Article

Labor Shortages, Rural Inequality, and Democratization

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Abstract

A large body of scholarship has asserted that inequalities in the distribution of fixed assets act as a barrier to democratic transitions. This article 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 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 thus, 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.

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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 (2000, 2006) and Boix (2003), 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. 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, Bautista, Querubín, and Robinson (2007) on Colombia, Ziblatt (2008) on Germany, and Baland and Robinson (2008) on Chile, among others.

With few exceptions—such as Baland and Robinson's study of the consequences of rural inequality in Chile—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. In addition, 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 who 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.

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 (Kuznets, 1955; Lewis, 1954). This includes intrarural 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 article 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 intrarural and rural–urban mobility of labor, some localities continue to experience labor surplus, while others experience labor market shortages. Our article 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 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. We also find a positive correlation between labor scarcity and higher levels of 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 landowners, it also lowers 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 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 (Ziblatt, 2008).

To advance these arguments, the remaining part of the article 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, underappreciating extensive intrarural 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 ("Empirical Analysis I: The Effects of District-Level Inequalities and Labor Shortage on Political Competition" section). In the sections titled "Empirical Analysis II: The Effect of Labor Shortage on Electoral Reform" and

"Conclusion", these arguments are put 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.

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 1870s 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 (Gerschenkron, 1946; Moore, 1966; Rueschemeyer, Stephens, & Stephens, 1992). 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 (Grant, 2005; Prosterman & Riedinger, 1987). 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 labor. The rural sector was therefore, by the standards of contemporary European countries, a relatively egalitarian one. The low proportion of landless laborers 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. (Grant, 2005, p. 53)

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 (Ziblatt, 2008). 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 U.S. States varied between 0.34 (Connecticut) and 0.83 (Louisiana), with an average Gini of 0.54.

Dan Ziblatt'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 (Boix, 2003; Vanhannen, 1997). 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 U.S. South, from Mexican *haciendas* or

from the Chilean farms discussed in Baland and Robinson (2008). 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 ha and 3 farms over 500 ha, which together comprised a little over 10,000 ha (thus 20% of the total arable land in the district; Kaiserliches Statistisches Amt, 1898). 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 firms of different sizes. In addition, one can approach employment inequality, by measuring the share of the agricultural workers who are employed in the largest or smallest units of the agricultural census, using measures of employment concentration. On 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 ha. These measures are not entirely unproblematic. Their most significant disadvantage is that they do not distinguish among independent or self-employed and employed farmers, or 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 (Moore, 1966).

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 (Königliches Preussisches Statistisches Landesamt, 1895, 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 ha; 0.5 to 2 ha; 2 to 5 ha; 5 to 20 ha; 20 to 100 ha; 100 to 200 ha; and above 200 ha. As suggested in Ramcharan (2010), we use the midpoint of each bin to construct the Gini coefficient.[1] We use Stephen Jenking's INEQDECO module to perform such calculation in Stata.[2] The histogram in Figure 1 presents the distribution of the land and employment inequality measures for Prussia in 1895.

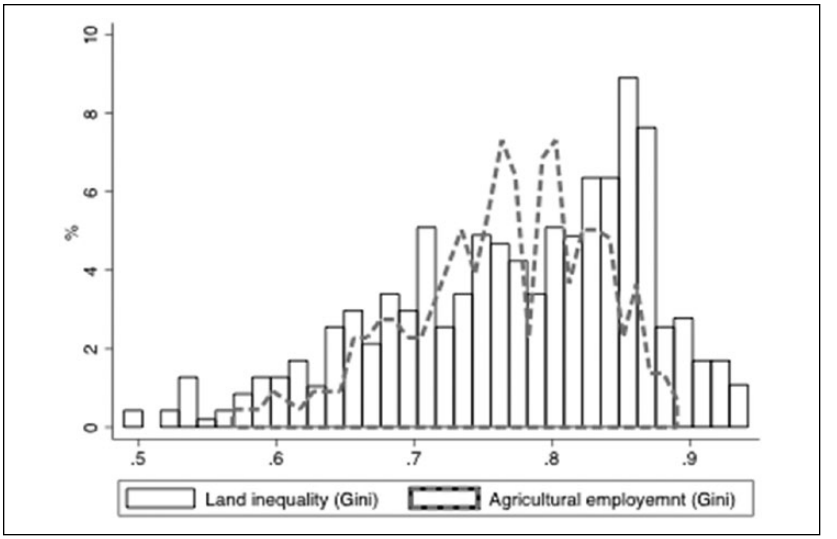

Figure 1. Land and agricultural employment Gini coefficients (1895).
For the sources used in computing these measures, see Appendix 2. The measures are aggregated at the level of the German electoral district.

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 0.76, with a 0.10 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" (Sombart, 1927, p. 408). The central economic problem experienced by German agriculture during the Imperial period was *Landflucht*, migration from land (Bade, 1980; Quante, 1933). 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" (Remarks of Lodemann, director in the Prussian Interior Ministry cited in Bade, 1980, p. 280). 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% of the population (Broesicke, 1907). Migration severely transformed the employment relations in the countryside.

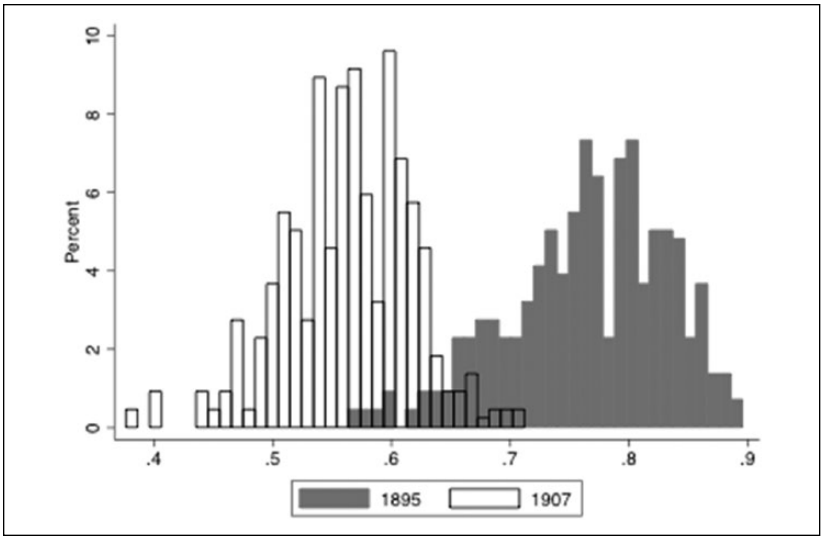

Figure 2. Agricultural employment Gini in 1895 and 1907 (computed at the level of German electoral districts).
Source. Königliches Preussisches Statistisches Landesamt (1907); Kaiserliches Statistisches Amt (1898).

Regions that only a few decades earlier had enjoyed relative surpluses in the supply of available rural workers experienced "labor shortage" ("*Leutenot*"; Rieger, 1914). Contemporary accounts decried shortage as the "main calamity" ("*Hauptkalamität*") of their locality Labor shortage, these studies argued, pushed up thewages in agriculture and contributed to the economic collapse of many farms (Kehri, 1908). 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 (SPD) argued that agricultural labor shortage affected particularly strongly the largest farms (over 500 ha), contributing to their fragmentation and a reduction of their numbers (Schulz, 1912). Figure 2 provides evidence that supports this assertion: across Prussian communes, the Gini coefficient of agricultural employment in 1907 shows systematically lower levels than in 1895.

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 (Grant, 2005; Fei & Ranis, 1964; Kuznets, 1955; Lewis, 1954; Ranis, 2004). In his seminal study of economic development, Lewis (1954) 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. Incipient industrialization sets in motion a process of migration from the countryside to urban centers, but also a process of intrarural mobility of agricultural workers toward 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 (Fei & Ranis, 1964; Lewis, 1954; Ranis, 2004). 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's 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 (Grant, 2005).

From the perspective of the Lewis's 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*.[3] For each rural locality we create a *labor shortage* variable defined as the ratio between the wage of the locality and the average 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.[4] 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 3 presents descriptive information of this variable, by contrasting the overtime changes in rural wages across East versus West Prussia. These data lend 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.

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

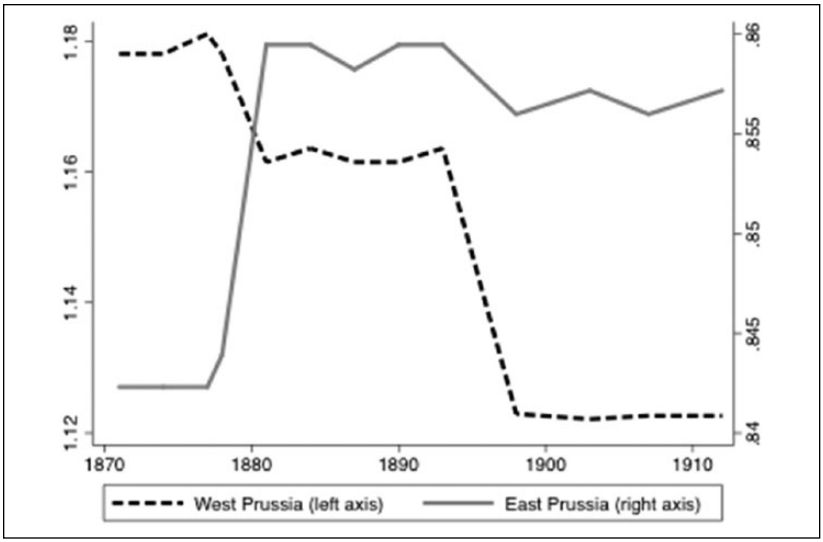

Figure 3. Rural wage versus rural average ratio across Prussia (1870-1912).
Source. Grant (2005) and Königliches Preussisches Statistisches Landesamt (1914).

concept whose dimensions are not always correlated with each other. 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. Second, the discussion has also the acuteness of the problem of labor shortage in German agriculture during the last few 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.

The Political Consequences of Rural Inequality: Hypotheses

The goal of this section is to formulate a number of hypotheses about the effects of district-level labor market conditions 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. 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.

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 pools and oversee the choices made by voters. As Nipperdey (1961) 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" (p. 241). 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 (Anderson, 2000; Klein, 2003; Suval, 1985).

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 (Hatschek, 1920). 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. Because 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.

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. 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 SPD.

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 who 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.

While inequality of landholding affects the "supply" of voters who 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 toward 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

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	Landholding 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 wage in all districts	Vote share conservatives Vote for opposition candidate ↑

> 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. (Wulff, 1922, p. 13)

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 of different forms of rural inequality, on one hand, and of labor shortages on electoral outcomes in conditions when the electoral choices made by voters were observed with relative ease.

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 source for the political variables is the ICPSR (Inter-University Consortium for Political and Social Research) dataset on German elections (ICPSR, 1984)

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 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 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 (Grant, 2002). 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 and 1905 that were collected by the Prussian statistical office (Broesicke, 1907).We aggregate these variables at the level of the German electoral district, using the correspondence tables between electoral localities and districts presented in Reibel (2007).

Our specifications include a range of additional economic and political controls. They include measures of inequality in landholding and inequality of employment, measures of economic development (proxied by a variable that captures the percentage of the population employed in industry and services), a measure of the percent Catholics and a measure of the linguistic fractionalization of a district. To compute the latter, 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 (Königliches Preussisches Statistisches Landesamt, 1900). The list of language communities within Prussia is rather large and includes 20 possible "mother tongues."

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 use dummy variables at the level of administrative district.[5] (For space considerations, the effects of the regional dummy variables are not presented in the table). Table 2 reports the results for this ordinary least squares (OLS) analysis with panel-corrected standard errors.

Models 1 to 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 "ethnical" parties, such as Poles or Danes in regions with levels of ethnic heterogeneity.

To test the other hypotheses presented in Table 1, Models 2 to 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 nonsignificant results are obtained using two other proxies for employment inequality: the share of workers in farms over 200 ha, 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.

Table 2. Time-Series Cross-Sectional Analysis of Vote Share of Conservative Party in National Elections (1871-1912).

	(1)	(2)	(3) OLS PCSE	(4)	(5)	(6) 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 > 200 ha.		3.512 (4.640)			5.499 (6.457)	5.805 (16.446)
Agricultural 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 fractionalization	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. OLS = ordinary least squares; PCSE = Panel Corrected Standard Errors.
*$p < .1$. **$p < .05$. ***$p < .01$.

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 SPD during the first electoral round of elections. Table 3 presents these results.

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 to 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 article, 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).

Table 3. Time-Series Cross-Sectional Analysis of Social Democratic Party Vote Share in National Elections (1871-1912).

	(1)	(2)	(3) OLS PCSE	(4)	(5)	(6) 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)
Agricultural 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 fractionalization	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 districts	217	200	214	217	198	194

Standard errors in parentheses. OLS = ordinary least squares; PCSE = Panel corrected standard errors.
*$p < .1$. **$p < .05$. ***$p < .01$.

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 subnational 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.

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 (Patemann, 1964). 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" (Wulff, 1912, p. 12).

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. 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.

Political efforts to reform the Prussian electoral system intensified after the turn of the century (Wulff, 1922). 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" (Retallack, 1988, p. 164). As Retallack (1988) 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. (p. 164)

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 toward electoral reform (Wilhelm II's throne speech, cited in Wulff, 1922, p. 101). 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 (Retallack, 1988, p. 164). 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, (c) the determination of the winner based on the proportional method of representation, and (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.

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. 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 (Wulff, 1922). 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 desiginAmong the latter, a highly contested issue was the income threshold that had to be used to assign voters to different electoral classes (the so-called "Maximierung;" Wulff, 1922, p. 175).[v] 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 article, Dan Ziblatt (2008) has argued that inequality in landholding is a robust predictor of opposition to this May 20th, 1912, vote.[v] 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 Daniel 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 reported in our analysis is 2 times larger than the number of observations reported by Ziblatt. We also measure the degree of electoral vulnerability for each politician, and use a measure of political fragmentation for each district. A final point of contrast is that we also report models that use controls for the partisan affiliation of the politician.

As 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).[6] 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 (1994), who presents information on the vote share received by each politician elected to the Prussian lower house and their runner-up. We expect a negative relationship between margin and the support for the secrecy of the ballot. As 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 0 otherwise. Finally, we add dummies for the parties.

For each vote, we code the dependent variable (vote for reform) in three ways: first, we compare "yes" versus other types of votes (abstentions, "no's"); second, we exclude abstentions from the analysis and only concentrate on the "yes" versus "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 (Kühne, 1994). Table 4 shows results for each of the six probit models, with and without partisan controls, respectively.[7]

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.[8] In particular, the reported marginal effects suggest that politicians from districts

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		1910		1912		1910		1912	
Labor shortage	0.617***	0.354***	0.492***	0.329*	0.739***	0.361*	0.905***	0.633**	0.508***	0.235**	0.429***	0.254*
	(0.125)	(0.130)	(0.165)	(0.191)	(0.148)	(0.189)	(0.258)	(0.272)	(0.111)	(0.108)	(0.136)	(0.140)
Landholding inequality (Gini)	0.306	0.255	0.224	0.152	0.346	0.777*	0.205	0.383	0.233	0.167	0.082	0.271
	(0.280)	(0.280)	(0.383)	(0.443)	(0.332)	(0.414)	(0.564)	(0.585)	(0.241)	(0.229)	(0.329)	(0.342)
Workers farms > 200 ha	0.009	0.000	0.035	0.029	0.017	0.013	0.087	0.042	0.023	0.011	0.069**	0.049**
	(0.017)	(0.014)	(0.031)	(0.031)	(0.021)	(0.023)	(0.053)	(0.045)	(0.018)	(0.014)	(0.029)	(0.025)
Economic development	0.041	0.049	0.108**	0.116*	0.051	0.046	0.215***	0.219***	0.018	0.027	0.093**	0.079*
	(0.040)	(0.035)	(0.052)	(0.061)	(0.046)	(0.051)	(0.071)	(0.075)	(0.037)	(0.031)	(0.043)	(0.045)
Linguistic fractionalization	0.285**	0.192*	0.198	0.305	0.362***	0.242	0.071	0.282	0.266**	0.169*	0.055	0.042
	(0.118)	(0.114)	(0.183)	(0.213)	(0.132)	(0.165)	(0.222)	(0.231)	(0.107)	(0.101)	(0.142)	(0.142)
% Catholics	0.001*	0.001	0.003***	0.004**	0.001*	0.002	0.009***	0.005***	0.001*	0.001	0.005***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Margin	0.003***	0.002***	0.002**	0.002**	0.003***	0.003***	0.001	0.002*	0.003***	0.002***	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Divided	0.102	0.040	0.090	0.104	0.106	0.001	0.006	0.017	0.065	0.022	0.004	0.002
	(0.078)	(0.067)	(0.089)	(0.105)	(0.086)	(0.079)	(0.108)	(0.109)	(0.069)	(0.059)	(0.075)	(0.075)
FK		0.066				0.090*				0.092***		0.151***
		(0.041)				(0.052)				(0.033)		(0.046)
NL		0.460***		0.222**		0.906***		0.646***		0.557***		0.324***
		(0.093)		(0.099)		(0.030)		(0.099)		(0.068)		(0.088)
Zentrum		0.126***		0.028		0.122*				0.107**		0.210**
		(0.047)		(0.122)		(0.069)				(0.046)		(0.102)
Social Democrat										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 parentheses. FK = Free Conservatives; NL = National Liberals.
*$p < .1$. **$p < .05$. ***$p < .01$.

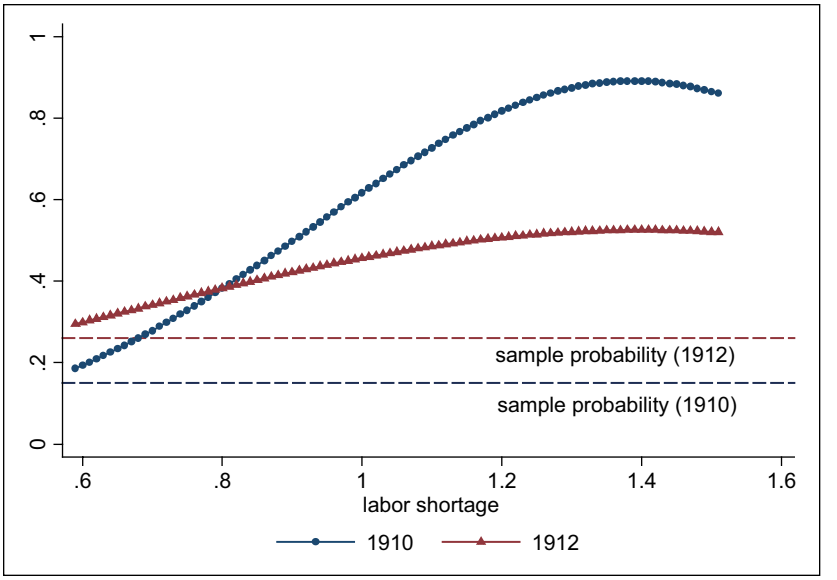

Figure 4. Simulated effect of relative labor shortage on the probability of supporting electoral reform.

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 4). Building from the coefficients of Models 1 and 3, Figure 4 simulates the probability of supporting both bills, across the full range of our labor shortage proxy, while holding the rest of the variables at their mean or modal values. A one-standard-deviation change (from the mean value) in the labor shortage variable is associated with an increase in the probability of support of electoral reform from 61% to 81% in 1910 and from 45% to 51% in 1912.

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

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 > 200 ha	−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 fractionalization	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	.94	.48	.94	0.32		
Overidentification test *p* value: Hansen *J*-statistic	.352	.106	.385	.229		

Robust standard errors in parentheses. IV = instrumental variable; 2SLS = two-stage least square.
*$p < .1$. **$p < .05$. ***$p < .01$.

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. In addition, note that the *Wald* F-*statistics* for the first stage regressions are well above the critical values identified by Stock, Wright, and Yogo (2002) as indicating a problem with weak instruments. In addition, as 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 because two-stage least square (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.

Conclusion

This article 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 inequalities in the distribution of land and employment. Moreover, we argue that the relative shortage of agricultural workers affects electoral outcomes, by increasing 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 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 article suggests that theoretical accounts of regime transitions need 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 article generates a number of implications that can be tested in a broad comparative framework. First, our analysis suggests that economic shocks that generate intraregional 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's term. Second, labor shortage during the early onset of democratic transitions lowers the electoral strength of actors who 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.

The findings contribute to a literature in comparative politics that is inspired by Hirschman's "exit, voice, and loyalty" framework which argues that viable exit opportunities for individuals in dependent labor market conditions weaken the ability of economic and political elites to engage in intimidation or repression. This article provides the first systematic evidence supporting this argument.

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Notes

1. For farms over 200 ha, the midsize point of the bin is set at 200.
2. The module can be found at http://ideas.repec.org/c/boc/bocode/s366002.html

3. The study of the rural migration from East Prussian regions and of the resulting labor shortage of East Prussia has been has been a central theme of the study of the 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. We augment this data with a measure of rural wages for 1914, reported in Königlich Preussisches Statistisches Landesamt (1914). Oliver Grant's dataset separates "rural" and "urban" wages. 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.
4. Because we have three 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.
5. A similar methodology is adopted by Robinson and Baland in their study of electoral repression in Chile.
6. To assign individual localities (*Gemeinde*) to Prussian electoral districts, we rely on the presentation of the boundaries of Prussian districts presented in Kühne (1994).
7. Given the nature of the dependent variable, the last two models in Table 4 are estimated with an ordered probit.
8. Note that we exclude from the analysis the Gini of agricultural employment, as in previous models this variable failed to reach standard levels of statistical significance.

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