

From ‘open secrets’ to the secret ballot: The economic and political determinants of secret ballot reform *

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Abstract

Electoral secrecy is an important (and hitherto understudied) aspect of European democratization. By employing a novel dataset on parliamentary support for voter secrecy in Imperial Germany, we explore the effects of structural, electoral and partisan factors on the decision of politicians to sponsor bills demanding a reform of electoral practices and a greater protection of electoral secrecy. We hypothesize that individual demand for electoral secrecy by politicians is inversely related to opportunities for electoral intimidation by private actors. We find that two economic conditions at the district level predict political support for reforms in voting technology: (a) the economic concentration of a district and (b) the skill profile of the industrial workforce. Low levels of economic concentration and a more skilled labor force, we argue, make economic intimidation by private actors too costly and, consequently increase political demand for electoral secrecy.

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How does a political system where politicians have the option of winning elections by relying on the electoral intimidation of voters reform itself? What is the relative effect of structural and electoral factors in shaping the incentives of politicians to agree to reform electoral institutions? These questions are of significance in our times, characterized by widespread pessimism about the quality of democracy in much of the developing world. To explore these questions, we turn to the historical experience of countries that have successfully adopted reforms of their electoral institutions with the goal to reduce the ability of politicians to rely on electoral intimidation and fraud. We examine Germany’s protracted political debates over the protection of electoral secrecy that have culminated with the introduction of the standardized electoral urn in 1912, nearly five decades after the introduction of universal male suffrage in 1870. To understand the sources of political support for electoral secrecy, we construct and analyze a new dataset comprising all bills submitted to the German parliament during the period between 1870 to 1918 which recommended reforms of electoral institutions with the goal of protecting the secrecy of the vote. This data allows us to explore systematically the effect of district level characteristics, political partisanship and electoral competition on the demand for electoral secrecy.

The paper will be organized as follows. We begin by providing a background description of the German electoral system during the Imperial Period. This discussion has two goals. First, we seek to show how imperfections in voting technology – such as ballot design and the design of electoral urns – allowed election officials to keep close tabs on the electoral choices made by individual voters. As the German electoral code contained no sanctions for private economic actors for their behavior at the times of elections, it opened up unexpected avenues of electoral intimidation on the part of private actors. One common form of electoral intimidation consisted in threats of “electoral layoffs” – dismissals for the choice at the ballot box. While this practice of electoral intimidation was common, its incidence varied significantly across districts and over time. We develop a number of hypotheses about the effects of district-level economic factors – such as economic concentration, inequality in the distribution of farms, economic development and the skill profile of the industrial workforce in a district – on the costs of electoral layoffs for private actors. These hypotheses allow us to specify when and under what conditions private actors in each district were more tempted to make use of the ample loopholes that existed in the electoral code and engage in electoral intimidation of voters.

This discussion about the economic conditions facilitating electoral intimidation by private

actors sets the stage for our analysis of the preferences of politicians about the reform of electoral institutions. The central hypothesis of our paper is that demand for electoral secrecy is inversely related to opportunities for electoral repression at the district level. The latter are a function of proximity of politicians to economic actors which have the capacity to engage in electoral intimidation of their voters and for whom the cost of electoral intimidation is relatively low. We unpack empirically the latter variable ('cost of electoral intimidation') and hypothesize that the latter is affected by district level economic factors, such as its economic concentration and the skill profile of the labor force. We examine the additional effect of additional political variables – such as the tightness of the race and the partisan affiliation on the individual demand for electoral secrecy. We test our hypotheses about individual demand for electoral secrecy using a novel dataset of the co-sponsorship of all electoral bills recommending improvements in electoral technology and the protection of greater electoral secrecy that have been submitted to the German parliament during the period between 1870 and 1912.

The German case is central to comparative theories of democratic transitions, and – as recent debates in the *American Political Science Review* illustrate – it continues to remain the empirical battleground for a range of alternative theories that seek to account for political and economic reforms in the 19th century (Boix, 1999; Kreuzer, 2010; Cusack et al. 2011). Our data allows us to test some of the most prominent explanations that have been formulated to account for Germany's democratization during the 19th century in a much more precise way than previous studies that have relied on cross-national datasets. In addition – and in departure from other approaches – we attempt to subject more traditional explanations – stressing economic development and inequality in landholding – and more recent explanations – stressing the importance of human capital and skills against each other and to examine the relative importance of these explanatory variables.

In our paper, we explicitly address theoretical predictions coming from three prominent recent literatures. The first is the debate about endogenous democratization (Przeworski and Limongi, 1997; Boix and Stokes, 2003). In a recent extension of this line of analysis, Susan Stokes argued that the growth in the size of the industrial labor force has been the crucial factor that has spurred political incentives for reforms that limit electoral corruption in Imperial Britain (Stokes, 2011). According to Susan Stokes, industrialization reduced the effectiveness of vote-buying through several interrelated mechanisms: it reduced the ability of political agents to monitor the actions of voters and it reduced the responsiveness of voters to

electoral bribes, by increasing the share of middle class voters to low income voters. We test some of the observable implications of this explanation, by examining the effect of a variety of measures of economic development on the support of a politician for electoral secrecy.

Recent theoretical work on democratic transitions argues that inequalities in the distribution of wealth (e.g. land) affect calculations made by elites during democratic transitions and their willingness to accept the extension of suffrage (Acemoglu and Robinson, 2000; Acemoglu and Robinson, 2006; Boix, 2003). This argument resonates well with the historical argument of *Junker* opposition to democratization that has been at the center of historical research on Germany and has been revived in recent work by Dan Ziblatt (Gerschenkron, 1943; Moore, 1966; Ziblatt, 2008). We subject this very prominent theoretical explanation to a new empirical test, by examining both the partisan determinants of support for electoral secrecy and for relative importance of inequalities in the distribution of farms in predicting politicians' demand for a reform of voting technology.

Finally, a third theoretical explanation advanced in recent years by Torben Iversen and David Soskice –argues that the impetus for electoral reform originated in regions and districts characterized by high levels of investment in human capital . (Cusack, Iversen, and Soskice, 2010). In a very welcome move away from cross-national comparisons, Cusack, Iversen, and Soskice turn to the analysis of subnational political development across German regions during the 19th century and argue that the more far-reaching electoral reforms adopted by Baden, Württemberg and Sachsen during the Imperial Period can be attributed to the presence of a workforce with higher levels of skills in these regions. As Cusack, Iversen and Soskice argue, “heavy industry was dominant in Prussia, light industry (high value-added exported oriented machine builders) in Baden, Saxony, Thuringia and Württemberg. (...) Light industry, with highly skilled workers and limited resources to withstand long strikes accepted unions to a greater degree. (...) Nowhere else in Germany seems to have come as close to adopting PR and incorporating the SPD as these three states” (Cusack, Iversen, and Soskice 2010: 399). While we welcome the move to the sub-national level, we believe that the appropriate level to test this theory is the electoral district, due to large variability in skill profiles across districts within each region. In our study, we develop precise estimates of the skill composition of the industrial workforce across all electoral districts of Imperial Germany, which allows us to examine the political consequences of differences in skill profiles at the local level.

Voting under imperfect electoral rules

Imperial Germany's elections to the lower house of Parliament were governed by the electoral law (*Reichswahlrecht*) of 1869 (Bundesgesetzblatt, 1869; Hatschek, 1920). In 1869, German lawmakers established 381 electoral districts electing representatives to the Reichstag, to which 16 districts of Alsace and Lorraine were added in 1884. Each district elected one representative to the Reichstag and allowed for runoffs to determine the winner. With very few exceptions – such as the amendment mandating the introduction of ballot envelopes, which was adopted in 1903 – the electoral law remained virtually unchanged throughout the Imperial Period. In contrast to the electoral laws that governed elections across German Länder, which experienced significant redistricting over the period, the boundaries of the electoral districted remained unchanged during the 13 elections of the Imperial Period.

Germany's electoral law was adopted after a two-month period of parliamentary negotiations that took place between March and May 1869 (Pollmann, 1986: 322). It resulted from a political compromise between Prussia and principalities that had joined the German confederation, such as Württemberg, Baden, Hessen and Bavaria. The secrecy of the ballot remained a contested political issue in these deliberations. Opponents of the secret ballot restated arguments that went back to the Frankfurt Constitutional convention of 1848. One of the strongest political arguments against electoral secrecy invoked on both occasions argued that the secret ballot created opportunities for “intrigues und abuses of all kinds. In darkness, bribery and intimidation can assert themselves boldly” (Hatschek, 1920: 180). Public voting was preferable to decisions made behind the veil of secrecy. As opponents of the secret ballot, which included prominent liberal politicians (and not just conservatives) argued, “all acts of political importance have to be subjected to public opinion. (...). The conflict and struggle among political parties will achieve its purest expression only in public and open voting” (Hatschek, 1920: 180).

Supporters of the secret ballot triumphed during these deliberations. A political agreement was reached to choose the winner of an election no longer through an open and public vote, but by the casting of a ballot. Article 10 of the electoral code stated: “the right to vote will be exercised in person, through covered and unsigned ballots that have to be place in an urn” (Paragraph 10 electoral code, Hatschek, 1920: 179). This remained, however, only a pyrrhic victory. The administrative code which specified how the electoral law would be practically implemented (*Wahlreglement* of 1870) contained numerous loopholes that made “electoral secrecy” a very distant political reality. Regulations of voting technology, such as

the design of the urns, the design of the ballot opened up wide opportunities for the violation of electoral secrecy during the national elections to the lower house of the parliament up to the period of world war I (Anderson, 2000; Arsenscheck, 2003).

Provisions regarding the design and distribution of electoral ballots introduced important imperfections in the micro-design of electoral institutions opening up possibilities for electoral manipulation. Germany's electoral law attributed responsibilities for the printing and distribution of ballots to individual candidates or parties (Gerstgarbe 2003: page XL). This created opportunities for individual candidates to attempt to differentiate themselves, by distributing ballots that differed in their design. The electoral law was unsuccessful in limiting possibilities of violations of electoral secrecy through a differentiation of the design of the ballot. Article 11 of the electoral law specified that the "ballot had to be made out of white paper and couldn't be marked with exterior signs distinguishing them" (Hatschek, 1920). (As such, it attempted to limit electoral manipulation whereby different candidates printed ballots of different colors). But the law was silent about other possibilities of electoral manipulation. While candidates could not differentiate the color of the ballots, they could differentiate their shape. Studies of electoral practices in Imperial Germany noted that candidates used ballots with the most unusual shapes, including "straws, pyramids and even boughs", in an effort to keep track of the electoral behavior of their voters (Anderson, 2000). In one district, the difference between ballots was of the order of magnitude of 100, with one ballot being the size of a penny, while the other one 100 times larger. In other localities, politicians manipulated the shape of the ballots that were distributed at different times of the day (Klein 2003: 223). In conjunction with list of voters that were held by their representatives at the polling stations, this allowed individual candidates to keep track of groups of voters that voted at different times and identify their electoral choice.

The parliamentary debates about the validity of different elections contain numerous instances of disputed elections, on the ground that the ballots contained "external marks" (Äussere Kennzeichen) which violated the secrecy of the vote. The most widely encountered complaint was that of the transparency of the paper on which the ballot was printed, which allowed election officials to identify the choice made by the voter. During the 1874 election, Prinz von Hohenlohe Ingelfingen, a four time incumbent, emerged as the winner against a Zentrum candidate, by a narrow majority. Opponents challenged the results of the elections, by claiming that the ballots were printed on transparent paper on which one could see the name of the candidate and that the number of these invalid ballots was larger than the margin

of 216 votes (Klein 2003: 136). The runner-up in the 1877 election in Ostprignitz, Potsdam also challenged the results of the election, by arguing that due to the transparency of the paper the name of the candidate could be seen even after the ballot had been folded. As this issue was brought to the German parliament, Saucken – Tarputschen, a member of the German Imperial Party defended transparent ballots, by arguing that voters had the “right to make their option known to others by using a transparent ballot. The secret vote, Saucken-Tarpuschen argued was a right, but not a *responsibility* of voters (Klein 2003: 64).

An additional imperfection in voting technology that allowed for violations of electoral secrecy was the design of the urn. The 1869 electoral code did not include specific regulations for the design of the electoral urn and left to the choice over the size and shape of the vessel collecting the ballots that had been cast to the discretion of local election officials. A contemporary account of electoral practices during the Imperial documented the wide variety of objects used as electoral urns. In many East Prussian districts, soup bowls were used as electoral urns (Saul 1975: 198). Other possible objects included “cigar boxes, drawers, suitcases, hat boxes, cooking pots, earthen bowls, beer mugs, plates and wash tubs [...]” (Siegfried 1903) Voting urns of small shape were particularly conducive to the violation of electoral secrecy. As Geoff Fairbairn, a historian of the period noted, “ballots would fall in such a way that they lay flat directly on top of each other in the exact order in which they were dropped in. This would allow a vengeful official to compare the stack with a list of the order in which people had voted and arranged for a punishment for those that had voted the wrong way” (Fairbairn 1990: 818)

Each of the 13 elections of the Imperial Period generated complaints about the design of the urn as a source of violation of electoral secrecy. These complaints continued even after the introduction of ballot envelopes in 1903, suggesting that this policy change was insufficient in protecting the secrecy of the vote. Thus, during the 11. session of the *Reichstag* (1903-1907) alone, German law-makers considered 22 protests about imperfections in the size of the urn. Several of the bills recommending changes in electoral technology contained specific recommendations to introduce a ‘standardized electoral urn’, as the use of urns of various shapes and sizes was regarded as a means to “control the vote choice of individual voters” (Stenographische Berichte de Reichstages, 42. Sitzung February 24 1910, page 1513 A). The proposal of Ernst Bassermann, the leader of the liberal fraction of the parliament submitted in 1910 is representative of the proposals discussed in Germany at the time. Bassermann’s proposal recommended:

“A covered vessel (electoral urn) will be placed on a table to collect the ballots. The urn has to be delivered by the Reich to the individual electoral districts at no charge. The urn has to be manufactured in such a way so that it cannot be ascertained who has inserted the ballots in the urn. The electoral board has to be convinced at the beginning of the voting that the electoral urn is empty” (Stenographische Berichte des Deutschen Reichstages, Drucksache, Volume 207 (1911, page 87)

While imperfections in the design of the urn were widely noted, top level German bureaucrats were remarkably successful in *delaying* the adoption of a secret urn. Their opposition to the standardized urn invoked two arguments. One was financial in nature. The cost for the Reich to build and distribute urns of standard size to all localities was estimated at 3/4 million Reichsmark. The second argument motivating their reluctance to reform the secret urn was “lack of preparedness”. As a representative of the government justified the need to delay the introduction of a secret urn “the question becomes whether Germany is ready to guarantee the secrecy of the vote under all circumstances. We have not yet found the adequate urn one that can resolve voting secrecy perfectly and we are reluctant to replace one evil by another evil. Existing technology that was tried out by the Imperial Office all necessitated the intervention on behalf of election officials and as a result the introduction of a new urn might increase the number of elections that were contested based on formalistic reasons” (“Darin liegt die Gefahr dass trotz dieser Urnen immer wieder Einwendungen erhoben wurden gegen das Verhalten des Wahlvorstehers”). (Stenographische Berichte des Reichstages, 43. Sitzung, February 24 1910, page 1519). The tactic of delay was effective: a standardized urn was adopted only in 1913, one year after the final election of the Imperial Period.

Thus, limitations in voting technology were a major source of violation of electoral secrecy. A third pervasive limitation of the electoral law was the failure to take steps to limit electoral intervention on behalf of *private* actors. Electoral intimidation by private actors was unpunished and remained, virtually, unchallenged. Beginning with the first elections of the *Reich*, German private actors took advantage of this asymmetry in the treatment of various forms of *electoral intimidation* and moved aggressively to occupy the political space between voters and candidates. The records of the parliamentary commission investigating German elections testify to the pervasiveness of electoral intimidation by employers. Such manipulation was not common to rural areas of East Prussia, but was found in the modern, industrial centers of Germany, such as the Ruhr region or Sachsen. As Lavinia Anderson characterizes the “political dominance by bread lords in Imperial Germany”:

“the intervention of German employers in national elections seems of a different order of magnitude than any encountered elsewhere. In every German parliamentary election, but especially from 1881 on, the evidence of massive employer intimidation is overwhelming. In no other country – at least among the ‘civilized lands’ to which Germans liked to compare themselves – was the practice of election intimidation by bread lords felt to be so universal, so unvarnished and so enduring” (Anderson 2000: 227).

The petitions submitted to the parliamentary commission contain ample documentation of the wide variety of ways in which employers attempted to influence electoral outcomes. One widely held encountered form of electoral repression was the prevention of voting by their workers. During the 1878 election in district 5 Oppeln (Tarnowitz), the local mining employer kept the employees locked up in the mine during the duration of the vote (Stenographische Berichte des Deutschen Reichstages, April 2 1879, page 1550 . In 1881, employers in Arnsberg (Westfalen) doubled the number of voters in a shift to preempt participation at the urns. Other employers, by contrast, used control over their workforce to bring workers to the polls (Stenographische Berichte des Deutschen Reichstages, May 1st 1881, page 955). The owner of the Geiswerden Iron works in Siegen County (Westfalia) boasted that he led his workers to the poll like a shepherd leading his flock (Suval 1987: 48). Elections in other districts also provide evidence of instances where employers marched requested workers to cast their ballots in alphabetical order, to keep a tab on their electoral choice (Klein, 2003). In one district, employers required workers to walk to the polls holding ballots above their head (Anderson, 2000).

The tool-kit of coercive strategies available to employers included extraction of oral and written promises from voters, threats of eviction and foreclosure. Among these, the most important instrument was the threat of layoffs. As August Bebel protested on the floor of the *Reichstag* as early as 1877, “One cannot talk of a free choice in all industrial districts because choice of vote leads to loss of employment by the worker” (Stenographische Berichte des Deutschen Reichstages, March 1st 1877, page 985) We find, in the records of the parliamentary commission, multiple complaints of threats of electoral layoffs by employers and it was widely understood by members of the commission that the threats that evidence that made it to the deliberations of the commission was just the tip of an iceberg (Anderson 2000: 258, Klein 2003: xx). Consider the following example. During the 1881 elections, the electoral district Geislingen in Württemberg was won by a margin of 142 votes by a representative of the Imperial Party against the left liberals. The loser of the election alleged however that lodge administrators of *Königliche Hüttenwerke*, the local employer threatened to lay off workers if

they did not vote for the candidate of the Imperial Party. These intimidations were carried out in three out of four localities. Employers followed up on these threats and laid off workers once the results of the election were announced” (Stenographische Berichte des Deutschen Reichstages, May 2 1885, page 2999).

The existence of this economic intimidation by private economic actors widely documented in all historical accounts of the period. One interesting question (which we leave for future research) is how correlated electoral repression was with other forms of economic repression, through private employers’ associations, that have been recently documented by Alex Kuo (Kuo, 2010). We hypothesize that the existence of electoral repression by private actors is of central importance in shaping political demands for electoral secrecy and that demand for electoral secrecy is lower in regions where electoral intimidation by private actors is costlier. Thus, analytically, our search for the political determinants of electoral secrecy is inextricably linked with the understanding of the costs of electoral intimidation by private actors.

The determinants of political demand for electoral secrecy

The above section has documented the extensive opportunities for electoral intimidation and violation that existed in Germany, despite the nominal commitment to ‘electoral secrecy’. In Lavinia Anderson’s concise characterization of the state of electoral politics in Imperial Germany, elections were an “open secret” (Anderson, 2000: 14). However, electoral intimidation was not entirely costless, neither for politicians nor for economic actors. The costs of electoral intimidation varied across time and space. Understanding this variation is important as a first step in understanding the determinants of the political demand for electoral secrecy.

The starting point of our analysis is that the structure and competition in labor markets affects opportunities of private actors to engage in electoral intimidation. While this may appear as a straightforward assumption, is not entirely uncontroversial. (An alternative explanation – discussed below – views inequalities in the distribution of land as the major factor affecting the ability of economic agents to engage in electoral repression). We hypothesize that two factors were likely to affect the costs of private actors to engage in electoral repression, (a) the economic concentration of a district and (b) the skill profile of the labor force. We discuss the consequences of economic concentration on the costs of electoral repression first. In this case, the effects work through (a) number of firms in a district and (b) effects through the number of occupations (and the intersectoral substitutability among these).

Economic concentration is likely to affect the incidence of electoral repression by affecting

the bargaining position of employers in a district. We hypothesize that the costs of ‘electoral layoffs’ are lower for private actors in districts where employment is in the hand of a limited number of firms. To illustrate this logic, consider the limit case of one electoral district where all employment opportunities are in the hands of one single firms. Electoral intimidation or layoffs as reprisals for the choices made by workers at the ballot box is relatively costless in these districts, as the firm faces no worry that other firms might rehire workers laid off for noneconomic reasons. By contrast, an increase in the number of firms is more likely to increase the collective action of employers to rely on a strategy of electoral intimidation.

Economic concentration is also likely to affect the costs of electoral layoffs of private economic actors through the interrelated effect on *occupational heterogeneity*. Districts with low levels of employment concentration (high levels of employment heterogeneity) exhibit higher intersectoral elasticities of substitution across occupations (Calmfors and Driffill, 1988). In other words, occupations are much closer substitutes for each other in diversified economic regions, which increases the employment opportunities available for workers that have been laid off for electoral reasons. Thus, as economic diversification (measured as occupational diversification) increases, we expect the costs of electoral intimidation to decline.

A second variable that is likely to affect the ability of private actors to engage in electoral intimidation is the skill profile of their workers. Electoral layoffs are costly for a firm that has made significant investments in the skills of its workers. By contrast, the costs of electoral layoffs are likely to decline if the workforce of a firm lacks specific skills. Thus, we hypothesize that the presence of a higher percentage of skills in a districts is likely to increase the costs of electoral intimidation. We, thus, share the hypothesis of Cusack, Iversen, and Soskice that the skill composition of a district has consequences for the incentives of politicians for electoral reform, but offer a slightly different political mechanism about the consequences of skills, one that works through the effects on the costs of electoral layoffs.

An alternative explanation regards inequalities in the distribution of land as an important source of political power of economic elites at the district level. Both classic approaches to Germany’s democratization and contemporary theoretical work on democratic transitions attribute an important causal role to rural inequality as a factor hindering democratic development. We will control for the role of inequality in landholding as a potential variable affecting opposition to electoral reform. Nevertheless, it is important to understand limitations of measures of landholding inequality as predictors of electoral behavior in the German case. The measure of landholding inequality that is favored in contemporary scholarship –

which measures the magnitude of the deviation from any perfectly equal distribution of agricultural land among landholders – is only an indicator of the *size* of farms, but tells us nothing about employment patterns on those farms. In the case of the Prussian districts of Imperial Germany, for which disaggregated data exists which measures agricultural employment across farms of different sizes, it has been shown that only a very small percentage of rural workers are employed on large farms (over 200 hectares) (Grant, 2005). The inequality of landholding stands only in a very weak empirical relationship with the Gini of agricultural employment (the correlation between these two variables for the 1895 census is 0.27). Thus, the micro mechanism by which rural inequality aids rural landowners electorally is not entirely clear: if the large farms are not populated, control over land does not translate into control over voters (Ardanaz and Mares, 2011). Baland and Robinson report similar finding for Chile: measures of agricultural employment concentration perform much better than measures of inequalities in landholding in predicting electoral behavior under the secret ballot (Baland and Robinson, 2008).

These structural conditions at the district level are likely to affect the costs of electoral intimidation by private economic actors. The presence of private actors that are willing to engage in electoral intimidation of voters is likely to affect the preferences of a politician for a reform of electoral secrecy: if a politician can rely on actors willing to engage in electoral intimidation of voters, we should expect that he will oppose a reform of electoral institutions protecting the secrecy of the vote. By contrast, we expect that politicians in districts whose underlying economic characteristics features make electoral intimidation too costly for private actors – either because of the low level of economic concentration or because of the high levels of skills – to support electoral reforms that increase the secrecy of the vote. In other words, we expect that two underlying economic features of a district, the level of economic concentration and the level of skills will influence political support for the adoption of the secret ballot.

Partisanship is likely to affect the calculations of politicians over the desirability of electoral secrecy, as the connections between politicians and private economic actors fell along relatively clear partisan line. In the political context of Imperial Germany, the Kartellparteien – National Liberals, Conservatives and Imperial Party – had the closest political connections to agricultural and industrial interests and these ties remained relatively stable until the dramatic political realignment following the disintegration of the Bülow bloc. The electoral cooperation of these parties guaranteed the adoption of favorable legislation preserving the interests of agricultural and industrial employers – such as the tariff legislation, protective

industrial policies, protection against economic competition and so on. As a result we expect stronger opposition from politicians from these parties to the adoption of the secret ballot as compared to politicians from other political parties which lacked sustained and systematic ties to private actors, such as Free liberals and Social Democrats.

Our hypotheses about the effects of the competitiveness of the race on the preferences of politicians for the adoption of secret ballot reform are less clear. If we assume risk aversion, we expect that politicians elected in tight races will be more likely to support the status quo in the design of voting technology. But if the politician perceives that the tightness of the race results from the use of electoral intimidation by his political opponent, then this consideration might offset the effect of risk aversion and lead to support for reforms leading to a greater protection of electoral secrecy.

The existence of electoral runoffs required often complex political alliances in the second round, which lowered electoral incentives to rely on private economic repression (even if capabilities were present) as the risk of deterring potential coalition partners in the second round was present. Thus, we hypothesize that politicians elected in runoffs face higher political costs associated with electoral repression. As such – all things equal – they are more likely to support electoral secrecy.

To sum up, we hypothesize that demand for electoral secrecy is inversely related to the costs of electoral repression. If economic conditions at the district level made private electoral repression relatively costless to private actors and if politicians in the district enjoyed political support from these actors, we expect that politicians to support a status quo in the design of electoral institutions. By contrast, we expect demands for electoral secrecy to be higher in districts where the costs of electoral repression are high. If existing theories offer any guidance, we expect political demand for the secret ballot to be high in districts with low levels of employment concentration and with a relatively skilled workforce.

Empirical analysis

We analyze all bills that have been submitted to the Reichstag demanding reforms in the technology of voting and the introduction of greater electoral secrecy. Table 1 presents the full list of proposals, the date of their submission the name of the politician (or group of politicians that initiated the proposal) alongside with some brief discussion of the main area of reform of electoral technology the proposal attempted to reform. We find proposals recommending electoral technology with the goal of bringing about greater electoral secrecy during seven of

the thirteen legislative sessions of the Imperial period. Proposals recommending a reform of electoral secrecy were associated with the

Table 1: Proposal for electoral reform – Ballot secrecy

	Year	# of document	Area of reform	Initiating Politician
1	1875	52	Electoral list	Voelk (NL)
2	1878	66	Ballot envelopes (<i>Stimmzettelkouverts</i>)	Blos, Most (SPD)
3	1878	119	Ballot envelopes (<i>Stimmzettelkouverts</i>)	Liebknecht (SPD)
4	1881	66	Ballot design	Woelfel (NL)
5	1889	26	Ballot design and ballot envelopes	Barth (DFP) and Rickert (NL)
6	1890	139	Ballot design	Groeber
7	1892	30	Ballot envelopes	Barth (DFP) and Rickert (NL)
8	1892	35	Ballot envelopes	Groeber
9	1894	20	Ballot envelopes and secret urn	Groeber, von Heereman, Lieber (Montabaur), Rintelen, Schaedler, Spahn, Wenzel
10	1894	21	Ballot envelopes	Rickert (NL)
11	1895	25	Ballot design and secret urn	Rickert (NL)
12	1899	22	Ballot design and secret urn	Rickert (NL)
13	1900	33	Ballot envelopes and secret urn	Grober (Z)
14	1907	112	Electoral urn (including shaking up of urn prior to the counting of ballots) and isolating space (<i>Isolierraum</i>)	Hompesch, Schadler, Spahn, Grober (Z)
15	1909	91	Electoral urn	Bassermann (NL)
16	1910	214	Electoral urn (shaking of urn)	von Hertling (Z)
17	1911	816	Electoral urn	Ablass (FVP)

Source: Stenographische Berichte des Deutschen Reichstages (various years).

Table 1 illustrates also the existence of temporal variation in the content of the reforms protecting electoral secrecy. The proposals submitted during the first legislative sessions of the Reichstag recommended primarily reforms of the design of the ballot. A possible remedy to the highly imperfect ballot – whose shape and shade of white could easily identify the voter – was the ballot envelope (*Stimmzettelkouvert*). (The idea of ballot envelope itself antedated the Imperial Period and was recommended for the first time in 1869 by Anton Sombart, a liberal politician during the parliamentary deliberations surrounding the introduction of the electoral law). In addition to recommendations for ballot envelopes, the proposals also sought to introduce restrictions on the discretion held by election officials attempting to pre-empt a common practice of the time whereby election officials opened up the folded ballots (allegedly to preempt the submission of multiple bills by voters). Proponents of ballot envelopes were

ultimately successful in bringing about this change in the technology of voting. In 1903, Chancellor Bülow agreed to a reform of the ballot and announced his decision on the floor of the Reichstag on January 21, 1903 (Stenographische Berichte des Reichstages 1903: 7431). Beginning with the 1903 election, ballots were to be inserted in envelopes, to protect the secrecy of the vote.

During the second part of the Imperial Period, proposals recommending changes in electoral technology focused primarily on changes in the design of the urn. Some of these proposals – such as the 1894 proposal advanced by members of the Free Liberal Party (Nr. 20/1894) or the liberal proposal (Nr. 22/1895) antedated the 1903 change in electoral technology. Many of the bills recommending the standardization of the electoral urn (changes in electoral practices such as “shaking up of urns prior to counting of votes”) followed the 1903 reform. The motivation for the persistence of these reform initiatives was the belief that the irregularities in the shape of electoral urns – which led to the stacking up of ballots – continued to act as an important source of violation of electoral secrecy (Gerlach 1904: 693). In fact, after the 1903 and 1907 election, 156 protests alleged violations of electoral secrecy (Anderson 2000: 258).

Explanatory Variables

As hypothesized above economic conditions at the district level influenced the opportunities of politicians to engage in electoral manipulation. Our first hypothesis is that the economic concentration of a district affects the relative magnitude of the costs of electoral layoffs by individual firms. We hypothesize that the costs of electoral layoffs for individual employers are likely to be lower in regions characterized by high levels of economic concentration. In regions with higher levels of economic concentration are likely to experience higher costs of electoral intimidation.

To test for this mechanism, we rely on extremely disaggregated information collected by the German statistical agency as part of its occupational census (*Betriebszählung*), which we use to construct a measure of employment concentration (Kaiserliches Statistisches Amt 1895, 1907). In 1895 and 1905, the German statistical agency collected highly disaggregated information on employment levels in 220 occupations for over 1000 municipalities. We use this extremely fine-grained information about Germany’s occupational landscape and aggregate these variables to the 397 electoral districts, using the mapping of localities into districts reported in Reidel (2007). As discussed above, Germany experiences no redistricting for the elections to the national parliament, which makes the mapping of localities to districts

relatively straightforward.

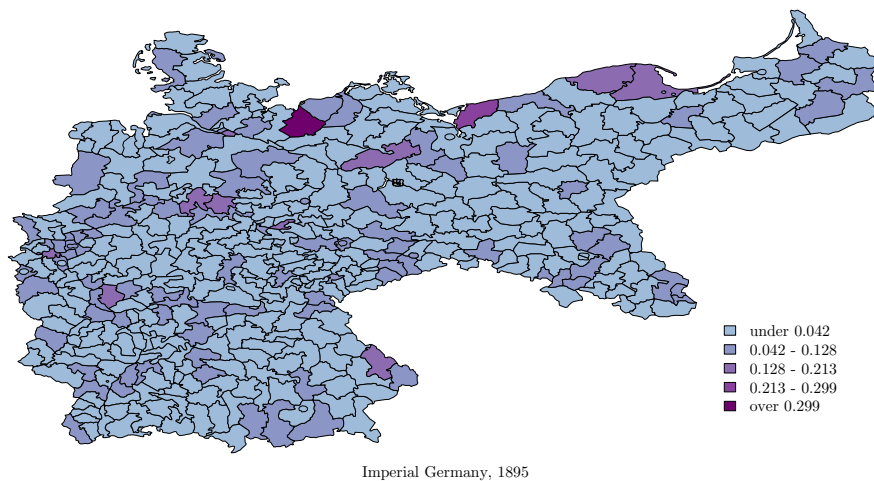
Our measure of economic concentration at the district level is the Herfindahl-Hirschman Index (HHI) of employment concentration. As conventionally used in the literature on industrial organization, the Herfindahl-Hirschman index is defined as the sum of the squares of employment shares of all occupations in a particular district. We construct $HHI = \sum_{i=1}^n S_i^2$ where S_i stands for the employment share of occupational employment in each district. Higher values of the HHI indicate more concentrated economic structures, while lower values represent more decentralized regional economies. One possible concern with this measure is that it measures of employment concentration at the occupational level and does not fully capture employment structure at the firm level. However, the highly disaggregated nature of this data (for each locality we have information on employment shares in 220 occupations) allows us to assume that for each locality one occupational category approximates one firm.

The proposals to change electoral law we analyze span a time period from 1875 to 1911. The only data that is available at all is based on the census in 1895 and 1905. We use a conservative approach to interpolating data for the years before and after measurements. We use the 1895 values for proposal submitted before 1895 and we use the 1905 measure for those that were introduced after 1905. For proposals in between the two censuses we use a weighted average (based on time from/to the next/last census). The emerging patterns are flat-steep-flat such that the measures are constant between 1875 and 1895, they can be growing or falling for the time between the two measures, and they remain stable after 1905. We believe that this is the most cautious and conservative approach.

Graphically, Figure 1 presents the geographical variation in economic concentration across the electoral districts of Germany. The variation in economic structure across *Länder* during Germany's process of industrialization has been the object of a large qualitative literature in economics, history and political science, which goes back to Gary Herrigel's pioneering work which has examined the significant economic differences between the 'autarkic economic regions' of the Ruhr region and the 'decentralized' regions of the South (Herrigel, 1996). Using data at the regional level of aggregation, Alex Kuo has also shown how economic concentration of a region affects the calculations of firms in joining associations of employers (Kuo, 2010). Our variable is calculated at a very disaggregated level (the locality), using information of employment breakdown across 200 occupations. Descriptive information about the variation in the level of employment concentration across the 97 *Regierungsbezirke* of Germany are in broad agreement with Gary Herrigel's earlier research (1996). Consider descriptive information from

the 1895 census. As compared to the average measure of economic concentration for Germany (which is 0.04), regions in the Ruhr area are characterized by significantly higher levels of economic concentration. The level of economic concentration in Düsseldorf, Arnsberg and Münster are 0.115, 0.06 and 0.08 respectively. By contrast – and in agreement with Herrigel – the economic concentration of Württemberg is 0.029.

Figure 1: Map – Employment Concentration – 1895

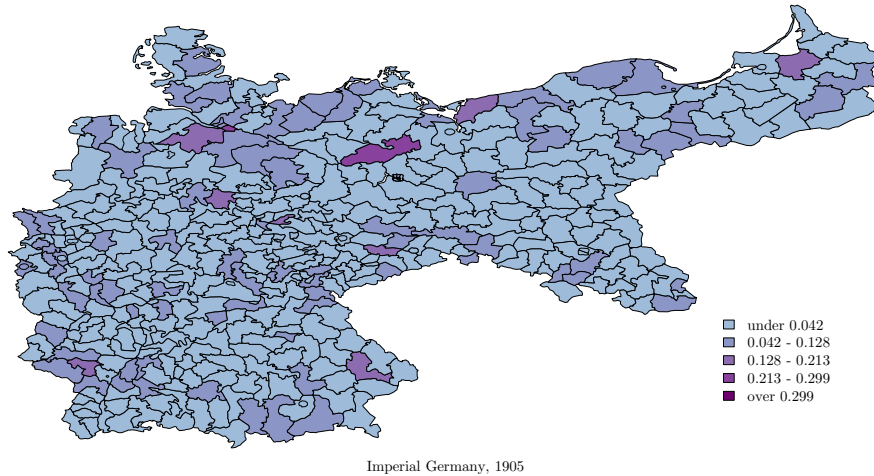


When examining changes in the level of economic concentration across the two censuses for which this measure is available, we find a very small decline in the level of economic concentration. The average value for Germany is now at 0.038. On the one hand, highly urbanized centers (such as Berlin) experience a decline. The decline affects both ‘autarkic’ and ‘decentralized’ regions in Germany. Using the same examples as above, the level of economic concentration in Düsseldorf, Münster and Württemberg experience a slight decline over this period. Arnsberg, by contrast experienced a slight increase in economic concentration.

Skills

In recent years, a number of studies have argued that the distribution of skills is an important predictor of political support for variation in political reforms across the 19th century (Cusack, Iversen, and Soskice 2009, 2011). Yet, while skills and human capital are invoked in many of these studies, none of the papers provide direct empirical measures of the distribution of

Figure 2: Map – Employment Concentration – 1905



human capital in 19th century European economies. Empirical evidence in existing work comes in the form of qualitative assessments of cross-national differences in the strength of guilds, rural cooperatives and national level associations of employers (Thelen, 2004; Cusack, Iversen, and Soskice 2011 based on Katzenstein 1985 and Crouch 1993). Even the most recent paper by Cusack, Iversen and Soskice that seeks to understand subnational variation in the development of electoral institutions across German regions relies only on qualitative assessments of the level of skills in these regions.

To advance the empirical understanding of the variation in human capital across German regions, we develop a measure of the skill profile of the industrial workforce that will be hopefully of broader use to scholars examining other political outcomes of the period. As part of its 1895 census, the German Statistical Agency has collected information on the ratio between skilled and unskilled workers in 183 occupations, which include 161 industrial occupations and 22 occupations in services. The definition of skilled workers (“gelernte Arbeiter”) employed by the Statistical Agency is straightforward (but somewhat laconic): skilled workers (gelernte Arbeiter) are those workers that require some training. By contrast, unskilled workers (ungelernte Arbeiter) – in other words manual workers, handymen and other workers in services – which do not have existing training” (Kaiserliches Statistisches Amt 1899: 73). The conclusions of this investigation of the German Statistical Agency about the skill composition

of the German labor force at the turn of the century is in broad agreement with some of the findings of the varieties of capitalism literature. The study noted that the number of skilled workers is very high in Germany (nearly 50% of workers). “The economic relations in industry – which requires particular abilities and skills which can be learned or acquired through persistent exercise are the decisive factor which explain these high ratios of skills” (Kaiserliches Statistisches Amt 1873: 73) The appendix presents the disaggregated levels of skills recorded at the time (Table A2).

We use this table in conjunction with the 1895 occupational census (which contains extremely disaggregated information on the number of workers in each industry to estimate the ratio of skilled to unskilled industrial workers across all German localities. The data has the following structure; every occupation is classified first according to agriculture, mining and producing industry, or trade and commerce. Within these broad categories there are two further levels. This can be illustrated with a goldsmith. This person makes jewelry and therefore (s)he is in the second sector (mining and producing industry), within that sector (s)he belongs to the vocational group “V” (metalworking class) and if the person does not use copper but gold (s)he is in the vocational group “V” and a type “a” (metalworking with gold or silver). Due to the 1895 census we know exactly how many people employed in “Va” were skilled. Figure 3 shows the fine-grained structure.

Figure 3: Structure of Occupational Catalogue

SECTOR	VOCATION	TYPE
1.) Agriculture		
2.) Mining and Producing Industry	I: Nursery II: Livestock breeding III: Mining IV: Stones and Soil V: Metalworking : XVII: Artist and creative occupations	a: Working with gold and silver b: Working with copper c: Working with steel
3.) Trade and Commerce		

Notes: Structure of the fine-grained classification of the vocational categories. Example: Goldsmith.

For each occupation we calculate a ‘skill ratio’, which is computed as the ratio between skilled workers and total number of workers in that occupation. For every occupational sub-

sub-group we can determine its average skill level. We also know how many employees work in which locality (e.g. in district 10 (Rastenberg-Friedland) there were 4 employees classified as “jewelers working with gold or silver” (“*Va*”). In the entire Empire the average of skilled workers in “*Va*” (jewelers working with gold and silver) is 94.2% and therefore we would have found the equivalent of 3.77 skilled employees for this occupation in Rastenberg-Friedland. If we do this for every occupational group and add the numbers up for this district, we find that Rastenberg-Friedland has 6862 (rounded from 6861.657) skilled employees and a total of 51,092 - this constitutes a share of 13,4% and this is the degree of skilled labor in the industrial workforce we find in Rastenberg-Friedland.

Unfortunately, precise tables of the ratio of skilled to unskilled workers have been developed only for the 1895 economic census and not for the 1905 census. Therefore, the only measure of the skill composition of the workforce at the level of the electoral district is based on the 1895 census.

A third economic control is the level inequality in the distribution of farms. We use a measure of the Gini of landholding inequality – which measures deviation from a perfect distribution of land among landholders – that has been computed by Ziblatt based on the 1905 German agricultural census (Ziblatt, 2009). We use this measure to test for the prominent explanation that inequalities in landholding predict demand for democratic institutions. Both classic and modern theories predict a negative relationship between rural inequality and support for electoral secrecy.

Additional controls

In addition to these economic controls, we control for a variety of political factors at the district level that are likely to affect the calculations of politicians over the advantages of the secrecy of the ballot. The first variable is the margin of victory. All our models include a measure of the electoral margin. Given Germany’s runoff elections, we compute margin as the difference in electoral victory between the winner and runner-up in the decisive electoral round (ICPSR, 1984). This variable is reversed so that higher values represent more competitive elections. We also control for the decisive round of the election (second round), by including a variable, which takes the value 1 if the election is determined in the second round. As discussed above, our theoretical expectations about the competitiveness of a race and support for the adoption of the secret ballot are somewhat unclear. Other political controls at the district level include the level of electoral turnout and the percentage of catholics in the district. The

source of both variables is the ICPSR dataset on German elections (ICPSR, 1984).

Results

We estimate several models to test our hypotheses and their robustness to alternative specifications. The outcome variable is whether a member of the Reichstag was a co-signer of a proposal recommending changes to the electoral law. Because we have unobserved heterogeneity over time (eight legislative periods), space (electoral districts), and subject (proposals) we estimate a non-nested binary model in which we incorporate random effects (Gelman and Hill, 2007).¹ In addition we add fixed effects for all major regions (Baden, Sachsen, Klein- und Hansestaaten, Elsass-Lothringen, West Preussen, and Ost Preussen). Thereby, we control for potential unobserved regional effects. This model allows us to estimate whether our variables of interest increase or decrease the probability for a politician from a certain district to co-sign an electoral reform bill or not. We have several proposals (i) per legislative period (p) and we include random effects for districts (α_d), periods (α_p), and proposals (α_i). The explanatory variables (\mathbf{X}_{dp}) vary over districts and periods:

$$\begin{aligned} P(y_{irdp} = 1) &= \text{logit}^{-1} [\beta_{0r} + \boldsymbol{\beta}\mathbf{X}_{dp} + \alpha_d + \alpha_p + \alpha_i] \\ \alpha_d &= N(0, \sigma_{\text{district}}) \\ \alpha_p &= N(0, \sigma_{\text{Leg.period}}) \\ \alpha_i &= N(0, \sigma_{\text{proposal}}) \end{aligned}$$

We present first the *economic model* (Model 1) which only relies on economic explanatory factors. In the second model we focus on *political* explanatory factors (Model 2). Eventually we add all factors in a final model and estimate each factor while controlling for the others (*Full Model*). We will first discuss the results of these three models, and then present a second set of models.

In model 1 (economic model) we find, as hypothesized, a negative and significant effect of economic concentration (**Economic Conc.**). There is also support for the negative impact of land inequality (**Land-Gini**) on the probability of co-signing. The share of employees in the

¹We estimate these models in R 2.13.1 using packages “arm”, “lme4”, “blme”, “foreign”, “aod”, “memsic” and “lmtree”. Altogether we have 7146 observations, 397 districts, and 8 different legislative periods.

Table 2: Regression Results

	<i>Economic</i>	<i>Political</i>	<i>Full</i>	<i>Trend</i>
	Model 1	Model 2	Model 3	Model 4
Constant	-1.903*** (0.653)	-2.383*** (0.672)	-2.494*** (0.861)	-2.458*** (0.865)
Economic Conc.	-3.404* (2.039)		-3.685* (1.907)	-3.641 (1.900)
Land-Gini	-2.762*** (0.847)		0.208 (0.801)	0.189* (0.802)
Non-Agriculture	0.011* (0.006)		-0.001 (0.006)	-0.001 (0.006)
Skill Ratio	1.680** (0.701)		1.504** (0.655)	1.526** (0.657)
% Catholics		0.008** (0.004)	0.009** (0.004)	0.009** (0.004)
Social Democrats		-0.147 (0.210)	-0.251 (0.217)	-0.255 (0.217)
Zentrum		1.589*** (0.281)	1.547*** (0.282)	1.548*** (0.282)
Minorities		-1.060** (0.481)	-1.030** (0.480)	-1.020** (0.481)
Free Liberals		2.011*** (0.184)	1.927*** (0.188)	1.924*** (0.188)
National Liberals		0.230 (0.212)	0.186 (0.213)	0.181 (0.213)
Other Party		0.581 (0.414)	0.567 (0.418)	0.562 (0.418)
Margin		-0.012*** (0.003)	-0.012*** (0.003)	-0.012*** (0.003)
Second		0.255* (0.139)	0.250* (0.140)	0.248 (0.141)
Eff. # Parties		-0.034 (0.104)	-0.059 (0.108)	-0.060* (0.108)
Turnout		-0.014** (0.007)	-0.018*** (0.007)	-0.018*** (0.007)
Δ in Econ. Conc.				-0.061 (0.131)
σ_{dis}	1.00	0.77	0.75	0.75
σ_{per}	0.38	0.00	0.52	0.52
σ_{pro}	0.73	0.93	0.75	0.75
N	7094	6749	6701	6701
Log-likelihood	-2113.821	-1888.422	-1875.954	-1875.847
AIC	4257.642	3820.845	3803.907	3805.694
BIC	4360.647	3970.822	3980.967	3989.564
Regional FE	YES	YES	YES	YES

*** ≤ 0.01 , ** ≤ 0.05 , * ≤ 0.1

non-agricultural sector is positively correlated with the outcome variable. Finally, we find a positive and significant estimate for the average skill level in a district. To rule out that unobserved regional variables bias the estimates, we rely on fixed effects for the *Länder* as we do for all models.

In model 2 we focus on the political factors. Here, we also control for the effect of the share of Catholics and do find a positive effect. The baseline party category are the Conservatives. We find that politicians of the Zentrum (Catholics) are more likely than the Conservatives to co-sign proposals. The Free Liberals are also significantly more likely to co-sign than the Conservatives while the minorities are even less likely than the conservatives. Of the four variables which are related to the competitiveness of a district (margin, second round, effective number of parties, and turnout) we only find that turnout and margin are negatively related to the outcome.

In the third model we include the economic and the political effects. Among the economic factors only the economic concentration and the average skill level remain significant. The significant effect of rural inequality disappears once we control for political and regional factors. The variables related to the tightness of the race remain unchanged in direction and significance. We believe that this third model (*Full Model*) is the appropriate model to evaluate which explanation is strongest in the context of Imperial Germany.

In addition to these results, we have also estimated three other models. Model 4 (*Trend Model*) includes an indicator that takes on the value 1 if the economic concentration increased over time. We do not find any significant effect for this variables. In model 5 (*Margin Model*) we interact `margin` with a party variable indicating more progressive groups (Zentrum, Social Democrats, and Free Liberals).² This again does not result in any additional explanatory power and the interaction coefficient is far smaller than its standard error. The last of these additional models (Concentration Model) looks at the interaction effect of economic concentration and more progressive parties. This interaction effect is also not supported by the data.

²Note that we actually use the inverse of margin. This gives the interaction a clear theoretical direction; we expect that the interaction is positive because margin is negatively related to proposals. The same holds for the concentration interaction.

Table 3: Regression Results

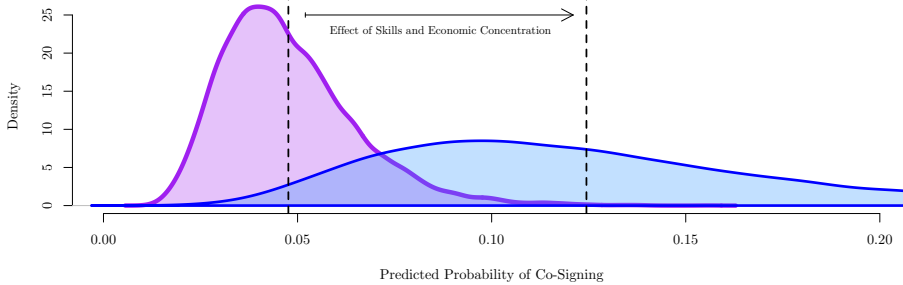
	<i>Margin</i>	<i>Concentration</i>
	Model 5	Model 6
Constant	-2.492*** (0.861)	-2.472*** (0.862)
Economic Conc.	-3.693* (1.908)	-4.529* (2.389)
Land-Gini	0.198 (0.801)	0.212 (0.801)
Non-Agriculture	-0.001 (0.006)	-0.001 (0.006)
Skill Ratio	1.508** (0.654)	1.533** (0.656)
%Catholics	0.009** (0.004)	0.009** (0.004)
Social Democrats	-0.234 (0.223)	-0.078 (0.334)
Zentrum	1.549*** (0.282)	1.691*** (0.354)
Minorities	-1.024** (0.481)	-1.019** (0.481)
Free Liberals	1.930*** (0.189)	2.092*** (0.307)
National Liberals	0.185 (0.213)	0.185 (0.213)
Other Party	0.567 (0.418)	0.566 (0.418)
Margin	-0.012*** (0.003)	-0.012*** (0.003)
Second	0.255* (0.141)	0.248* (0.140)
Eff. # Parties	-0.062 (0.109)	-0.059 (0.108)
Turnout	-0.018*** (0.007)	-0.018*** (0.007)
Inter: Margin×Progr.	-0.046 (0.234)	
Inter: Econ×Progr.		-0.005 (0.007)
σ_{dis}	0.75	0.75
σ_{per}	0.52	0.52
σ_{pro}	0.75	0.75
N	6701	6701
Log-likelihood	-1956.409	-1955.888
AIC	3964.819	3963.775
BIC	4141.879	4140.835
Regional FE	YES	YES

*** ≤ 0.01 , ** ≤ 0.05 , * ≤ 0.1

Interpretation of the empirical results

To illustrate the effect of skills and economic concentration on the propensity to co-sign a proposal, we can look at the change in predicted probability for a specific unit. Earlier we mentioned the district *Rastenberg-Friedland* (district # 10) which is in East Prussia. To illustrate the effect of skills and economic concentration we can study the *predicted* behavior of the district's parliamentarian for the *von Hertling proposal*. This proposal was introduced in 1910 and sought to make it mandatory that the urn is shaken to guarantee ballot secrecy.

Figure 4: Simulated Probabilities



The conservative district had a below average level of skills and an above average degree of economic concentration. We use the estimated coefficients and the variance-covariance matrix from Model 3 together with the estimated random effects for all three levels and generate 10,000 simulated predictions.³ Based on the theoretical argument, we would not expect to see this district supporting the proposal and this is also what the predictions yield; the likelihood of co-signing is only 4.8%. The purple area in Figure 4 shows the simulated density for the district.

In the next step we ask what would happen if this district would remain conservative but had a far higher skill level and lower economic concentration (holding all other covariates constant). We use a high level of average skills ($\sim 50\%$) and a low degree of economic concentration (~ 0). The simulated predicted probabilities are shown as blue density and we see that the mean is higher. In fact, the predicted probability of co-signing is almost three times as big ($\sim 12,4\%$). The empirical 99% confidence interval for the difference in the two predicted probabilities is $[0.01, 0.21]$ and therefore the difference is significant.⁴

Empirical Summary

We show that the economic structure of a district has an effect on the demands for electoral secrecy. The full model (Model 3) shows that even when controlling for partisan affiliation and the competitiveness of a district the economic structure explains additional variance.

³Note, the uncertainty is fully captured in the variance-covariance of the fixed effects. For a more general exposition of this informal Bayesian approach see chapter 7 in Gelman and Hill (2007).

⁴The larger variance in the predicted probabilities for the high-skill and low-concentration (blue density) case are due to less compression (see Berry et al. 2010).

This is also surprising since both measures are constructed and exhibit to a certain degree some noisiness. Noisiness pushes coefficients back to 0 and finding significant effects is harder. Nevertheless, regardless of model specification our two main economic variables (economic concentration and district-level skills) show an effect in the expected direction and are significant.

We have also tried to see whether there is any additive effect when the political part and the economic part fall in place and are both conducive to reform. None of the tested interaction effects would allow us to make any such claims based on this data.

Conclusion

Changes in ‘electoral technology’ and the protection of electoral secrecy are an important aspect (and hitherto understudied) aspect of European democratization. As this paper has illustrated, political conflict over electoral secrecy took the form of conflict over micro-level changes in electoral technology – the size of the urn, the design of the ballot – and over micro-level changes in electoral processes, such as the shaking of the electoral urn prior to the counting of votes. The prolonged political debate over the reform of electoral technology in Germany illustrates that politicians clearly understood that these micro level changes in voting institutions had potential consequences for electoral practices and for their probability of re-election. Using a novel dataset on co-sponsorship of political proposals that recommended changes in electoral secrecy, we have shown that politicians’ demand for electoral secrecy is inversely related to opportunities for electoral intimidation by private economic actors at the level of the district. Demand for electoral secrecy, we show, originated with politicians in “diversified economic districts” (to borrow Gary Herrigel’s phrase), with a relatively skilled workforce. The effects of these structural economic conditions at the district level is robust even after the introduction of variables controlling for the competitiveness of the district and the partisan orientation of a politician.

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Appendix

Table A1: Descriptive statistics of the data set

Variable	n	Min	Median	Mean	Max	#NA
Vote	7146	0	0	0.11	1	0
Baden	7146	0	0	0.04	1	0
Sachsen	7146	0	0	0.06	1	0
Klein & Hansestaaten	7146	0	0	0.09	1	0
Elsass-Lothringen	7146	0	0	0.04	1	0
West Preussen	7146	0	0	0.29	1	0
Ost Preussen	7146	0	0	0.30	1	0
Bayern	7146	0	0	0.12	1	0
HHI	7094	0.00	0.03	0.042	0.72	52
HHI Increase	7146	0	0	0.35	1	0
Land-Gini	7146	0.46	0.73	0.73	0.95	0
Non-Agriculture	7146	30.23	58.78	60.29	99.56	0
Skill Ratio	7146	0.04	0.24	0.26	0.70	0
% Catholics	7146	0	24.3	36.91	100	0
Social Democrats	7146	0	0	0.14	1	0
Zentrum	7146	0	0	0.25	1	0
Minorities	7146	0	0	0.06	1	0
Free Liberals	7146	0	0	0.09	1	0
National Liberal	7146	0	0	0.17	1	0
Other Party	7146	0	0	0.02	1	0
Margin	7146	0	25.4	32.44	100	0
Second Round	6749	0	0	0.37	1	397
Eff. # Parties	7146	1.00	2.21	2.31	17.1972	0
Turnout	7146	20.1	74.9	72.42	95.2	0
District #	7146	1	199	199	397	0
Year	7146	1874	1893	1893.11	1907	0

Table A2: Skilled and Unskilled workers in 1895 – “Die gelernten und ungelerten Arbeiter im Jahre 1895”

Sector	Type	Category	Descr. ⁵	Skill M ⁶	Skill F ⁷	Skilled	Unskill M ⁸	Unskill F ⁹	Unskilled ¹⁰	
III. Mining, Salt works and smelting operations	IIIa)	Ore mining	B 1	42876	3	42879	24313	3523	27836	
	IIIb)	Iron steel works	B 2	22914	18	22932	112400	4210	116610	
	IIIb)	Salt mines	B 3	2853	5	2858	6349	98	6447	
	IIIc)	Exploitation of rocks, browncoal, oil, amber	B 4	184186	7	184193	124326	6076	130402	
	IIIc)	Exploitation of peat	B 5	179	1	180	4915	1328	6243	
IV Stonecutting	IVa)	Stonemasonry	B 6	48373	40	48413	3491	254	3745	
		Quarryworkers	B 7	19526	200	19726	43488	1766	45254	
		Maker of delicate stone objects	B 8	4102	30	4132	1904	510	2414	
	IVb)	Workers with gravel, sand	B 9	3746	74	3820	29343	1644	30987	
		Maker of cement objects	B 10	902	11	913	2734	158	2892	
	IVc)	Workers with loam and clay	B 11	232	3	235	3249	149	3398	
	IVd)	Potters, Bricks	B 12	10360	54	10414	149902	12653	162555	
		Potter maker	B 13	14721	122	14843	6450	1229	7679	
		Maker of refined potter	B 14	669	44	743	1143	266	1409	
		Porcelain former	B 15	19193	4082	23275	10752	7114	17866	
	IV e)	Glasprocessing	B 16	17274	182	17456	12062	3306	15368	
		Glas finishing	B 17	6780	580	7360	712	937	1649	
		Mirror glas and mirror fabrication	B 18	2545	666	3211	1894	590	2484	
		Toys made out of stone, porcelain or glas	B 19	694	266	960	164	125	289	
	V Metalprocessing/ Metallurgy	Va)	Noble metals	B 20	15418	4368	19786	724	487	1211
			Other precious metal processing	B 21	5089	2277	7366	893	2508	3401
		Vb)	Non-noble metals with the exception of Iron and Steel	B 22	9167	17	9184	499	86	585
		Coppersmiths	B 23	5569	4	5573	673	39	712	
		Brass founder	B 24	1301	28	1329	409	224	633	
		Tin founder	B 25	196	107	303	234	579	813	
		Producers of metal toys	B 26	11112	489	11601	3968	1955	5923	
		Other producers of non-precious metals (ex. iron)	B 27	324	324	324	194	19	213	
Vc)		Iron and Steel	B 28	7472	82	7554	1480	985	2465	
		Worker in bronze	B 29	6588	263	6851	5566	2117	7683	
		Metal founder	B 30	41814	57	41871	26396	2000	28396	
		Iron founder	B 31	553	3	556	2097	200	2297	
		Black and	B 32	44643	46	44689	1036	306	1342	
		Plumber	B 33	3833	215	4048	5468	3912	9380	
	Tin worker	B 34	1488	1	1489	288	52	340		
	Maker of nails									

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Sector	Type	Category	Descr.	Skill M	Skill F	Skilled	Unskill M	Unskill F	Unskilled
		Maker of wires	B 35	2320	3	2323	2373	143	2516
		Makers of screws and chains	B 36	3329	52	3381	6348	1575	7923
		Blacksmith	B 37	127152	53	127205	3402	161	3563
		Locksmith	B 38	259294	164	259458	8318	626	8944
		Knife smith	B 39	11955	21	11976	4754	512	5266
		scissor sharpener	B 40	5136	13	5149	613	73	686
		File cutter	B 41	4914	17	4931	740	63	803
		Maker of small iron pieces	B 42	4268	129	4397	5248	745	5993
		Producer of needles, wire objects	B 43	4809	470	5279	3060	2424	5484
		Producers of writing tools made of steel	B 44	54	7	61	135	418	553
VI Machine tools									
	VI a)	Producers of machine tools	B 45	63089	217	63306	49611	2792	52403
	VI b)	Builder of mills	B 46	2342	2	2344	282	13	295
	VI c)	Builders of carriages and ships	B 47	44875	23	44898	1100	316	1416
	VI d)	Gunsmith	B 48	3530	11	3541	4482	118	4600
			B 49	10014		10014	10080	22	10102
			B 50	2846		2846	75	5	80
			B 51	2133	3	2136	4180	270	4450
	VI e)	Watchmakers	B 52	14154	801	14955	1560	759	2319
	VI f)	Musical instruments (excluding musical toys for children)	B 53	3804	20	3824	1386	255	1641
			B 54	5213	371	5584	1698	681	2379
			B 55	18649	239	18888	916	616	1532
	VIg)	Mathematical and surgical instruments	B 56	435	6	441	2424	1316	3740
	VIh)	Lamps	B 57	3480	12	3492	5669	1066	6735
	Vii)	Electrical machines							
VII Chemical Industry									
	VIIa)	Chemist	B 58	2912	109	3021	24206	2216	26422
	VIIb)	Druggist	B 59	5921	7	5928	2144	376	2520
	VIIc)	Producer of colored materials	B 60	3422	254	3676	10032	2431	12463
	VIIId)	Producer of explosive materials	B 61	1339	241	1580	8577	7727	16304
	VIIe)	Producer of artificial fertilizers	B 62	354	3	357	8283	620	8
			B 63	373	1	374	222	50	272

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Sector	Type	Category	Descr.	Skill M	Skill F	Skilled	Unskill M	Unskill F	Unskilled	
VIII Secondary products of forestry (Soaps, Fats, Oils, Varnishes)	VIIIa) Sec. prdc of frstr	Charcoalburner	B 64	265		265	545	19	564	
		Gas	B 65	769	4	773	11238	102	11340	
	VIIIb) Soap-making	Soap makers	B 66	1763	117	1880	4191	1909	6100	
	VIIIc) Oil mills	Oil mills	B 67	919	16	935	3717	251	3968	
	VIII(d) Oils, varnishes	Workers with oils, varnishes	B 68	946	137	1083	4512	1237	5749	
IX Textile industry	IX) Preparation of spinning materials	Preparation of spinning materials	B 69	1185	811	1996	6679	6913	13592	
	IXa) Spinner	Spinner	B 70	23570	33397	56967	38085	62068	100153	
		Cloth maker	B 71	19943	10552	30495	14481	13815	28296	
	IXb) Weaver	Weaver	B 72	102633	87322	189955	49661	55741	105402	
	IXc) Ribbon manufacturer	Ribbon manufacturer	B 73	428	386	814	286	245	531	
	IXd) Knitter	Knitter	B 74	17053	19962	37015	3925	5983	9908	
	IXe) Embroiderer	Embroiderer	B 75	3771	6940	10711	1426	5727	7153	
	Ixf) Dyer	Dyer	B 76	16089	543	16632	13672	3228	16900	
		Bleacher	B 77	10335	8094	18429	12673	10505	23178	
	Ixg) Fringe maker	Fringe maker	B 78	5757	5180	10937	3392	4580	7972	
	Ixh) Rope maker	Rope maker	B 79	4915	195	5110	1881	1710	3591	
		Sailmaker	B 80	726	253	979	204	603	807	
X Paper Industry	X) Paper and cardboard makers	Paper and cardboard makers	B 81	8031	2540	10571	34650	18887	53537	
		Toys manufactured from papermache	B 82	1085	440	1525	130	192	322	
	Xb) Bookbinder	Bookbinder	B 83	26954	2505	29459	4563	12258	16821	
XI Leatherworking	XIa) Workers with leather	Leather Industry	B 84	287	2	289	178	23	201	
		Tanner	B 85	24111	879	24990	12066	890	12956	
		Leather colorer	B 86	1239	41	1280	2576	204	2780	
	XIb) Oilcloth, rubber	Oilcloth	B 87	425	27	452	1399	147	1546	
		Producer of rubber objects	B 88	477	147	624	6025	3116	9141	
		Producers of toys manufactured out of rubber	B 89	4	1	5	180	85	265	
		Manufacturer of toys made out of leather	B 91	206	230	436	58	182	240	
	XIc) Saddle makers	Saddle Maker	B 90	37903	589	38492	1538	1208	2746	
		Wallpaperer	B 92	19401	247	19648	634	276	910	
XII Woodworking	XIIa) Woodworking	Woodworkers	B 93	15461	83	15544	29341	831	30172	
		Manufacturer of large wood objects	B 94	7458	277	7735	5339	1442	6781	

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Sector	Type	Category	Descr.	Skill M	Skill F	Skilled	Unskill M	Unskill F	Unskilled
	XIIb) Manufacturers of polished wood objects	Cabinet maker	B 95	235594	240	235834	6704	822	7526
	XIIb) Barrel makers	Barrel maker	B 96	29997	23	30020	1385	68	1453
	XII(d) Basket maker	Basket maker	B 97	11529	1522	13051	1174	393	1567
	XII(e) Weaver of straw	Other weaver of wood and straw	B 98	1406	2112	3518	884	1018	1902
	XII(f) Turner	Turner	B 99	19400	33	19433	595	161	756
		Maker of wood toys	B 100	1758	519	2277	804	735	1539
		Maker of cork objects	B 101	8679	776	9455	2253	1322	3575
	XII(g) Combmaker, brushmakers and makers of other wood objects	Combmaker	B 102	975	44	1019	273	129	402
		Brushmaker	B 103	6832	1133	7965	1946	2261	4207
		Umbrella maker	B 104	1407	1091	2498	1528	666	2194
		Maker of picture and and mirror frames	B 105	13141	497	13638	1623	691	2314
	XIII Food processing and production								
	XIII) Producer of vegetarian food items	Miller	B 106	50381	41	50422	15621	806	16427
		Baker	B 107	114448	474	114922	5951	8654	14605
		Pastrybaker	B 108	14230	351	14581	1849	3988	5837
		Sugar producer	B 109	1543	52	1595	22785	3766	26551
		Producer of other vegetable food items	B 110	1245	923	2168	7191	8329	15520
	XIII(b) Producer of animal food items	Butcher	B 111	86303	295	86598	4545	7010	11555
		Other animal food items	B 112	5817	824	6641	3589	2154	5743
		Manufacturer of mineral products	B 113	563	21	584	5868	405	6273
	XIII(c) Drinks	Malter	B 114	1570	7	1577	1280	59	1339
		Brewer	B 115	35784	36	35820	31308	1438	32746
		Manufacturer of wine	B 116	4347	16	4363	7265	810	8075
		Winemaker	B 117	3733	26	3759	918	66	984
		Vinegar distiller	B 118	250	5	255	851	55	906
	XIII(d) Tobacco	Tobacco maker	B 119	43756	41344	85100	12323	23344	35667
	XIV Fashion & Bekleidung								
	XIV(a) Clothes	Seamstress	B 120		97190	97190		957	957
		Tailor	B 121	131486	58846	190334	550	415	965
		Maker of linen millinery	B 122	3170	24667	27837	2264	3035	5299
		Dollmaker	B 123	112	15429	15541	174	1071	1245
		Maker of artificial flowers	B 124	568	1153	1721	137	565	702
		Hatmaker	B 125	631	5966	6597	541	2134	2675
		Bonnet maker	B 126	5712	2690	8402	4087	3032	7119
		Furrier	B 127	751	276	1027	56	68	124
			B 128	5376	864	6240	813	517	1330

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Sector	Type	Category	Descr.	Skill M	Skill F	Skilled	Unskill M	Unskill F	Unskilled
		Glove maker	B 129	4678	3373	8051	381	949	1330
		Maker of ties and suspenders	B 130	187	1758	1945	129	201	330
		Corsetmaker	B 131	446	4334	4780	268	1301	1569
	XIV(b) Shoes	Shoemaker	B 132	147655	7431	155086	4462	3383	7845
	XIV(c) Barber	Barber	B 133	21920	18	21938	50	14	64
		Hairdresser and makers of wigs	B 134	8214	496	8710	43	34	77
	XIV(d) Workers in public baths and cleaners	Worker in public baths	B 135	315	112	427	1727	1363	3090
		Washer	B 136	555	19947	20502	2175	26710	28885
		Clothescleaner	B 137	81	14	95	54	49	103
XV Construction									
	XV(a) Construction worker	Construction worker	B 138	9779	23	9802	312062	8116	320178
	XV(b) Field surveyor	Field surveyor	B 139	1467	3	1470	4379	82	4461
	XV(c) Bricklayer	Bricklayer	B 140	372234	182	372416	44547	2172	46719
	XV(d) Carpenter	Carpenter	B 141	155391	84	155475	4594	271	4865
	XV(e) Glasier	Glasier	B 142	10763	15	10778	219	36	255
	XV(f) Painter	Painter	B 143	92589	104	92693	2494	232	2726
	XV(g) Stucco worker	Stucco worker	B 144	11276	11	11287	757	45	802
	XV(h) Roofer	Roofer	B 145	19512		19512	2301	31	2332
	XV(i) Stonemasonry	Stonemasonry	B 146	11653	13	11666	5350	37	5387
	XV(j) Maker of wells	Maker of wells	B 147	1434	2	1436	1065	13	1078
	XV(k) Plumber	Plumber	B 148	3477	4	3481	3224	24	3248
	XV(l) Gasstove maker	Gasstove maker	B 149	11393	3	11396	773	48	821
	XV(m) Chimney sweeper	Chimney sweeper	B 150	5351		5351	21	3	24
XVI Printing and photography									
	XVI(a) Wood carver	Wood carver	B 151	3181	43	3224	283	312	595
	XVI(b) Bookprinter	Bookprinter	B 152	51884	1461	53348	5610	7191	12801
		Lithographer	B 153	16646	353	16999	1472	2593	4065
		Lithographer using copper and iron	B 154	879	22	901	98	263	361
		Color printer	B 155	489	294	783	182	490	672
	XVI(c) Photographer	Photographer	B 156	5943	599	6542	248	219	467
XVII Artistic occupations									
	XVII(a) Painter and carver	Painter and carver	B 157	2130	92	2222	158	24	182
	XVII(b) Engraver	Engraver	B 158	8881	170	9051	396	72	468
	XVII(c) Calligrapher	Calligrapher	B 159	3229	173	3402	24	30	54
	XVII(d) Other artistic occupations	Other artistic occupations	B 160	1472	193	1665	135	118	253
		Commerce with merchandise	B 161	928	127	1055	20412	6331	26743
XVIII Trade									
	XVIII) Commerce with goods	Shopping agent	C 1	179611 and commerce	80866	260477	96974	13901	111875
	XVII(b) Commerce with credit	Money	C 2	849	41	890	4078	75	4153
		Credit	C 3	773	9	782	8548	96	8644

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Sector	Type	Category	Descr.	Skill M	Skill F	Skilled	Unskill M	Unskill F	Unskilled
	XVIII(c) Commerce with books, art including antiques	Commerce with books, art including antiques	C 4	5029	473	5502	3518	209	3727
		Newspaperprinter	C 5	135	42	177	1571	3167	4738
		Peddler	C 6	619	358	977	278	148	426
		Business mediator	C 7	363	10	373	748	21	769
		Trading apprentice	C 8	226	10	236	26963	2018	28981
		Auctioneer	C 9	198	38	236	1765	91	1856
XIX Insurance	IXI(a) Actuary	Actuary	C 10	283	3	286	1145	32	1177
XX Transportation	XX(a) Transportation on land	Driver of pers. vehicles	C 13	700	2	702	25703	86	25789
		Streetcar worker	C 14	557		557	13843	117	13960
		Railway workers	C 15	1080	14	1094	39160	237	39397
	XX(b) Watertransportation	Navigator	C 16	179		179	724	12	736
		Navigator on ships on seas and coasts	C 17	7045		7045	5098	80	5178
		Navigator on rivers	C 18	18488	21	18509	13846	103	13949
		Longshoreman	C 19	639		639	2420	12	2432
	XX(c) Parcel carrier	Parcel carrier	C 20	192	14	206	7144	2062	9206
	XX(d) Mortician	Mortician	C 21	78	7	85	2115	740	2855
XXI Hotels and restaurants	XXI(a) Hotels and restaurants	Hotels and restaurants	C 22	52370	37121	89491	42737	125924	168661

¹Description and classification of the Imperial Statistical Office. This is the finest categorization level.

²Number of skilled men in a certain category.

³Number of skilled women in a certain category.

⁴Number of skilled employees in a certain category.

⁵Number of *unskilled* men in a certain category.

⁶Number of *unskilled* women in a certain category.

⁷Source: "Die gelernten und ungelerten Arbeiter im Jahre 1895". 1899. *Kaiserliches Statistisches Amt. Die berufliche und soziale Gliederung des Deutschen Volkes nach der Berufszählung vom 14. Juni 1895*, pages 77-80.