ministry of finance (Jacobs 2008, pp. 46, Klein 2014, pp. 426). In 1929 the tobacco company aimed at taking over the smaller cigarette producer Batschari, which had accumulated a huge tax debt. Due to a decision of the ministry of finance, the debt was cancelled without stating its reason.

Altogether, drawn from theoretical consideration, previous research on other countries and periods as well as anecdotal evidence, we expect that investors believed that political connections improved firms performance via information advantages, support of business activities in general and protection against prosecution. In that sense, they served as an insurance and reduced investment risk and should matter most in periods of instability and insecurity. To test this hypothesis for the economic crisis that came along with re-stabilizing the German currency after hyperinflation, we select a sample of firms and analyse their longer run performance in the period 1922, 1923 and 1924. While the breakdown of the economy in 1923 and early 1924 lead to the downfall and bankruptcy of many firms, some people – like the Barmat brothers – benefitted in these years. Especially investors, who were in possession of large amounts of foreign capital, were able to buy a number of other firms in a very short period (see also Ufermann 1924). After the inflation, they needed capital to run these enterprises and were dependent on political support (Klein 2014, p. 221). The Barmat affair is a good example for the value of political connection in these years. Another example comes from a debate in the parliament 1924 about how much debt and liabilities had to be revalued in order to compensate creditors for the devaluation of the currency. In the committee that was founded to debate these issue, four members were identified who had personal interest for a rather moderate revaluation of debts and liabilities. They themselves or their family members had

¹⁵⁴ See also: Verhandlungen des Preussischen Landtags, 2. WP. Bd. 5, 95 Sitzung, 11. November 1925, 6267, 6326.

bought land during the hyperinflation but still had remaining liabilities from these deals, which they tried to keep low (Morus 1925).

Descriptive statistics and overview of the political connections

By the end of 1925, 1,064 firms were listed on the Berlin stock exchange, with a nominal share value of 9,759.9 and a market value of approximately 7,000 million Reichsmark (RM). This equals a market capitalisation of 11 to 15 percent of the GDP¹⁵⁵, which is about half the amount of the estimate provided by Rajan and Zingales (2003)¹⁵⁶. The largest sector in terms of number of listed firms was heavy industry. The banking sector, with its main trading centre in Berlin was also of great importance, though the recent period of hyperinflation had severely decreased its overall market share.¹⁵⁷ In terms of joint stock capital the market seemed quite balanced regarding its composition mirroring the structure of the German economy with its core sectors chemicals and machine building. Firm data for the benchmark year 1925 was taken from *Handbuch der Deutschen Aktiengesellschaften*, a stock market manual. This record includes firm-specific variables such as name of the firm, director and supervisory board members, size of an issue (total value of all shares), the year of incorporation, place of headquarters and sector.¹⁵⁸ For these firms we further collected firm information and political connections in the year 1928 to show the development of political connections from the same source. The end-of-year prices for 1925 and 1928 were taken from the December issues of *Berliner Börsenzeitung*. We define political connections as a connection via the supervisory board memberships of politicians. Ferguson and Voth (2008) as well as Faccio (2006) also included financial donations to parties. These payments, however, are very difficult to identify and summarise for our observation period. It is relatively easy for the Nazi party, since many historians and political scientists have spent decades of research time on this party, but it is nearly impossible to identify these kinds of informal links for all parties in interwar Germany. We may therefore underestimate the actual political relationship and are not able to directly compare our results

¹⁵⁵ Nominal GDP was taken from Burhop and Wolff (2005).

¹⁵⁶ Rajan and Zingales (2003) cover all stock exchanges in Germany and not just the central one in Berlin. However, Burhop and Lehmann-Hasemeyer (2016) have recently shown for 1913 that even if all stock exchanges are covered, the overall market capitalisation is slightly lower. A similar revision of the Rajan and Zingales (2003) data has been made for the US and the UK (see Musacchio and Turner 2013, p. 528)

¹⁵⁷ The large universal banks in particular suffered tremendous losses, which led to a reduction in equity capital and made them dependent on the Reichsbank (Central Bank) as a last-resort lender and left the entire banking sector vulnerable (Tilly 2001, p. 15; Schnabel 2009).

¹⁵⁸ We are grateful to Carsten Burhop for providing us with an unpublished dataset of all firms listed on the Berlin stock exchange in 1925, including name of the firm, size of the issue year of incorporation, place of headquarters and sector. This severely reduced the amount of data that we had to collect.

to Ferguson and Voth (2008). However, by studying the stock market performance, we mainly study the expectations of investors. It therefore makes sense to focus on formal and public political connections that can easily be observed by an average informed investor. Board memberships and board of directors were made public in *Adressbuch der Direktoren und Aufsichtsräte* and – based on the handbook – discussed in media (Morus 1925, p. 1928). Supervisory boards were elected by the general assemblies. Since 1884 all persons, regardless of whether they held shares or not, could be elected (Burhop 2006, p. 14). The members were elected for a term of five years and the supervisory board had to consist of at least three members, but the larger the firm the larger the boards. Deutsche Bank, for instance, had 58 board members in 1925. In this period supervisory boards were not just regulatory bodies. Members of the board were often involved in strategically important firm decisions (Windolf 2006, 191). Political connections were identified by comparing the names of supervisory board members with MPs since 1919 when the National Assembly, the founding meeting of the first German democracy, took place. This has been done using the database published in the digital library of the Bavarian state library (Bayerische Staatsbibliothek).¹⁵⁹ These result were then compared and crosschecked with the *Adressbuch der Direktoren und Aufsichtsräte 1925*. It is necessary to rely on more than one source to make sure to reduce mistakes that arise for instance due to misspelling of names or missings in the manuals.¹⁶⁰

We differentiate between different types of political connections in order to learn more about their quality. We therefore distinguish between board members, who are currently in the parliament, but for the first time (connected only to current MP); board members that were MP in earlier years (connected only to former MP) and board members who are in parliament and look back on at least one term of office before (connected to former and current MP). Furthermore we count the same type of connections but just if the party of the MP was in the current government. We assume that a direct connection to the government, which is even closer if the MP is still in parliament, should have a higher value than a connection to a former politician. We also checked whether the politician held the office of a minister at some stage. Table 1 provides an overview of the political connections for the benchmark years 1925 and

¹⁵⁹ By considering only supervisory board members who had been MPs since the National assembly in 1919, we miss political connections of supervisory board members that were MPs in the Empire, but not in Weimar. However, since we capture all politicians who started their political career in the Empire but were still politically active in the Weimar Republic, the bias should be limited. Especially since the political “value” in terms of the political influence of a person who was an MP in the Empire but not in the Weimar Republic was most likely too limited to matter in 1925—nearly six years after the official end of the Empire and almost a decade after the beginning of World War I.

¹⁶⁰ This is quite a common problem as Radandt (1966) points out.

1928. Overall, it was quite common to have a political connection. About 12 percent of the firms had a political connection in the form of a current or a former Member of Parliament (MP) in 1925. The share slightly decreased to 9 percent in 1928. Most of these political connections were direct connections to the government and about 2 percent were connections to a former Minister. Morus (1925) claims that previous ministers were particularly attractive for firms, but as long as Ministers were still in office, they tried to avoid any official connection to industry to keep the impression of a clean and uncorrupted Republic. Eleven firms had a CEO, who was previously a politician. In our benchmark year, Morus (1925) reports that 65 of the 463 Members of Parliament held together 269 board memberships. In 1928, the same journalist again reports that about 16 percent of the Members of Parliament and about eleven percent of the Members of the Prussian state parliament were ‘close’ to industry. Altogether, 72 Members of Parliament held together 276 board memberships. He further claims that although the overall number of politicians in supervisory boards seems rather low, a single man from a certain sector or firm in the right parliamentary group would be sufficient to influence politics in their favour (Morus 1928).

Panel b of Table 1 reveals that most connections were to moderate parties in the middle of the political left-right continuum. The most extreme connections were to the right-wing German National Peoples party. We do not find connections to more extreme parties. Most connections were to the German Democratic Party (DDP)¹⁶¹, a liberal party that clearly supported economic interests and the German Peoples Party (DVP), both of which were most of the time part of the government and the rather conservative Center Party (Zentrum). Surprisingly we just find few Social Democrats and Independent Social Democrats (USPD) on supervisory boards and all of them in public or non-profit organisation. Morus (1925) claims that this might be caused by the ‘Barmat- Affair’¹⁶², after which the involved Social Democrat Gustav Bauer resigned from all board memberships.

¹⁶¹ The DVP were liberal with an emphasis on civil and parliamentary rights (Treue 1954, pp. 70). The party represented the interests of the upper classes and commerce. The aims of the opposing Social Democrats were defined in their Erfurt Programme of 1891, which contained several practical demands in favor of the working class, such as the improvement of labour conditions, the eight-hour working day, free health care and not least that religion should be a private matter (Treue 1954, p. 72).

¹⁶² See also Klein (2014, 229-228).

Table 1: Overview political connections of supervisory board members

	1925		1928	
Panel A: Types of political connections				
	Number of firms	in Percent	Number of firms	in Percent
Connected altogether	131	12.3	88	9.1
Connected only to current MP	16	1.5	4	0.4
Connected only to former MP	66	6.2	38	3.9
Connected to former and current MP	49	4.6	46	4.8
Connected altogether to governing party	111	10.4	76	7.9
Connected only to current MP of the governing party	15	1.4	4	0.4
Connected only to former MP of the governing party	57	5.4	31	3.2
Connected to former and current MP of the governing party	39	3.7	41	4.2
Connected to a former or current Minister	21	2.0	14	1.5
Panel B: Connections to Parties				
	Number of firms	in Percent	Number of firms	in Percent
Bavarian Peoples Party (BVP)	3	0.3	4	0.4
German Democratic Party (DDP)	48	4.5	34	3.5
German Nationals Peoples Party (DNVP)	10	0.9	5	0.5
German Peoples Party (DVP)	55	5.2	29	3.0
National Socialist Party (NSDAP)	0	0.0	1	0.1
Social Democratic Party (SPD)	12	1.1	7	0.7
Centre Party	11	1.0	15	1.6
Total number of firms	1064	100	968	100

Source: see text

Taking a closer look at the politicians on supervisory boards reveals that some of them were well-known networkers. Table 2 provides an overview over the politicians, which held more than ten board memberships in 1925. The industrialist Victor Weidtmann, for instance, was a member of 19 different boards. Most of these firms were from heavy industry, but Weidtmann was also on the board of Deutsche Bank, the most influential universal bank at the time (see for instance Lehmann 2014). We assume that good networkers played a central role, especially

since they often represented large parts of particular sectors and not just a single firm. For instance, Albert Vögler, who held 12 board memberships, co-initiated the foundation of the trust of large steel mills ‘*Vereinigte Stahlwerke AG*’ in the mid-1920s. The trust cooperated with the government and took advantage by influencing taxation and getting other privileges (see Reckendrees 2000, pp. 222). Furthermore, the overall number of board memberships of these politicians was much higher if we also include non-listed companies or firms that were no joint stock companies. Hans von Raumer for instance, overall held 14 board memberships, Hermann Fischer 46 and ten Hompel more than 15 altogether (Adressbuch der Direktoren und Aufsichtsräte 1925/1926, Morus 1925).

Table 2: Politicians with more than 10 board memberships in 1925

<i>Name</i>	<i>Number of board memberships</i>	<i>Party affiliation</i>	<i>legislative periods</i>	<i>Occupation</i>
<i>Victor Weidtman</i>	19	DVP	1	Lawyer, Entrepreneur
<i>Hermann Fischer</i>	15	DDP	3	Lawyer
<i>Albert Vögler</i>	12	DVP	2	Engineer, Entrepreneur
<i>Carl Friedrich von Siemens</i>	11	DDP	2	Engineer, Lawyer, Entrepreneur
<i>Hans von Raumer</i>	8	DVP	3	Lawyer, Entrepreneur
<i>Alfred Hugenberg</i>	5	DVP	4	Entrepreneur
<i>Hugo Stinnes</i>	4	DVP	1	Entrepreneur
<i>Rudolf ten Hompel</i>	4	Center	3	Entrepreneur

Source: see text

Furthermore, some sectors were much more connected than others (Table 3). In mining, for instance, every fourth firm had a politician on its supervisory board. Branches with a direct business link to public or state matters, such as transportation and public utility, also rank among the sectors with the largest amount of connected firms. For the year 1932, Ferguson and Voth (2008, p. 124) also find the highest degree of political connections to the Nazis these sectors. However, while in 1925 less than 8 percent of steel firms (part of heavy industry) were connected, the NSDAP affiliation of these firms was nearly 60 percent in 1932. The National Socialists had a strong interest in controlling that part of the economy, since it would become decisive in times of war. Thus, arguably the National Socialists MPs selected themselves into the supervisory boards of steel producing firms around 1932 with a clear interest in controlling production. However, steel industrialist on the other hand also had a strong interest to cooperate with the National Socialist of whom they expect to raise demand for armament.

Table 3: Share of different types of political connections by sector 1925

Panel A: Connection type							
	Share of firms connected altogether		Share of firms connected to governing party		Share of firms connected to former or current Minister		
Banking	15.7		9.8		3.9		
Insurance	23.3		14.0		0.0		
Mining	25.6		25.6		4.7		
Heavy industry	7.4		6.1		0.4		
Light industry	7.5		7.0		0.5		
Food processing	9.1		7.8		0.0		
Transportation	22.4		19.4		7.5		
Chemical industry	7.6		5.7		0.0		
Public utility	23.8		22.2		7.9		
Others	9.5		7.3		1.7		
All firms	12.3		10.4		2.0		

Panel B: Parties							
Share by sector	DVP	Zentrum	DNVP	DDP	BVP	SPD/ USPD	no connection
Banking	0	0	20	10.4	33.3	8.3	4.6
Insurance	9.1	9.1	20	0	0	16.7	3.5
Mining	25.5	18.2	30	18.8	0	0	6.9
Heavy industry	21.8	0	0	8.3	0	25	24.3
Light industry	7.3	18.2	0	14.6	33.3	8.3	19.8
Food processing	7.3	0	10	4.2	0	0	7.5
Transportation	7.3	9.1	0	18.8	0	16.7	5.6
Chemical industry	1.8	9.1	0	2.1	0	0	5.3
Public utility	12.7	9.1	0	12.5	0	8.3	5.1

Source: see text

Table 4 compares the characteristics of connected and unconnected firms for all types of party connections for 1925. One can clearly see that there were significant differences. Firms with political connections seem to have been larger and older than the average unconnected firm. Apart from firm age, connections to the Social Democrats show reverse characteristics. The average capitalisation of firms with a Social Democrat on the supervisory board was below average and far below the average of other politically connected firms.

Table 4: Overview of differences between connected and unconnected firms 1925

	DVP	Zentrum	DNVP	DDP	BVP	SPD/ USPD	no connection
Joint Stock Capital	18.1	14.6	31.2	34.5	49.2	3.3	7.9
t-statistic	3.9***	1.2	3.9***	8.8***	4.0***	-0.9	
Firm age in years	34.1	34.3	42.4	37.7	48.7	52.1	33.0
t-statistic	0.4	0.2	1.6	1.7*	1.5	3.5***	
Distance to Berlin in km	264	328	235	202	302	177	246
t-statistic	0.7	1.5	-0.2	-1.6	0.5	-1.3	
N	55	11	10	48	3	12	934

Source: See text. Share capital in million Reichsmark.

Cross-section – the value of political connections

In order to quantify the impact of political connections, we first run a simple cross section analysis. The dependent variable is the log of the market value in percent of the nominal share value in December 1925. The market value of firms mainly reflects investors' expectations. These are influenced by firm fundamentals and microstructure of stock exchanges. Since all firms were listed on the Berlin stock exchange, the influence of microstructure can be ignored. Thus the stock price level should reflect the expected performance, i.e. earnings of a firm. The demand for shares is also influenced by expectations about risk. Firms with high expected earnings should have high stock prices, while firms with low expected earnings should have low stock prices (see Fama and French 1992, 1995). High risk should reduce the effective demand for shares and therefore depress share prices. As stated before, we assume that political connections influence the stock price positively: firms that have well established political connections are able to generate higher profits because of better information. Furthermore, since we assume that political connections can be interpreted as an insurance for investment, they should also make the investment more attractive, which raises the demand. This should be even more pronounced in times of crisis, when the overall risk for all stock market investments suddenly increases. Altogether, we estimate the following equation with ordinary least squares. Standard errors are clustered by sector.

$$Marketvalue_i = \alpha + \beta * political\ connection_i + \chi * X_i + \varepsilon_i$$

where *Marketvalue* is the log of the end-of-the year share price in percent of the nominal share value. The variable ‘*political connections*’ covers different measures for connections such as for instance dummy variables indicating whether a firm had a current or a former politician on the board, whether a firm had an MP or a former MP of the governing party on the board, or whether the MP was Minister. We also include a variable that measures the years of experience he had as politician. \mathbf{Xi} is a vector that covers other firm-specific variables such as joint stock capital, sector, age of the firm and distance from headquarters to Berlin. The latter serves as a proxy for asymmetric information. Burhop and Lehmann-Hasemeyer (2016) have recently provided evidence that distance is positively correlated with information asymmetries. Furthermore, Lampe and Ploeckl (2014), for instance, have shown – based on Bavarian telephone exchanges in 1900 – that a theoretically ‘weightless’ communication like phone calls was subject to substantial distance cost similar to physically transported mail. Thus, it is possible that firms farther away from Berlin will use political connection to reduce information costs. If we cannot observe a price in the December issues of *Berliner Börsenzeitung* then we exclude the firms.¹⁶³ We further exclude the 43 insurance companies, since trading in them was heavily restricted. They only issued ‘vinkulierte Namensaktien’, that is, registered shares with restricted transferability (Gelman and Burhop 2008, p. 4). Therefore, our data demands reduce the number of observations from 1,064 to 887.

Tables 5 provides the results. Overall, the model is a good fit explaining about 20 percent of the overall variation of the market value. As expected, firm fundamentals clearly influence the market value. The larger and older a firm, the higher is its market value. Political connections also influence the market value in the expected way. However, it is interesting to note that not every political connection mattered. Just a connection to a party in the government mattered. This is possibly driven by the rather negative performance of the public firms, which were non-profit organisation, in which the Social Democrats were board members.¹⁶⁴

¹⁶³ In general, we take the price from 31 December, but if this price cannot be observed, we take the last price reported in the *Berliner Börsenzeitung*. The earliest price that we take for 1925 is the 1 December, to keep a potential bias small.

¹⁶⁴ However, the causality is very unclear. On the one hand, this observation fits the literature about investors and Social Democrats. Hibbs (1977), for instance, claims that left-wing governments in general pursued policies harmful to capital owners. Research for more recent periods provides evidence that stocks drop after a left electoral victory and increase after a right victory, which further supports this hypothesis (see Bechtel 2009; Herron 2000; Leblang and Mukherjee 2004; Snowberg, Wolfers and Zitzewitz 2007). Furthermore, Social Democrats were the party of the workers, demanding shorter working hours, better working condition and better pay (see Winkler 1982). Thus, it seems plausible that investors feared potential negative effects on a firm’s performance if a Social Democrat was on the supervisory board. Supervisory board members from the Social Democrats might have been suspected to also rather harm capital owners to the benefit of the employees and workers. On the other hand, there is evidence of positive political support through Social Democrats in this period as seen in the Barmat affair.

Table 5: Regression results OLS 1925

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	log (market value in percent of nominal share value) December 1925								
All political connections board members (BM)	0.181 (0.147)								
All political connections (BM and CEO)		0.192 (0.134)							
BM is currently MP for the first time			0.0932 (0.533)						
BM was MP			0.0755 (0.185)						
BM was and still is MP			0.376 (0.307)						
All political connections to a governing party (BM)				0.319* (0.162)					
All political connections to a governing party (BM and CEO)					0.326* (0.146)				
Number of years BM was MP						0.0610** (0.0256)			
BM was or is MP and board president							-0.133 (0.346)		
BM was Minister								0.308 (0.558)	
CEO is or was politician									0.0486 (0.279)
Distance headquarters-Berlin	0.000265 (0.000282)	0.000264 (0.000281)	0.000265 (0.000280)	0.000270 (0.000276)	0.000263 (0.000274)	0.000284 (0.000275)	0.000248 (0.000286)	0.000262 (0.000264)	0.000247 (0.000287)
Capitalisation	9.01e-09*** (2.56e-09)	8.99e-09*** (2.55e-09)	9.01e-09*** (2.66e-09)	8.62e-09*** (2.40e-09)	8.59e-09*** (2.40e-09)	8.65e-09*** (2.48e-09)	9.48e-09*** (2.81e-09)	9.39e-09*** (2.65e-09)	9.38e-09*** (2.78e-09)
Age of the firm	0.0133*** (0.00289)	0.0133*** (0.00291)	0.0134*** (0.00302)	0.0133*** (0.00291)	0.0132*** (0.00294)	0.0134*** (0.00289)	0.0135*** (0.00282)	0.0135*** (0.00287)	0.0135*** (0.00284)
Constant	-0.0408 (0.154)	-0.0395 (0.156)	-0.0540 (0.164)	-0.0389 (0.157)	-0.0332 (0.159)	-0.0623 (0.159)	-0.0220 (0.154)	-0.0391 (0.157)	-0.0228 (0.156)
Sector dummies	y	y	y	y	y	y	y	y	y
R-squared	0.185	0.186	0.186	0.188	0.188	0.187	0.184	0.185	0.184
N	887	887	887	887	887	887	887	887	887

Robust standard errors in parentheses, clustered by sector *** p<0.01, ** p<0.05, * p<0.1

Furthermore, the experience of a particular politician also seems to matter. If we include a variable that measures the years of time in office, it has a positive and highly significant impact on the firm's performance. On the other side, it did not matter if the politician was a former minister or was not just a member of the supervisory board but board president or part of the management board (CEO).¹⁶⁵ We further run a regression where we include the four MPs with the largest number of board memberships and dummies for different party affiliations. It is interesting to note that a certain political party does not drive the results in Table 5. Instead, it rather seems to be related to certain persons. We find, for instance that firms which had Albert Vögler on the supervisory board, performed significantly better.¹⁶⁶ This interesting result, however cannot further be explored quantitatively since most other MPs had much fewer board memberships. Therefore, the dummies variables capturing the presence for other MPs would cover too few firms and cannot be interpreted meaningfully.

Performance in times of crisis

The results of the previous section support our hypothesis that firms benefit from political connections. This also fits well the anecdotal evidence we discussed in the introduction. However, it is still possible that well performing firms simply had a higher likelihood to establish political connections. In order to learn more about causality, we analyse the performance of connected versus unconnected firms in a period of three years, including an exogenous economic crisis, the hyperinflation in 1923. Since we assume that political connections served as an insurance for investment, we expect them to matter most in times of crisis when the overall risk for all firms on the stock exchange increased. We therefore apply a Diff-in-Diff like setting, in which the treatment is the stabilisation crisis in 1924, which followed the hyperinflation in 1923. The hyperinflation in 1923 caused a large exogenous shock to the economy, which severely increased risk. However, we have learned previously that the hyperinflation also created particular opportunities for connected firms. Barmat would be a typical example. We therefore expect connected firms to perform significantly better than unconnected firms in the years after the inflation, confirming the hypothesis that political connections function like an insurance. Since we have shown in table 4 that the largest and

¹⁶⁵ We also tried to differentiate between differently sized firms, by including an interaction effect with all connections and connection to the government and the capitalisation of the firm. This variable is not significant in 1925. We also ran regression separately on certain sectors. Just in mining connections seemed significantly more important than in other sectors.

¹⁶⁶ The results are available on request.

oldest firms had the highest likelihood to have a political connection, we do a qualitative matching by choosing only the largest and establish firms. We reduce the sample to the 30 largest firms in 1922, which we took from Ronge (2002, p. 323). 9 out of the 30 firms had a political connection - all to a governing party. Table 6 shows that the main differences between connected and unconnected firms that were evident in Table 4 disappear. There is no significant difference between connected and unconnected firms in terms of joint stock capital, firm age, distance of headquarters to Berlin, book value and/or profits in 1922. Only market value is higher for connected firms, which perfectly fits our results from the previous section.

Table 6: Overview connected versus unconnected firms, 30 largest firms in 1922

	<i>Connected</i>	<i>unconnected</i>	<i>t-statistics</i>
Market value in per cent of share value (log)	9.85	9.28	1.70*
Joint stock capital in Mill Marks	216	245	0.42
Firm age in years	40.6	43	0.34
Distance to Berlin in km	313	266	-0.54
Book value in Mill Marks	27,800	27,800	-1.43
Profits 1922 in Mill Marks	1,340	970	0.54
N	9	21	

Source Source: Ronge (2002, 324), Salinger Börsenhandbuch 1922

We then manually collected weekly share prices for the years 1922, 1923 and 1924. Table 7 provides an overview of the firms and some share prices in 1924 and figure 1 the performance over the whole period. The nine firms that had politicians in the supervisory board are well known for their political connections and how they made use of it. Deutsche Bank for instance, the largest German Credit institute at the time was involved in many business activities covering many different areas of the economy. Accordingly, they were much more confronted with most of the major challenges of that time than other firms: inflation, cut-off from international trade during and in the aftermath of the war (Gall 1995, pp. 176). There were many ways and situations in which the Deutsche Bank probably used its well-developed political network. In March 1920, for instance, the main lobby group for Industry (Reichsverband der deutschen Industrie) and the ministry of economics discussed the foundation of '*Kreditgemeinschaft für die Deutsche Industrie*'. This institution was supposed to facilitate capital procurement of the German industry, which reduced the scope of action for banks. The ministry of finance finally rejected this threat for independent banks' business (Gall 1995, p. 186). At the time, Joseph Wirth from the Centre Party was the minister of finance and one of his fellow party members was member of the supervisory board of the Deutsche Bank at the same time.

Table 7: firm characteristics of the 30 largest firms in 1922

Name of the Firm	Joint stock capital in Million Mark	Firm age	Headquarters	Connected	Affiliated Party	Average Market-to-book ratio 1924			
						1st quarter	2nd quarter	3rd quarter	4th quarter
Deutsche Bank	400	52	Berlin	yes	Centre Party, DDP	15.5	8.3	9.7	11.4
Diskonto Gesellschaft	400	66	Berlin	yes	Centre Party, DDP	18.6	8.8	11	14.3
Dresdner Bank	350	50	Berlin			9.8	5.1	6.3	7.7
HAPAG	285	75	Hamburg			40.5	21.9	25	25.8
Norddeutscher Lloyd	250	66	Bremen			9.1	4.9	5.9	4.1
AEG	850	39	Berlin			13.2	7.9	8.6	9.4
Vereinigte Stahlwerke van der Zypen	43	41	Cologne	yes	DDP	123.2	97.2	89.9	125.7
BASF	430	57	Ludwigshafen			23.7	14.4	16.4	23.3
Bayer	430	41	Cologne			22.5	12	14	20.4
Degussa	100	49	Frankfurt			-	-	-	-
Deutsch-Lux. Bergwerks- und Hütten-AG	260	21	Bochum	yes	DDP, DVP	57.2	40.2	48.1	67.6
DEA	100	23	Berlin			63.4	36	38.1	41.9
Mannesmann	100	32	Düsseldorf			35.8	20.9	16.8	25.5
Felten & Guillaume Carlswerk AG	150	23	Cologne			34.8	19.6	16.5	28.8
Gelsenkirchener Bergwerksverein	318	49	Gelsenkirchen	yes	DDP	63.6	44.2	50.2	70.1
Orenstein & Koppel	136	24	Berlin			21.2	11.6	10.8	17.7
Harpener Bergbau	110	66	Dortmund			82.5	53.4	61.6	97.6
Farbwerke Hoechst AG	430	43	Höchst			33.5	10.7	13.2	20.4
Daimler	200	32	Berlin			5	2.9	2	3.1
Ilse Bergbau AG	150	34	Senftenberg			33.5	15.7	14.7	20.6
Köln-Neuessener Bergwerksverein	94	73	Essen	yes	DDP	55.3	32.9	36.4	58.6
Linke-Hofmann-Lauchhammer AG	123	23	Berlin			33	14.3	11.8	10.8
Commerzbank	350	52	Hamburg			8	4.2	3.9	5.8
Mannesmann	101	15	Aachen	yes	DVP	46.5	27.2	33.4	49.6
Oberschlesische Kokswerke	70	32	Berlin			63	39.9	40.1	43.8
Phoenix AG für Bergbau und Hüttenbetrieb	275	70	Düsseldorf			41.7	24.1	32.5	46.1
Rheinischen Aktiengesellschaft für Braunkohlebergbau und Brikettfabrikation	104	20	Cologne			43.9	26.7	28.2	33.9
Rheinische Stahlwerke AG	160	52	Duisburg			42.6	23.6	27.7	40.9
Siemens & Halske	260	25	Berlin	yes	DDP	48.7	37.5	43.1	57.2
Vereinigte Glanzstoff-Fabriken	70	23	Elberfeld	yes	DVP	65.2	46.6	44.2	60.1
Average	237					39.8	24.6	26.2	35.9

Source: Ronge (2002, 324). Berliner Börsenzeitung, different issues 1924, Handbuch der Reichstagsabgeordneten

Another well know political networker in this sample was Siemens. In times of uncertainty and poor business after World War I, secure revenues were highly desired. The Berlin-based engineering company could rely on contracts with the federal post to establish and develop the telephone network. During the whole 1920s the company enjoyed preferential treatment by the post ministry (Feldenkirchen 1995, pp. 262). At the time Siemens had a board member who was part of the government.

Figure 1: Log of market value in percent of nominal share value (weekly) 1922-1924 of connected and unconnected firms

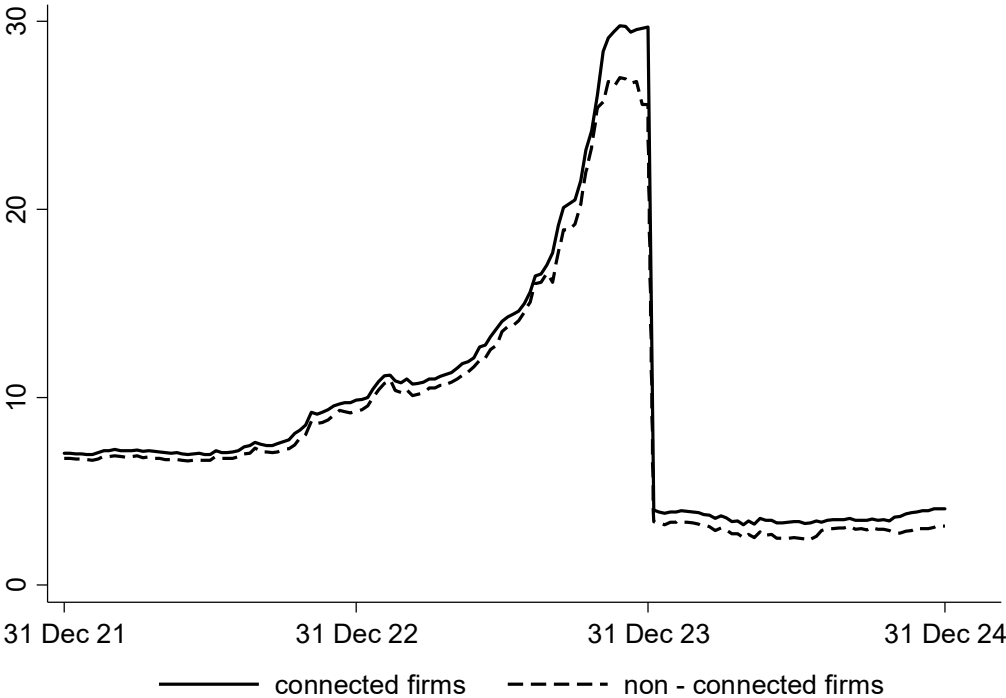


Figure 1 shows that while in 1922, one can hardly see a trend, the inflation gains speed in early 1923 up to its peak in November 1923. In December 1923 the inflation was banned and firm values dropped. Over the year 1924 the firms then started to recover (Taylor 2013). There is no eye-catching difference between the two types of firms. However, over the whole time the connected firms had a slightly higher market value. If we have a closer look at 1924 (Figure 2), after the hyperinflation was banned, it seems that connected firm did not just have a higher market value over the whole period, they also seem to recover quicker towards the end of the year. We test this by estimating a basic panel fixed effects model: in which the dependent variable is the log of the share price in percent of the nominal share value as before. The results are reported in Table 8. In Regression 1, 2 and 3 we use the weekly values per firm.

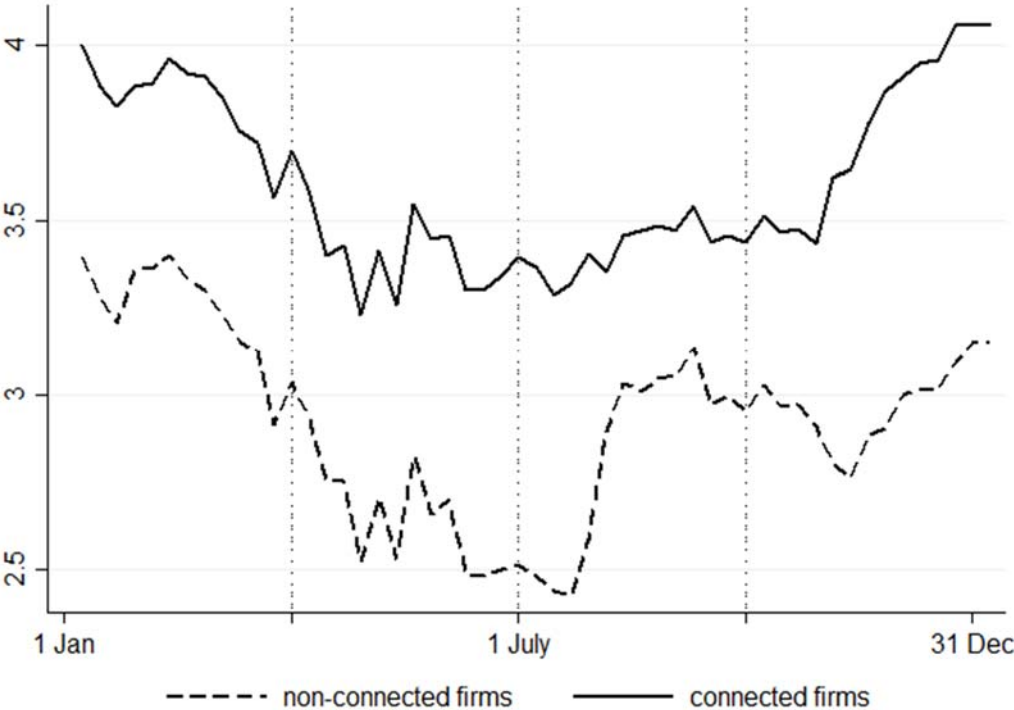
Table 8: Performance and recovery 1922-1923

Dependent variable	(1) log(market value in per cent of nominal share value)	(2)	(3)	(4) average log(market value in per cent of nominal share value) per year	(5)	(6) SD (average log(market value in per cent of nominal share value) per year)	(7)
All connections	0.377 (0.270)			0.377 (0.277)		0.0617 -0.0601	
All connections*1923	0.700 (0.697)	0.700 (0.697)	0.700 (0.709)	0.700 (0.718)	0.700 (0.713)	0.202 -0.764	0.202 -0.76
All connections*1924	0.348*** (0.134)	0.351** (0.135)	0.359** (0.142)	0.359*** (0.126)	0.346** (0.126)	-0.129* -0.0711	-0.149* -0.0781
1923	8.581*** (0.476)	8.581*** (0.476)	19.78*** (1.971)	8.581*** (0.490)	8.581*** (0.487)	5.885*** -0.393	5.885*** -0.391
1924	-4.372*** (0.0905)	-4.375*** (0.0920)	-3.493*** (0.130)	-4.344*** (0.0891)	-4.331*** (0.0884)	-0.535*** -0.0453	-0.516*** -0.056
Constant	7.251*** (0.140)	7.377*** (0.135)	6.841*** (0.168)	7.251*** (0.144)	7.359*** (0.134)	0.858*** -0.0365	0.872*** -0.111
Firm fixed effects	n	y	y	n	y	n	y
Week fixed effects	n	n	y				
Observations	4,609	4,609	4,609	89	89	89	89
R-squared		0.622	0.917		0.972		0.923
Number of firms	30	30	30	30	30	30	30

Robust standard errors in parentheses, clustered at sector level, *** p<0.01, ** p<0.05, * p<0.1

In order to reduce the potential autocorrelation of the error term, we also provide estimates in which we use the average market value per year for 1922, 1923 and 1924 per firm (4 and 5). To learn something about risk, we estimate the same panel with the standard deviation of the market value for the years 1922-1924 (6 and 7).

Figure 2: Log of market value in percent of nominal share value (weekly) 1924 of connected and unconnected firms



Overall the results for the market value and average market value are similar. There is no difference in performance during the hyperinflation. However, if we look at the coefficient of the interaction term ‘All connections* year 1924’, it is positive and significant in all specifications. In 1924, firms with political connections seemed to have performed significantly better than non-connected ones. Furthermore, they performed better with lower volatility, i.e. less risk as shown in regression 6 and 7.

In Table 9 we take a closer look at the year 1924, by dropping all observations on previous years. In the first two regressions, we estimate a similar fixed effect model as in table 8, with a time interaction term for quarters of the year. Again, connected firms seemed to perform better over the whole year. The inclusion of a lagged dependent variable in the regression, assuming that we have a dynamic panel, does not alter the results.

Table 9: Performance and recovery 1924

Dependent variable	(1)	(2)	(3)	(4)	(5)
	log(Market to share value)				
Lag dependent variable			0.984*** (0.00855)	0.738*** (0.0638)	0.735*** (0.0145)
All connections	0.597** (0.267)		0.0141 (0.0103)		
All connections* April-June 1924	0.153** (0.0597)	0.153** (0.0596)	0.0145* (0.00755)	0.0492** (0.0193)	0.0718* (0.0401)
All connections* July-September 1924	0.200*** (0.0621)	0.200*** (0.0621)	-0.0113 (0.00761)	0.0439** (0.0196)	0.0471 (0.0410)
All connections* October-December 1924	0.281*** (0.0858)	0.281*** (0.0858)	0.00605 (0.00900)	0.0758*** (0.0271)	0.0951** (0.0410)
April-June 1924	-0.595*** (0.0237)	-0.595*** (0.0237)	-0.0189** (0.00783)	-0.160*** (0.0377)	-0.142*** (0.0180)
July-September 1924	-0.528*** (0.0425)	-0.528*** (0.0425)	0.0439*** (0.00635)	-0.0968** (0.0367)	-0.0756*** (0.0185)
October-December 1924	-0.301*** (0.0676)	-0.301*** (0.0676)	0.0516*** (0.00634)	-0.0336 (0.0251)	-0.0184 (0.0175)
Constant	3.238*** (0.169)	3.441*** (0.0231)	0.0223 (0.0288)	0.878*** (0.220)	0.869*** (0.0498)
Firm fixed effects	n	y	n	y	n
Observations	1,459	1,459	1,424	1,424	1,424
R-squared		0.526		0.785	
Number of firms	29	29	29	29	29

Note Model (5) is an Arellano-Bover/Blundell-Bond estimation. Robust standard errors in parentheses, clustered at sector level *** p<0.01, ** p<0.05, * p<0.1

Altogether, when we pick the 30 largest firms in 1922 and study the performance of the connected versus unconnected ones it seems that the former recovered better after the crisis. This may not be driven entirely by their political connections. Yet, it is very likely that the stabilisation success can be attributed to their political connections, since the main firm characteristics were largely equal between both groups. However, although statistically significant- admittedly the real advantage was relatively low. If an investor bought 1000 Marks in shares of politically connected firms (equally weighted) in January 1922, he lost 968 Marks by December 1924. If he had bought shares for the same amount of unconnected firms, his loss would have been 987 Marks. Thus, he lost 0.1 percentage point less. The difference is more pronounced if we just consider the stabilisation crisis of 1924. If an investor bought shares for 1000 Marks of a connected firm in January 1924, he lost about 348 Marks by December. If he had bought shares of the unconnected firms the loss would have been about 680 Marks.

Conclusion

Altogether, we show that political connections were quite widespread in interwar Germany. Overall, about 12 percent of the firms had a politician in the supervisory board. We further show that larger and older firms had a higher likelihood to establish political connections. The most active politicians on supervisory boards were often industrialists, who probably tried to benefit by gaining political power and influence. They are also known as important networkers. We also provide evidence that political connections to the government added value to firms and that this relationship seems causal. The impact, however is much less than the impact Ferguson and Voth (2008) have shown for 1932/1933. This may be caused by the fact that we underestimate the degree of political connections, since we just include supervisory and management board memberships. However, it also fits the observation that political connections should matter less in more democratic systems (Faccio 2006).

Furthermore, it is interesting to note that a politician, who was currently an MP or a former minister or the head of the board was not necessarily required to add value to a firm. It was equally as useful to have a political connection in the form of any MP. The only thing that seemed to matter was whether he was a member of the governing party or that he had many years of experience, which probably translated into good networks.

Apart from all these interesting results, there are still a number of unanswered yet important questions and, as stated in the introduction, this paper should be seen as a starting point. Questions like how did political connections develop over time and sectors? In which periods of German History did they matter the most? Was it always the same sectors and firms that were interested in political connections or did this change over time? All these questions must be left to future research.

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Appendix

Table A1: Firm characteristics by sector

	<i>Average joint stock capital in Mill RM in 1925</i>	<i>Average joint stock capital in Mill RM In 1928</i>	<i>Av. firm age In 1925</i>	<i>Av. distance headquarters to Berlin in km</i>	<i>Total number of firms</i>	<i>Percentage share of all firms</i>
<i>Banking</i>	16.3	17.0	47.0	186	51	4.8
<i>Insurance</i>	4.8	5.7	64.9	221	43	4.0
<i>Mining</i>	26.8	28.3	39.7	287	86	8.1
<i>Heavy industry</i>	5.4	5.7	28.2	254	245	23.0
<i>Light industry</i>	4.9	5.2	30.4	278	200	18.8
<i>Food processing</i>	4.0	5.3	37.1	305	77	7.2
<i>Transportation</i>	13.1	18.2	37.9	217	67	6.3
<i>Chemical industry</i>	17.5	22.0	32.0	244	53	5.0
<i>Public utility</i>	20.8	25.9	27.6	214	63	5.9
<i>Others</i>	3.8	5.8	29.6	195	179	16.8
<i>All firms</i>	9.2	10.7	33.6	245	1064	100

Source: See text.

Table A2: Overview of differences between connected and unconnected firms 1928

	DVP	Zentrum	DNVP	NSDAP	DDP	BVP	SPD	no connection
Joint Stock Capital	40.4	25.7	55.6	1.6	55.3	28.6	5.6	8.3
t-statistic	6.57***	2.76***	4.17***		10.0***	1.68*	-0.29	
Firm age in years	37.0	30.3	53.4	33.3	34.2	46.0	45.8	33.3
t-statistic	1.03	-0.61	2.36**		0.30	1.33	1.75*	
Distance to Berlin in km	266.2	360.3	257.6	199.3	215.5	352.4	205.9	243.7
t-statistic	0.65	2.45**	0.17		-0.88	1.19	-0.54	
N	29	15	5	1	34	4	7	976

Source: See text. Share capital in million Reichsmark, age in years. Distance from Berlin in km.

Table A3: Overview variables

Dummy variables	1925		1928	
	Number of firms	in Percent	Number of firms	in Percent
Connected altogether	131	12.3	88	8.3
Connected only to current MP	16	1.5	4	0.4
Connected only to former MP	66	6.2	38	3.6
Connected to former and current MP	49	4.6	46	4.3
Connected altogether to governing party	111	10.4	51	4.8
Connected only to current MP of the governing party	15	1.4	3	0.3
Connected only to former MP of the governing party	57	5.4	24	2.3
Connected to former and current MP of the governing party	39	3.7	24	2.3
BVP	3	0.3	4	0.4
DDP	48	4.5	34	3.2
DNVP	10	0.9	5	0.5
DVP	55	5.2	29	2.7
NSDAP	0	0.0	1	0.1
Centre Party	11	1.0	15	1.4
SPD	12	1.1	7	0.7

Other variables	1925		1928	
	Mean (SD)	Min (Max)	Mean (SD)	Min (Max)
Max. number of board memberships	0.77 (2.9)	0 (15)	0.58 (2.6)	0 (17)
Value of political connection	0.092 (0.26)	0 (1)	0.062 (0.22)	0 (1)
Age of the firm	33.6 (18.9)	1 (160)	33.6 (18.9)	1 (160)
Joint stock capital in mill. RM	9.16 (20.7)	0.0225 (300)	10.7 (28.3)	0.006 (546)
Distance headquarters–Berlin	245.1 (183.5)	0 (682.2)	245.1 (183.5)	0 (682.2)
Price end-of-the-year	21.5 (30.9)	0.1 (390)	124.4 (103.4)	0.1 (1178)

Chapter III

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‘Вставайте, люди русские!’

The revolution of 1905 and the political stock market*

This paper assesses the attitude of investors towards democratic change by performing an event study using Russian government bonds. The Revolution of 1905 offers an ideal occasion: In addition to the revolutionary events, it was accompanied by two opposing constitutional changes within a short period of time. The result contributes to the debate as to whether Imperial Russia could possibly have followed other Western European states, i.e. gradually adopting a democratic rule, or whether a revolution was inevitable – as the writing of Soviet history suggests. As it turns out, investors did not perceive the ongoing as a threat. Rather they considered long-run democratic change to be a realistic. Furthermore, the Russo-Japanese War is taken into consideration. The result is basically in line with the literature finding a negative impact of wars on capital markets. The assessment is based on two types of bonds, listed at both the Saint Petersburg and the Berlin Stock Exchange. The outcome reveals that investors in the East and West were largely consistent in their reactions to political and war-related events.

Keywords: Russian economic history; political stock market; Democratic change; impact war on stock markets

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‘The events of 1905 were a prologue to the two revolutions of 1917, that of February and that of October. In the prologue all the elements of the drama were included, but not carried through.’

Leo Trotsky, The history of the Russian Revolution (1932)

Introduction

In modern Russian history a lot of attention has been paid to the Bolshevik seizure of power in 1917, not least because Soviet Communism took a pivotal role in shaping the world’s history and politics in the 20th century. The radical nature of the Russian Revolution shook the European bourgeois and aristocratic elite in the very foundations. However, it did not come out of the blue. Already at the beginning of the 20th century, years before the far-reaching events of February and October 1917, Russia’s political and economic situation was far from stable. The looming defeat in a costly military engagement in the Far East and deteriorating conditions of living had led to severe social unrest. The Revolution of 1905 was not only in many aspects a blueprint for the later events but also resulted in the adaption of large constitutional rights in the hitherto autocratically-ruled state.

This sudden political turmoil was a watershed for the country’s future development. The resulting participation of a large share of the population, accompanied by substantial civil rights, embodied a clear turn towards democracy. However, the granted reforms were revoked shortly afterwards and the old autocratic order was restored: Any expectation of fundamental political change turned out to be short-lived. Whether Russia could have gone the way of other western European states – gradually adopting constitutional democratic rights – or whether its inability to do so inevitably eventuated in the Bolshevik Revolution has been disputed among historians ever since (Ascher 2004, xi).¹⁶⁸

This paper examines how the various political events during the revolution of 1905 were perceived on the stock markets of Saint Petersburg and Berlin. An event study using two types

¹⁶⁸ Soviet historians and socialist theorists like Leo Trotsky saw the reason for the revolution in the system itself (Frankel 2007, p. 57). An insurrection against it was therefore inevitable. The Tsar’s notion of the political development of his country was quite the opposite; He was optimistic in maintaining the authoritarian policies which had been existent for centuries (Harcave 1964, p. 18). For a more recent historical view see, for instance, Walkin (1964), Fröhlich (1981) or Bradley (2002).

of Russian government bonds reflects the reaction of contemporary capital owners, which is particularly interesting in two aspects:

First, it helps to reveal the capital owners view on the implementation of democracy. The accompanying political and economic freedom is often regarded as beneficial for economic growth.¹⁶⁹ Also, democratic regimes are usually characterised by greater stability.¹⁷⁰ Both arguments imply that a turn towards democracy should generally be welcomed at the markets. On the other hand, capital owners have good reason to disapprove of such reform: It might result in the redistribution of income, an increased provision of public goods and finally an increase in taxation. Such an anti-democratic attitude was characteristic for foreign investors, which prefer to invest authoritarian regimes.¹⁷¹ As it turns out the constitutional changes of 1905 were not appreciated on both considered markets. At the same time, the actors there did not realise an imminent threat of a revolution.¹⁷² Such result implies that a gradual democratisation of Imperial Russia was seen realistic in the long run – as opposed to the view of Soviet historians.

Second, both the Saint Petersburg and the Berlin Stock Exchange are considered. This approach highlights possible dissent between investors in the East and West regarding their view on democratisation. While the Berlin Stock Exchange is well-investigated, this does not apply to the one in Saint Petersburg.¹⁷³ It was considerably smaller than other European markets at that time and had lower trading volume (Borodkin et al. 2006). However, the securities employed in this event study developed almost equally at the two stock exchanges. This outcome suggests that investors' behaviour did not differ substantially between Imperial Russia and the German Empire.

Analogically, the economic effect of the military campaign in the Russo-Japanese war is established. The struggle for dominance in the Far East with Japan reached its peak right before the revolution.¹⁷⁴ Though this eventually turned out to be a disastrous and costly adventure, Russia aimed at the chance to expand its influence in a strategically important region. In this context, recent military involvements in Crimea come to mind, which had a quite severe effect

¹⁶⁹ Economic growth literature suggests a variety of underlying reasons. Positive effects can arise from better protection of property rights (Gould and Gruben 1996; Claessens and Laeven 2003), from an effective rule of law (Barro 2001) or an increased level of human capital in democratic countries (Tavares and Wacziarg 2001; Baum and Lake 2003).

¹⁷⁰ See for instance Acemoglu and Robinson (2000), Morrison (2011) or Aidt and Franck (2015).

¹⁷¹ Many studies find foreign direct investment to be fostered by authoritarian rule, especially in peripheral countries (Oneal 1994; Li & Resnick 2003; Mathur & Singh 2013).

¹⁷² As suggested by Acemoglu and Robinson (2000).

¹⁷³ The Berlin Stock Exchange was already highly developed at that time. Corresponding work on this issue is provided, for instance, by Wetzel (1996), Gelman and Burhop (2008) or Lehmann (2014).

¹⁷⁴ According to literature, the war even worked as a catalyst for the revolutionary events in 1905 (Löwe 2007 b).

on an economic level: the Rouble depreciated massively and net capital outflow regained the high level of the economic crisis in 2008. This development was also reflected in the development of the stock market as well as government bonds (Kholodilin et al. 2014).¹⁷⁵ Nonetheless, empirical evidence on the interaction of capital markets and military conflicts is ambiguous.¹⁷⁶ This paper contributes to the discussion by employing another conflict that has not been investigated yet in that respect. The outcome is not fully consistent with historical literature considering the importance of the various war events. Furthermore, both the Saint Petersburg and the Berlin Stock Exchange reacted almost equally indicating there was no home bias of Russian investors.

This paper is organised as follow: first, the literature is review a based on that various hypotheses are set up. Then, the historical background is illustrated – along with the various events that will be investigated. Next, the data and the methodology are presented. After the results have been outlined, a final section concludes.

Consequences of democratisation

The overall effects of a broader participation of the people can various consequences on the political level: For instance, wealth is redistributed from richer to poorer parts of the population which are now able to utilise their political power (Husted and Kenny 1997; Justman and Gradstein 1999; Acemoglu and Robinson 2000). Such development is often accompanied by growing government expenditures (Aidt and Jensen 2009, p. 379), as well as an increase in the provision of public goods (Husted and Kenny 1997; Lott 1999; Aidt et al. 2006). In the end, these expenditures can be a burden for both the treasury and firms.¹⁷⁷ Authoritarian governments might also have been seen advantageous, since they often claim to be a guarantor for political stability. A stable environment, along with lower potential financial burdens is in the best interest of investors – visible, for instance, in the recent Turkish parliamentary elections in November 2015.¹⁷⁸

Despite high costs, the ruling elites extended the voting rights by choice. One major explanation for this is the importance of specific political constellations and general political competition

¹⁷⁵ The latter constitute the basis of this study.

¹⁷⁶ Often, there was a large impact of events that are considered decisive (Frey and Kucher 2000; Brown and Burdekin 2002). Other authors, like Oosterlinck (2003) or Willard et al. (1996) do not find such a distinct coherence.

¹⁷⁷ Additional cost may arise from a better protection of workers or related legislation.

¹⁷⁸ After the victory of conservative authoritarian government on 1 November 2015, the Turkish stock market and the currency increased significantly in value (FAZ 2 November 2015).

(Lizzerri and Persico 2004; Turner and Zhan 2012). Another common argument is that the participation of a larger share of the population can avoid a revolution, which arises from the disenfranchised masses (Acemoglu and Robinson 2000; Morrison 2011; Aidt and Franck 2015).¹⁷⁹ Accordingly, democratisation possesses a large stabilising element, which can outweigh possibly negative implications – the net effect on investors' attitude remains unclear however.

Sovereign bonds have been considered frequently without detecting a 'democratic advantage': bonds issued by democratic governments did not perform significantly better (Saiegh 2005; Archer et al. 2007; Beaulieu et al. 2012). John Turner and Wenwen Zhan (2012) find investors at the London Stock Exchange to react negatively to a widening of the franchise for the House of Commons in 1867. In the Kingdom of Saxony, the electoral law was altered twice in close succession. There, the negative effects of such change prevailed (Lehmann-Hasemeyer et al. 2014). Generally, investors seemed to be rather sceptical towards democratic change.

This study contributes to this stand of literature by adding another market in a largely unique political environment. The democratic reforms that came into effect in 1906 virtually constitute a natural experiment. The general approach is comparable to other historical studies in that context. Technically the instant investor reaction is assessed in an event study. A negative reaction to an extension of democratic rights supports an anti-democratic attitude of investors. The same applies vice versa. Such an anti-democratic view was found in Great Britain and, partially, in the Kingdom of Saxony. There, the main arguments refer to the potential costs which originate from higher taxation and improved working conditions, which find their expression in a lower value of the affected firms.

Another reason for such behaviour might be an imminent threat of a revolution as claimed by Acemoglu and Robinson (2000). However, Turner and Zhan (2012) failed to find such an effect for Victorian Britain. The revolution of 1905 provides an ideal setting for testing this hypothesis. Generally, a revolutionary regime seems likely to reject financial demands against its predecessor, whose political action, including state expenditures, are probably considered illegitimate.¹⁸⁰ If a revolution is considered a serious threat, government bonds are expected to

¹⁷⁹ Democratisation can have many dimensions. Its level does not only depend on the franchise, but also on the competences of the parliament itself. The interdependence between these two factors needs to be taken into account before making general statements (Pittaluga et al. 2015).

¹⁸⁰ Stephanie Collet (2013) gives an excellent example of sovereign bonds that are declared null in the wake of a regime change. She denotes this type of debt 'odious', which underlines the immoral character of its usage. In fact, most of the government spending in Imperial Russia had been used for more or less suppressive purposes: Military expenditures and the repayment of older debt constituted a large share in the state budget (Ischchanian 1913, p. 210; Reichsbudget 1908).

benefit from a democratic reform, since this would release some of the political pressure and accordingly lower the probability of a government bond to fail. Likewise, the revoking of reforms should have the reverse effect, as the risk of revolution is increased again. The two events of social unrest on 22 January and 5 December 1905 seem particularly suited to test the threat of revolution hypothesis, as they carried large revolutionary potential.

Turner and Zhan (2012) check the threat of revolution hypothesis by using shares prices. This paper looks at government bonds instead, which appears advantageous: while firms are likely to survive a regime change, this hardly applies for government bonds issued by the old ruler (Collet 2013). Their prices are exposed to greater risk and consequently expected to react more sensitively than share prices. Theory and empirical findings imply a general anti-democratic sentiment of investors. A positive reaction of bond prices to the extension of democratic rights can therefore be attributed to an increased risk of an overthrow of the regime. The same applies conversely to dissolution of the Duma and the restriction of franchise shortly afterwards.

Hypothesis 1: Bond prices react negatively to an extension of democratic rights. A possible thread of revolution is mainly reflected in the two events of social unrest.

By quantifying the market reaction this study further allows for making a point on democratic prospects for Imperial Russia. By this means it can reveal in how far the government's decision to eventually leave the path of reform was backed by the elite. Whether Imperial Russia was already on a path towards a constitutional state or, in other words, whether it could possibly have followed other western European states such as Great Britain, has been debated extensively by historians – without reaching a consensus however (See, for instance, Walkin 1964, Fröhlich 1981 or Bradley 2002).¹⁸¹

As argued above, bond prices reflect the expectation of market participants, i.e. investors. These embody the financial and social elite of Russia and even the whole of Europe.¹⁸² Decisions of one autocratic ruler – or at best of a small circle of advisors – might be irrational in the end. Investment on the other hand follows a largely rational schedule and are plausibly giving a quite precise image of the conditions of that time.

The controversy about the Revolution of 1905 is by no means a recent one. Count Witte saw the main reason in the Tsar's single political decisions – particularly in the war with Japan –

¹⁸¹ The recent political development of Russia has been analysed in similar regard (see Hahn 2004 or Hassner 2008).

¹⁸² The structure of bond holders is depicted below. For a comprehensive view on foreign activity in Russian markets see, for instance, McKay (1970) or Ischchanian (1913).

rather than in the inadequacy of the system itself. In his view, the unrest resulted from the Tsars ‘...wavering and not from Russia’s desire for revolution’ (Frankel 2007, p. 57).

In sharp contrast, Soviet historians like Leo Trotsky detected intrinsic structural problems in the regime itself: ‘The monarchy loses its capacity for any kind of creative initiative; it defends itself, it strikes back, it retreats, its activities acquire the automatism of reflexes [...] His nearest ancestors [...] passed on to Nicholas a chaotic empire already carrying the matured revolution in its womb. If he had any choice left, it was only between different roads to ruin.’ (Trotsky 1932, p. 98). According to him, the system itself is the cause for the (therefore inevitable) revolution. The above hypothesis in a specific Russian context can be reformulated as follows:

Hypothesis 2: If investors see a viable democratic prospect for Imperial Russia, bond prices are expected to react negatively to an extension of democratic rights.

At first glance such reasoning seems contradictory. However, the argument is the same as with regard to previous Hypothesis, as the reaction of investors reflects the risk of a revolution. A negative price movement in the wake of reforms suggests that the negative effects, as described earlier, prevailed. Such an outcome would express the investors’ confidence in the stability of the political system.¹⁸³ If on the other hand a threat of a revolution was imminent, any reform should have been welcomed.

Additionally, a well-known historical narrative is re-examined. Ever since, the mutiny on the battleship Potemkin has been a central motive in the history of revolution – not only in the Soviet Union. The ship was anchoring nearby Odessa, when abominable food caused large discontent among the sailors. The command reacted with severe sanction and eventually provoked a mutiny. Though the revolt failed to spread to other ships or even the city of Odessa, it remained hugely popular in the public.¹⁸⁴ However, the importance of the historical event remains questionable (Bennett 1959). En passant this paper can further clarify the issue: The date of Potemkin mutiny corresponds to the sample period, which allows to test its impact on capital markets.

¹⁸³Needless to say that such an assessment – from a present-day perspective – would have been a fatal misjudgement.

¹⁸⁴ Its mainstream fame stems mostly from the 1925 film by Sergey Eisenstein. There is a vast literature on its culture impact, for instance Rosentreter (2011).

War effect on the stock market

Generally, political events have a quite measurable impact on stock markets. The majority of studies focusses on elections (see, for instance, Bechtel 2009; Bernhard and Leblang 2006, chapters 3 and 4; Herron 2000; Leblang and Mukherjee 2004, 2005; Snowberg et al. 2006).¹⁸⁵ The impact of wars has been considered less frequently. By nature wars provide ideal occasions for an event study. Stock market prices reflect the investors' appraisal quite precisely, since the outcome of single encounters comes as a surprise for the public. Empirical literature in this field focusses mainly on two conflicts: World War II and the American Civil War. In both cases however, results are ambiguous. Bruno Frey and Marcel Kucher (2000) find distinct effects using the sovereign bonds of different countries traded on the Swiss bourse during World War II.¹⁸⁶ William Brown and Richard Burdekin (2002) employ a similar approach based on prices from the London Stock Exchange. They focussed on a particular German bond which was issued to finance reparation payments of the Treaty of Versailles. After the National Socialists assumed power, they refused the payment of these dues.¹⁸⁷ Accordingly, the risk of failure of this security was inversely related to the chance of the regime to prevail. Decisive war-related events result in significant breaks in price movements.

Kim Oosterlinck (2003) employed the spread between Vichy state bonds – issued by the French regime collaborating with the German occupiers – and French *Rentes*, which stem from the third French republic. Major price changes are assumed to reflect the probability of the Vichy regime to survive the war.¹⁸⁸ Various events related to the war had a pronounced impact on the respective bond. However, investors reacted more sensitively to political rather than to war-related events.

The second conflict that has been an object of thorough investigation is the American Civil War. Also there, war-related events manifested in financial market prices (McCandless 1996). However, investors often disagreed with historians in their assessment of the significance of these events. Kristen Willard et al. (1996) fail to match the market-impact of well-known battles with historical assessment. Many encounters that are considered important did not cause

¹⁸⁵ Related to these studies are such that evaluate altering of the political or constitutional structure as such. For example, an altering of the electoral law has large impact on prices, as delineated by Lehmann-Hasemeyer et al. (2014) or Turner and Zhan (2012).

¹⁸⁶ An exception is the final capitulation of the Wehrmacht. It is argued that the German defeat – obviously unavoidable – had already been priced by market participants.

¹⁸⁷ The argumentation of the National Socialists resembles that brought forward by Stephanie Collet (2013) - just in a perverted sense. In their view, debt issued by the democratic state was 'odious' in its nature.

¹⁸⁸ In general, the two security types are nearly identical, except for the different issuer. Any spread therefore only reflects the regime itself.

structural breaks in the exchange rate of the greenback – a currency issued by the Union to overcome wartime financial constraints. Based on the same strategy, a further study by Brown and Burdekin (2000) comes to similar results. The authors employed the prices of confederate cotton bonds traded in London. In sum, the assessment of contemporaries often deviates from the historical narrative.

Generally, Russian bonds are expected to have been impacted by war-related events. First, Russia was already burdened by a huge debt prior to the start of the conflict. Also, its strategic position in the Far East was quite disadvantageous. A remote engagement such as this involves immense costs and a large risk of failure. Holders of Russian government bonds must have been on alert. Further, all major battles in the war turned out to be disastrous for Russia, as described above. Such a rare case allows formulating clear-cut expectations with regard to Russian bond prices: price reactions to any war-related event is expected to be negative. The only plausible exception from that assumption is the signing of the Treaty of Portsmouth which was quite advantageous for Russia and should, accordingly, have been perceived positively.

Hypothesis 3: Russian government bonds reacted (negatively) to the war events of the Russo-Japanese war.

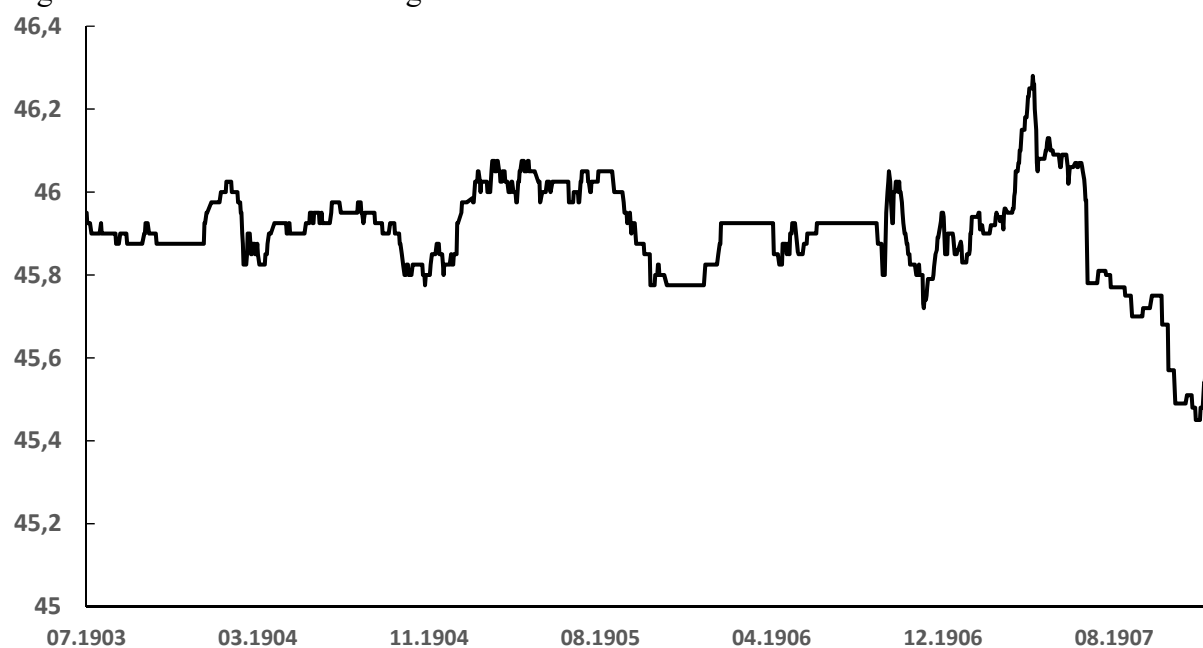
The Russo-Japanese War is particularly suited for the investigation: It had large political implications, especially in East-Asia. Also, it sketched out modern warfare in great detail (Kowner 2007). Though geographically limited to a small area, related news was noticed across the globe. In that regard it was quite modern: means of communication were a distinct characteristic of all following conflicts. Nevertheless, the war events have to be looked at with caution: The sheer size of the Russian Empire made news from a remote battlefield take a long time to reach the European part of Russia.¹⁸⁹ Furthermore, the Russian press was characterised by patriotic rather than objective reporting and freedom of press was not yet in place (Grüner 2007). It remains questionable whether any defeat of the Russian army was displayed in full. German newspapers on the other hand were less suspicious of being pro-Russian. The comparison between price reactions at the Saint Petersburg and the Berlin Stock Exchange can clarify this issue.

¹⁸⁹ Only one direct telegraph line to Russian mainland existed, alongside the Trans-Siberian Railway.

Russian government bonds and the Saint Petersburg Stock Exchange

Russian state borrowing has a long-reaching tradition and was crucial for the modernisation of the country. The state played a much larger role in the economic activity than elsewhere. It tried to satisfy its demand for capital by extensively floating bond issues. As a consequence, government bonds were widespread in Russia well before corporate stocks. Likewise, the amount of the corresponding securities was largest throughout the whole Imperial period (Papp 2001, pp. 32).¹⁹⁰ As stated above, the price development of bonds is especially interesting to analyse in the context of Russo-Japanese War. This conflict was geographically limited and did not affect the economy as a whole. In line with that the Rouble-Mark exchange rate remained relatively constant during the whole period – as displayed in Figure 2. Even so, bond prices are assumed to react sensitively than corporate stocks.

Figure 1: Rouble-Mark exchange rate



Source: *Torgovo-Promyshlennaya Gazeta*.

Initially revenues from bond issues were used basically for warfare and other military expenses, to a small extent also for railroad construction (Ukhov 2003, pp. 4). In the late 19th century the main purpose was altered: Now Russia's industrialisation was fuelled by that mean. The attempts to modernise the economy were implemented mostly by the state. Moreover, market

¹⁹⁰ In the considered period government bonds accounted for a large share of the Russian capital market (Sidorov 1975, p. 253). They were regarded as an attractive investment, not least due to the low level of trust in private enterprises and the dominant role of the state in business activities (Papp 2001, pp. 17).

economy and a financial market in particular were far less developed compared to other European states. The demand for capital could barely be satisfied on domestically. As a consequence, new bonds were issued abroad on a large scale under Tsar Alexander III. This time the Russian government placed these new securities directly on foreign markets, while up until this point it had used banks as an intermediary. Further, gold bonds were introduced as universal standard. Coupon and principal payments of these were either made in paper Roubles or in gold coins, which facilitated international trading (Ukhov 2003, pp. 16). While these measures were of little avail in the beginning, Russia gained unrestricted access to international financial markets after the turn of the century. Consequently, nearly half of all Russian government bonds were held by foreign investors in 1913 (Ukhov 2003, p. 35).¹⁹¹ The German Empire was a major creditor. Approximately 15% of German foreign capital was placed in Russia (Nötzold 1975, p. 241). For that reason the use of the Berlin Stock Exchange as a reference market is particularly suitable.¹⁹²

The efficiency of the Saint Petersburg Stock Exchange has been investigated but little. It was founded at the same time as the city itself. However, it did not become significant for the Russian economy until the late 19th century, when trading reached a substantial amount (Borodkin et al. 2006, pp. 4). The overall economic environment in Russia was not very favourable: the industry was homogeneous as it was grounded on only a few sectors. An unfavourable legislation impeded the creation of firms and a prosperous economic development (Owen 1995, pp. 16). In addition, the establishment of the so-called security department at the Saint Petersburg Stock Exchange in 1900 is regarded as a heavy obstacle. It imposed strict controls on trading and thereby hampered the development of a free market (Papp 2001, p. 8). Still, prices did react to external events, particularly to political ones (Borodkin et al. 2006).¹⁹³ After the turn of the century, the Saint Petersburg Stock Exchange was in many aspects considered well-functioning (Papp 2001, pp. 324).

Much more emphasis has been put on the Berlin Stock Exchange. It performed well even when measured against modern standards. Berlin displayed a high level of information efficiency (Gelman and Burhop 2008) and comparably low trading costs (Gehrig and Fohlin 2006). Further, costs of initial public offerings were quite low, which indicates its efficiency in

¹⁹¹ For all Russian companies, this share amounted to 33.5% (Ukhov 2003, p. 35).

¹⁹² Several Russian governments bonds as well as railroad companies were traded in Berlin. These can be found in *Handbuch der Deutschen Aktiengesellschaften* (1914), a stock market manual. Other important sources of capital were France and Belgium.

¹⁹³ According to Borodkin et al. (2006), these political events mattered a lot more for prices than the fundamental values of a security.

underwriting new issues (Lehmann 2014). It was well integrated with other European markets, as prices of internationally traded securities developed almost equally (Baltzer 2006). Overall Berlin seems to be an adequate benchmark market in terms of efficiency.

As it turns out, prices at Berlin and Saint Petersburg behaved equally most of the time. Possible differences in investors' reaction to specific events are assumed to originate from varying attitudes. Likewise, political as well as war-related events might have been taken differently on the respective markets. This applies to political events as well as war events. The latter category is particularly prone to a home bias of Russian government bonds, if investors' decisions were possible driven by patriotic motives. Likewise, an exceedingly anti-democratic attitude of the Russian elite would condense in returns considering political events.¹⁹⁴ Admittedly these interpretations remain speculative to some extent. Differences in outcome might still be induced by lack of efficiency or varying access to relevant information.¹⁹⁵

Hypothesis 4: Possible differences in bond returns at the Saint Petersburg and the Berlin Stock Exchange reflect mainly differences in investors' attitude.

Economic and political backwardness of Imperial Russia

The economic backwardness of Imperial Russia became evident to its rulers ever since the painful defeat in the Crimean War. Russia, though vastly superior in manpower, in the end did not stand a chance due to the lack of modern weapons and transport infrastructure. In the following decades modernisation efforts were undertaken – with initial success. Serfdom was abolished in 1861, the educational system and the military were modernised, economic and social reforms were implemented. The result were extremely high growth rates of GDP and industrial production during the 1890s.¹⁹⁶ Regardless of the temporary economic advance Russia remained largely autocratic, unlike many other European states at that time (Schmidt 2003 pp. 83). Attempts to promote the self-government of rural municipalities were prevented

¹⁹⁴ Historical research often claims distinct autocratic attitudes in the Russian society (see Bradley 2002).

¹⁹⁵ Russian newspapers were generally favourable in reporting of war-related events. Information on political events such as the Bloody Sunday should have been accessible even more easily for Russian investors, as these happened nearby: the Winter Palace, for instance, a main place of action, is well within sight of the Saint Petersburg Stock Exchange.

¹⁹⁶ Although not all of the ambitious reform plans could be implemented. Interests of ruling classes varied largely. For instance, former land owners demanded high financial compensation. That could not be given by the government which faced huge financial constraints by itself. In the end, former serfs had to ransom themselves and remained effectively as dependent as before (Hoch 1991).

by the interests of the aristocracy and central bureaucracy – including the Tsar himself (Löwe 2007 a, pp. 41). Likewise, the peasants’ standard of living remained at subsistence level. The area of land they were allotted with to them after the abolishment of serfdom was undersized (Hoch 2004). Furthermore, even 40 years after the official liberation of serfs, the redemption payment to former landlords were an immense burden (Hoch 1994). In addition, most parts of the population, including an emerging middle class, were still excluded from political participation.

After the turn of the century the high growth rates of industrial production could not keep pace with population growth, as shown in Table 1. In the absence of a prospering economy and an improving standard of living, the structural problems of the empire came to light.¹⁹⁷

Table 1: 5-year growth rates of selected economic indicators

Period	Population	Coal	Oil	Pig iron	Grain
1880–1885	11.4%	29.8%	411.4%	17.8%	-
1885–1890	8.3%	40.9%	105.6%	75.5%	-
1890–1895	5.2%	51.3%	66.9%	55.9%	-
1895–1900	7.3%	77.5%	67.4%	102.1%	10.0%
1900–1905	8.3%	15.6%	-27.8%	-6.8%	1.2%

Source: Kahan (1989, p. 69)

In the wake of the Russo-Japanese War the economic situation further worsened. The deployment and support of troops in the Far East had a direct impact on the welfare of the Russian population, which resulted in continuous unrest. At the same time, an unsuccessful course of war further reduced the government’s reputation. According to the memories of Count Sergey Witte – a formative figure in Imperial Russian politics at the turn of the century¹⁹⁸ – the war functioned as a catalyst: ‘It came the year 1905. The disturbance in the heads of all social classes grew and grew, related to our inglorious defeats in the Far East’ (Witte 1923, p. 197). The unrest culminated on 9 January 1905.¹⁹⁹ A large group of striking workers – estimated at 50,000 to 100,000 people – marched to the Winter Palace in order to express their discontent

¹⁹⁷ The dependency of autocratic regimes on economic prosperity appears to be a general phenomenon, as the recent discussions on the People’s Republic of China illustrate. When growth ceases, the demands for political change become more frequent (see, for instance, *The Economist* 25 October 2014).

¹⁹⁸ Count Witte – serving among other positions as Russian minister of finance – was largely responsible for the fostering of railway construction and industrialisation. Later, he became the main negotiator for peace with Japan and the author of the October Manifesto – as delineated below.

¹⁹⁹ That date corresponds to 22 January in the Julian calendar which had been still in use in Imperial Russia. All the dates mentioned hereafter refer to the Gregorian calendar.

and hand over a petition claiming democratic rights. Though initially peaceful, the mass was fired at by tsarist troops, resulting in hundreds of casualties. The so-called Bloody Sunday gave rise to large uprisings all over the country.²⁰⁰ The situation was not pacified until the release of the October Manifesto on 30 October 1905. In this document the Tsar promised far-reaching constitutional rights. Most notably it contained the introduction of a broad franchise for a newly established parliament – the Duma. The October Manifesto furthermore promised extensive civil rights including religious and political freedom as well as freedom of press (Dahlmann 2005, pp. 125). Within a short period of time Russia’s political system was altered radically. The situation still was quite volatile. While the liberal movement saw its demands mainly fulfilled, the socialist fraction of the formerly united opposition continued their protest. On 5 December 1905 a general strike paralysed economic and social life throughout Russia. Though the protest was finally brought to an end by force, it had a direct consequence on the political level: The government immediately announced the exact shape of the new franchise.²⁰¹ The year 1906 was marked by extensive reforms. Parties and other political organisations were founded in large numbers. On 23 April the new constitution became effective, followed by the solemn opening of the parliament on 10 May (Dahlmann 2005, pp. 128).

Table 2: Overview political events

Date	Event
22 January 1905	Bloody Sunday
30 October 1905	October Manifesto
5 December 1905	General strike
23 April 1906	Commencement of new constitution
10 May 1906	Opening of the first Duma
21 July 1906	Dissolution of the first Duma
20 February 1907	Opening of the second Duma
2 June 1907	Dissolution second Duma and new franchise

All dates refer to the Gregorian calendar.

When the new Duma began its session, it could not match the high expectations with regard to the new political era. In many important questions – for instance, the redemption payments for peasants, possible nationalisation of private property or the extent of civil rights – parliament

²⁰⁰ Russia’s mainly agrarian-based economy was heavily affected. For a detailed picture see Miller (2013).

²⁰¹ The new suffrage widened the electorate to a great degree. Still, as a census suffrage, it strongly discriminated against the low income classes.

and government opposed heavily. Legislation was virtually deadlocked. By 21 July of the same year, the Tsar made use of his constitutional right to dissolve the Duma.²⁰²

The succeeding parliamentary constituted in February 1907. Still, it was not more cooperative to the Tsarist government as it was composed of more leftist and radical MPs. The electorate did not welcome the sudden closing of the old Duma. Political consent was still out of sight. Once again, the Tsar dissolved the parliament. This time however, the newly decreed franchise was greatly restricted in order to generate a parliament that votes in accordance with the government – a clear violation of the constitution (Schmidt 2003, pp. 102). The period of democratisation in Imperial Russia, initiated in 1905, lasted for only two years.

The struggle for influence in the Far East

In the Far East the conflict with Japan had been intensifying since the turn of the century. Part of Count Witte's strategy to foster economic growth and open up new markets was the eastward expansion of the Russian Empire. A prominent symbol of that strategy was the Trans-Siberian Railway that was completed in 1904. It connected European Russia with Vladivostok at the Pacific Ocean and carried huge economic and military potential. This threat to Japanese interests and in addition short-term diplomatic miscalculation led to an escalation of the conflict. When Japan asked for a restriction of Russian activity in the region, the Russian government did little to comply.²⁰³ It completely ignored the Japanese claims, not least due to the feeling of superiority over a non-European nation (Frankel 2007, pp. 54).²⁰⁴

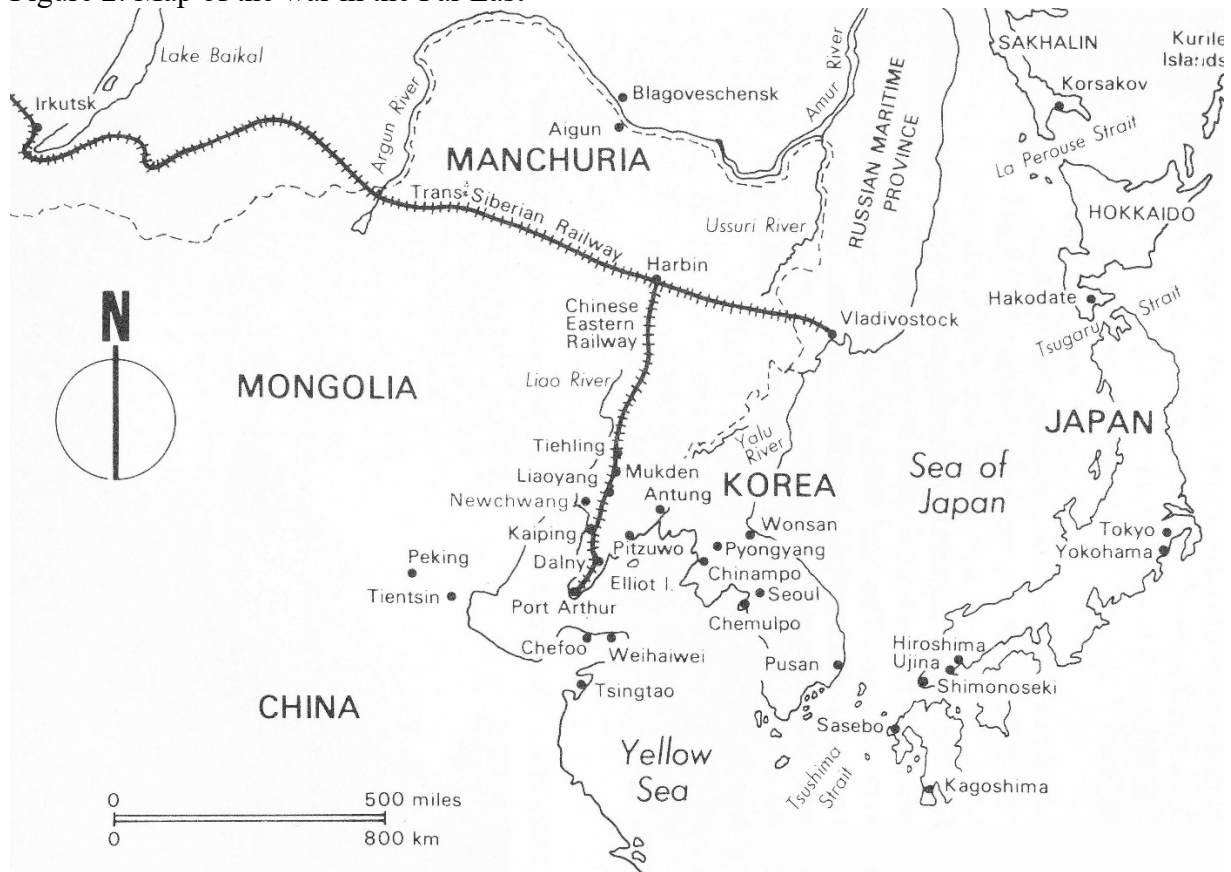
Eventually Japan launched a surprise attack on the Russian city of Port Arthur. The Russian government was not caught totally unaware. In fact, it hoped for a successful course of war that could lead to enthusiasm among the people and, as in former military conflicts, distract from domestic problems. However, such hopes turned out to be wrong, along with the presumed superiority of the Russian army. The troops' morale continuously worsened as an easy victory failed to materialise. At the same time, the war became increasingly unpopular. The mobilisation of new troops became more and more difficult (Löwe 2007b, pp. 147).

²⁰² Though this clearly showed the unwillingness of the Tsar to renounce political power, the political factions did their bit, too. Most of them were newly founded and consequently the majority of the Duma was not well-organized and failed to find a consensus. A government responsible to the parliament could barely develop under such circumstances (Galai 2005).

²⁰³ Since the Boxer-rebellion the spheres of interests in the region were altered. Russia controlled Manchuria, while Japan had de facto annexed Korea in 1895 (Connaughton 1988, p. 3).

²⁰⁴ For a comprehensive view of the origins of the war, see Nish (1985).

Figure 2: Map of the war in the Far East



Source: Connaughton (1988)

In the following, the Russo-Japanese War is outlined. Table 3 lists the most decisive and significant events.²⁰⁵ As it turns out, the Imperial Russian army suffered heavy defeats in the majority of battles. In sharp contrast to the self-understanding of a traditional European power, the Japanese army was de-facto superior in many aspects. Despite the recent completion of the Trans-Siberian Railways, sending and maintaining troops far from the mainland was a formidable logistical challenge. Also Russia's military personnel, though large in numbers, consisted mainly of peasants. Their motivation to fight a remote war against an unknown enemy was rather low. Japan on the other hand had put in great efforts to modernise its military. Modelled on Prussian and British standard, the Japanese army comprised highly trained and specialised forces, which it effectively deployed right on its doorstep in the Japanese Sea, Korea and Manchuria (Connaughton 1988, pp. 12).

²⁰⁵ This section identifies the most decisive events of the war. If not marked differently, it is based on the work of Richard Connaughton (1988) and Ian Nish (2005), who provide a detailed view of the war campaigns. Bear in mind that only new information on the course of the war – decisive battles of strategic importance – are useful for an event study, which ascribes a change in prices to the altering expectations of investors.

Table 3: Overview of war events of the Russo-Japanese War

Date	Event
9 February 1904	First Japanese attack
30 April 1904	Battle at Yalu River
10 August 1904	Battle of the Yellow Sea
2 January 1905	Capitulation of port Arthur
10 March 1905	Mukden Battle
27 May 1905	Battle of Tsushima
27 June 1905	Mutiny on Battleship Potemkin
5 September 1905	Treaty of Portsmouth

All dates refer to the Gregorian calendar.

On 9 February the Japanese navy launched an attack on Port Arthur, damaging several Russian ships. The attack was not preceded by a declaration of war. It came largely to a surprise to the public making this event particularly useful to study – notwithstanding its small strategic relevance.

The first major confrontation on land was the Battle of Yalu River. On 30 April 1904 the Japanese army conquered all the Russian positions, however at great cost of life. The Japanese fortunes of war continued at the Yellow sea, where Japan gained full control after the battle on 10 August 1904. In the first half of 1905 the most decisive battle of the war was fought. On 2 January Port Arthur surrendered after a 154-day siege. Russia finally lost its only naval base in the region and the remains of the Russian Far East fleet were destroyed. The impact on public opinion and the troop's morale was immense. Also, the Battle of Mukden in March of the same year turned out to be disastrous. Eventually, Russia was repulsed from Manchuria – again, the losses on the Japanese side were substantial as well. The last critical naval battle happened at the Tsushima strait. In a risky endeavour the Russian Baltic fleet had circumnavigated Africa, only to meet the same fate as its Far East counterpart. After its final trump card had failed to succeed, Russia's defeat at all stages was undeniable.

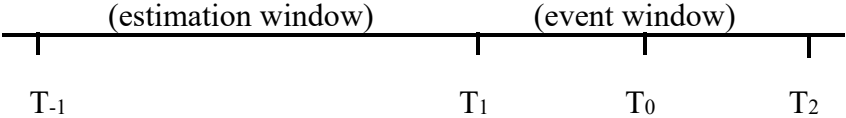
In the end, both sides showed a certain level of war weariness. Despite the successful course of war, the ongoing engagement was a financial and political burden for Japan as well. When US President Theodore Roosevelt offered to negotiate peace, the belligerents were keen to accept. In a long and tough conference, Japan could not take advantage of the fact that it had won nearly every battle. The Treaty of Portsmouth, signed on 5 September 1905, comprised the cession of Manchuria, southern Sakhalin and Kwantung. Apart from these minor territorial losses, the

Russian delegation chaired by Count Witte was quite successful: Japan failed to achieve high reparation payments as well as further territorial claims. Considering Russia’s performance on the battlefield, the peace treaty was to its best advantage.²⁰⁶

Methodology

The impact of the various events on the stock exchange is measured by applying standard event study methodology using Russian government bonds.²⁰⁷ Figure 2 visualises the approach. In an estimation period $[T_{-1}, T_1]$, which is unaffected by the event – the estimation window – the parameters later used to determine the expected (normal) returns are calculated. The event under consideration occurs at T_0 and can affect the stock market during the event window $[T_1, T_2]$, which can lie on either side of T_0 . This is due to the fact that information might leak before the actual event, which is typically relevant for earnings announcement or the like. There is no general consensus on the exact length of the estimation period. Usually, it is set between one and six months for daily prices.²⁰⁸ As prices in the considered period are overall unstable, a relatively short estimation window of 60 days is used in this study.

Figure 3: Estimation and event window



Source: MacKinlay (1997).

The foundation of an event study is the estimation of the expected return, which is then subtracted from the actual return. The resulting abnormal return reflects the impact of the event itself. Here, the so-called constant mean return model is employed. Based on the period- t returns of security i , the expected return $E(R_{it})$ is:

²⁰⁶ Correspondingly, the Japanese public perceived the outcome of the negotiations as extremely humiliating. In the following days, Tokyo was shaken by violent anti-peace riots (Westwood 1986, pp. 160).
²⁰⁷ For an overview of this method see MacKinlay (1997).
²⁰⁸ For an overview see, for instance, Bessembinder et al. (2009).

$$E(R_{it}) = \mu_i + \zeta_{it} \quad \text{With } E(\zeta_{it}) = 0 \text{ and } \text{Var}(\zeta_{it}) = \sigma_{\varepsilon_i}^2 \quad (1)$$

Though much simpler than the common market model, this approach usually yields quite similar and equally powerful results (Brown and Warner, 1980; 1985). The expected return is simply the mean return during the estimation period. Afterwards, abnormal returns in the event window are established. Specifically, these are calculated for security i at time t as: $AR_{it} = R_{it} - E(R_{it})$, where R_{it} is a stock's realized return and where $E(R_{it})$ is its expected return in the absence of the event, as calculated above. Then the average cumulated abnormal return (ACAR) from $t=T_1$ to $t=T_2$ is

$$ACAR = \frac{1}{N} \sum_{i=1}^N \sum_{t=T_1}^{T_2} AR_{it} \quad (2),$$

where N is the number of securities in the sample during each event. To test the significance of the ACARs, their variance is estimated by using the cross-sectional variance across the cumulative abnormal returns. This cross-sectional approach takes account of an increase in event period variance (Campbell et al. 1997, p. 168; Turner and Zhan 2012, p. 620). According to this the variance $\text{Var}(ACAR)$ is:

$$\text{Var}(ACAR) = \frac{1}{N^2} \sum_{i=1}^N (CAR_i - ACAR)^2 \quad (3),$$

The test statistic is then calculated as $t = \frac{ACAR}{\sqrt{\text{Var}(ACAR)}}$, which is asymptotically standard normal.

Data

The event study is based on daily prices of two types of Russian government bonds. These were hand-collected from two sources. The daily newspapers *Torgovo-Promyshlennaya Gazeta*,²⁰⁹ and *Berliner Börsenzeitung* both include a daily official price sheet of the respective stock exchange.²¹⁰ Prices there were quoted as a percentage of the security's nominal value. The exact event dates were re-checked in the daily newspapers *Frankfurter Zeitung* and *Berliner Börsenzeitung*.²¹¹

The choice of the specific securities is based on the availability of prices. Though various municipal bonds were issued in Russia, these were traded only sporadically and were rather considered a long-term investment for institutional investors (Papp 2001, p. 39). Consequently, only federal government bonds are suitable for this analysis. Still, also these are characterised by a low frequency of trading. Finally, only those types of securities that were traded regularly on both markets were included: The 4% State Bond – following the Russian notation also referred to as *Renta* – and the 3^{1/8} Convertible Obligation.²¹² Both of these securities had not more than one week break in price notation.

Figures 4 and 5 show the two different types of bonds employed in this study. In both graphs the solid line represents the prices on the Saint Petersburg Stock Exchange. The dashed line refers to Berlin. Apparently there is an overall downward trend in the development of bond prices. However, there is large variation, especially at the time of the revolutionary events. After all such behaviour is desirable for an event study – the basic concept is to link variation and time of event.

²⁰⁹ *Торгово-промышленная газета*, the literal translation is Commerce and Industry Newspaper. Further, missing prices were counterchecked in *Биржевые Ведомости* (Stock Exchange Gazette).

²¹⁰ The *Berliner Börsenzeitung* is available at the *Staatsbibliothek zu Berlin* or online: <http://zefys.staatsbibliothek-berlin.de/list/title/zdb/2436020X/> (07.12.2015)

²¹¹ For most events, the news was announced on the day of occurrence. In some cases, it came out a few days delayed. Still, a sufficiently large event window can capture the effect. In addition, a detailed review of Russian newspapers would be preferable. This unfortunately was not feasible, due to the author's tight time schedule and poor language skills.

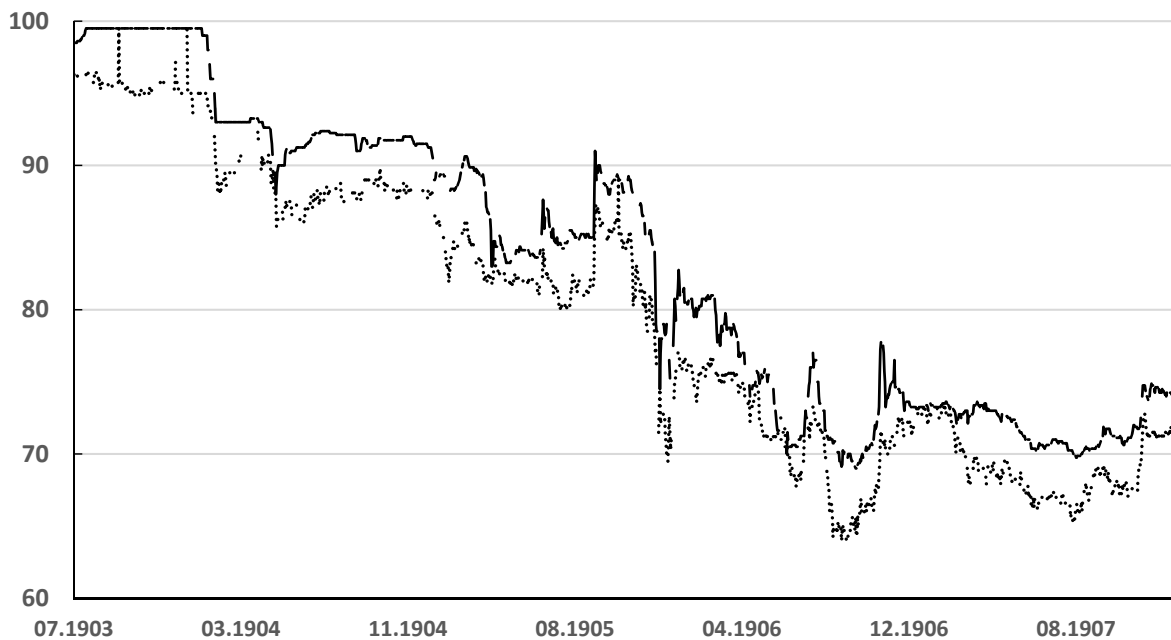
²¹² *Государственная рента* and *конвертируемая облигация* respectively.

Figure 4: State bonds



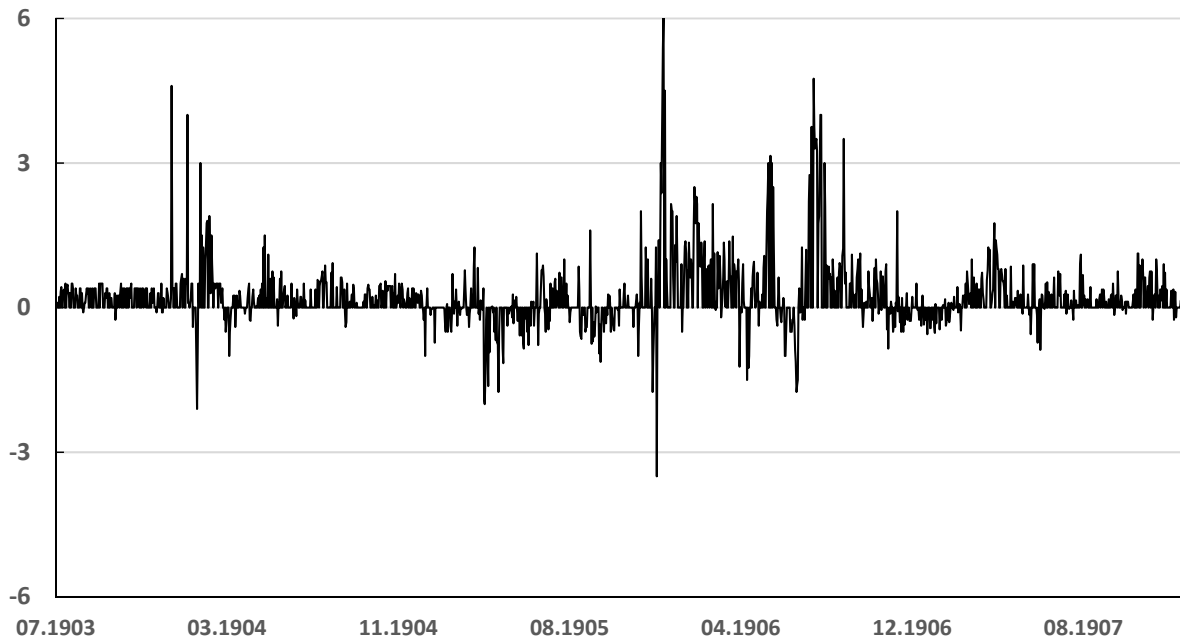
The solid line refers to of prices on the Saint Petersburg Stock Exchange, the dashed line to prices on the Berlin Stock Exchange.

Figure 5: Convertible obligations



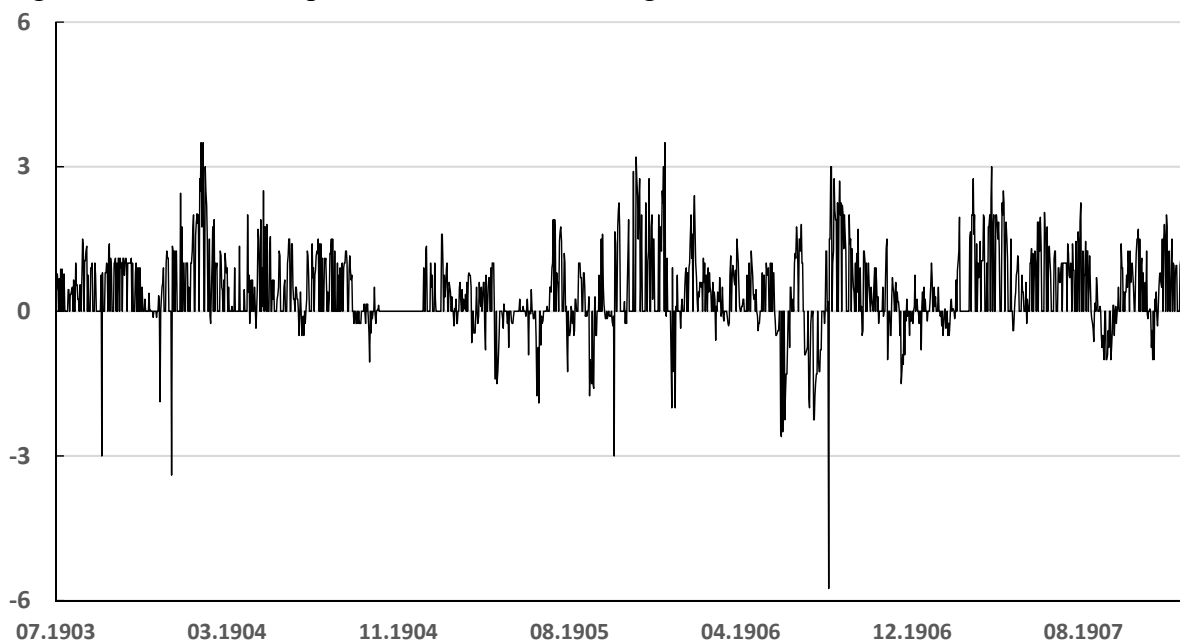
The solid line refers to of prices on the Saint Petersburg Stock Exchange, the dashed line to prices on the Berlin Stock Exchange.

Figure 6: Difference in prices of State Bonds



The graph shows the difference in prices of 4% State Bonds between the Saint Petersburg Stock Exchange and the Berlin Stock Exchange.

Figure 7: Difference in prices of Convertible Obligations



The graph shows the difference in prices of 3 1/8% Convertible Obligations between the Saint Petersburg Stock Exchange and the Berlin Stock Exchange.

The spread between the two markets, which is shown in figures 6 and 7 respectively allows to make a point on the efficiency of the Saint Petersburg Stock Exchange. Berlin is used as a benchmark in terms of efficiency. As it turns out, prices moved equally most of the time. In 1906 the variance of state bond prices appeared to be somewhat greater. However, an augmented Dickey-Fuller test shows that the spread of both bond series is stationary. Moreover, applying the Engle-Granger two-step method reveals that price series of both *Renta* and Obligations are integrated with its counterpart on the other market.²¹³ Table 4 displays corresponding descriptive statistics.

Considering both security types, mean as well as median prices were slightly higher in Saint Petersburg. There is some variation in both spread series though. Unlike to the *Renta*, the spread of the Convertible Obligations possesses a negative skew.

Table 4: Descriptive statistics for *Renta*, Obligations and the differences

	Renta Petersburg	Renta Berlin	Spread Renta	Obligations Petersburg	Obligations Berlin	Spread Obligations
Mean	83.17	82.81	0.37	80.37	79.71	0.58
Median	84.13	84.10	0.28	81.75	81.20	0.65
Std. Dev.	10.03	10.11	0.83	9.87	9.85	0.95
Minimum	69.0	65.8	-3.5	63.0	64.0	-5.8
Maximum	99.5	99.8	6.1	96.9	99.5	3.5
Skewness	0.15	0.15	1.86	0.17	0.14	-0.59
Kurtosis	1.61	1.59	11.97	1.65	1.66	5.83

Source: own calculation.

²¹³ In fact, the two tests are to a large extent equivalent.

Results

Tables 5 and 6 contain the event study results regarding Saint Petersburg and Berlin respectively. The two markets did not always behave consistently. In nearly all cases however, the size and the sign of the abnormal return are almost equal, only the corresponding p-values differ. Considering the war events only, this difference is negligible as well. Generally speaking, the capital market in Berlin and its investors seemed to react slightly more sensitively to political events and adjusted their portfolio accordingly. As the price series were well-integrated overall, the reason for this varying impact may be due to availability of information. War-related events had almost equal impact on both markets. Generally, reporting in Russian newspapers was more favourable towards the Tsarist government than abroad, especially in times of war.²¹⁴ Free press was not existent, which is of particular importance in times of conflict. During the Russo-Japanese war, the whole media landscape reported patriotically and emphasized a Russian superiority over Japanese race and culture. Likewise, the war reporting was one-sided and naively ignored the strength of the Japanese military (Grüner 2007, pp. 188). Such notion is not reflected in the results presented in Table 5. The assessment of war-related events was to large extent equal in Berlin and Saint Petersburg.

Following Hypothesis 4, there was no significant difference in attitude between investors in the East and West. There was no home bias of Russian investors. Even in war times, patriotic feeling was less important than the pursuit of profit. In this sense, investment during the early 20th century was already globalised. Also, the protagonists might in large part have been the same on both markets, causing such result. There is evidence of the great importance of foreign investors at the Saint Petersburg Stock Exchange. The exact ownership of shares is difficult to determine, however (Papp 2001, pp. 433).²¹⁵

²¹⁴ An exact picture on varying reporting in in Russian and international newspapers would allow more precise conclusions. However, this required an intensive historical investigation, which is beyond the scope of this paper.

²¹⁵ The majority of shares were bearer and not name shares. Furthermore, many Russian investors deposited their shares abroad, which makes it even more difficult to identify the exact origin of capital.

Table 5: Results of the event study considering war events

Date	Event	(-3; +3)		(-7; +7)		(0; +7)		(-7; 0)	
		ACAR	p-value	ACAR	p-value	ACAR	p-value	ACAR	p-value
Petersburg									
9 Feb 04	First Japanese attack	-0.0358	0.010	-0.0438	0.007	-0.0183	0.038	-0.0137	0.064
30 Apr 04	Battle of Yalu River	-0.0042	0.364	-0.0165	0.046	-0.0172	0.042	0.0006	0.880
10 Aug 04	Battle of the Yellow Sea	-0.0011	0.788	-0.0029	0.508	-0.0013	0.748	-0.0013	0.748
2 Jan 05	Capitulation of Port Arthur	-0.0151	0.054	-0.0167	0.044	-0.0025	0.557	-0.0017	0.692
10 Mar 05	Mukden Battle	-0.0025	0.559	-0.0107	0.098	-0.0079	0.162	-0.0034	0.455
27 May 05	Battle of Tsushima	0.0029	0.509	0.0050	0.306	0.0021	0.622	0.0021	0.616
27 Jun 05	Mutiny on Potemkin	-0.0028	0.528	-0.0091	0.130	-0.0013	0.757	-0.0056	0.261
5 Sep 05	Treaty of Portsmouth	0.0150	0.054	0.0543	0.004	0.0038	0.402	0.0475	0.006
Berlin									
9 Feb 04	First Japanese attack	-0.0480	0.009	-0.0616	0.006	-0.0099	0.169	-0.0255	0.032
30 Apr 04	Battle of Yalu River	-0.0127	0.114	-0.0326	0.020	-0.0343	0.018	-0.0008	0.887
10 Aug 04	Battle of the Yellow Sea	-0.0013	0.813	-0.0064	0.304	0.0037	0.517	-0.0112	0.140
2 Jan 05	Capitulation of Port Arthur	-0.0143	0.093	-0.0186	0.058	-0.0136	0.101	-0.0010	0.846
10 Mar 05	Mukden Battle	-0.0070	0.273	-0.0134	0.103	-0.0093	0.186	-0.0025	0.645
27 May 05	Battle of Tsushima	-0.0005	0.926	0.0068	0.286	0.0019	0.727	0.0043	0.459
27 Jun 05	Mutiny on Potemkin	-0.0035	0.530	-0.0229	0.039	-0.0121	0.123	-0.0105	0.153
5 Sep 05	Treaty of Portsmouth	0.0196	0.052	0.0498	0.009	-0.0111	0.141	0.0597	0.006

The upper part of the table shows the results at the Saint Petersburg Stock Exchange, the lower part refers to Berlin. Bolded ACAR-values are significant at the 10% level.

Table 6: Results of the event study considering political events

Date	Event	(-3; +3)		(-7; +7)		(0; +7)		(-7; 0)	
		ACAR	p-value	ACAR	p-value	ACAR	p-value	ACAR	p-value
Petersburg									
22 Jan 05	Bloody Sunday	0.0021	0.616	-0.0088	0.137	-0.0024	0.584	-0.0069	0.200
30 Oct 05	October Manifesto	-0.0035	0.442	-0.0219	0.027	-0.0121	0.080	-0.0091	0.130
5 Dec 05	General strike	-0.0053	0.283	-0.0688	0.003	-0.0081	0.155	-0.0583	0.004
23 Apr 06	First constitution	0.0032	0.478	-0.0021	0.627	0.0051	0.295	-0.0112	0.092
10 May 06	Opening first Duma	0.0078	0.167	0.0018	0.672	0.0063	0.224	-0.0056	0.263
21 Jul 06	Dissolution first Duma	0.0160	0.048	0.0398	0.008	-0.0010	0.811	0.0404	0.008
20 Feb 07	Opening Second Duma	-0.0045	0.340	-0.0040	0.384	-0.0020	0.639	-0.0020	0.640
2 Jun 07	Dissolution second Duma	-0.0004	0.924	-0.0026	0.550	-0.0001	0.975	-0.0019	0.660
Berlin									
22 Jan 05	Bloody Sunday	-0.0245	0.035	-0.0086	0.207	0.0010	0.847	-0.0095	0.181
30 Oct 05	October Manifesto	-0.0012	0.829	-0.0419	0.012	-0.0129	0.111	-0.0489	0.009
5 Dec 05	General strike	-0.0371	0.016	-0.0740	0.004	-0.0024	0.663	-0.1034	0.002
23 Apr 06	First constitution	-0.0126	0.115	-0.0059	0.337	0.0113	0.137	-0.0132	0.106
10 May 06	Opening first Duma	-0.0055	0.365	-0.0179	0.062	-0.0092	0.189	-0.0099	0.169
21 Jul 06	Dissolution first Duma	0.0184	0.059	0.0278	0.027	0.0116	0.131	0.0149	0.086
20 Feb 07	Opening Second Duma	-0.0163	0.074	-0.0160	0.076	-0.0063	0.309	-0.0077	0.243
2 Jun 07	Dissolution second Duma	-0.0033	0.550	-0.0084	0.217	-0.0137	0.100	0.0032	0.568

The upper part of the table shows the results at the Saint Petersburg Stock Exchange, the lower part refers to Berlin. Bolded ACAR-values are significant at the 10% level.

Of all event window specifications, the symmetric two-week window produces the most significant outcome. Apparently the effect established over a longer time. According to table 6 some events apparently have been anticipated in advance and were already priced in. While quite realistic with regard to political events, such investment behaviour is far less plausible considering war-related events. Here the outcome (of a battle) is stochastic for non-involved persons such as investors. As shown in table 5, two events did produce significant abnormal returns. The outbreak of the war and the signing of the peace treaty, both with a quite political character had been looming for a while, which gives a reasonable explanation for the outcome.²¹⁶

Overall the stock market reacted to war-related event as hypothesised. All negative abnormal returns occurred in the wake of large battles, i.e. Russian defeats. The Treaty of Portsmouth was welcomed in both Saint Petersburg and Berlin – in line with common historical assessment that considers the treaty as very favourable for the Russian Empire. Hypothesis 3 can be largely confirmed. The outcome substantiates previous research on the impact of wars on financial markets. Not every ‘great’ battle in resulted in a significant stock market reaction. That corresponds quite well with the findings of Willard et al. (1996) and Oosterlinck (2003).

The mutiny on the battleship Potemkin was not perceived at all by investors. It was popularised not until later years, most probably due to its large role in Soviet propaganda and the well-known movie by Sergej Eisenstein.

As mentioned before and shown in Table 6, the impact of political events was much greater on the Berlin Stock Exchange. The two cases of large public unrest – Bloody Sunday and the general strike in December 1905 – were accompanied by a strongly negative price reaction. However, it were the harmful consequences of the general strike affecting the whole economy that obviously weighted heaviest for investors – much more than the initial uprising, which, heavily violent, had a large revolutionary character. In the investors’ view a revolution was apparently not imminent, they rather feared a costly standstill of the economy. Altogether, this is a first indication of the validity of the first hypothesis.

When the October Manifesto was released in 1905, the response on the stock markets was only marginal. Any kind of political concession was apparently expected by the public, as the reaction one week prior to the event indicates. The other political events follow a consistent pattern with respect to the above expectations. Except for the new constitution coming into

²¹⁶ Prior to the conflict, growing tensions between the later belligerents were widely reported in international media. The course of the peace negotiations was also discussed in the press in large measure. The Russian delegation had notably close relations to journalists and tried to take advantage by manipulating the (mainly American) public (Westwood 1986, p. 158).

effect all the events related to democratisation induced negative abnormal returns. Vice versa, the reaction of investors was quite positive when the newly established parliament was dissolved in July 1906. The first attempt to implement a parliamentary system in Russia was dropped after short time only. As it turns out, that happened in the best interests of capital owners. When the parliament was dissolved for the second time one year later, no significant abnormal price behaviour materialised. Just as before, the Duma had failed to successfully cooperate with the government. As Count Witte noted: ‘The dissension between the activity of the government and the activity of the Duma was obviously and permanently revealed. It was clear that it cannot go on like that’ (Witte 1923, p. 519). The public and investors most likely did anticipate the outcome, which was the same as before: Once more, the parliament was dissolved by the Tsar.

Considering the overall market reaction, the first two hypotheses can mostly be confirmed. Investors at both the Saint Petersburg and the Berlin Stock Exchange did not welcome democratic change. However, they did not realise any threat of a revolution that could enhance the risk of failure of government bonds – notwithstanding partially violent uprisings. This study fails to find a ‘democratic advantage’ of Russian government bonds, consistent with recent literature (See Saiegh 2005; Archer et al. 2007 or Beaulieu et al. 2012). According to hypothesis 2, such reaction in turn reveals capital owners view on Russia’s development in the long run. With no revolution at hand, participation of the masses could be implemented. However, in small steps. In the end, a gradual introduction of a parliamentary system – as in most western European states – must have been considered a quite realistic option for the Russian Empire as well.

Conclusion

Political events in late Imperial Russia mattered for investors throughout Europe. That applies for those events related to the Revolution of 1905 as well as to the Russo-Japanese War. Based on event study technique, this paper reveals that the prices of Russian government bonds at both the Saint Petersburg and the Berlin Stock Exchange reacted sensitively and pretty much in an equal manner.

The particular reaction to political events implies a general anti-democratic attitude of investors. Likewise, the price development does not reflect a possible threat of revolution – as claimed by Acemoglu and Robinson (2000). Synonymously, a gradual democratic development in the long run appeared realistic in the eyes of contemporary capital owners. In the end, this assessment

was somewhat optimistic – the Revolution of 1905 effectively served as a blueprint for the Bolshevik revolution a decade later.

The involvement in a military conflict of large scale such as the Russo-Japanese War repelled investors. This result corresponds well to the findings of other authors regarding war-related events: Historical narrative often differs from the assessment of contemporary investors. Not all well-known events – like the battle of Tsushima – did have a large impact on capital markets.²¹⁷

Finally, both considered markets – Saint Petersburg and Berlin – reacted quite similarly, especially to war-related events. There was no distinct home bias of Russian investors. Finally, bond prices did not reflect any significant difference in investors' attitude towards democratisation in the East and West. In this respect a globalised political stock market including 'backward' Imperial Russia was existent already in the early 20th century.

²¹⁷ Not to mention the mutiny on the battleship Potemkin: though a well-known narrative, it turned out to be of no importance for investors.

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Conclusion

This thesis examines the interaction of political events and financial markets at both the micro and the macro level. As the findings suggest, political information had a quite noticeable impact on investment decisions in the beginning of the 20th century. Such result broadly confirms the validity of the efficient market hypothesis in its semi-strong form as claimed by Fama (1970) as early as in this period.

Particularly the events related to the Revolution of 1905 – examined in the third part of this thesis – often resulted in an instant price reaction at both the Saint Petersburg and the Berlin Stock Exchange. The latter one has been investigated frequently and is considered to be largely efficient (Burhop 2011; Gelman and Burhop 2008). The major Russian capital market on the other hand is largely unexplored in that regard. An examination of government bonds in the light of revolutionary as well as events related to the Russo-Japanese War aims to add to the picture: an almost equal price reaction to the various events on both markets indicate a high degree of information efficiency of the Saint Petersburg Stock Exchange at the turn of the century. Peripheral financial markets such as this one were apparently globalised well before World War I. Participants there followed a rational investment strategy rather than national sentiment – just as today, capital seems to be neutral.

Given the efficiency of markets one can further conclude from the investors' reaction. The results largely resemble the literature: investors in general feared the high costs of democratic change. However, they did not anticipate a full-scale revolution and most probably saw a realistic chance for gradual political change in Imperial Russia, as opposed to the Soviet writing of history. As the happening a decade later shows, investors are sometimes profoundly mistaken in their appraisal.

A large-scale military conflict like the Russo-Japanese War levelled down Russian government bond prices. Considering the reaction to war-related events, the assessment of contemporary investors often seemed to differ from the historical narrative: many well-known events like the battle of Tsushima or the mutiny on the battleship Potemkin were not perceived important.

The first two chapters of this thesis consider connections between firms and politics in pre- and interwar Germany. Our dataset is hugely comprehensive, as we include all Berlin-listed stock companies in 1913, 1925 and 1938 respectively. In this way we can give an overview of political connections in Germany in the first half of the 20th century and close a gap in historical literature. The choice of time periods further allows us to directly compare three different

regime types in terms of the effectiveness of a connection: unlike most of the literature, we fail to find distinct benefits of having a board member in parliament in general. Political ties proved overall advantageous to share price performance only under National Socialist rule, consistent with previous literature on this extreme period of German history (Ferguson and Voth 2008). In the first German democracy, a more detailed view reveals how additional value did arise from specific types of connection: there, as well as in 1938, the connected person played a decisive role. Economic and political heavyweights added considerably to firm performance, so did members of a currently governing party. The effect was particularly pronounced in certain sectors, in line with the scarce literature in historical context (Braggion and Moore 2013). Note that the impact on firm performance refers to share prices, which reflect mainly the expectations of investors. The actual accounting of affiliated companies – in terms of returns on assets – was barely affected at all. Moreover, a clear causal effect is difficult to establish. Though we address possible selection bias by performing a variety of robustness checks, the main dependent variable remains critical: end-of-year share prices reflect only partially the impact of having a connection.

Our findings suggest that direct benefits from a connection were of minor importance. Rather, firms could gain from improved access to political information or to an established political and economic network.

In a monarchy by contrast, links to the parliament, although widespread, did not add to the value of firms at all. Why these still put great effort in establishing a connection – after all, about 12 percent of all Berlin-listed firms were interlinked with the parliament in 1913 – remains unclear and must be left to future research.

One explanation for the high level of connectedness is indicated by leaving the steady state economy and examining firm performance in times of crises. In these, political connections proved extremely advantageous: an examination of the 30 largest stock companies in 1922 shows that the share prices of connected firms recovered much quicker after the hyperinflation two years later.

Moreover, firms with ties to politics had much better chances to survive over time. Based on all firms listed in 1925, we check which of these remained on the market in the following ten years. As it turns out, the probability to survive was significantly higher for a connected firm. The effect was particularly pronounced during the Great Depression. Seen from this angle, an additional benefit becomes apparent: firms, as well as investors regarded a connection as a kind of insurance against failure and political backup in economically troubled times. Highlighting

this effect constitutes a major aspect of this thesis. As comparable advantage for connected firms has been suggested also by historical (Faccio et al. 2006), as well as modern literature (Grossman and Woll 2014). These have much better chances of receiving a bailout. By implication, the public should be aware when the next bailout is on the agenda.

Our result emphasises the importance of having a board member in the parliament particularly for those firms, which are highly exposed to political or economic risks. Although not directly apparent, a link to politics proved beneficial already well before the recent financial crisis and since then firms have been continuously aiming to bring politicians into their management. Probably Richard Cheney hinted at his personal career when he commented on a completely unrelated issue in 2004:

‘People...ought to be free to enter into any kind of relationship they want to.’

Richard Cheney, Washington Post, 25 August 2004

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