

Labor migration, rural inequality and democratic reforms

Martin Ardanaz
IADB

Isabela Mares
Columbia University

Abstract:

A large body of scholarship has asserted that inequalities in the distribution of fixed assets act as a barrier to democratic transitions. This paper proposes a theoretical and empirical amendment of this finding, by arguing that employment conditions in the countryside, rather than inequalities in the distribution of fixed assets affected electoral outcomes in societies characterized by high levels of rural inequality. Using empirical evidence from the Prussian districts of Imperial Germany during the period between 1871 and 1912, we show that relative labor market shortages of agricultural workers affected electoral outcomes under conditions of an imperfect protection of electoral secrecy. Shortages of agricultural workers both reduced the electoral strength of conservative politicians and increased the willingness of rural voters to 'take electoral risks' and vote for the opposition Social Democratic Party. Labor shortages also affect preferences of individual legislators over the reform of electoral institutions. We find that politicians in districts experiencing high levels of labor shortage and higher costs of electoral intimidation are more willing to support changes in electoral rules that increase the protection of electoral secrecy. In theoretical terms, our findings contribute to the literature linking rural inequality and democratization, by demonstrating the importance of labor scarcity as a source of political cleavages over electoral reforms.

Introduction

Asset inequality has returned to the center of research in the literature on democratization, after a remarkable absence. In recent contributions by Acemoglu and Robinson and Boix, 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.ⁱ In these accounts, asset inequality plays a critical role accounting for the most decisive political outcomes of interest to comparative politics, such as democratization, democratic consolidation, violence and social revolutions.

Despite theoretical interest in the study of rural inequality, empirical research of the political consequences of inequality is still in its beginnings. Acemoglu and Robinson's *Economic Origins of Dictatorship and Democracy* remains, exclusively, a theoretical contribution which eschews empirical analysis altogether. While Boix tests his argument with cross-national panel data, the inferences about the consequences of rural inequality during the early periods of democratic transition remain still tentative, due to the scarcity of available measures of rural inequality. In very recent years, a number of studies have explored within country-variation in patterns of landholding inequality and their implications on a variety of political and long-term economic outcomes. They include Banerjee and Iyer 2006 on India; Acemoglu et al. 2007 on Colombia; Galor et al. 2008 on the United States, Ziblatt 2008 on Germany, and Baland and Robinson 2008 on Chile, among others.ⁱⁱ

With few exceptions – such as Baland and Robinson’s study of the consequences of rural inequality in Chileⁱⁱⁱ - these recent studies share a range of common theoretical and empirical problems. Rural inequality is, in itself, a multidimensional concept involving inequalities in landholding or employment. The different components of rural inequality may stand in a very weak empirical relationship to each other. Additionally, they may affect political and electoral outcomes through different mechanisms. For example, while inequality in the distribution of land confers access to wealth and economic resources, inequality in the distribution of employment confers access to a pool of voters that can be subjected to political pressures during elections. Most empirical studies operate only with one single measure of rural inequality without providing any theoretical justification why that particular dimension of rural inequality is favored. This strategy eschews substantive questions about the conditions under which inequality of landholding is more important than inequality of employment. Some of these studies make no effort to test whether the effect they identify is robust across competing measures of rural inequality^{iv}.

The second limitation of recent approaches examining the political consequences of rural inequality is that they assume immobile labor markets. Capital is the only mobile factor, while land and labor are immobile. For some societies at very low levels of economic development, this assumption of labor immobility might be justified. Yet, as development economists have argued nearly half a century ago, societies in their early stages of industrialization experience very high levels of labor mobility.^v This includes both intra-rural labor mobility and mobility of labor from rural to urban areas. We know surprisingly little about the consequences of labor mobility for political competition and for the incentives of politicians to undertake reforms of the electoral systems.

This paper explores the political consequences of labor shortage in economies that exhibit high inequalities in the distribution of fixed assets. Building on the foundational work of Lewis, we show that during the early stages of economic development productivity shocks set in motion a transition from a state of ‘unlimited labor supply in the countryside’ to a state characterized by wide regional heterogeneity in supply of labor. Due to both intra-rural and rural-urban mobility of labor, some localities continue to experience labor surplus, while others experience labor market shortages. Our paper explores empirically the implication of shortages of agricultural workers for electoral outcomes and for reforms of electoral institutions. Conditions of scarcity in the supply of rural workers, we hypothesize, weaken not just the economic power of rural landlords, but also contribute also to changes in the ‘political price’ that agricultural workers can extract in the electoral marketplace. In districts where labor is scarce, electoral strategies premised on intimidation and threats of layoffs in retaliation for the choices made at the ballot box are now costlier for rural landlords. In these districts, rural voters are also more likely to use their increased economic power to take greater ‘electoral risks’ and vote in favor of opposition candidates. We test these hypotheses by examining the effects of labor shortage on electoral outcomes and find that the scarcity of rural workers in a district reduces the vote share of parties representing the interests of rural landowners and that it is associated with an increase in the support for Social Democratic candidates. Countering a vast literature in political science that has argued that inequalities in *landholding* affected the political power of conservatives, we find that this form of rural inequality has *often no effect* on a range of measures of political competition in the countryside.

We argue that labor shortage is in itself the source of a political cleavage over design of electoral institutions. As labor shortage reduces the costs of electoral intimidation of rural land-

owners reducing the ability of the latter to rely on their economic power to achieve their desired results at the ballot box. As a result, a political cleavage opens itself up between politicians from labor scarce and labor abundant areas. In labor abundant electoral districts where the costs of electoral repression remain unchanged, politicians continue to support electoral institutions that violate the secrecy of the vote. By contrast, politicians from labor scarce areas experience higher costs of electoral repression. As electoral strategies premised on electoral intimidation become too costly for these politicians, they are willing to support changes in electoral institutions that support greater electoral secrecy. We illustrate these propositions, by showing that both direct and instrumented measures of labor shortage increase the probability of support of changes in electoral institutions premised on electoral secrecy. The results are robust to the inclusion of a large number of factors that control for the political competition in a district, its religious and linguistic heterogeneity and inequalities in the distribution of fixed assets and employment. In our analysis, we are unable to confirm the central proposition of the recent democratization literature which argues that inequalities in the distribution of fixed assets (e.g. landholding inequality) reduces support of electoral reforms the key predictor of political incentives to engage in a reform of electoral systems^{vi}.

To advance these arguments, the remaining part of the paper will be organized as follows. We begin by characterizing the empirical variation in rural inequality in Imperial Germany and explore differences in the distribution of land, employment and rural agricultural wages across electoral districts. We highlight some limitations of existing approaches that focus on inequalities in the distribution of fixed assets only, by illustrating that the latter variable may be a poor predictor of landowner's ability to control rural voters and mobilize them for electoral purposes. Next, we show that the assumption of labor immobility made in recent research on

democratic transitions is problematic, under-appreciating extensive intra-rural and rural-urban migration that accompanies the period of early economic takeoffs. The following section formulates a number of hypotheses about the effects of inequalities in the distribution of land and employment on political competition in the countryside. We develop a number of hypotheses about the consequences of labor shortage on the incentives for politicians to support reforms of the electoral system (section III). In sections IV and V put these arguments to an empirical test, by examining the effects of labor scarcity and rural inequality on the political support for changes in electoral institutions and the adoption of electoral secrecy. We conclude, by noting implications of our study for the literature examining the economic determinants of democratization, noting limitations of the exclusive emphasis on single dimensions of rural inequality.

I. Land, labor and wages: The consequences of rural inequality in Prussia

The study of Imperial Germany has occupied a central place in the comparative literature linking inequality and democratization. Nevertheless, considerable disagreement continues to exist among economic historians on the extent of rural inequality in Imperial Germany. One line of research that goes back to economic studies published under the auspices of the German Statistical Office beginning with the 1870's stressed the unequal character of German agriculture. This interpretation of Imperial Germany as the paradigmatic case of an economy with a highly unequal rural sector and where unreformed vestiges of a feudal past continued well into the 19th century and exercised a strong influence on classic accounts in comparative politics,

such as Gerschenkron and Moore.^{vii} By contrast, more recent studies have argued that compared with other countries at similar levels of economic development, the conditions in German agriculture have *not* been particularly unequal.^{viii} As a recent study states this position:

“The image of East Elbian agriculture as dominated by large estates, on the English pattern is to a large degree a false one. The typical farm in Brandenburg, Silesia, East Prussia and the Danzig region of West Prussia was more likely to be an owner-occupied holding of around 30-50 hectares. Even where larger estates predominated, they were very different from the English model: an average *Junker* estate might consist of around 250 hectares farmed ‘in hand’; the equivalent English aristocratic estate in the 1890’s would be almost entirely let out to tenants and considerably larger. In most of Germany, especially in the west and south, large estates were a rarity. The typical farm was small, 10-20 hectares and owner-occupied. There was little employed labour. The rural sector was therefore, by the standards of contemporary European countries, a relatively egalitarian one. The low proportion of landless labourers in the rural population as a whole and the high level of owner-occupancy mean that the structure of nineteenth century German agriculture compared well with the situation of many less-developed economies today”^{ix}

Some of this disagreement can be traced back to the different empirical indicators used to assess rural inequality. Germany appears as particularly unequal when one measures the distribution of land, but less unequal if one measures the distribution of employment across different farms or information about ownership of land. Let us consider inequalities in the distribution of land first. In a recent study, Dan Ziblatt has computed measures of landholding inequality, using information on the number and size of German farms from the 1895 agricultural census.^x The measure used in this study, a Gini measure of *landholding inequality* calculates the magnitude of the deviation from any perfectly equal distribution of agricultural land among landholders. Higher values of the Gini index indicate that larger farms account for a greater proportion of total agricultural land, while smaller values suggest that total farm acreage is relatively equally distributed among farms of different sizes. Ziblatt’s study reveals considerable variation in patterns of landholding inequality but high average value of the measure of landholding inequality for Imperial Germany in 1895. Ginis of landholding inequalities varied between 0.49 and 0.94, with an average of 0.77. To put these figures in a

comparative context, in 1860 the Gini of land inequality across US States varied between 0.34 (Connecticut) and 0.83 (Louisiana), with an average Gini of 0.54.

Within Prussia, a large percentage of the districts with levels of rural inequality higher than the average were located in East Elbian regions, such as Königsberg, Gumbinnen, Breslau or Marienwerden. We find considerable number of farms between 100 and 200 hectares in these districts, which leads to high values of landholding inequality. The box plots in Figure 1 help convey these regional differences.^{xi}

<Figure 1 here>

Dan Zibilatt's study reflects a practice that is common in contemporary research to use measures of inequalities in the distribution of land as the preferred indicator of rural inequality^{xii}. While this measure has been widely used in political science research, it is important to reflect on some of its limitations. The Gini of landholding is only an aggregate indicator of the *size* of farms in a locality, a district or a country. It tells us nothing about the ownership of these farms. Inequalities in ownership – such as its concentration among a select group of owners or the lack of property among propertyless peasants are not captured by any of the existing measures of landholding inequality. The Gini of landholding inequality also contains no information about the employment patterns on these farms. Two localities that have identical Ginis in the distribution of farms might have very different distributions of employment. Districts or regions with high inequality in the distribution of farms may nevertheless be characterized by high levels of equality in employment, if most agricultural workers are employed on the smaller farms in a

district. This can occur, for instance, if the land of large farms has very little economic value or if the latter are not used for agricultural purposes.

Does the distribution of employment across German farms mirror the unequal distribution of land? With respect to their employment, East Elbian farms differed from farms in the US South, from Mexican *haciendas* or from the Chilean farms discussed in Baland and Robinson.^{xiii} Large rural farms in Prussia were very sparsely populated. Memel, a district located at the highest North Eastern tip of Prussia (in today's Lithuania) provides a good illustration of this statement. Here, the 1895 census recorded 27 farms over 200 hectares and 3 farms over 500 hectares, which together comprised a little bit over 10,000 hectares (thus 20 % of the total arable land in the district.^{xiv} Yet only 700 workers (roughly 6% of the total agricultural labor force) were employed on these farms.

This example suggests that measures that capture inequalities in the distribution of land may stand empirically in a very weak relationship to measures of inequalities in the distribution of workers across farms. We can use a variety of possible indicators to assess inequalities in the distribution of agricultural employment. The analogous measure of landholding inequality, the Gini of employment measures the distribution of rural workers across farms of different sizes. Additionally, one can approach employment inequality, by measuring the share of the agricultural workers that are employed in the largest or smallest units of the agricultural census, using measures of employment concentration. One example of such measure of rural inequality (that will be used in the empirical analysis below) computes the share of agricultural workers in farms over 200 hectares. These measures are not entirely unproblematic. Their most significant disadvantage is that they do not distinguish among independent or self-employed and employed farmers, nor among different types of employment contracts held by the rural workers. Thus,

while these measures bring us closer to classic studies comparative politics studies of democratization (such as Moore), which have argued that forms of “labor relations in the countryside” rather than inequalities in the size of farms were the key predictor of successful transitions to democracy, they still fall short in measuring salient aspects of agricultural relations^{xv}.

To assess the distribution of agricultural employment across farms of different sizes, we construct a Gini of agricultural employment. Using information from the Prussian agricultural census, we construct this measure for two censuses, 1895 and 1907. Based on the data reported in the Prussian Agricultural Census, the number of farms are distributed across the following size “bins”: less than 0.5 hectare ; .0.5-2 hectares; 2- 5 hectares; 5- 20 hectares; 20-100 hectares; 100 – 200 hectares; and above 200 hectares. As suggested in Ramcharan (2010), we use the mid-point of each bin to construct the Gini coefficient^{xvi}. We use Stephen Jenking's INEQDECO module to perform such calculation in Stata^{xvii}. The histogram in Figure 2 presents the distribution of the land and employment inequality measures for Prussia in 1895.

<Figure 2 here>

Due to the low presence of workers in large farms, the Gini of agricultural employment takes lower values than the Gini of landholding inequality. In 1895, the Gini of employment took an average value of .76, with a .10 standard deviation.

Agricultural workers were not firmly tied to their employers, but found themselves in constant political flux throughout the period. As Werner Sombart noted, the German labor market in the late 19th century resembled an “anthill in which a hiker stuck a cane.”^{xviii} The central economic problem experienced by German agriculture during the Imperial period was

Landflucht, migration from land.^{xix} As early as 1890, a statistical study commissioned by the Prussian Interior Ministry concluded that the “labor shortage which affected the Eastern regions of the Prussian monarchy can lead to the death (*Lebensunfähigkeit*) of German agriculture.”^{xx} Migration intensified in the following decades. Between 1895 and 1905 several districts of East Prussia – such as Gumbinnen, Allenstein or Posen – experienced migration rates that exceeded 10 percent of the population.^{xxi} Migration severely transformed the employment relations in the countryside. Regions that only a few decades earlier had enjoyed relative surpluses in the supply of available rural workers experienced “labor shortage” (“*Leutenot*”) ^{xxii}. Contemporary accounts decried shortage as the “main calamity” (“*Hauptkalamität*”) of their locality, pushing up the wages of level of wages in agriculture and contributing to the economic collapse of many farms.”^{xxiii} In a number of articles published on the eve of World War I, Arthur Schulz, the leading expert on rural inequality of Germany’s Social Democratic Party argued that agricultural labor shortage affected particularly strongly the largest farms (over 500 hectares), contributing to their fragmentation and a reduction of their numbers.^{xxiv} Figure 3 provides evidence that supports this assertion: across Prussian communes, the Gini coefficient of agricultural employment in 1907 shows systematically lower levels than in 1895.

<Figure 3 here>

Intense labor mobility is an economic reality common to all economies undergoing economic development and the study of its economic implications was at the center of the development economics nearly half a century ago^{xxv}. In his seminal study of economic development, Lewis explores the distributional tensions that arise in developing economies that transition from a state of ‘unlimited supply of labor in the countryside’ to a context where rural and urban employers compete for a limited/constrained pool of workers.^{xxvi} Incipient

industrialization sets in motion a process of migration from the countryside to urban centers but also a process of intra-rural mobility of agricultural workers towards areas that expand the arable land. As long as labor surplus persists, the growth of real wages is constrained and the producer surplus is captured entirely by owners of land or capital. Once the surplus of rural labor is exhausted – a point referred to by Lewis, Ranis and other development economists as the ‘economic turning point’ – wages begin to rise and follow the growth in productivity.^{xxvii} The process of migration creates large regional imbalances in the supply of agricultural workers. Some rural areas remain largely unaffected by labor mobility, other areas that had previously been ‘reservoirs of nearly unlimited labor surplus’ (to use Lewis’ phrase) experience shortages of rural workers. In a recent study, Oliver Grant has assessed the effects of labor mobility on a range of economic outcomes in Germany, arguing that the empirical predictions of the Lewis and Kuznets models are borne out by the German case.^{xxviii}

From the perspective of the Lewis model, the most salient economic implication of labor mobility is the imbalance in the supply of agricultural workers and the rise of labor scarcity in some rural areas. To assess the incidence of labor shortage across agricultural districts, we rely on a panel of data on rural wages across all Prussian communes. These data have been collected – and generously shared with us – by Oliver Grant. Note 29 discusses at length the methodology used by Oliver Grant to measure the wage rates in rural localities *only*^{xxix}. For each rural locality we create a *labor shortage* variable defined as the ratio between the real wage of the locality and the average real wage for all localities. Higher values of this measure proxy for relative labor shortage of agricultural workers in a district, while lower values proxy for relative labor surplus^{xxx}. We then, match these localities to the German and Prussian districts, respectively, using the correspondence rules presented in Reibel (2007) for German districts and Kühne

(1994) for Prussian districts. Figure 4 presents descriptive information of this variable, by contrasting the overtime changes in rural wages across East versus West Prussia. This data lends empirical support to the discussion of the pressures on the wages of agricultural workers in the East that is a *leitmotif* in the economic and political publications of the period.

<Figure 4>

The above discussion raises a number of issues that will inform our subsequent analysis of the effects of rural inequality and labor shortage on political outcomes. First, we have shown that rural inequality is a multidimensional concept whose dimensions are not always correlated with each other. Table A.1 (Appendix) presents correlations between these measures. The correlation between inequality in landholding and inequality in employment is 0.27. To put this point more strongly, measuring inequalities in the distribution of land conveys only information about the size of farms but *no information* about the distribution of agricultural workers across farms. The distribution in landholding may be highly unequal but that may reflect a high number of empty parcels of land, marshes and so on. In the Prussian context, due to the weak correlation between 'land-based' and 'employment-based measures' of rural inequality, inequalities in the distribution of land were unlikely to guarantee politicians control over a large pool of voters. Secondly, the discussion has also the acuteness of the problem of labor shortage in German agriculture during the last decades of the previous century. The following section will formulate a range of theoretical hypotheses about the political consequences of landholding and employment inequality on electoral outcomes.

II. The political consequences of rural inequality: hypotheses

The goal of this section is to formulate a number of hypotheses about the effects of labor market conditions at the district level on electoral outcomes. We also seek to disaggregate the effects of different forms of inequality for electoral competition and specify the mechanisms by which labor shortage affects electoral outcomes. Inequalities, we hypothesize, affect the calculations of *economic* agents (in this case rural landlords) to engage in electoral repression. Both inequality and the relative labor scarcity of a district also affects the labor market bargaining power of rural workers and the willingness of the latter to withstand the pressure of employers to support an opposition candidate. Prior to understanding the calculations made by the landlords about the advantages of electoral intimidation, we begin with a discussion of the conditions under which political parties rely on private actors (such as landlords) as their political agents in a district.

The political and financial centralization of parties affects the electoral dependence of political candidates on private economic actors. Two dimensions are of importance in characterizing these outcomes: (a) control over the selection of candidates and (b) the availability of financial resources that can be transferred by the central party organization to individual candidates to aid them during their race^{xxxii}. If a centralized party organization controls the process of selection of individual candidates and disposes over financial resources that can be distributed to candidates to allocate them in a race, the dependence of politicians on the economic resources of private economic actors is relatively low. By contrast, if the process of nomination of political candidates remains in the hands of local 'notables', the dependence of politicians on private actors that control sizeable economic resources is higher. This dependency

of candidates on local economic actors is heightened if parties lack access to centralized financial resources. In this case, individual politicians in a district depend both financially and organizationally on the political resources provided by economic agents.

On a measure of organizational and financial decentralization, the German Conservative Party (Deutsche Konservative Partei or DKP) can be located at the extreme, epitomizing an underfunded party that lacked a centralized organizational infrastructure. The DKP lacked a central campaign fund that could aid individual candidates during elections and numerous publications of the party complained contain numerous complaints about “the practice of living from hand to mouth”, which put the party at a relative disadvantage relative to its competitors, such as National Liberals (during the first decades), the Zentrum and later Social Democrats^{xxxii} (Retallack 1988: 25). The DKP also lacked a centralized political infrastructure that coordinated the process of selection and nomination of political candidates. Decisions over the selection of candidates were taken in local meetings of notables, very often by acclamation. National party leaders were unable to wrest political control over the selection of the selection of candidates from these local committees, which contributed to the overrepresentation of landowners among rural politicians. In many rural districts, the local landlord became the political candidate. Descriptive statistics of the social background of DKP politicians elected both to the Second chamber of the Prussian Assembly and to the second Chamber of the *Reichstag* illustrate the consequences of this total delegation of the selection of candidates to local notables. In both chambers, the percent of conservative politicians that were previously landowners was very high, averaging 65 %^{xxxiii}. This overrepresentation of landowners as political candidates of the DKP remained relatively high and did not decline throughout the period.

At the time of elections, landlords provided political and organizational support to political candidates. This political support came in a variety of forms. Landlords could prevent “undesired” candidates from campaigning among their employees, distribute the “correct” electoral information to their voters, mobilize voters and bring them to the polls and oversee the choices made by voters. As Nipperdey has argued, “in their key economic regions of East Prussia, landlords used their authority as a source of “electoral terror” supplementing the absence of organization on the part of conservatives” . The “tool kit” of repressive strategies available to private actors included a variety of instruments ranging from harassment and intimidation to a punishment that was very costly for voters and that involved ‘layoffs’ for the choices made at the ballot box.^{xxxv}

The insufficient protection of electoral secrecy made these threats of economic punishments extremely credible. Elections to the Prussian lower house were based on open voting. Electoral law governing national level elections nominally protected electoral secrecy^{xxxvi}. This was only an abstract commitment, which was not implemented in practice. Numerous details of the electoral code were – such as design of electoral urns or ballots – opened up ample possibilities for electoral intimidation. Since the German electoral law lacked a standardized provision regulating the size of the electoral urn, local election officials resorted to containers of a variety of shapes to collect the ballots cast by voters. The use of small containers where ballots were tightly stacked on top of each other allowed officials to match the vote of each individual against a list recording the order in which ballots were cast and identify the vote choice of individual voters. As Suval describes the consequences of this insufficient protection of electoral secrecy:

“An agricultural worker might vote with his foreman looking over his shoulder, a member of an election committee might glance at the ballots. Light crosses or other marks could be put on the ballots to discover the individual’s preference. Even after the introduction of the envelope, there was always the reliable method of simply recording the order of voting and keeping the ballots in the order of being cast. Thus, at the end of the day, the committee had to go through the ballots to find out how everyone in the precinct voted. This practice caused great uneasiness among the odd rebels in the villages. Few were as ingenious as Willi Brandt’s grandfather, who assured the secrecy of his Socialist vote in a large eastern landed estate by ‘accidentally’ spilling over the soup tureen that held the vote, thus making impossible a tally by order of who voted.”^{xxxvii}

We have argued that the dependence of conservative politicians on electoral support by landowners was particularly high due to the financial weakness of the conservative party and the absence of political control held by party leaders on the appointment of candidates in individual districts. In this political context, we hypothesize that economic conditions at the level of the district affected electoral outcomes through two interrelated pathways. First, they affected the opportunities and costs of electoral repression faced by individual landlords, which in turn affected the level of ‘electoral repression’ on the part of landowners in a district. Both inequality and labor shortage also affected the calculations made by voters and their willingness to support political candidates from parties that were branded as official enemies of the *Reich*. This individual behavior of landlords as political agents of the conservative candidate and voters mediate between economic conditions in a district (rural inequality and labor shortage) and political outcomes, such as the margin of victory of conservative candidates and the relative electoral support of opposition candidates, such as the Social Democratic Party.

The two different forms of rural inequality – inequality of landholding and inequality of employment – affect political outcomes through different mechanisms. Inequality of employment affects the supply of rural voters that can be subjected to political pressure. In districts characterized by higher levels of landholding inequality (and where a higher share of

rural workers can be found on large farms), one expects that employers are able to ‘control’ the supply of voters relatively easy and engage in strategies of electoral repression, by bringing voters to polls, relying on supervisors to distribute the ‘correct’ political ballots among their workers. By contrast, inequality in the distribution of farms may affect political outcomes only indirectly, through access to economic resources, rather than access to voters. Cross-national research examining the political consequences of rural inequality has privileged the importance of inequalities in the distribution of fixed assets as a predictor of resistance to democratization. By contrast, we hypothesize that this dimension of inequality has much weaker effects on electoral outcomes and on the support for electoral reform^{xxxviii}.

While inequality of landholding affects the “supply” of voters that can be subjected to electoral manipulation, labor mobility and migration affects the “price” of electoral intimidation. In electoral districts where agricultural workers are relatively abundant, electoral intimidation carries relatively low political costs. In conditions of labor surplus, the economic bargaining power is tilted towards employers. In these districts, one expects that the threat of electoral layoffs is relatively powerful and that the willingness of voters to support opposition political candidates is relatively low. As a result, we expect that labor surplus will be associated with larger electoral margins for conservative politicians and a lower vote share for opposition candidates. By contrast, we expect that the shortage of agricultural workers will constrain the economic power of local landlords, raising the costs of electoral intimidation. As a contemporary account discussed the implications of labor scarcity for electoral politics in rural districts:

“In the early times, the electoral pressures of landowners on rural workers were certainly not small. In the latter period, landowners had to use this means of power (*Machtmittel*) very carefully due to the labor shortage that existed in the countryside. One was happy if one could keep one’s employees and one was careful to antagonize them through electoral harassments and not drive them to the cities”^{xxxix}

Shortages of agricultural workers are likely to weaken the credibility of the threat of electoral layoffs on the part of employers and increase the willingness of voters to take “electoral risks” and vote for opposition candidates. Thus, we expect labor shortage to lower the electoral margin of conservative candidates and increase electoral support for opposition candidates. Table 1 summarizes the theoretical predictions of our analysis about the effects on different forms of rural inequality, on the one hand, and of labor shortages on electoral outcomes in conditions when the electoral choices made by voters were observed with relative ease.

<<INSERT TABLE 1 HERE >

III. Empirical analysis I: The effects of district level inequalities and labor shortage on political competition

To explore the political consequences of different forms of rural inequality for electoral competition, we have assembled electoral data on the results of the 13 German *national* elections during the period between 1871 and 1912. Given that our key economic indicators – which allow us to compute measures of labor shortage are only available only for Prussian localities, we are confining our analysis to the Prussian districts of Imperial Germany. Thus, we analyze political competition in 236 out of 397 electoral districts.

Our dataset allows us to examine the electoral consequences of labor shortage at a very disaggregated level of analysis. As discussed above, we measure labor shortage as the ratio between the real wages of agricultural workers in a particular district to the economy level wages

of agricultural workers. In our empirical analysis, we present both models that estimate the direct effect of labor shortage and instrumental variable (IV) estimates in order to account for the potential endogeneity problem in our data. In particular, we instrument the labor shortage proxy in two ways. The first is a measure of agricultural productivity. To leverage the significant variation in levels of rural productivity across Prussian regions, we use estimates of regional differences in agricultural productivity that have been recently computed by Grant^{xi}. We expect our labor shortage variable to be positively affected by productivity levels. A second instrument of labor shortage is a measure of net migratory outflows from a locality, which measures the differential adjustment in the labor supply in response to uneven exogenous productivity shocks. We construct this measure of outflows from statistical accounts of rural migration across Prussian localities during the period between 1895 to 1905 that were collected by the Prussian statistical office^{xli}. We aggregate these variables at the level of the German electoral district, using the correspondence tables between electoral localities and districts presented in Reibel^{xliii}.

We explore the effects of additional economic factors at the district level on the vote share enjoyed by conservative political candidates and on electoral gains made by the Social Democrats. Our specifications include a number of additional measures of inequality in the distribution of agricultural workers across different farms of different sizes. Our above discussion has suggested that the two forms of inequality (inequality in the distribution of farms and inequality in the distribution of labor) affect electoral outcomes, such as the support of conservative politicians, through different mechanisms. In our analysis we test for the relative importance of these forms of inequality for electoral outcomes.

Our specifications include a range of additional economic and political controls. To control for the level of economic development of a district, we include a measure of the

percentage of the population employed in industry and services (*Industry & Services*).^{xliii} We also use two additional controls for the linguistic and religious fragmentation of a district. A first variable (*% Catholics*) measures the percentage of the catholics in a district.^{xliiv} A second variable measures the linguistic fragmentation of a district (*Linguistic Fractionalization*). To compute this measure, we take advantage of information collected by the Prussian statistical agency in 1900, which collected information on the mother tongue spoken in each locality (*Gemeinde*) within Prussia.^{xliv} The list of language communities within Prussia is rather large and includes 20 possible ‘mother-tongues’. In addition to Polish, Danish and Lithuanian – which were the largest non-German speaking minorities – other language communities in Prussia include speakers of west-slavic dialects such as masurian and kasubian (*Kaschubisch*).^{xlvi} Using this information, we compute a measure of linguistic fractionalization as 1 minus the Herfindahl index of ethnolinguistic group shares. We find significant variation in the linguistic heterogeneity across Prussian districts. The measure of linguistic fragmentation takes values between a min. 0.01 and a max. 0.68, with a mean of 0.12. Table A.2 (Appendix) presents descriptive information on the values for all the variables used in the analysis.

We begin by exploring the determinants of the vote share of the conservative party during the first round of national elections to the German *Reichstag*. In particular, we conduct a time-series cross sectional analysis that seeks to account for these electoral outcomes. To correct for the presence of serial correlation, we introduce a lagged dependent variable, which entails dropping the 1871 election from the analysis, and assume a common AR(1) error process across panels. To assess the impact of *time*, we de-mean the dependent variable by year and to control for unobserved *regional* effects (that may include unobserved regional differences in the structure of labor markets), we employ dummy variables at the level of administrative district^{xlvii}.

(For space considerations, the effects of the regional dummy variables are not included in the specification). Table 2 reports the results for this pooled OLS analysis with panel corrected standard errors.

<Table 2 here>

Models 1-5 test our central hypothesis, namely that labor market shortages of agricultural workers have reduced the electoral power of conservatives. We find that the vote share for conservatives is significantly lower in electoral districts where the wages for agricultural workers are higher than the average wage. Depending on the model at hand, we find that a one standard deviation change in the labor shortage variable is accompanied by up to a 5 percentage point reduction in the conservative vote share. Given that the mean level of electoral support for conservatives across Prussia over the time period is 18%, this effect is not negligible.

Both models 1 and 2 illustrate that the electoral strength of conservative politicians was lower in areas with a larger share of catholic voters, a result which can be attributed to the ability of the *Zentrum* to rally the catholic vote. The linguistic fractionalization of a district has an effect on the electoral support for conservative candidate that is statistically significant only in model 2. An increase in the linguistic heterogeneity of a district is likely to reduce the vote share of conservative candidates. We attribute this result to the success of 'ethnic' parties, such as Poles or Danes in regions with levels of ethnic heterogeneity.

To test the other hypotheses presented in table 1, Models 2-4 present one at a time, the different proxies of rural inequality. As shown in Model 4, while the correlation between the Gini of landholding inequality and the vote share of the conservative party is positive, the variable does not achieve statistical significance at conventional levels. Similar non-significant

results are obtained using two other proxies for employment inequality: the share of workers in farms over 200 hectares, and the gini of agricultural employment. In Model 5, we include simultaneously all available district level economic controls, and find that the negative relationship between shortage and the conservative vote share remains robust in this specification. Finally, Model 6 assesses the effect of labor shortage on political competition using two available instruments: agricultural productivity and net population outflows. The estimated IV coefficient finds a negative relationship between labor shortage and the vote share of the conservative party^{xlviii}.

One interpretation for the negative relationship between labor shortage and the electoral strength of Conservatives in rural districts is that labor shortage increases the costs of electoral intimidation by politicians or landlords in rural areas against dissenting voters. A related implication of our analysis is that in labor scarce areas voters are more willing to take political risks at the ballot box and support opposition candidates. To test for this hypothesis we examine the effects of labor shortage on the vote share received by the main opposition party of the time, the Social Democratic Party during the first electoral round of elections. Table 3 presents these results.

<Table 3 here>

Across all models, we find a positive relationship between labor shortage and the vote share of Social Democratic candidates. Depending on the model at hand, a one standard deviation change in shortage boosts the electoral gains of SPD candidates by up to 2.5 percentage points (or 22% increase with respect to the mean level of support).. In models 2-5, we examine whether the effect of labor shortage is robust to the inclusion of additional district level

economic variables. While the coefficients are not always significant, it seems that Social Democratic candidates were not able to make larger electoral inroads into areas with a larger concentration of rural workers in large farms. In model 4, we explore the consequences of inequalities in the distribution of land. We find that inequalities in landholdings are positively related to the social democratic vote share, suggesting that opponents of socialist candidates could not rely on the economic resources provided by higher inequalities in landownership to preempt voters from supporting opposition candidates. This effect is relatively large: in particular, a standard deviation change in landholding inequality is equal to about 4 percentage point increase in the vote share for SPD candidates (in Prussia, the vote share for SPD averaged around 11% during this period). Model 5 includes all relevant district level economic controls. The effects of labor shortage on the electoral support of opposition candidates remain unchanged in these models, even after accounting for potential endogeneity (Model 6).

In combination, the results presented in Tables 2 and 3, respectively, demonstrate that labor market shortages had electoral implications in the agricultural districts across Prussia, by altering the economic bargaining power between rural employers and workers. Labor shortages increased the costs of electoral repression of rural landlords, while increasing the willingness of voters to take political risks. In the remaining part of the paper, we explore the consequences of labor shortage for the preferences of politicians for reforms of electoral institutions. The implication of our analysis is that demand for electoral secrecy is lower in districts where politicians for which electoral intimidation is too costly (labor scarce districts) than in districts where the costs of electoral intimidation are lower (labor abundant districts). Thus, labor shortage can become a source of political cleavage over the design of electoral institutions. To explore these questions, we shift our level of analysis to the sub-national level and examine

political support for votes for electoral reform discussed in the Prussian Lower House. This shift in the unit of analysis is motivated by data availability. While roll call data for the reform of the German electoral system is unavailable, we can find this information on proposals to reform the electoral system of the Prussian second chamber^{xlix}.

IV. Empirical analysis II: the effect of labor shortage on electoral reform

Proposals to reform the Prussian electoral system provide us with an opportunity to explore the effect of labor market changes on electoral reforms. The electoral system by which politicians were elected to the lower chamber of the Prussian parliament – decried by many contemporaries as the *Junkersystem* – was based on indirect, public and censitary voting. Electoral districts were divided into ‘subdistricts’ (*Urwahlbezirke*), which were in turn divided into ‘classes’, with voters assigned to different classes depending on their level of income. Each class of voters would select electors (*Wahlmänner*) through public voting. The electors were then responsible for selecting the candidate.¹ As contemporaries assessed the implications of this electoral system, “public voting served conservatives in the countryside where they were the economically more powerful rather well and could help them in their electoral victory”^{li}.

We focus on two roll call votes in the Prussian lower house considering the introduction of secret and direct elections, as these dimensions of electoral change are related to our theoretical framework most directly^{lii}. Our explanatory variables of interest – inequality in landholding, employment and labor shortage – have direct observable implications about the preferences of politicians over these reforms. One expects electoral intimidation to be more

prevalent in districts where rural employers control an abundant pool of workers, in other words in districts characterized by high inequalities in agricultural employment. As a result, we should see opposition to electoral reforms in these districts. By contrast, labor market shortage increases the costs of electoral intimidation and should thus decrease opposition to electoral reforms.

Conservative politicians representing had opposed electoral secrecy for elections to the Prussian legislature beginning with the early 1880's, a time when the first proposals to introduce secret ballot were placed on the agenda of the Prussian Lower Chamber. Their opposition to electoral secrecy was premised on three interrelated arguments. Firstly, by invoking the example of the German national elections – where secret voting was nominally guaranteed – they argued that the introduction of the secret ballot provided no assurance that electoral pressures from the powerful economic actors in the district would be removed. If anything, they argued, electoral pressure in the national elections was much higher than in the Prussian elections which was based on public voting. The secret ballot was nothing than a “means of deception” (*Täuschungsmittel*) “an instrument which legalized dire deception of employers and exacerbated betrayal by workers. The secret ballot allowed workers to hide their true position towards their employer and double cross employers in cold blood, despite the social welfare provided by the latter it allowed workers to vote for candidates who were determined to undermine the very existence of employers”.^{liii} Secondly, conservative politicians argued that the secret ballot was not reconcilable with the “three class system – because the voters cannot ascertain whether the elector (Wahlmann) for which they voted would vote for a party that represents their interests. By contrast, when elections are public, such control is possible. Thirdly, conservatives expressed the fear that “if one removes one element from the Prussian electoral system, then the entire edifice will collapse on its own”.^{liv}

Political efforts to reform the Prussian electoral system intensified after the turn of the century.^{lv} At the time, the heterogeneity in the preferences of politicians representing rural districts increased, as illustrated by intense disagreement “among conservative members of parliament, provincial spokesmen and newspaper editors about the need to accept any reform at all”.^{lvi} As Retallack summarizes the factors contributing to this increased divergence in opinions:

“It had recently become apparent that the Conservatives’ intimidation of voters in the rural districts of the East was more than matched by the SPD intimidation of shopkeepers, artisans and non-Socialist voters in the cities of the West. In the end, conservative leaders had come to the conclusion that the secret *Landtag* franchise could be a benefit to them.”^{lvii}

At the opening of the 1908 session of the Prussian Chamber of Parliament, Wilhelm II signaled the support of the monarchy for a reform of Prussia’s electoral system which should “correspond to the economic development, the diffusion of education and political understanding”, nudging, thus a divided conservative party further towards electoral reform.^{lviii} Following on this announcement, Chancellor Bethmann-Hollweg introduced a proposal to reform the Prussian electoral system. In Bethmann-Hollweg’s own words, the motivation for this proposal was to help ‘conservatives regain touch with the mood of the people’, after their unpopular behavior during the finance reform struggle of 1909.^{lix} The proposal recommended a wholesale transformation of Prussia’s electoral system: (a) a replacement of indirect with direct elections, (b) an increase in the size of the districts, (b) the determination of the winner based on the proportional method of representation; (d) proposal to allow higher education citizens, such as civil servants (*Beamte*), academics, officers to vote in the higher income category. The

proposal left two aspects of the Prussian electoral system unchanged: public voting and the *Klassenwahlrecht*.

This bold proposal experienced however a dramatic change in the commission of the Prussian Lower House.^{lx} A “black-blue” compromise between conservatives and representatives of the Catholic Party recommended an alternative proposal of electoral reform, one that maintained indirect elections to the Prussian lower house but that introduced voter secrecy. As a contemporary conservative publication reflected on this compromise, “despite our serious reservations, this is less dangerous than the proposal of the government to introduce direct elections and a highly dubious proportional representation”.^{lxi}

In the empirical analysis that follows, we concentrate on two votes. The first vote was taken on March 10, 1910 in the Lower House of Deputies of the Prussian Parliament. This is a vote on a proposal to change the Prussian electoral system to a direct electoral system with secret ballot^{lxii}. This proposal to reform the Prussian electoral system was ultimately defeated due to the inability of the two houses of the Prussian Parliament to reach a compromise and the unwillingness of the Prussian government to step in and resolve this disagreement.^{lxiii} While an agreement between the two houses of the parliament over the introduction of *secret* elections was reached, the proposals ultimately foundered over other more minor details of electoral design, such as the income thresholds that had to be used to assign voters to different electoral classes (the so-called ‘Maximierung’)^{lxiv} Finally, Prior to World War I, the proposal to adopt the secret ballot came on the agenda in one final time on May 20th, 1912, and this is the second vote we analyze. In a recent paper Dan Ziblatt has argued that inequality in landholding is a robust predictor of opposition to this May 20th, 1912 vote.^{lxv} By contrast, our analysis stresses that labor market conditions in a district – more notably labor market scarcity – affect in direct and

immediate ways electoral competition and, thus, demand for electoral secrecy. In addition to testing for the effects of shortage of rural voters, our analysis of this vote differs from the analysis presented by Ziblatt on several issues. First, we make use of *all* roll call votes recorded at the time (rather than a subset of the votes). As a result, the number of observations in reported in our analysis is two times larger than the number of observations reported by Ziblatt. We also use measures of political competition for each politician (margin) and a measure of the political fragmentation of a district. A final point of contrast is that we also report models that use controls for the partisan affiliation of the politician.

Our working hypothesis is that politicians in districts with districts that experience labor market shortages are less likely to support the maintenance of the electoral status quo than politicians from labor abundant districts. This difference in preferences of politicians from labor scarce and labor abundant districts could be attributed to different costs of labor repression in labor abundant and labor scarce districts. Politicians in labor scarce districts are less likely than politicians from labor abundant districts to owe their political victory to electoral intimidation. We explore empirically the consequences of labor shortages alongside political competition in a district in explaining the variation in support for electoral institutions.

Since the unit of the analysis is now the Prussian electoral district (whose geographic boundaries differed from the boundaries of the electoral districts to the national parliament), we have recalculated all economic and social covariates at the level of the Prussian district, using the correspondence tables mapping localities into districts presented in Kühne (1994)^{lxvi}. Table A.3 (Appendix) presents descriptive information on the values of the variables for Prussian electoral districts. Due to significant gerrymandering in the drawing of the boundaries of Prussian districts, the maximal values of rural inequality is higher in the Prussian electoral

districts when compared to the districts used for German national elections. We supplement the existing variables with two additional measures of the political competition at the district level. First, to measure the electoral vulnerability of different politicians, we include a measure for their margin of victory. We code this variable based on the historical information reported in Kühne, who presents information on the vote share received by each politician elected to the Prussian lower house and their runner-up.^{lxvii} We find wide variability in the electoral vulnerability of politicians across Prussian districts. The variable *Margin* takes values between 0.6 and 100, with an average of 60.1 and a standard deviation of 34.48. We expect a negative relationship between margin and the support for the secrecy of the ballot. Since some of the Prussian electoral districts were multimember districts, we compute a measure of political fragmentation of the district. The variable *Divided* takes the value of 1 if the district is represented by politicians from different political parties and zero otherwise. Finally, we add dummies for the parties that concentrate the largest legislative contingent: FK, National Liberals, Zentrum, and Social Democrats (with Conservatives as the omitted category).

For each vote, we code the dependent variable (vote for reform) in three ways: first, we compare “yes” vs. other types of votes (abstentions, “no’s”); secondly, we exclude abstentions from the analysis and only concentrate on the “yes” vs. “no” votes; and finally, we follow the ordinal ranking proposed by Ziblatt and treat “yes” votes as 2, abstentions as 1, and “no” votes as 0.^{lxviii} Table 4 shows results for each of the six probit models, with and without partisan controls, respectively.^{lxix}

<Table 4 here>

Regardless of the coding of the dependent variable, proposal, and inclusion of party identification dummies, it is interesting to note that our variable proxying for labor market conditions is the only rural inequality variable that is consistently affecting elite incentives to support electoral reform.^{lxx} In particular, the reported marginal effects suggest that politicians from districts experiencing relative labor shortage were more likely to approve both bills. These effects are sizable considering the sample probability of voting for reform in each year (see last row of Table). Building from the coefficients of Models 1 and 3, Figure 5 simulates the probability of supporting both bills, across the full range of labor shortage proxy, while holding the rest of the variables at their mean or modal values. A one-standard deviation change in labor shortage is associated with an increase in the probability of support of electoral reform from 61 to 81 percent in 1910 and from 45 to 51 percent in 1912.

<Figure 5>

Among other findings, the electoral vulnerability of each politician also shapes the incentives to support electoral reform, with politicians in tighter races favoring greater electoral secrecy, although the effect of this variable is relatively small. By contrast the level of partisan fragmentation in Prussia's multimember districts has no effect on the probability of support of this legislation. Among the partisan variables, the Social Democrats, and National Liberals have strong, positive effects in support of the reforms.

As a final robustness check, Table 5 reports results from an IV approach, in which we assess the effect of labor market conditions on the probability of electoral reform using the productivity and outflow variables as instruments for labor shortage, along with several IV diagnostics. With one exception, the IV coefficients behave in the expected direction and reach

standard levels of statistical significance. It is important to note that the two instruments are indeed relevant: the correlation between labor shortage, productivity and migration is 0.14 and -0.55, respectively, and both are statistically significant at the 1% level. Additionally, note that the **Wald F-statistics** for the first stage regressions are well above the critical values identified by Stock and Yogo (2002; 2005) as indicating a problem with weak instruments. Additionally, since our model is overidentified we can test whether the instruments are exogenous. The usual econometric approach to this identification question is to run a test of **overidentification**. The results of these tests fail to reject the null hypotheses that the IVs are uncorrelated with the structural error (exclusion restriction). Finally, the test of **exogeneity** (Durbin-Wu-Hausman test) does not lead us to conclude that our labor shortage proxy is an endogenous variable, and since 2SLS can yield inefficient estimates when endogeneity is not significant, we are confident that the results presented in previous tables do not suffer from a consistency problem.

<TABLE 5 HERE>

V: Conclusion

This paper advances the rapidly growing literature examining the political consequences of rural inequality in two ways. First, we demonstrate that rural inequality is a multidimensional

concept, involving both inequalities in the distribution of land and employment. Moreover, we argue that the relative shortage agricultural workers affects electoral outcomes, by increasing both the costs of electoral repression and the willingness of rural voters to 'take electoral risks' and support opposition candidates. We then bring this disaggregated view of rural inequality to the study of electoral competition under conditions of an imperfect protection of electoral secrecy. We find that inequalities in the distribution of land did not play a significant role in accounting for the vote share of candidates representing Conservative Politicians nor the vote share of Social Democratic Parties. By contrast, we find that immediate labor market conditions - such as the relative shortage of agricultural workers -- exerted a significant effect on electoral outcomes in German national elections under conditions of an imperfect protection of electoral secrecy.

Our findings about the political implications of labor shortages in countries with a high inequality in the distribution of fixed assets open up a range of additional implications for the comparative literature examining the economic preconditions of regime transitions. First, our paper suggests that theoretical accounts of regime transitions needs to examine the consequences of labor mobility for electoral politics in societies where electoral systems open up significant opportunities for electoral intimidation. Labor mobility creates regional inequalities in the abundance or shortage of agricultural workers. We have shown that the relative shortage in the supply of rural workers opened up a political cleavage among politicians from rural areas over the desirability of electoral reform. Due to their relatively higher costs of economic repression, politicians from areas experiencing labor shortage were more likely to support changes in electoral institutions and reforms of electoral secrecy than politicians in areas with a relative abundance of agricultural workers.

Our paper generates a number of implications that can be tested in a broad comparative framework. First, our analysis suggests that economic shocks that generate intra-regional differences in the costs of 'electoral intimidation' precede and spur democratic transitions. Democratization is less likely to happen in economies experiencing an 'unlimited supply of workers', to use Lewis' term. Secondly, labor shortage during the early onset of democratic transitions lowers the electoral strength of actors that owed their victory to ample intimidation of voters. Labor scarcity, we show, is likely to change the composition of the political coalition supporting changes in electoral institutions. Due to the high costs of strategies premised on electoral intimidation, politicians from labor scarce areas may join the political coalition supporting change in electoral institutions. By contrast, rural politicians from labor abundant areas are likely to persist in their support of existing electoral rules. Political cleavages and coalitions over electoral reforms, we argue, are predicted by relative labor shortages and not by inequalities in the distribution of land. We leave it to future studies to test the empirical predictions of our 'sectoral' model of democratization in other political contexts.

REFERENCES

- Acemoglu, D., Bautista, M., Querubín, P., & Robinson, J., 2007. Economic and political inequality in development: The case of Cundinamarca, Colombia, NBER Working Paper No. 13208.
- Acemoglu, D. and J. Robinson 2000. "Why did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective." *Quarterly Journal of Economics* 115: 1167-99.
- Ansell, B. and D. Samuels 2010 Inequality and Democratization: A Contractarian Approach, *Comparative Political Studies* XX X 1–32.
- Bade, K. 1980. "Massenwanderung und Arbeitsmarkt im deutschen Nordosten 1880-1914." *Archiv für Sozialgeschichte* 20265- 323.
- Bauer, A. 1975. *Chilean rural society from the Spanish conquest to the 1930s*. Cambridge: Cambridge University Press.
- Baland, JM, and J. Robinson 2008 Land and Power: Theory and Evidence from Chile. *American Economic Review* 2008, 98:5, 1737–1765
- Banerjee, Abhijit, and Lakshmi Iyer. 2006. "History, Institutions and Economic Performance: The Legacy of Colonial Land Tenure Systems in India." *American Economic Review* 95: 1190-1213.
- Boix, C. 2003. *Democracy and Redistribution*. Cambridge, Cambridge University Press.
- Broesicke, M. 1907. "Die Binnenwanderungen im preussischen Staat." *Zeitschrift des Königlich Preussischen Statistischen Landesamts* XLVII: 1- 62.
- Fei, J. and G. Ranis 1964. *Development in the Labor Surplus Economy: Theory and Policy*. Homewood, Richard D Irwin.
- Galor, O., Moav, O., & Vollrath, D., 2008. Inequality in land ownership, the emergence of human capital promoting institutions, and the great divergence, *Review of Economic Studies*, 76, 1, 143-179.
- Gerschenkron, A. 1946. *Bread and Democracy in Germany*. Ithaca, Cornell University Press.
- Grant, O. 2005. *Migration and inequality in Germany*. New York, Oxford University Press.
- Hohls, R. and H. Kaelble 1989. *Die regionale Erwerbsstruktur im deutschen Reich und in der Bundesrepublik Deutschland*. St. Katharinen, Scripta Mercaturae Verlag.

ICPSR 1984. German Reichstag election data 1871 - 1912. Ann Arbor, ICPSR.

Karl, T. 1997. *The paradox of plenty: oil booms and petro-states*. Berkeley: University of California Press.

Kehri, J. 1908. *Das Dorf Schalach Kreis Zauch Belzig und seine landwirtschaftlichen Verhältnisse*. Leipzig.

Klein, T. 2003. *Gültig, Ungültig: die Wahlprüfungsverfahren des Deutschen Reichstages 1867-1918*. Marburg, Elwert.

Königliches Preussisches Statistisches Landesamt 1882. *Preussische Statistik. Volume 76c*. Berlin, Verlag des Königlichen Preussischen Statistischen Landesamts.

Königliches Preussisches Statistisches Landesamt 1895. *Preussische Statistik. Volume 142b*. Berlin, Verlag des Königlichen Preussischen Statistischen Landesamts,.

Königliches Preussisches Statistisches Landesamt 1907. *Preussische Statistik. Volume 239*. Verlag Königliches Preussisches Statistisches Landesamt.

Königliches Preussisches Statistisches Landesamt 1914. *Statistisches Jahrbuch für den Preussischen Staat*. Berlin, Verlag des Königlichen Preussischen Statistischen Landesamts, pages 187- 195.

Königliches Preussisches Statistisches Landesamt 1915. *Statistisches Jahrbuch für den Preussischen Staat*. Berlin, Verlag des Königlichen Preussischen Statistischen Landesamts.

Konservative Partei. 1910. *Die Preussische Wahlrechtreform und die Konservative Partei*. Berlin.

Kühne, T. 1994. *Handbuch der Wahlen zum Preussischen Abgeordnetenhaus*. Düsseldorf, Droste.

Kurtz, Marcus. 2004. *Free Market Democracy and the Chilean and Mexican Countryside*. New York: Cambridge University Press.

Kuznets, S. 1955. "Economic growth and income inequality." *American Economic Review* 45: 1-28.

Lewis, W. A. 1954. "Development with unlimited supplies of labour." *Manchester School of Economics and Social Studies* 201: 139-92.

Meitzen, A. 1868. *Der Boden und die landwirtschaftlichen Verhältniss des Preussischen Staates*. Berlin, Finanzministerium.

- Moore, B. 1966. *Social origins of dictatorship and democracy. Lord and peasant in the making of the modern world*. Boston, Beacon Press.
- Paige, Jeffery. 1997. *Coffee and Power: Revolution and the rise of democracy in Central America*. Cambridge Harvard University Press.
- Prosterman, R. and J. Riedinger 1987. *Land reform and democratic development*. Baltimore, Johns Hopkins University Press.
- Przeworski, A. and C. Curvale 2005 Does politics explain the economic gap between the United States and Latin America?, Mimeo, NYU.
- Reibel, Carl- Wilhelm. 2007. *Handbuch der Reichstagswahlen 1890- 1918. Bündnisse, Ergebnisse, Kandidaten*. Dusseldorf: Droste
- Rueschemeyer, D., E. Huber Stephens, et al. 1992. *Capitalist development and democracy*. Chicago, University of Chicago Press.
- Quante, P. 1933. "Die Flucht aus der Landwirtschaft." *Zeitschrift des Königlich Preussischen Statistischen Bureaus* 3: 277- 380.
- Quante, P. 1959. "Die Bevölkerungsentwicklung der preussischen Ostprovinzen im 19. und 20. Jahrhundert." *Zeitschrift für Ostforschung* 84: 481- 499.
- Ramcharan, 2010 Inequality and redistribution: evidence from US counties and states, 1890-1930, *The Review of Economics and Statistics*, 92 4: 729-744.
- Rieger, A. 1914. *Die Landflucht und ihre Bekämpfung unter besonderer Berücksichtigung der landlichen Arbeiterfrage*. Berlin.
- Schattschneider, E. E. 1942. *Party Government*. Westport: Greenwood Press.
- Schulz, A. 1912. "Das Vordringen des landwirtschaftlichen Familienbetriebes und des Kleingrundbesitzes in Ostelbien." *Sozialistische Monatshefte* 162: 424- 439
- Sombart, W. 1927. *Die Deutsche Volkswirtschaft im 19. und im Anfang des 20. Jahrhundert*. Berlin.
- Summerhill, W., 2010. Colonial institutions, slavery, inequality, and development: Evidence from São Paulo, Brazil, MPRA Paper 22162, University Library of Munich, Germany
- Vanhanen, T. 1997. *Prospects of Democracy: A Study of 172 countries*. London, Routledge.
- Weber, M. 1917. *Das Preussische Wahlrecht. Max Weber Gesamtausgabe*. Tübingen, Mohr.
- Ziblatt, D. 2008. "Does landholding inequality block democratization ? A test of the 'bread and democracy' thesis and the case of Prussia." *World Politics* 603: 610-48.

Ziblatt, D. 2009. "Shaping Democratic Practice and the causes of electoral fraud: the case of nineteenth century Germany." *American Political Science Review* 103(1): 1-21.

ⁱ Acemoglu and Robinson 2000; Acemoglu and Robinson 2006; Boix 2003.

ⁱⁱ Acemoglu et al. 2007, Baland and Robinson 2008, Banerjee and Iyer 2006; Galor et al. 2008, Ziblatt 2008.

ⁱⁱⁱ Baland and Robinson 2008 explore the effects of the introduction of the secret ballot on voting behavior in Chile. They find that the share of workers in large farms in the total the agricultural labor force – in other words a measure of employment concentration – is a strong predictor of the vote for right wing parties before, but not after, the change in the electoral system (e.g. introduction of the secret ballot).

^{iv} On methodological grounds, we underscore here the need to check the correlation between multiple dimensions of inequality.

^v Lewis 1954; Kuznets 1955.

^{vi} Ziblatt 2008.

^{vii} Gerschenkron 1946; Moore 1966; Rueschemeyer et. al. 1992.

^{viii} Prosterman and Riedinger 1987; Grant 2005.

^{ix} Grant 2005, 53.

^x Ziblatt 2008.

^{xi} The shaded rectangle represents the interquartile range, which contains the median, shown as the solid line. The dashed horizontal line indicates the mean level of inequality across Prussia.

^{xii} Vanhannen 1997; Boix 2003; Przeworski and Curvale 2005; Ansell and Samuels 2010.

^{xiii} Baland and Robinson 2008.

^{xiv} Statistisk des Deutschen Reiches 1895.

^{xv} Moore 1966.

^{xvi} For farms over 200 hectares, the mid-size point of the bin is set at 200.

^{xvii} The module can be found at <http://ideas.repec.org/c/boc/bocode/s366002.html>.

^{xviii} Sombart 1927, 408.

^{xix} Quante 1933; Quante 1958; Bade 1980.

^{xx} Remarks of Lodemann, director in the Prussian Interior Ministry cited in Bade 1980, 280.

^{xxi} Broesicke 1907.

^{xxii} Stenographischer Bericht über die Verhandlungen der XXIV Generalversammlung der Vereinigung der Steuer und Wirtschaftsreformer zu Berlin am 14.-15. Februar 1899, page 5. See also Rieger, Arnim. 1914. Die Landflucht und ihre Bekämpfung unter besonderer Berücksichtigung der ländlichen Arbeiterfrage, Berlin.

^{xxiii} Kehri 1908.

^{xxiv} Schulz 1912a, 426, Schulz 1912b), Schulz 1912, 426 shows a significant decline in the number of farms over 500 hectares in 7 out of the East Prussian provinces and attributes this decline to labor shortage.

^{xxv} Lewis 1954; Kuznets 1955; Fei and Ranis 1964; Ranis 2004; Grant 2005.

^{xxvi} Lewis 1954

^{xxvii} Lewis 1954; Fei and Ranis 1964; Ranis 2004.

^{xxviii} Grant 2005.

^{xxix} The study of the rural migration from East Prussian regions and of the resulting labor shortage of East Prussia has been a central theme of the study of the economic and political developments of Imperial Germany, going back to the work by Max Weber. In recent econometric work, Oliver Grant has explored the effects of labor mobility for a variety of economic and demographic outcomes. We are grateful to Oliver Grant for sharing the data rural agricultural wages in Prussia localities for 1892 and 1901. The source for the agricultural wage data is Zeitschrift des Königlich Preußischen Statistischen Bureaus (1904), pages 320-328. We augment this data with a measure of rural wages for 1914, reported in

Königlich Preussisches Statistisches Landesamt, 1914, pages 187- 195. Oliver Grant’s dataset for rural wages in Prussia is constructed with the goal of separating ‘rural’ and ‘urban’ wages and of exploring the economic consequences of intra-urban and intra-rural wage inequality separately. This separation is possible many localities in Prussia are separated based on ‘urban’ and ‘rural’ districts (‘Landkreis’ and ‘Stadtkreis’). Using the Grant dataset, we restrict our analysis to the local wage rate in *rural* localities and use the ratio between this wage and the wage rate of all rural localities in the dataset as a measure of labor shortage. By excluding urban wage rates from this measure, we only examine the political consequences emanating from imbalances in the rural labor market.

^{xxx} Since we have 3 data points per locality, In the empirical analysis, we assign the 1892 data to the elections up to 1890, the 1901 data to the elections up to 1903 and the 1914 data to the remaining elections.

^{xxxi} Schattschneider’s classic study defines control over nominations is the key to understanding party organization (“He who makes nominations is the owner of the party”). Schattschneider 1942: 64

^{xxxii} Retallack 1988, 25

^{xxxiii} Retallack 1988, 234 and 235.

^{xxxiv} Nipperdey 1961: 241

^{xxxv} Suval 1985; Anderson 2000; Klein 2003.

^{xxxvi} Hatschek 1920; Pollmann 1985.

^{xxxvii} Suval 1985, 50.

^{xxxviii} A large literature arguing that differences in the organization of agricultural labor markets affect democratic transitions exists and precedes the recent literature that focuses on inequalities in the distribution of assets. Our study thus seeks to rejoin these debates. Both Weber (in his study of East Elbian rural workers) and Moore explore the political consequences of the disintegration of ‘traditional relations’ in the Prussian countryside (to use Weber’s phrase). Weber 1893, Moore 1966. Scholars of Latin America have also argued that labor scarcity leads underpins elite acquiescence to democracy, while labor abundance allows the persistence of non-democratic practices. Karl 1997, Bauer 1975. Jeffery’ Paige’s study of political developments in El Salvador, Costa Rica and Nicaragua also emphasizes the importance of different types of rural employment relations in these countries for democratic reforms between 1920 and 1979. Paige 1997: 85- 148. Kurtz 2004 also presents an account of the consequences of labor mobility in the Mexican countryside on individual and collective political mobilization and on the political support for the incumbent PRI. Kurtz 2004: 180-192.

^{xxxix} Wulff 1922, 13.

^{xl} These estimates can be found in Grant, Oliver Wavell. Productivity in German Agriculture: Estimates of agricultural productivity from regional accounts, Working Paper, Nuffield College, Oxford University, Appendix B, pages 37-39. This source provides also a very informative analysis of the factors that affected the uneven productivity growth across German regions.

^{xli} Broesicke 1907

^{xlii} Reibel 2007

^{xliii} Despite the wealth of available data on Imperial Germany, surprisingly it is quite difficult to obtain reliable estimates of the number of agricultural workers at the lowest administrative unit that uses a consistent methodology *across* the economic censuses of the period. Two alternatives exist, but each has some potential drawbacks. One strategy, employed by Zibblatt (2008) is to use the data reported in Reibel, who uses estimates of male agricultural workers for both the 1898 and the 1905 census. The alternative strategy that we encounter in the work of economic historians working on Imperial Germany (such as Grant 2005) is to use the figures reported by Hohls and Kaelble 1989. The drawback of the second approach is that the data is not available at the lowest administrative level, but only at the level of the 79 administrative districts (*Regierungsbezirk*) of Germany (one administrative district comprises, on average 5 electoral districts). Given that the 1895 census contains data for the number of agricultural workers in each commune, we have constructed a random sample of localities from this census. We found a higher

correlation between the figures reported in Hohls and Kaelble and these figures, we opted for the use of economic development data of this source.

^{xliv} Based on data reported in the ICPSR dataset (ICPSR 1984).

^{xlv} Preussische Statistik 1900.

^{xlvi} Preussische Statistik 1900

^{xlvii} A similar methodology is adopted by Robinson and Baland in their study of electoral repression in Chile.

^{xlviii} The next empirical section discusses instrument validity and formal tests on instrument diagnostics (weak instruments, exogeneity, and overidentifying restrictions).

^{xlix} The number of proposals for reform that made it to the floor of the Prussian lower chamber is a very small fraction of the proposals that were submitted and were simply shelved remaining unresolved. For a fuller (although still incomplete) analysis of the proposals to reform the electoral system, see Wulff 1912.

^l Patemann 1964, 10.

^{li} Wulff, 1912, 12.

^{lii} Given that our current measure of wages includes rural wages only, urban districts only are excluded from the analysis. We leave the study of other dimensions of electoral reform where the urban-rural cleavage is more pronounced for future research. The most direct expression of the rural urban cleavage during proposals for electoral reform that involved the allocation of voters to different “electoral classes” following the tax reforms of the early 1890s.

^{liii} Stenographische Berichte des Preussischen Hauses der Abgeordneten 16 december 1883.

^{liv} Stenographische Berichte über die Verhandlungen der zweiten Kammer des Preussischen Hauses der Abgeordneten 1883; December 5, 209.

^{lv} Wulff 1922.

^{lvi} Retallack 1988, 164.

^{lvii} Retallack 1988, 164.

^{lviii} Wilhelm’s throne speech, cited in Wulff 1922, 101.

^{lix} Retallack 1988: 164.

^{lx} Schriftlicher Bericht der Kommission über ihre Beratungen Drucksache Nr 157; Mündlicher Bericht der Kommission über ihre Beratungen durch ihren Berichterstatter Dr. Bell am 9. 3. 1910. Stenographische Berichte.

^{lxi} Konservative Partei 1910, 11.

^{lxii} The specific wording of the proposal is as follows: “Soll der Antrage der Abgeordneten Aronsohn und Genossen zur zweiten Beratung der Wahlgesetznovelle (Drucksache Nr. 172 und zwar der zweite Satz des vorgeschlagenen Paragraph 4 folgenden Wortlauts: Die Abgeordneten werden von den stimmberechtigten Wählern des Wahlbezirks mittels verdeckter Stimmzettel unmittelbar gewählt” .

^{lxiii} Wulff 1922, 170.

^{lxiv} Wulff 1922: 175.

^{lxv} Ziblatt 2008.

^{lxvi} To assign individual localities (Gemeinde) to Prussian electoral districts, we rely on the presentation of the boundaries of Prussian districts presented in Kühne (1994).

^{lxvii} Kühne 1994.

^{lxviii} Kühne 1994.

^{lix} Given the nature of the dependent variable, the last two models in Table 4 are estimated with an ordered probit.

^{lxx} Note that we exclude from the analysis the agricultural employment gini since in previous models failed to reach standard levels of statistical significance.

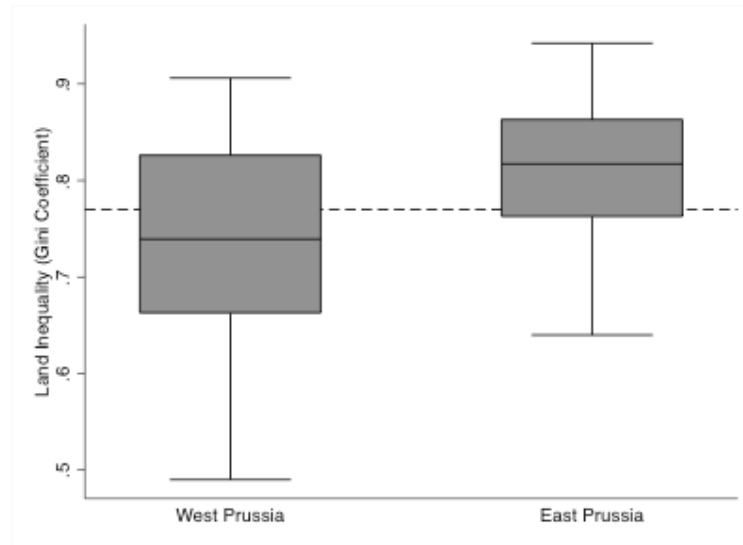


Figure 1: Inequality in the distribution of land, box plots, by regions (1895)

Source: See Table A2

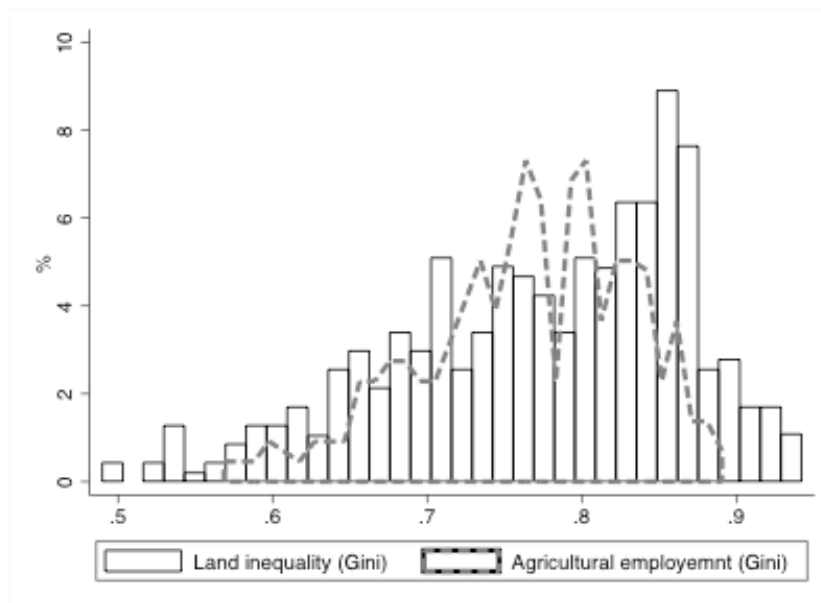


Figure 2: Land and Agricultural employment Gini coefficients (1895)

Note: For the sources used in computing these measures, see Appendix 2. The measures are aggregated at the level of the German electoral district.

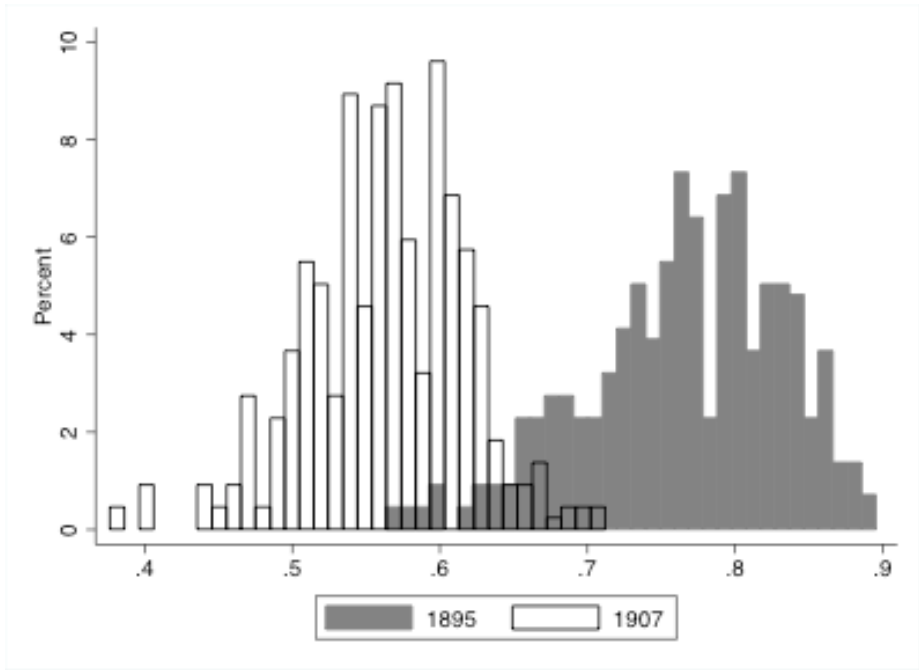


Figure 3: Agricultural employment Gini in 1895 and 1907 (computed at the level of German electoral districts)

Source: See Table A2.

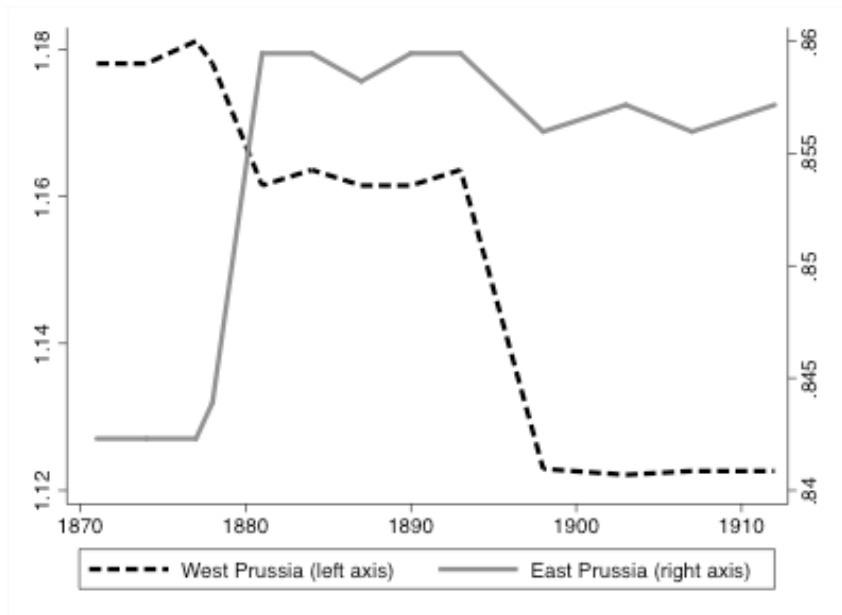


Figure 4. Rural wage vs. rural average ratio across Prussia (1870-1912)

Source: Appendix 2

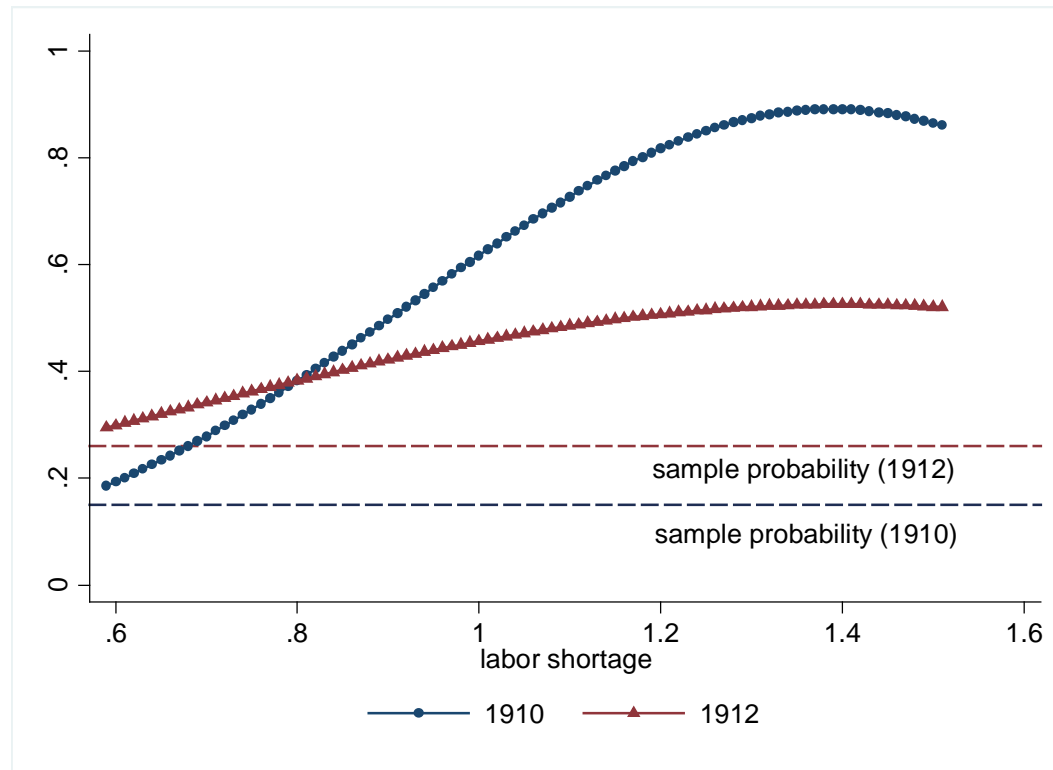


Figure 5: Simulated effect of relative labor shortage on the probability of supporting electoral reform

Table 1**Hypothesized effects of rural inequality and labor shortage on political outcomes**

Economic variables in a district	Mechanism	Indicator	Effects of an increase in the value of this variable on electoral outcomes
Landholding inequality	Affects concentration of financial resources but not access to voters	Gini coefficient	Vote share conservatives Vote for opposition candidate ↓
Employment inequality	Affects supply of voters that can be subject to electoral manipulation	Workers in farms > 200 ha., -Agricultural employment gini	Vote share conservatives ↑; Vote for opposition candidate ↓
Labor shortage	Affects “price” of rural workers and economic costs of electoral repression	Wage in district i as ratio of average real wage in all districts	Vote share conservatives Vote for opposition candidate ↑

Table 2: Time-Series Cross-Sectional Analysis of vote share of Conservative Party in national elections (1871-1912)

	(1)	(2)	(3)	(4)	(5)	(6)
			OLS PCSE			RE-IV
LABOR SHORTAGE	-21.956*** (3.826)	-24.720*** (4.364)	-21.644*** (3.899)	-22.063*** (3.838)	-24.759*** (4.299)	-81.043* (47.985)
WORKERS FARMS >200ha.		-3.512 (4.640)			-5.499 (6.457)	-5.805 (16.446)
AGR. EMPLOYMENT INEQUALITY (GINI)			2.427 (12.114)		-2.026 (15.124)	6.732 (31.267)
LANDHOLDING INEQUALITY (GINI)				3.460 (5.915)	6.366 (8.948)	9.191 (23.159)
ECONOMIC DEVELOPMENT	-0.168 (0.317)	-0.179 (0.339)	-0.181 (0.321)	-0.169 (0.317)	-0.180 (0.339)	-0.514* (0.290)
LINGUISTIC FRAC.	-3.267 (3.017)	-1.896 (3.440)	-3.765 (3.162)	-3.081 (2.943)	-1.893 (3.416)	2.063 (8.552)
% CATHOLICS	-0.240*** (0.037)	-0.229*** (0.035)	-0.242*** (0.036)	-0.238*** (0.037)	-0.224*** (0.036)	-0.348*** (0.074)
LAGGED DEPENDENT VARIABLE	0.272*** (0.090)	0.253*** (0.091)	0.268*** (0.091)	0.273*** (0.090)	0.254*** (0.091)	
CONSTANT	55.883*** (17.152)	62.049*** (18.147)	55.523*** (18.548)	53.033*** (17.693)	58.128*** (20.213)	142.934*** (42.095)
Observations	2,221	2,073	2,208	2,221	2,061	2,191
Number of districts	217	200	214	217	198	194

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Time-Series Cross-Sectional Analysis of Social Democratic Party vote share in national elections (1871-1912)

	(1)	(2)	(3)	(4)	(5)	(6)
			OLS PCSE			RE- IV
LABOR SHORTAGE	12.322** (5.181)	12.693** (5.321)	12.289** (5.190)	10.629** (4.898)	12.755** (4.995)	90.848** (40.892)
WORKERS FARMS >200ha.		-0.261 (6.317)			-25.165*** (7.836)	-28.209** (14.125)
AGR. EMPLOYMENT INEQUALITY (GINI)			16.578 (12.426)		-7.530 (14.432)	-26.991 (27.248)
LANDHOLDING INEQUALITY (GINI)				47.258*** (7.603)	61.050*** (9.070)	66.720*** (20.037)
ECONOMIC DEVELOPMENT	1.929*** (0.166)	1.931*** (0.177)	1.934*** (0.166)	1.926*** (0.167)	1.928*** (0.178)	1.687*** (0.183)
LINGUISTIC FRAC.	-9.712*** (2.207)	-8.027*** (2.400)	-10.259*** (2.350)	-7.440*** (2.181)	-6.832*** (2.509)	-9.086 (7.401)
% CATHOLICS	-0.060** (0.026)	-0.077*** (0.028)	-0.061** (0.025)	-0.031 (0.025)	-0.039* (0.023)	0.116* (0.067)
LAGGED DEPENDENT VARIABLE	0.016 (0.017)	0.017 (0.017)	0.016 (0.017)	0.017 (0.017)	0.016 (0.017)	
CONSTANT	-110.885*** (9.854)	-111.860*** (10.148)	-120.368*** (12.421)	-149.770*** (12.875)	-156.124*** (14.773)	-195.571*** (34.331)
Observations	2,221	2,073	2,208	2,221	2,061	2,191
Number of districtnumber	217	200	214	217	198	194

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Marginal Effects After Probit: Parliamentary votes on electoral reforms (March 11th, 1910 & May 20th, 1912)

	Yes vs. Others				Excluding abstentions				Ordinal ranking			
	1910	1912	1912	1912	1910	1912	1912	1912	1910	1912	1912	1912
LABOR SHORTAGE	0.617*** (0.125)	0.354*** (0.130)	0.492*** (0.165)	0.329* (0.191)	0.739*** (0.148)	0.361* (0.189)	0.905*** (0.258)	0.633** (0.272)	0.508*** (0.111)	0.235** (0.108)	0.429*** (0.136)	0.254* (0.140)
LANDHOLDING INEQUALITY (GINI)	0.306 (0.280)	0.255 (0.280)	-0.224 (0.383)	-0.152 (0.443)	0.346 (0.332)	0.777* (0.414)	-0.205 (0.564)	0.383 (0.585)	0.233 (0.241)	0.167 (0.229)	0.082 (0.329)	0.271 (0.342)
WORKERS FARMS >200ha.	-0.009 (0.017)	0.000 (0.014)	-0.035 (0.031)	-0.029 (0.031)	-0.017 (0.021)	-0.013 (0.023)	-0.087 (0.053)	-0.042 (0.045)	-0.023 (0.018)	-0.011 (0.014)	-0.069** (0.029)	-0.049** (0.025)
ECONOMIC DEVELOPMENT	0.041 (0.040)	0.049 (0.035)	0.108** (0.052)	0.116* (0.061)	0.051 (0.046)	0.046 (0.051)	0.215*** (0.071)	0.219*** (0.075)	0.018 (0.037)	0.027 (0.031)	0.093** (0.043)	0.079* (0.045)
LINGUISTIC FRAC.	0.285** (0.118)	0.192* (0.114)	-0.198 (0.183)	-0.305 (0.213)	0.362*** (0.132)	0.242 (0.165)	-0.071 (0.222)	0.282 (0.231)	0.266** (0.107)	0.169* (0.101)	-0.055 (0.142)	-0.042 (0.142)
% CATHOLICS	-0.001* (0.001)	0.001 (0.001)	0.003*** (0.001)	0.004** (0.001)	-0.001* (0.001)	0.002 (0.001)	0.009*** (0.001)	0.005*** (0.002)	-0.001* (0.001)	0.001 (0.001)	0.005*** (0.001)	0.003*** (0.001)
MARGIN	-0.003*** (0.001)	-0.002*** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.001 (0.001)	-0.002* (0.001)	-0.003*** (0.001)	-0.002*** (0.001)	-0.001 (0.001)	-0.001 (0.001)
DIVIDED	0.102 (0.078)	0.040 (0.067)	0.090 (0.089)	0.104 (0.105)	0.106 (0.086)	0.001 (0.079)	0.006 (0.108)	-0.017 (0.109)	0.065 (0.069)	0.022 (0.059)	0.004 (0.075)	0.002 (0.075)
FK		-0.066 (0.041)				-0.090* (0.052)				-0.092*** (0.033)		-0.151*** (0.046)
NL		0.460*** (0.093)		0.222** (0.099)		0.906*** (0.030)		0.646*** (0.099)		0.557*** (0.068)		0.324*** (0.088)
ZENTRUM		-0.126*** (0.047)		0.028 (0.122)		-0.122* (0.069)				-0.107** (0.046)		0.210** (0.102)
SOCIALDEM										0.876 (.)		0.779*** (0.026)
Observations	347	346	364	303	306	305	287	200	347	347	364	347
Prob(y=1)	0.151	0.121	0.262	0.298	0.171	0.148	0.349	0.246	0.162	0.127	0.249	0.226

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Parliamentary vote on electoral reforms: IV estimations

	Yes vs. Others		Excluding Abstentions		Ordinal Ranking	
	1910	1912	1910	1912	1910	1912
	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-ordered probit	IV-ordered probit
LABOR SHORTAGE	0.658** (0.293)	0.390 (0.294)	0.690** (0.292)	0.954*** (0.322)	1.457** (0.700)	1.304** (0.591)
LANDHOLDING INEQUALITY (GINI)	0.247 (0.360)	-0.691 (0.423)	0.138 (0.413)	-0.526 (0.439)	1.048 (1.059)	0.596 (1.088)
WORKERS FARMS >200ha.	-0.007 (0.012)	-0.007 (0.014)	-0.007 (0.012)	-0.013 (0.014)	-0.111 (0.086)	-0.311*** (0.107)
ECONOMIC DEVELOPMENT	0.006 (0.053)	0.061 (0.054)	0.006 (0.060)	0.099* (0.058)	0.105 (0.134)	0.242* (0.133)
LINGUISTIC FRAC.	0.385** (0.174)	-0.063 (0.190)	0.447** (0.177)	0.166 (0.169)	1.012** (0.475)	-0.112 (0.426)
% CATHOLICS	-0.001 (0.001)	0.003*** (0.001)	-0.001 (0.001)	0.007*** (0.001)	-0.004 (0.002)	0.015*** (0.002)
MARGIN	-0.003*** (0.001)	-0.002* (0.001)	-0.003*** (0.001)	-0.001 (0.001)	-0.011*** (0.002)	-0.003 (0.002)
DIVIDED	0.112 (0.089)	0.038 (0.090)	0.104 (0.096)	-0.043 (0.104)	0.238 (0.223)	0.059 (0.213)
CONSTANT	-0.567 (0.837)	-0.220 (0.862)	-0.455 (0.886)	-1.363 (0.885)		
Observations	298	314	261	244	368	368
Wald F-statistic (first stage)	24.32	39.76	24.18	31.22		
DWH test p-value	0.94	0.48	0.94	0.32		
Overidentification test p-value:						
Hansen J-statistic	0.352	0.106	0.385	0.229		

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix

Table A.1: Pair-wise correlation matrix across the three measures of rural inequality*

Land Inequality (Gini 1905)	1			
Employment Inequality (Gini 1905)	0.2747	0.2492	1	
Labor shortage	-0.2466	-0.3495	-0.3383	1

Source: See Table A2

Table A. 2: Description of the main variables used in analysis of political competition in national elections

Variable	Obs	Mean	Std. Dev.	Min.	Max.	Source
Rural Wages1892	2457	1.00	0.21	0.61	1.57	Grant (2005)*
Rural Wages1901	2457	1.00	0.19	0.60	1.52	Grant (2005)*
Rural Wages 1914	2717	1.00	0.19	0.58	1.51	Statistisches Jahrbuch für den Preussischen Staat 1914
Gini Agricultural Employment1895	2860	0.77	0.07	0.56	0.90	Preussische Statistik 1895
Gini Agricultural Employment 1907	2873	0.56	0.07	0.00	0.71	Preussische Statistik 1907
Land Inequality (Gini) Employment share (farms >200 ha.)	3068	0.77	0.09	0.49	0.94	Ziblatt (2009)**
Fractionalization Industry & Services	2686	0.13	0.12	0.00	0.58	Preussische Statistik 1895
% Catholics	2912	0.12	0.19	0.00	0.69	Preussische Statistik 1900
	5161	60.17	14.42	30.23	99.56	Hohls and Kaelble 1889
	5161	36.80	36.51	0.00	100.00	ICPSR 1984

*Based on Zeitschrift des Preussischen Statistischen Bureaus 1904

**Based on Statistik des Deutschen Reiches 1898

Table A.3: Description of the main explanatory variables used in the analysis of roll call votes in Prussian lower house

Variable	Obs	Mean	Std. Dev.	Min.	Max.	Source
Rural Wages1901	372	1.00	0.19	0.60	1.52	Grant (2005)*
Gini Agricultural Employment 1905	480	0.56	0.07	0.00	0.71	Preussische Statistik 1907
Land Inequality (Gini)	483	0.77	0.09	0.49	0.94	Ziblatt (2008)**
Fractionalization	453	0.12	0.19	0.00	0.69	Preussische Statistik 1900
Margin	476	60.18	34.49	0.60	100	Kuhne 1994
Divided district	472	0.11	0.32	0.00	1.00	Kuhne 1994
Industry & Services	453	60.17	14.42	30.23	99.56	Hohls and Kaelble 1989
% Catholics	485	36.80	36.51	0.00	100.00	ICPSR 1984

*Based on Zeitschrift des Preussischen Statistischen Bureaus 1904

**Based on Statistik des Deutschen Reiches 1898