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The Political Economics of Growth, Labor Control and Coercion: Evidence from a Suffrage Reform

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Abstract

In this paper, we analyze how a suffrage reform in 1862/63 that shifted the de jure distribution of political power from landowners to industrialists affected Sweden's industrialization and economic and social development from the 1860s to the 1910s. Using a newly constructed, comprehensive historical data set of the universe of approximately 2,400 Swedish local governments, we document that the change in suffrage affected a very large number of development and social outcomes at the local level, such as labor coercion, factor price manipulation in the form of entry barriers including investments in local public goods (i.e., schooling) and transportation (i.e., local railways), the real wage structure, technology adoption in both agriculture and industry, labor productivity in both agriculture and industry, changes in the composition of employment and the structure of production, demographic transition, organized labor, and persistence in dysfunctional local political institutions. Our findings are consistent with the idea that political institutions are a key determinant of long-run development and growth. Specifically, our results suggest that politically powerful landowners can block economic development using labor coercion and factor price manipulation, i.e., using entry barriers and other distortionary policies.

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1. Introduction

In this paper, we analyze how a dramatic shift in the distribution of political power from landowners to industrialists affected Sweden's industrialization, economic development and structural transformation from the 1860s to the 1910s.[1] Specifically, we exploit a unique historical Swedish suffrage reform that extended the voting rights to industrialists at the local level in 1862.[2] Historically, only landowners were entitled to vote; however, in 1863, a new local electoral system based on weighted voting was introduced. In the new electoral system, the number of votes was proportional to the taxes paid, having no restrictions on the maximum number of votes.[3] As a result, a single tax payer, e.g., an industrialist, could have the majority of votes in a local government.

Most importantly, we are able to document the effect of the suffrage reform in 1862/63 on a very large number of development and social outcomes at the local level (i.e., for a universe of approximately 2,400 local governments) due to our large data-collection project.[4] Thus, we are able to show that the suffrage reform affected factor price manipulations in the form of entry barriers (e.g., local infrastructure, such as railways), labor coercion (e.g., in terms of both feudal labor contracts and corvée labor), local government spending (e.g., primary education and poor relief), the real wage structure of various types of agricultural labors, technology adoption in both agriculture and industry, labor productivity in both agriculture and industry, changes in the composition of employment and the structure of production, demographic transition (e.g., fertility, marriage and mortality), social and labor movements, and persistence in dysfunctional local political institutions, which made it possible to capture the political process even after Sweden was democratized in 1919.

Equally important, our identification strategy of the effect of political institutions (i.e., the suffrage reform) on economic development exploits the facts that votes *V* are a linear function of the taxable income of both landowners, i.e., $V^L = \alpha$(taxable income of landowners), and industrialists, i.e., $V^I = \beta$(taxable income of industrialists),[5] while *de jure* political power is

[1] This paper is part of a larger project that investigates how political institutions have shaped Sweden's economic development in the 19th and 20th centuries.

[2] Importantly, the suffrage reform was *imposed* on local governments, which makes our research design arguably more credible than if political institutions were endogenously determined by the local governments themselves.

[3] The weighted voting scheme was in place between 1862 and 1918. In 1901, the maximum of number of votes was capped at 5,000. After 1908, it was capped at 40.

[4] The data set covers an extremely broad range of measures for the 1850-1950 period and is probably the largest and most comprehensive historical disaggregated data set worldwide since the data set includes more than 1 billion observations.

[5] The taxable income of landowners is based on the assessed agricultural property value, while taxable income of industrialists is based on operating profits of the firm.

determined by majority rule, i.e., the group that has a majority of votes governs the local government. For example, landowners have *de jure* political power if $1[V^L > V^I]$. Therefore, we can identify the effect based on changes in *de jure* political power independent of changes in *de facto* political power, i.e., the effect of political power working through income and wealth, simply by controlling for votes or taxable income in the regressions. In other words, *de jure* political power should be "as if" it is as good as randomly assigned conditional on the rules that determine the votes of landowners and industrialists in the weighted voting system, i.e., $E[u \mid 1[V^L > V^I], V^I, V^L] = E[u \mid V^I, V^L]$.[6] Moreover, this assumption also seems plausible in practice since the votes of the industrialists V^I are driven by extremely large, externally driven, idiosyncratic period-specific shocks to the operating profits of their companies, while the landowners' votes are governed by a uniform national law outside their control. Indeed, a number of specification checks support our identification assumption of conditional mean independence, such as the estimated effects are little affected by controlling for unobserved time-invariant heterogeneity, adjusting for the baseline outcome, controlling for taxable income at baseline, or splitting the sample on a key pre-treatment variable (i.e., inequality in landownership).[7]

Our empirical analysis is informed by three complementary economic theories that explain how politically powerful landowners could actively block industrialization, economic development and growth. The point of departure is the existence of a historical social conflict of interest over the institutional organization of the labor market between landowners and industrialists. The premise is that landowners would benefit from having feudal labor market institutions so that they could coerce and control their labor force at all times, while industrialists preferred labor markets that were freer because such markets would allow for the immediate dismissal of the workforce (i.e., at-will employment).

The first theory by Acemoglu, Johnson and Robinson (2005) provides a general dynamic framework for thinking about how the distribution of political power affects long-run development and growth. This framework assumes that political institutions affect the distribution of (*de jure*) political power, which, in turn, affects the choices of economic policies and institutions, i.e., free or unfree labor markets. The economic performance of a society is then determined by its economic policies and institutions. The second theory guiding our

[6] For example, this assumption would be violated if decision-making in local governments is not conducted by majority rule, i.e., the group that has a majority of votes determines the policies.

[7] These tests are related to the methods of assessing unconfoundedness (i.e., conditional mean independence or selection on observables) as discussed by Imbens and Rubin (2015, Chapter 21). We perform these tests by adding additional control variables on the right side of the regression.

empirical approach is that of Acemoglu and Wolitsky (2011) since they provide a detailed economic theory of the functioning of unfree (feudal) labor markets. Specifically, this theory leads to several new insights about coercive labor relations, i.e., ways politically powerful landowners can *directly* control their laborers by using labor coercion. The third theory, that by Acemoglu (2006), provides a complementary framework for reasoning about how politically powerful landowners can *indirectly* control labor by manipulating factor prices (i.e., the equilibrium wage rate in the labor market) in a nondemocratic society.[8] Strong parallels also obtain between factor price manipulation and labor coercion since both are methods of keeping wages low through inefficient and extractive means.

In this paper, we are able to test the predictions of all three theories since we constructed a new and comprehensive historical data set of the universe of approximately 2,400 Swedish local governments as noted above. As a result, this new comprehensive data set has the potential to greatly enhance our understanding of the driving forces behind economic development since it covers the period in which Sweden was transformed from a poor, rural and agrarian society in the mid-19th century to one of the richest and most industrialized countries worldwide in the 1960s.

In this paper, we present results that are strikingly consistent with the three theories about how politically powerful landowners can actively block industrialization, economic development and growth. Regarding economic policies, we find that local governments with politically powerful landowners invest much less in local railways and spend much less on primary education and poor relief. These results hold for local governments controlled by a few large or many smaller landowners. The results from the agricultural sector suggest that politically powerful landowners use much more labor coercion in terms of both feudal labor contracts and unpaid work (corvée labor),[9] pay much lower wages, have much higher labor and land productivity, and invest much less in labor-saving technologies. Moreover, we find that politically powerful landowners blocked labor movements. The results from the industrial sector indicate that local governments with politically powerful landowners have a much smaller industrial sector in terms of both employment and large industrial firms, much lower labor productivity, and far fewer industrial firms investing in new technology, i.e., electric motors driving manufacturing machinery. The results from the evolution of political institutions indicate that there is high persistence in dysfunctional local political institutions in local

[8] For a textbook treatment of factor price manipulation, see Chapter 22 in Acemoglu (2009).
[9] This result holds for both larger and smaller landowners, i.e., those with farm sizes larger and smaller than 100 hectares.

governments that were controlled by politically powerful landowners during the 19th century, even after Sweden's democratization in 1919. Finally, the results of the demographic outcomes suggest that landowners' political power is negatively related to the population, marriage, and fertility but positively related to the mortality rate. However, infant mortality is not affected.

In summary, the above results provide strong support for the general dynamic theory of institutions proposed by Acemoglu et al. (2005). Notably, the result that politically powerful landowners were able to block economic development by using labor-repressive policies and other distortionary policies lines up particularly well with the theories of Acemoglu and Wolitsky (2011) and Acemoglu (2006). Surprisingly, perhaps, we find no support that a more equal distribution of landownership is conducive for growth and development (e.g., Galor et al. (2009) and Banerjee and Iyer (2005)). On the contrary, local governments controlled by many small landowners also use labor coercion and factor price manipulation to block economic development.

This paper is related to a very large number of distinct studies. It is related to the literature that argues that political institutions are the fundamental cause of economic growth.[10] Importantly, most other major explanations for income differences, such as geography and culture, are ruled out by our research design since it is a within-country study.[11] It is also related to the literature on forced labor and labor coercion.[12] Another strand of related literature is that which argues that human capital formation, rather than institutions, is the key determinant of economic growth.[13] Our study is also related to the literature investigating the link between industrialization and investments in human capital.[14] Another related stream of literature consists of work investigating the effects of the transportation infrastructure on economic development since we find that investments in local railway lines were a key component in Sweden's industrialization process.[15] In fact, 70% of all Swedish railways were built and

[10] For example, see the books by Acemoglu (2009) and Acemoglu and Robinson (2012) and the references cited therein.
[11] On the attractiveness of using within-country variation, see Pande and Udry (2005).
[12] On the literature on forced labor, see also Engerman (1992), Dell (2010), Markevich and Zhuravskaya (2018). Moore (1966), Naidu (2010) and Naidu and Yuchtman (2013). Another related literature deals with labor-tying in rural agrarian economies (e.g., Bardhan (1984)) and the workings of labor markets in low-income countries more generally. For an overview of this literature, see Rosenzweig (1988).
[13] See for example, Acemoglu, Gallego and Robinson (2014) and Glaeser et al. (2004).
[14] For example, see Allen (2003), Galor and Moav (2006), Galor et al. (2009), Goldin and Katz (2001), Mitch (1993), Mokyr (1990), Sandberg (1979), Ljungberg and Nilsson (2009), and Squicciarini and Voigtländer (2015).
[15] For example, see Banerjee et al. (2012), Donaldson (2017), and Donaldson and Hornbeck (2016).

financed by local governments.[16] This paper is also related to the literature investigating technological adoption.[17] We contribute to this literature by providing evidence that technological adoption (e.g., railways and electric motors) depends on the political power of local elites. Additionally, our paper is related to the literature on the misallocation of resources both within and across sectors.[18] The work on fertility, mortality and the demographic transition is another related strand of literature.[19] Our work is also related to studies on migration, urbanization and the dual economy.[20] Finally, this paper is naturally related to studies of Sweden's economic development.[21]

The rest of this paper is structured as follows. Section 2 describes the historical background, the rural local governments, the suffrage reform, investments in local railways, and the data. Section 3 presents the theoretical framework of the importance of political institutions and the use of labor coercion and factor price manipulation to block economic development. Section 4 discusses the empirical framework. Section 5 presents the results, while section 6 describes a case study. Finally, section 7 concludes.

2. Background

In this section, we provide a description of the Swedish setting in the 19th century (section 2.1).[22] Additionally, we describe Sweden's labor-repressive agricultural system (section 2.2), the suffrage reform and the variation in local political power (section 2.3), investments in local railways (section 2.4) and the data used in the analysis (section 2.5).

2.1 Sweden in the 19th century

In the middle of the 19th century, Sweden, a predominantly rural and agricultural-based society, was one of the poorest countries in Europe. For example, almost 80% of its nearly 3.5 million inhabitants worked in the agriculture sector, while less than 10% worked in the industrial and

[16] Berger and Enflo (2015) study the effect of railways on economic development, but they analyze only the effect of the main trunk lines on population growth for 81 very small towns. These towns had an average size of approximately 2,000 in 1855. Thus, they composed only approximately 6% of the total Swedish population.
[17] For example, see Gerschenkron (1962), Nelson and Phelps (1966), Griliches (1957), Krusell and Ríos-Rull (1996), and Parente and Prescott (1994).
[18] For example, see Rosenstein-Rodan (1943), Nurkse (1953), Lewis (1954), Rostow (1960), Banerjee and Duflo (2005), Hsieh and Klenow (2009, 2014), Restuccia and Rogerson (2008) and Gollin et al. (2014).
[19] For example, see Becker (1981), Becker and Barro (1988), Preston (1975), Cutler et al. (2006), Galor (2005), Sandberg and Steckel (1997), and Voth (2003).
[20] For example, see Bairoch (1988) and Lewis (1954).
[21] This literature is large. For a collection of articles, see Jonung and Ohlsson (1997). Most of the historical studies on Sweden are based on either highly aggregated statistics or individual data from a few local governments. Most of these studies either are descriptive or use correlation-based approaches. In contrast, this study uses a quasi-experimental design on the universe of all Swedish local governments.
[22] For a collection of articles describing Sweden's economic development from 1750-1970, see Koblik (1975).

handicraft sectors. In addition, it was not until 1943 that the share of employment in the industrial sector was larger than that in the agricultural sector (Edvinsson (2005)).[23] Moreover, the countryside was sparsely populated; only 10% of all Swedes lived in one of 87 very small towns in 1850.[24] The health situation was also dreadful since the life expectancy was only 41 years, and the average infant mortality rate was 15% in 1855 but could be as high as 40-50% in certain rural regions (e.g., Brändström (1984)). The primary education system introduced in 1842 was also in a very poor state. For example, in 1847, the number of teachers was only 2,800, i.e., one teacher per 130 children. Moreover, half of the teachers were not examined regarding their qualifications, and rural areas had extremely low attendance rates (less than 10%) because children were required by their fathers to perform farm work (e.g., Johansson (1972)).[25] Thus, overall, in the mid-1800s, Sweden was a very economically and socially backward country. Nonetheless, Sweden become one of the richest, healthiest, and most industrialized countries worldwide 100 years later.

Another important fact about Sweden's economic development is that much of the early industrialization occurred in rural areas, not in cities. For example, as late as 1901, 64% of the total employment in the industrial sector was based in rural areas. As a result, there was very close contact between the industrial and agricultural labor markets in the countryside.[26] Moreover, there was a large demand for unskilled labor, including women and children, in the early industrialization process (Heckscher (1954), Schön (2012)).[27]

Regarding the political system, Sweden was to a large degree a feudal society in the middle of the 19th century. Specifically, it had a parliament (the Diet) consisting of four estates: nobles, the clergy, burghers and landowning farmers.[28] The nobility consisted of 1,200 male family heads, the clergy of 1,500 clergymen, and the burghers of approximately 30,000 individuals, and the number of landowning farmers was approximately 180,000-200,000

[23] The value added from manufacturing was larger than that from agriculture only after 1920.
[24] There were only 87 towns, and they typically had a very small population, except for Stockholm city.
[25] Sandberg (1979) argues that Sweden had a "strikingly large stock of human and social capital. Sweden was a poor but sophisticated country." His conclusion is, however, based on secondary sources and highly aggregated data. A completely different picture emerges once one analyzes the primary micro data stored in the National Archives. Moreover, Resnick and Resnick (1977) argue that the literacy criterion used by the Swedish church is flawed and cannot be used to assess the literacy of the population as is done in Sandberg (1979). In addition, Kindleberger (1982) and Fisher and Thurman (1989) also criticize Sandberg's conclusions on other grounds.
[26] For example, Bagge et al. (1935, p. 300) write, "Industries in the rural districts must have competed with agriculture for the available labour".
[27] For a description of child labor in Sweden, see Bjurman and Olsson (1979).
[28] The Parliament Act of 1866 introduced a new system of representation, namely, a bicameral legislature.

(Christensen 2006). As a result, approximately only 5% of the total Swedish population had some form of political rights in the feudal society.

Notably, all landowning farmers had political rights, which was in sharp contrast to most other European feudal societies, where many farmers were serfs instead. Nevertheless, the vast majority of landowners were smallholders since in 1870, 95% of all landowners had a farm size smaller than 30 hectares, while only 1% had a farm size above 100 hectares. The smallholder farms operated 70% of all arable land. In other words, the Swedish agricultural economy was to a large extent characterized by subsistence farming and production for the local market.[29] Nonetheless, both small and large landowners were dependent on a large supply of cheap labor for the very short harvest season since in agriculture, it normally takes a full year to produce a crop and the timeliness of labor inputs is everything. A shortage of farm hands, when the crop must be harvested, can ruin the entire year's work. Thus, to ensure that landowners had a reliable supply of cheap labor, a repressive agricultural system was created by the Swedish feudal elites in the 17th century. As a result, Swedish feudalism could be characterized as a system of labor coercion.[30]

2.2 Sweden's labor-repressive agricultural system[31]

One key component of Sweden's repressive agricultural system was the Master and Servant Act, which established that farm servants (e.g., both farm hands and maids) should be contracted for one year at a time and were required to do whatever work that the master (e.g., farmers) deemed necessary.[32] The farm servants were paid in kind (e.g., room and board), with a very small cash wage. The institution of farm service was a crucial system for the supply of labor in agriculture. For example, in 1870, farm servants constituted more than 30% of the labor force in the agriculture sector. The Master and Servant Act also allowed for coercive measures such as corporal punishment and police fetching when servants did not show up for work. The Master and Servant Act also included strict anti-enticement clauses. Thus, a master had almost complete control over his farm servants (e.g., Eklund (1974, p. 227)). It was only on October

[29] The typical smallholding was a family farm with permanent hired labor, primarily unmarried farm hands and maids, employed by the year and paid in kind (e.g., free lodging and food), with a very small cash wage (Morell and Myrdal (2011, p. 174)).

[30] Acemoglu and Wolitsky (2011), for example, also argue that European feudalism was primarily a system of labor coercion.

[31] Moore (1966) introduced the term "labor-repressive agriculture".

[32] For a description of the institution of farm service in the 18th and 19th centuries in Sweden, see Eklund (1974, chapter 8), Harnesk (1990) and Lundh (2010). For a description of the different types of agricultural laborers and the different ways of organizing agricultural production, see also Lundh and Olsson (2011).

24, 1926, that the Master and Servant Act was abolished, but the system of payment in kind was continued until 1945.

A second important component of the labor-repressive agrarian system was that the common people (e.g., landless laborers) were required by law to be employed, typically as farm servants; otherwise, they could be imprisoned for life (Eklund 1974, p. 211). In other words, it was forbidden for rural landless people to be unemployed.[33]

A third component of the labor-repressive agrarian system was that a large share of tenant farmers was required by law to perform corvée labor, i.e., unpaid labor demanded by the landowner. The amount of corvée labor also depended on the size of the tenant farm, with larger farms having more corvée obligations than smaller farms (e.g., Morell 2001). Tenant farmers were typically required to work 3-4 days per week, but in some areas, corvée labor could run as high as 700-800 days of work per year,[34] implying that household of the tenant farmer either had to be large enough to provide this labor itself or had subcontract this labor by hiring agricultural laborers and maids. In addition, tenant farmers were required to perform extra work whenever requested by landowners. This additional work was paid but typically far below the "market" wage. The system of corvée labor was abolished only in 1944, and as late as 1920, nearly 30% of all Swedish farmers were tenant farmers and were therefore basically required to perform corvée labor or extra work at a very low wage.[35]

The labor-repressive element of the Swedish agrarian system was also reinforced by the fact that labor mobility (domestic movements) was severely restricted since Sweden maintained a rigid system of internal passport control until 1860. The poor relief law ("hemortsrätt") further restricted labor mobility among the poorer segments of society until 1956. In addition, freedom of trade was heavily circumscribed until the mid-19th century, when the craft guilds were abolished in 1846 and a more general freedom of trade act for men and unmarried women was introduced in 1864.

The Swedish state church (Lutheran) also constituted a central element in the labor repressive system because they upheld the feudal social order at the local level. The feudal social order was a system of subordinance and dominance including, for instance, the patron-client relationship between landowners and their workers and the relationship between the local priest and their congregation. Specifically, the local priests closely monitored their congregations through yearly mandatory hearings and punished the congregation members

[33] This law was abolished in 1885.
[34] See Olsson (2006).
[35] For a description of the Swedish corvée labor system, see Morell (2011).

(e.g., stocks were used, where the hands and legs were locked into holes in a wooden frame) if they did not comply with the authority of the household heads (e.g., landowners) or the church rules (e.g., Pleijel (1965, 1970)).

To conclude, Sweden had a very labor-repressive agricultural system, and from a European perspective, labor coercion was abolished extremely late. Moreover, Sweden did not conduct any land reform, in contrast to most other countries with feudalism except for England.[36]

2.3 The suffrage reform and the variation in local political power

Sweden has a long history of local self-government in rural areas. Historically, there existed approximately 2,400 rural local governments, and their decision-making body was the town meeting, i.e., a direct democratic form of government (e.g., see Hinnerich and Pettersson-Lidbom (2014) and Mellquist (1974)).[37] Thus, eligible voters were gathered at town meetings —at least three times per year—to determine matters of economic importance. The town meeting regulation from 1817 stated that, effectively, only landowners had voting rights at the town meetings (Sörndal (1941)). Typically, the decisions at the meetings were made by unanimity; sometimes, however, in cases of disagreement, a weighted voting scheme, where voters received votes in relation to their farm size, was used. The size of the farm was measured in terms of the "mantal", which was the basic tax assessment unit of land in use since the 16th century. This type of weighted voting system gave landowners with a large farm only a few more votes than those with a small farm.[38]

In 1862, the four-estate parliament decided to extend suffrage rights at the local level to other groups, including industrialists, in a new Local Government Act. The rationale behind this new law was the private property principle, i.e., all local taxpayers, including companies, should have voting rights in the local government (e.g., Norrlid (1970)). Moreover, one year later, the four-estate parliament decided that all local taxpayers should receive votes in proportion to their taxes paid, without any restrictions on the maximum number of votes.[39] Thus, a single taxpayer could have the majority of votes.[40] Interestingly, there was no debate among the four estates in the Diet regarding the extension of suffrage rights to industrialists at

[36] Gary and Olsson (2017).
[37] Sweden also had 87-94 urban towns or "cities" in the latter part of the 19th century. The cities have a different political system from the rural local governments.
[38] For a description of the mantal and how it was being used in the local governments, see Lagerroth (1928).
[39] For example, one industrial firm (Ljusne Woxna AB, Söderala) had 87,974 votes in 1900; in comparison, the average number of votes per taxpayer was approximately 50.
[40] For example, a single taxpayer had the majority of votes in 54 local governments in 1871 and in 44 local governments in 1892.

the local level in 1862 (Mellquist (1974, p.52)). Similarly, the decision to make votes proportional to taxable income in 1863 was also accepted with unanimity (Mellquist (1974, p. 71)). Mellquist (1974) provides an explanation for these nonconflictual decisions, namely "because companies were so small and few at that time made it impossible to foresee the subsequent economic development and industrialization."

Most importantly, the taxable income of a local taxpayer was determined by a uniform nationwide regulation.[41] Specifically, for landowners, taxable income was set to 3% of the assessed agricultural property value, and they received 2 votes for every 0.10 krona of taxable income. Thus, the fixed rule that determined the votes of landowners was as follows:

$$(1) \quad V_t^L = f(\textit{taxable income}_{t-1}) = 2*(\textit{Property value}_{t-1}*0.03)/10)$$

where V_t^L represents landowners votes in period *t*. For industrialists, the taxable income was based on the operating profits, and they only received 1 vote for every 0.10 krona of taxable income. As a result, the fixed rule that determined the votes of landowners was as follows:

$$(2) \quad V_t^I = g(\textit{taxable income}_{t-1}) = 1*(\textit{Operating profits}_{t-1}/10)$$

where V_t^I represents industrialists votes in period *t*. Thus, the relative strength of the political power of landowners versus industrialists depends on both the assessed agricultural property value and the operating profits of industrial firms. Indeed, the votes of landowners changed comparatively minimally over time, while that of industrialists fluctuated enormously. The reason for the stability of the votes of landowners was that the central government regulated the assessment of the value of agricultural property and performed strong oversight over this process at the local level.[42] In sharp contrast, the votes of industrialists were extremely volatile because the operating profits of firms were related to the boom and bust of industrial business cycles.

To illustrate these facts, we use data from the local government of Ytterlännäs, which was dominated by one industrialist (Janne Gavelius) who was in control of all the votes from a large sawmill company (Graningeverken). Figure 1 shows the evolution of the total votes for the landowners in Ytterlännäs for the period 1864-1908 and of the sawmill company for the shorter period 1871-1899.[43] In 1864, the number of votes of landowners in Ytterlännäs was 6,940,

[41] Article II in Bevillningsstadgan.
[42] For a discussion of the process of assessing the value of agricultural property in the 19th century, see Lindgren (2017).
[43] We are grateful to Erik Nydahl for providing us with these data.

which slowly decreased to approximately 6,100 in the early 1870s and thereafter slowly increased to 10,841 in 1908. Thus, over the course of almost 50 years, the number of votes of landowners had increased by a factor of only 1.5. This somewhat smooth evolution in the number of votes due to landownership can be compared with the very sharp, year-to-year changes in the number of votes of the sawmill company. The largest number of votes that the company had was 31,263 in 1875, while the lowest number was 3,569 in 1880. Thus, over a very short period of time, the number of votes of the industrialist varies by a factor of almost 9. The extremely large swings in the number of votes for the company were caused by the high volatility in the international wood market. In summary, the above discussion clearly shows that the variation in the political power of landowners across time is largely driven by idiosyncratic period-specific shocks, i.e., external factors outside the control of both landowners and industrialists in the local government of Ytterlännäs.

We can also illustrate these relationships at the aggregate level of the universe of local governments. Figure 2 shows the development in the total number of votes (millions) during the 1864-1908 period for both landowners and industrialists. In 1864, the total number of votes was 4.3 million for landowners and 10.1 million for industrialists. Thus, landowners had more than twice as many votes at the aggregate level directly after the change in the suffrage reform in 1862. However, in 1908, this relationship had completely reversed since votes for the industrialists had increased to 30.5 million, while for landowners, votes had increased only to 15.2 million. Thus, over the 1864-1908 period, the total number of votes increased by 50% for landowners, while it increased by more than 600% for industrialists. In addition, Figure 1 shows that the local government of Ytterlännäs has almost exactly the same trend in the votes of landowners over time as the corresponding aggregated time series in Figure 2. Specifically, the correlation coefficient between the two time series is as high as 0.96.

2.3 Investments in local railways

The new Swedish Local Government Act of 1862 included important reforms.[44] Specifically, it explicitly gave local governments permission to deal with all economic matters of local importance.[45] Previously, local governments were in charge of primary education

[44] Before 1862, Swedish local governments had only one common town meeting for both clerical and secular matters. After 1862, there were two distinct town meetings: one for clerical matters including primary education and another for secular matters (e.g., poor relief, railways). However, they both had identical weighted voting systems and an identical electorate.

[45] There are a number of previous case studies by historians that describe decision-making at the local level in Sweden in the 19th century (e.g., Gustafsson (1989), Malmström (2006), Mellquist (1974), Nydahl (2010), Nyström (2002) and Tiscornia (1992)). Most of these studies describe how landowners shape local policy-making. For example, Nyström (2003) discusses how landowners could exercise their monopsony power to keep

(approximately 40% of the total spending), poor relief (approximately 20% of the total spending) and matters related to the clergy (approximately 25% of the total spending). Now, however, the act also allowed the local government to spend on local infrastructure investments such as railways. All spending was to be financed via a proportional income tax rate that they could set completely freely.[46] The average income tax rate was nearly 10% but could be as high as 40% in the beginning of the 20th century.

Sweden started to build railways in 1856, which, from a European perspective, was very late. In 1853, the four-estate parliament decided that only the trunk lines should be built, financed, and operated by the state, while all other local railways should be financed by private interests in the form of limited liability companies. However, these companies were owned by local governments to a very large extent.[47] In fact, nearly 70% of all Swedish railways were largely financed by local governments (Oredsson (1989)).[48] To illustrate the importance of local railways in Sweden, Figure 3 shows the annual size of the railway network up to 1910, separately for the railways owned by the state and those owned by local governments. The figure reveals that the size of the state-owned railways was larger than that of the local government-owned railways only before 1874 and that the difference between them was increasing over time. The local railways were also much more important than the state-owned railways for the transportation of both people and goods. For example, in 1910, 38 million people travelled on local lines, but only 20 million travelled on trunk lines. The tonnage of goods transported by local railways was also 2 times higher than that transported by state-owned railways.

For the local railway data, Figure 4 shows the yearly number of local governments with local railways for our sample period 1862-1908. This figure reveals that only 16 local governments already had a local railway in 1862; however, this number had increased to 797 in 1908. Local government investments in local railways were predominately financed via long-term loans, typically with a 40-year maturity, which required approval from the central government. Figure 5 shows the annual number of local governments that had taken a long-term loan to invest in local railways. Importantly, Figure 5 reveals that the long-term

wages in agriculture low. However, both Mellquist (1974) and Nydahl (2010) argue that industrialists make very different local policy choices (e.g., investments in railways) compared to those of landowners.

[46] The state grants constituted less than 10% of local government revenues.

[47] For the financing and construction of Swedish railways, see Hedin (1967), Nicander (1980), Modig (1971) and Oredsson (1989).

[48] The Swedish railway network had a maximum of 16,886 km of railways. Before the First World War, Sweden had 25 km of railroad for every 10,000 people, which was more than twice the amount for any other European country (Hedin (1967)).

investments in local railways closely follow the time profile of the construction of local railways in Figure 4 and that the number of long-term loans is very similar to the number of local governments with local railways. Thus, this figure again illustrates the fact that Swedish local governments financed the lion's share of local railways.

The local financing of railways was highly controversial during this period. Mellquist (1974, p 139-155) has analyzed in detail how the railway investment decisions among voters at town meetings were made in 128 distinct cases. Mellquist finds that in all of his investigated cases, almost all of the landowners were against investing in railways, while the industrialists were always in favor. Nonetheless, the decisions at town meetings were usually in favor of investing in local railways since a few industrialists often had more *de jure* political power, i.e., votes, than all the landowners combined. Moreover, most of the very largest landowners showed little interest in investing in local railways. For example, Möller (1989) analyzed all local railway investments in Scania, which is the area in Sweden that had the largest investments in local railways. He finds that 48 of the largest landowners invested in local railways. Thus, the share of large landowners who invested in local railways was only 12% since Scania had 409 large landowners at that time (Lundh and Olsson 2011). Indeed, in this paper, we present results that strongly suggest that both large and small landowners tried to block the construction of local railways.

In summary, most Swedish landowners were hostile toward railways. This hostility is perhaps not surprising given the existence of a historical social conflict between landowners and industrialists regarding the institutional organization of the labor market, as discussed in the introduction. Thus, having access to railways would make it more difficult for landowners to control their labor. For example, investment in infrastructure, such as railways, would create a better business environment and therefore increase the industrialists' productivity. According to the factor price manipulation motive, this increase would induce the landowners to block technology adoption to reduce the productivity of the competing group. In addition, having access to railways and industrial jobs would increase the outside options of agricultural workers, making it harder for landowners to use coercion. Moreover, most Swedish landowners would gain little by having access to local railways because they already had developed an inexpensive transportation system since the transportation of goods was part of tenant farmers' corvée obligations.

2.5 Data

A major contribution of this paper is that we exploit a newly assembled data set of local governments during the 1850s-1950s period.[49] Our data include information regarding a very large number of political, economic and demographic variables of more than 2,300 rural local governments. We describe the variables used in the analysis below, while the descriptive statistics are presented in Table 1a for the endline outcomes (i.e., circa 1908) and Table 1b for the baseline outcomes (i.e., circa 1862)

Our key explanatory variable of interest is the political power of landowners at the local government level, i.e., the average number of years during the 1864-1908 period during which landowners had more than 50% of the votes.

We analyze a very large number of development and social outcomes. We include six variables measuring the economic policies of local governments, namely, having a local railway within their boundaries,[50] spending on primary education, spending on poor relief, church spending and total spending. We also include a large number of outcomes in the agricultural sector. All the endline measures in agriculture are based on the 1908-1924 period, while the baseline is 1858-1862. Notably, we include six direct measures of labor coercion at the local level. Two of the measures of labor coercion are based on a survey sent to all local governments in 1924 that asked what types of labor contracts were being used. Specifically, the survey asked whether feudal labor contracts based on labor coercion, i.e., the Master and Servant Act discussed previously, were still being used in the agricultural sector.[51] We digitized the information in the survey, and we have data from 1,708 out of 2,345 rural local governments. We use binary coding, i.e., rural local governments that predominately use feudal labor contracts are defined as having a coerced labor market, while the others are coded as having an essentially free labor market. We also have information on whether the feudal labor contracts were used on both small and large farms.[52] Perhaps surprisingly, feudal labor contracts were still being used, on both small and large farms, in approximately 50% of all rural local government as late as 1924.

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[49] The data collection was financed by an ERC consolidator grant.
[50] This variable is constructed from yearly geocoded data on the universe of local railway constructions.
[51] Notably, the Master and Servant Act was abolished as late as 1926. The Farmers Party also voted against this decision in Parliament (Eklund 1974, p. 236). However, despite the abolishment of the Master and Servant Act, Sweden still kept a labor-repressive contract work system and corvée duties until the mid-1940s.
[52] A large farm is defined as having more than 100 hectares of arable land.

The other four measures of labor coercion are taken from a Royal Commission report about tenant farmers in 1919.[53] Tenant farmers were typically required to perform corvée duties or work for a very low payment.[54] Specifically, we have two local measures of tenancy rates, i.e., the share of farm land cultivated by tenant farmers: one for large landowners and the other for small landowners.[55] The amount of corvée labor also increased with the size of the tenant farm, as noted previously. As a result, we can use the average size of the tenant farms as an additional measure of labor coercion. Again, we have this measure for both large and small landowners.

We also have two indirect measures of labor coercion, namely, the share of citizens belonging to a union in 1908 and the share of voters voting for labor parties,[56] i.e., left-wing parties, at the general election in 1911.[57] Arguably, these two measures should proxy for how effective landowners could block labor movements and, as a result, to what extent they could coerce their labor. Indeed, agricultural workers contracted under the Master and Servant Act were prohibited from being organized and were severely punished if they tried to do so (e.g., Morell (2001, Chapter 9)). Moreover, most tenant farmers did not support left-wing parties since they opposed industrialization (e.g., Morell (2011)).

We also measure the real daily cash wages of three types of male agricultural laborers,[58] i.e., casual workers with and without meals and workers contracted under the Master and Servant Act (i.e., "statare").[59] Importantly, both landowners and industrialists competed for the casual workers.[60] Moreover, temporary workers with meals primarily worked for small landowners, while those without meals typically worked for larger landowners. The employment shares in agriculture are obtained from the 1910 and 1855 censuses. We construct local measures of labor and land productivity from yield data based on 16 different crops and their prices during the 1913-1917 period and 8 crops in 1858.[61] Our measure of labor-saving

[53] The commission is known by the name "Jordkommissionen".
[54] As noted in the report by the Royal Commission, not all tenant farmers were required to perform corvée labor; nevertheless, this practice was very common, especially on large farms.
[55] A large farm is defined as having more than 100 hectares of arable land.
[56] Interestingly, no voters voted for left-wing parties in 891 local governments (38%).
[57] This is the first general election when all males were allowed to vote.
[58] In 1913, the average daily wage for these types of agricultural workers was 2.4 kronor, which can be compared with the average manufacturing wage of 4.3 kronor. Thus, the average daily wage in the manufacturing sector was nearly 2 times larger than that in the agricultural sector, which is similar to the findings in Allen (1955).
[59] These data come from unpublished archival material on local wages for the period 1913-1928. For a discussion of the data, see the publication by The National Board of Health and Welfare, Arbetaretillgång, arbetstid och arbetslön inom Sveriges jordbruk.
[60] This fact is of importance when testing for the factor price manipulation mechanism.
[61] For a discussion of the data, see the publication by Statistics Sweden, Jordbruk och boskapsskötsel.

technologies is the ratio of oxen to horses during the years 1917-1919 and 1858. This variable should reflect the progress of horse mechanization, which was made possible by the horse collar (e.g., Liebowitz (1992)).[62] For example, early major innovations such as the introduction of the self-rake reaper and the binder required horsepower. Thus, the adoption of new technologies was closely tied to the adoption of horses (e.g., Olmstead and Rhode (1988, 2008)).

A third set of outcomes pertains to the industrial sector. We digitized data on all Swedish manufacturing plants for the period 1913-1952.[63] Importantly, only plants with more than 10 workers and a production value of at least 10,000 krona were required to submit their data to Statistics Sweden. Thus, only larger industrial firms are included in these data.[64] In this paper, we rely on data from 1914, with a total number of 9,695 plants. We digitized data on the value of total sales, the total number of workers, and the type of technology used in the production process, i.e., electric motors driving manufacturing machinery. As a result, we can construct measures of labor productivity at the plant level: output per worker. Notably, average labor productivity was almost 5 times higher in the industrial sector than in the agricultural sector, suggesting a misallocation of labor between sectors. Additionally, we define a measure of industrial activity using an indicator variable that takes the value of one if there is at least one industrial firm in the local government. Out of a total of 2,307, there were 1,148 local governments that had at least one industrial firm. Thus, according to this measure, 50% of local governments had no industrial activity according to this measure. We also have data regarding the employment share in the industrial sector from the 1910 and 1855 censuses. The employment share captures the business activity of smaller industrial firms. According to this measure, only 77 local governments did not have any people employed in the industrial sector.

We also have five demographic variables: the total mortality rate, the infant mortality rate, the fertility rate, population size, and the marriage rate.[65] These variables are measured on a yearly basis.

The maximum number of (rural) local governments in our analysis is 2,354, but the number of observations differs across specifications due to (i) jurisdictional boundary

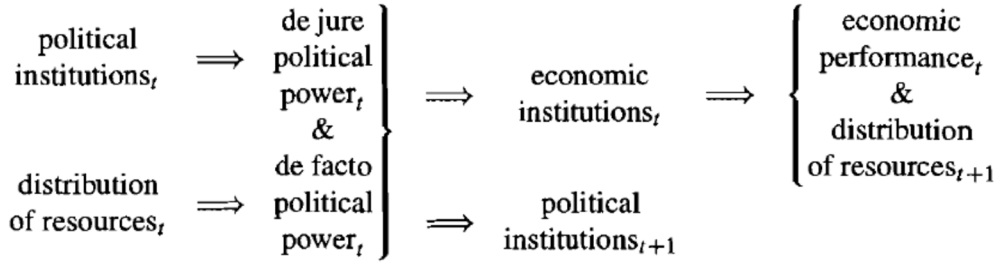
[62] As noted by Liebowitz (1992), "the ox was the symbol of backward farmers in remote places." In fact, Olmstead and Rhode (1988) show that the adoption of new farm technologies was closely tied to the adoption of horses as opposed to oxen or human labor for power on farms. Thus, they argue that the ratio of horses to oxen is a "rough proxy for the transition of agricultural practices in the nineteenth century."
[63] These data come from the National Archives.
[64] The average firm in our data set has 44 workers.
[65] Interestingly, the average out-migration rate during the second part of the 19th century was 7.4%, suggesting that 122 people moved from the jurisdiction of an average-sized local government in a given year. Perhaps surprisingly, on average, only 4 of these 122 migrated to the United States of America. Thus, internal migration completely dominates the external migration patterns.

inconsistencies and (ii) differential rates of missing observations across the various outcomes since they are derived from different sources; additionally, (iii) some local governments sometimes shared common responsibilities for education and welfare.

Table 1a and 1b show the summary statistics of the variables used in the analysis. We divided each table into two panels. Panel A shows the summary statistics of the explanatory variable of interest, i.e., the political power of landowners, and Panel B shows the statistics of all other outcome variables (endline outcomes in Table 1a and baseline outcomes in Table 1b).

3. The Theoretical Framework

As discussed above, our empirical framework is informed by three complementary theories: those of Acemoglu, Johnson and Robinson (2005); Acemoglu and Wolitsky (2011); and Acemoglu (2006). Regarding Acemoglu et al. (2005), a schematic representation of their framework is as follows:



Note: This figure is taken from Acemoglu et al. (2005).

Thus, the following population regression can be derived from their framework:

$$Y_{it} = \alpha + \beta P_{it} + v_{it}, \tag{3}$$

where index i denotes a local government at time t. The explanatory variable, P_{it}, is a measure of the political power (both *de jure* and *de facto*) of landowners. The outcome variable Y_{it} is some measure of economic institutions (including economic policies), economic performance, political institutions, or distributions of resources. v_{it} is an error term. The parameter of interest is β, which measures the causal effect of the political power of landowners on the outcome variables.

This framework also reveals that P_{it} generally consists of the following two components: *de jure* and *de facto* political power. *De jure* political power refers to power that originates from the political institutions in society, while *de facto* power originates from the economic resources available to the group. In our case, political power P_{it} will naturally include both types of

components since both landowners and industrialists receive votes in proportion to taxable income as discussed above (i.e., equations (1) and (2)). We discuss how to separate *de jure* from *de facto* political power in the empirical framework in the next section.

As discussed above, Acemoglu et al. (2005) argue that the distribution of political power is the key determinant of economic institutions (including economic policies) and economic performance. This general framework however does not explain, in detail, how politically powerful landowners can actively block economic development and growth. On the other hand, the models by Acemoglu and Wolitsky (2011) and Acemoglu (2006) provide such explanations. Below we present a simplistic model that illustrates how politically powerful landowners can use both overt labor coercion (i.e., Acemoglu and Wolitsky (2011)) and factor price manipulation (i.e., Acemoglu (2006)), i.e., indirect control of labor, to affect the distribution of resources.[66] Thus, this model provides an example of how a political powerful elite in a nondemocratic society may choose economic institutions that are deleterious to long-term economic growth and development since they create distortions and inefficiencies.

We start by assuming that an homogenous elite, i.e., landowners, controls political power and has access to the production function $F(K^L, L^L)$, where K^L is capital and L^L is the labor employed by the landowners. The cost of capital is taken as given at $R > 0$. The labor supply is endogenous and given by $L^S(w + g)$, where w is the equilibrium wage rate, g is "guns", i.e., a measure of labor coercion, and L^S is a strictly increasing function. A higher level of labor coercion amounts to extracting more labor from laborers than they would have been willing to supply at the prevailing wage.[67] We also assume that the demand for labor comes from two different sectors of society, i.e., the agricultural L^L and industrial L^I sectors. Moreover, the premise is that landowners do not directly control the demand for labor in the industrial sector, which can be expressed as $L^I(w, b)$, where b is a policy, such as entry barriers or other types of inefficient policies that reduce the productivity of industrialists, imposed on the industrial sector. The choice of policy can also be thought of as (a lack of) investment in infrastructure, such as local railways, which affects industrialists' technology choices. We also assume that L^I is a strictly increasing function, that the labor market clears, i.e., $L^L + L^I(w,b) = L^S(w + g)$, and that the cost of labor coercion is h(g), with h´(0). The maximization problem of the landowners can be written as Max $F^L(K^L,L^L) - RK^L - wL^L - h(g)$ w.r.t K^L, L^L, g, and b; subject to labor market clearing.

[66] This model is taken from the presentation of Acemoglu (2012).
[67] Acemoglu and Wolitzky (2011) derive this assumption from a principal-agent relationship embedded in a market equilibrium.

Let us first analyze only labor coercion and ignore the labor demand from industrialists. The solution to this problem will involve $g > 0$ to reduce equilibrium wages. This solution is Pareto inefficient since costly labor coercion (guns) is used to inefficiently transfer resources from workers to landowners. Turning to the analysis of the factor price manipulation motive without labor coercion, we find that the solution will involve $b > 0$ to reduce equilibrium wages. Again, this solution is Pareto inefficient since resources are misallocated between the two sectors of the economy. Finally, combining both solutions implies that both $g > 0$ and $b > 0$.

In summary, the model shows that politically powerful landowners will try to control labor both directly and indirectly by using both labor coercion and factor price manipulation. As a result, these distortionary economic policies/institutions will retard or block economic development and growth. This simplistic model, however, does not include the more refined predictions from the more elaborate models of labor coercion and factor price manipulation. These two models are briefly discussed in the following text.

Acemoglu and Wolitsky (2011) provide a detailed economic theory of the functioning of unfree (feudal) labor markets using a principal agent model. Specifically, this theory leads to several new insights about coercive labor relations, i.e., how politically powerful landowners can coerce their agricultural laborers. Acemoglu and Wolitsky show that coercion always increases the effort of agricultural workers and that workers who have a lower outside option (e.g., lack of industry) are coerced more and therefore put forth higher levels of effort. They also show that labor scarcity increases coercion if the outside option effect is larger than the labor demand effect. In summary, Acemoglu and Wolitsky (2011) provide a theoretical framework for thinking about how politically powerful landowners can *directly* control labor by using labor coercion in the agricultural sector.

Acemoglu (2006) provides a complementary framework for reasoning about how politically powerful landowners can *indirectly* control labor by manipulating factor prices (i.e., the equilibrium wage rate in the labor market) in a nondemocratic society.[68] The key premises are that landowners and industrialists compete for the same labor force and that political power is controlled by the landowners.[69] With the factor price manipulation mechanism, the landowners' goal is to reduce the industrialists' labor demand and, consequently, equilibrium wages. Thus, according to this theory, politically powerful landowners are expected to reduce

[68] For a textbook treatment of factor price manipulation, see Chapter 22 in Acemoglu (2009).
[69] Competition might also occur in the political arena between landowners and industrialists, leading to a political replacement effect. This theory offers similar predictions as the factor price mechanism, as discussed by Acemoglu (2005, 2006).

the profitability of industrialists by decreasing the size and labor productivity of the industrial sector. Politically powerful landowners should also block industrialists' technology adoption decision to reduce their productivity and thereby retard or block industrialization, economic development and growth.

4. The Empirical Framework

In this section, we describe the empirical framework in detail. As discussed in the previous section, the theoretically motivated population regression of interest is equation (3), i.e.,

(4) $Y_{it} = \alpha + \beta P_{it} + v_{it}$,

where the explanatory variable, P_{it}, is a measure of the political power, consisting of both *de jure* and *de facto*, of landowners. To separately identify *de facto* from *de jure* political power, we will exploit the fact that votes are linear functions of taxable income for both landowners, i.e., equation (1), and industrialists, i.e., equation (2), while the *de jure* political power of landowners is a non-linear function of votes, i.e., $X_{it} = 1[V_{it}^{L} > V_{it}^{I}]$ where 1[.] is an indicator function assigned the value 1 if landowners have a majority of the votes in period *t*.[70] Thus, the modified population regression of interest is then

(5) $Y_{it} = \beta_0 + \beta_1 X_{it} + u_{it}$,

where the parameter β_1 is effect of the *de jure* political power on the outcome *Y*, i.e., the difference in outcomes between local governments controlled by landowners and industrialists. Obviously, to identify the effect of *de jure* political power only, we need to control for taxable income of both landowners and industrialists, since votes are a linear function of taxable income, i.e., V_{it}^{L} and V_{it}^{I}. Thus, we need to modify equation (5) as

(6) $Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 V_{it}^{L} + \beta_3 V_{it}^{I} + u_{it}$.

Equation (5) now controls for taxable income separable for both landowners and industrialists. As a result, this specification does not only address the problem of separating *de jure* from *de*

[70] A regression-discontinuity analysis is suitable in a setting with a weighted voting system since the smoothness assumption will not hold in general. In other words, the relationship between the forcing variable (i.e., vote share) and the outcome will be discontinuous since a single voter may have a large impact on the outcome if they possess many votes.

facto political power, but solves all other problems related to differences in income and wealth among local governments. In other words, the identification assumption is that $E[u_{it}| X_{it}, V_{it}^L, V_{it}^I)] = E[u_{it}|V_{it}^L, V_{it}^I)]$. Thus, having a majority of votes is "as good as randomly assigned" conditional on taxable incomes of landowners and industrialists.

The appropriateness of our identification assumption can be illustrated graphically using the local government of Ytterlännäs. To reiterate, Figure 1 shows the evolution of V^I and V^L over the period of 1864-1908, when the weighted voting system was in place. Figure 1 reveals that the evolution of V^I is extremely volatile, while the development of V^I is much smoother. Thus, which of the two groups, landowners or industrialists, who politically controls the local government is likely to be more or less random due to the idiosyncratic period-specific shocks to the profits of the industrialists. To address the remaining concern that any differences in taxable income, such as the upward trends in both V^L and V^I, might also affect who holds the power in the local government, we must control for V^L and V^I in equation (6). The plausibility of our identification can also be scrutinized by a number of specification checks discussed in detail below.

The period of investigation is 1864-1908, i.e., during the years when the weighted voting system was in place. Unfortunately, we only have data at the endline (circa 1908) and baseline (circa 1862) for most of the outcomes. Therefore, our estimating equation at the endline year is

$$(7) \quad Y_{i,1908} = \alpha + \beta X_{it} + \pi V_{i,1908}^L + \lambda V_{i,1908}^I + u_{i,1908},$$

where the parameter β represents the long-term impact of the *de jure* political power of landowners on economic outcomes, $Y_{i,1908}$, i.e., the effect of the suffrage reform nearly 50 years after it was introduced in 1862/63.[71] In the endline specification (7), the binary indictor is perhaps not the most suitable measure of political power of landowners for the period of 1864-1908.[72] A more appropriate measure given that we are interested in the long-term impact of suffrage reform is to take the average of X_{it} across all the years during 1864-1908, i.e., $\bar{X}_i$. Thus, we modify equation (7) as

$$(8) \quad Y_{i,1908} = \alpha + \beta \bar{X}_i + \pi V_{i,1908}^L + \lambda V_{i,1908}^I + u_{i,1908}.$$

[71] In 1909, the maximum of votes was capped to 40, and in 1919, Sweden introduced the one person, one vote system.

[72] The correlation between X_{it} and $\bar{X}_i$ is 0.78. All of the results in the paper hold for both measures. Moreover, all of the results also hold for using the time average of $V_{i,t}^L$ *and* $V_{i,t}^I$ instead of $V_{i,1908}^L$ and $V_{i,1908}^I$.

Figure 7 shows the distribution of $\bar{X}_i$ during the period of 1864-1908. This figure reveals that 1,395 local governments were always controlled by landowners (i.e., $\bar{X}_i = 1$), while 99 local governments were always governed by industrialists (i.e., $\bar{X}_i = 0$) after 1864. The remaining 860 local governments had switching majorities of various durations (i.e., $0 < \bar{X}_i < 1$).

To test the plausibility of our identification assumption, i.e., $E[u_{i,1908}| \bar{X}_i, V^L_{i,1908}, V^I_{i,1908}] = E[u_{i,1908}|V^L_{i,1908}, V^I_{i,1908}]$, we will exploit the outcome data at the baseline year 1862 in three different ways. If our identifying assumption holds, then all of these alternative specifications should also produce similar estimates of β. The first specification check is to control for the baseline (1862) value of taxable income (i.e., the key control variables in our approach) in equation (5) before the suffrage reform was implemented. The second specification check is to control for the baseline outcome $Y_{i,1862}$ in equation (5) as a way to adjust for any pre-treatment differences. This is a lagged dependent variable (LDV) approach, which assumes unconfoundedness given lagged outcomes (e.g., Angrist and Pishke (2009), Ding and Li (2019), Imbens and Wooldridge (2009) McKenzie (2012)). A third specification check is to make a long difference transformation of equation (5) using the baseline year 1862. This is a differences-in-differences (DiD) approach, which assumes parallel trends to deal with time-invariant unobserved heterogeneity. Importantly, the LDV and DiD approaches make fundamentally different assumptions. Moreover, the parallel trends assumption in the DiD approach has the drawback of being functional form-dependent (Athey and Imbens (2006)), while the ignorability assumption in the LDV method is scale-free. In fact, Imbens and Wooldridge (2009) argue that the LDV approach is to be preferred over the DiD approach in a panel data setting.[73]

To summarize, we use three different estimators of the parameter β with distinct identifying assumptions, namely, OLS, LDV, and, DiD. Therefore, finding similar results across the three estimators would bolster credibility since these estimators rely on alternative identifying assumptions (e.g., Angrist and Pishke (2009)).[74] Finally, we use cluster-robust standard errors in all of the OLS, LDV and DiD specifications.

[73] Imbens and Wooldridge (2009) write "As a practical matter, the DID approach appears less attractive than the unconfoundedness based approach in the context of panel data. It is difficult to see how making treated and control units comparable on lagged outcomes will make the causal interpretation of their difference less credible, as suggested by the DID assumptions."

[74] Specifically, the LDV and DiD approaches have an appealing bracketing relationship, i.e., bounding the true causal effect if either assumption holds.

5. Results

In this section, we present the OLS, LDV and DiD results of how the distribution of political power between landowners and industrialists affects a large number of outcome variables.

We also present the results separately for local governments controlled by large landowners and those controlled by small landowners since land inequality has previously been shown to be associated with economic development (e.g., Galor et al. (2009), Banerjee and Iyer (2005) and Engerman Sokoloff (2000)). This classification is based on the baseline distribution of the assessed agricultural property compiled by Wohlin (1912),[75] which, in turn, determined the baseline number of votes of landowners. He classifies a local government where a single landowner has at least 10% of the votes of all landowners as being dominated by large landowners. There are 1,346 such local governments out of a total of 2,354. Consequently, there were 1,008 local governments controlled by small landowners.

Another benefit of splitting the sample on a pre-treatment variable is that the results from the two sub-samples can be interpreted as an implicit test of our identifying assumption, i.e., having a majority of votes is "as if" it is randomly assigned and conditional on taxable incomes of landowners and industrialists, as discussed by Imbens and Rubin (2015), for example. Thus, finding similar results for both large and small landowners will bolster the credibility that the results are not caused by some important omitted factor (e.g., if the majority rule is violated).

We present the results in 7 subsections. In sections 1 and 2, we first establish that politically powerful landowners use more factor price manipulation and labor coercion. In the remaining subsections, we then test the predictions from Acemoglu (2006) and Acemoglu and Wolitsky (2011) that politically powerful landowners also affect real wages (section 5.3), technology adoption (section 5.4), labor productivity (section 5.5), structural change (section 5.6), and demographic change (section 5.7). In section 7, we also provide a case study from a local government illustrating how a politically powerful landowner can block development.

5.1 Factor price manipulation

In this section, we empirically analyze whether politically powerful landowners used more factor price manipulation in the industrial sector. Factor price manipulation corresponds to policy *b* in the theoretical model described in Section 3. Policy *b* is essentially a measure of economic barriers to entry or other distortionary policies that reduce the productivity of competing groups, i.e., the industrialists in our context.

[75] Wohlin uses data from 1865 but this data is identical to the data from 1862 since there was no change in the assessment of agricultural property between these years.

We use several measures of factor price manipulations or entry barriers. First, we use the lack of infrastructure investments in local railways as an important obstacle to firms from entering a local government. Table 2 reports the results. Columns 1 and 2 show the OLS estimates both without and with taxable income in 1908 as a control variable. Column 3 shows the results from adding taxable income at the baseline to the OLS specification in Column 2. Column 4 shows the corresponding estimate using the LDV approach, while Column 5 displays the results using the DiD approach. Panel A shows the results for all local governments, while Panels B and C show the results for local governments controlled by large landowners and small landowners, respectively. Our results show that politically powerful landowners built much fewer local railways in all specifications. The results hold both for local governments controlled by large (Panel B) and small landowners (Panel C). The estimated effects are substantial since they imply that investments in local railways are reduced by 19-24% in Panel A if landowners have had the majority at all times compared to when industrialists are always in the majority in a local government. Moreover, the point estimates are strikingly similar across all of the specifications in Panel A, strongly suggesting that the *de jure* political power of landowners is "as if" it is as good as randomly assigned.

Politically powerful landowners have also had other means to create entry barriers that lowered the productivity of competing groups. For example, by reducing spending on primary education, it becomes more difficult for industrial firms to find a suitable supply of labor since spending on primary education affects the pool of educated people. Similarly, by reducing spending on poor relief, it is more difficult for firms to find workers since poor relief basically played the same role as that currently played by unemployment insurance, and the labor supply will be lower if the benefits of unemployed industrial workers are lower. In addition, these policies were economically powerful since primary education and poor relief were both large spending programs since education constituted approximately 40% and poor relief constituted 20% of the total spending of local governments. Tables 3 and 4 report the OLS, LDV and DiD results of primary education and poor relief, respectively. We consider the logs of the dependent variables. Table 3 shows that spending on primary education is reduced by 20-30%,[76] and Table 4 reveals that spending on poor relief is reduced by a similar amount if landowners have had the majority at all times compared to when industrialists always held the majority in a local government. Again, we find similar results for local governments controlled by large (Panel B)

[76] Andersson and Berger (2019), in their cross-sectional analysis using local government data from 1874, come to the opposite result, namely, that politically powerful landowners spend more on education.

and small landowners (Panel C) and that the point estimates are highly similar across all the specifications within each of the panels.

5.2 Labor coercion

In this section, we empirically analyze whether politically powerful landowners used more labor coercion in the agricultural sector. Labor coercion corresponds to policy *g* in the theoretical model in Section 3.

We use two direct measures and two indirect measures of labor coercion as previously discussed. The first direct measure of labor coercion is the type of labor market contract used in the local government, i.e., feudal contracts as determined by the Master and Servant Act or free labor contracts. The second direct measure is the prevalence of corvée labor, i.e., unpaid work or work paid at a very low wage. We apply these direct measures of labor coercion to both larger and smaller farms.

Table 5 presents the OLS, LDV and DiD results of the type of labor market contracts at larger farms, i.e., larger than 100 hectares, while Table 6 displays the results of smaller farms. All estimates in Tables 5 and 6 show that feudal labor market contracts are used at both larger and smaller farms in local governments controlled by both large and small landowners. These estimates are also substantial. For example, in larger farms, the estimate in Panel A in Table 5 ranges between 0.21 and 0.29, suggesting that a local government that has always been controlled by landowners is 21-29% more likely to have feudal labor contracts. Moreover, the estimates are very similar across OLS, LDV and DiD in columns 2-5 in each of the panels, again suggesting that *de jure* political power of landowners is "as if" it is as good as randomly assigned and conditional on taxable income.

Considering the second measure of labor coercion, i.e., the prevalence of corvée labor, we include the following two measures: the average size of tenant farms and the share of arable land cultivated by tenant farmers. We consider the logs of the dependent variables. Again, we have these measures for both larger and smaller farms. Unfortunately, we lack baseline outcomes; thus, we only present the OLS estimates but both with and without controls for taxable income at both the endline and baseline. The results are displayed in Table 7. All estimates, except for the share of arable land cultivated by tenant farmers at larger farms, are significant and positive. Thus, these findings strongly suggest that politically powerful landowners used more corvée labor. The results are also similar for local governments controlled by large (Panel B) and small landowners (Panel C). Again, these estimates are large. For example, the estimated effects in Columns 1-4 in Panel A suggests that the amount of mandatory unpaid work increases by 35-48% for an average-sized tenant farm located in an

area where landowners have had the majority at all times compared to a similar farm but located in an area where industrialists were always in the majority.

The more indirect measures of labor coercion are derived from the fact that the Master and Servant Act prohibited workers from organizing and that most tenant farmers opposed industrialization to the same extent as landowners (e.g., Morell (2001, 2011)). Thus, we can use the prevalence of labor movements as indirect measures of labor coercion as noted above. We constructed the following two indirect measures: the share of unionized workers in 1908 and the share of voters voting for labor parties (e.g., the social democrats) at the general election for the 2nd Chamber in 1911, i.e., the first election in Sweden with universal male suffrage. Table 8 displays the OLS, LDV and DiD results of the share of organized labor in 1908, while Table 9 shows the corresponding results of the share of people voting for labor parties in 1911. Both tables clearly reveal that politically powerful landowners could block labor movements.[77] Again, the results are similar for local governments controlled by large (Panel B) and small landowners (Panel C). The estimates are also substantial. For example, the share of people voting for labor parties is typically reduced by approximately 15 percentage points or more if landowners have had the political majority all the times compared to when industrialists were always in majority in a local government. This must be considered a very large effect given that the average share of left-wing voters is 16%. Similarly, the effects on organized labor are also very large since the mean is 0.007. Thus, the effects in Table 8 are all larger than 100%.

We also present the results for church spending, a third major spending program of local governments. Church spending constituted approximately 25% of the total spending. Table 10 shows that church spending is higher in local governments controlled by landowners. Again, we find similar results for local governments controlled by large (Panel B) and small landowners (Panel C). The finding that church spending is higher in local governments controlled by landowners is also consistent with the hypothesis that politically powerful landowners use more labor coercion since the local clergy constituted an essential part of the old feudal social order as discussed previously. Thus, politically powerful landowners could invest more in the local clergy to be able to better control and coerce their agricultural workers.

[77] In a recent study, with data on Swedish local governments over the same time period, Karadja and Prawitz (2019) showed that emigration (to the U.S.) could affect political factors such as labor movements. Thus, emigration could therefore also be a mediating factor in the relationship between political power and development outcomes in our analysis. To address this issue, we have used their emigration variable as a dependent variable in our OLS, LDV and DiD specifications. The estimated effects are close to zero and not statistically significantly different from zero (see Table A1 in the Appendix). As a result, emigration cannot be an intervening variable in our analysis.

For completeness, we also show the results for total spending. Table 11 reveals that landowners typically spend less than industrialists altogether.

5.3 Real wages

In this section, we empirically analyze whether the structure of real wages was affected by having politically powerful landowners. According to the theoretical model described in Section 3, both higher labor coercion and factor price manipulation should decrease the real wages in the local labor market.

We include data related to the real wages of the following three different types of agricultural labors: casual labors with and without meals and workers contracted by feudal labor contracts. Unfortunately, we lack baseline outcomes; thus, we only present the OLS estimates but both with and without controls. We consider the logs of the dependent variables. Table 12 shows that the wage rate of all types of workers is lower in local governments controlled by landowners. The results are similar for local governments controlled by large (Panel B) and small landowners (Panel C). The estimated effect ranges between -0.06 and -0.10, suggesting that the real wage is reduced by 6-10% if landowners have had the majority all the times compared to when industrialists always held the majority in a local government.

5.4 Technology adoption

In this section, we empirically analyze whether investment in technology by both landowners and industrialists was affected by having politically powerful landowners. The hypothesis is that politically powerful landowners do not need to save on labor since they can use labor coercion instead to holding low wages. Thus, labor coercion should impede technology adoption (e.g., Acemoglu (2010)).[78] Politically powerful landowners can also affect the technology adoption of industrial firms by using factor price manipulation, i.e., blocking the technology adoption of firms (Acemoglu (2006)).

Regarding technology adoption in the agricultural sector, we proxy investment in labor-saving technology using the type of draft animals used, i.e., oxen vs. horses. Historically, oxen are associated with backward agriculture (i.e., labor-intensive), while horses are linked to mechanization in agriculture (Olmstead and Rhode (2008), as noted above. We use the ratio of oxen to horses as our dependent variable. Table 13 shows the results obtained using OLS, LDV and DiD. For all specifications, we find that politically powerful landowners invest much less in labor saving technologies, which is consistent with the interpretation that more labor coercion

[78] Acemoglu (2010) shows that when technologies are (strongly) labor-replacing, low wages discourage technology adoption and development.

leads to lower investments in labor-saving technologies. The results are also similar for local governments controlled by large (Panel B) and small landowners (Panel C).

Considering technology adoption in the industrial sector, we include firm level data related to the technology used in the production process, i.e., electric motors driving manufacturing machinery. We use the share of industrial firms using electric motors (conditional on the local government having at least one industrial firm) as our dependent variable. Table 14 shows the results obtained using OLS, LDV and DiD. All estimates show that firms situated in areas with politically powerful landowners invest much less on new technologies (conditional on having an industrial firm). The results are also similar for local governments controlled by large (Panel B) and small landowners (Panel C). The estimated effect is approximately -0.30 suggesting that the adoption of electric motors is reduced by 30% if landowners have had the majority all the times compared to when industrialists always held the majority in a local government. Thus, this finding is consistent with Acemoglu (2006), who shows that higher barriers to entry lower the adoption of new technologies (i.e., electric motors).

5.5 Land and labor productivity

In this section, we empirically analyze whether land and labor productivity in both the agricultural and industrial sectors are affected by having politically powerful landowners. We should expect to find a positive relationship between political power and productivity in the agricultural sector if landowners use labor coercion since coercion and effort are complements (Acemoglu and Wolitsky (2010)). However, there should be a negative relationship between political power and industrial labor productivity if landowners use factor price manipulation (Acemoglu (2006)).

Table 15 shows the OLS, LDV and DiD results of the log of land productivity. The estimated effect in Panel A ranges from 0.13 to 0.20. Thus, land productivity is higher in areas controlled by landowners, supporting the theoretical results reported by Acemoglu and Wolitsky (2010), who show a positive relationship between coercion and effort. The results are similar for local governments controlled by large (Panel B) and small landowners (Panel C).

Table 16 shows the OLS, LDV and DiD results of agricultural labor productivity in logarithmic form. The results in Table 16 show that labor productivity is higher in areas controlled by landowners, which again is consistent with Acemoglu and Wolitsky (2010). The estimated effects are also large since they range from 0.61 to 1.34. Thus, labor productivity is increased by 61-134% (Panel A) if landowners have had the majority all the times compared to when industrialists always held the majority in a local government. The results are similar for local governments controlled by large (Panel B) and small landowners (Panel C).

Considering labor productivity in the industrial sector, Table 17 displays the OLS results since we lack information regarding the baseline outcomes. We consider the logs of the dependent variable. The estimates in Panel A are -0.48 without controlling for taxable income in 1908, -0.34 when controlling for taxable income in 1908 (Columns 2), and -0.39 when also controlling for taxable income at baseline (Column 3). Thus, labor productivity in industry is decreased by 34-48% if landowners have had the majority all the times compared to when industrialists always held the majority in a local government, strongly suggesting that landowners use factor price manipulation. The results are similar for local governments controlled by large (Panel B) and small landowners (Panel C).

Taken together, the above results strongly suggest that landowners can affect the productivity in agriculture and industry by using both labor coercion and factor price manipulation.

5.6 Structural change

In this section, we empirically analyze whether there is a lack of structural change in the economy in local governments with politically powerful landowners. We would expect such a relationship if politically powerful landowners use inefficient policies such as labor coercion and factor price manipulation to block economic development.

We include the following three measures of structural change: the share of people employed in the agricultural sector, the share of people employed in the industrial sector, and whether the local government has a large industry.

Table 18 shows the OLS, LDV and DiD results of the share of people employed in the agricultural sector. All estimates in Panel A are in the range of 0.20-0.32. Thus, the share of the employed in agriculture is increased by 20-32 percentage points if landowners have had the majority all the times compared to when industrialists always held the majority in a local government. The results are similar for local governments controlled by large (Panel B) and small landowners (Panel C).

Considering the share of people employed in industry, Table 19 shows that all estimates in Panel A are in the range of -0.07 to -0.20. Consequently, the share of the employed in industry is decreased by 7-20 percentage points if landowners have had the majority all the times compared to when industrialists always held the majority in a local government. The results are similar for local governments controlled by large (Panel B) and small landowners (Panel C).

Table 20 shows the results of having a large industrial firm within the local government. We only show the OLS results since we lack information regarding the baseline outcome. The estimates in Panel A are -0.60 without controlling for taxable income in 1908, -0.54 when

controlling for taxable income in 1908 (Columns 2), and -0.59 when also controlling for taxable income at baseline (Column 3). Thus, labor productivity in industry is decreased by 60% if landowners have had the majority all the times compared to when industrialists always held the majority in a local government. The results are similar for local governments controlled by large (Panel B) and small landowners (Panel C).

Taken together, the above results strongly suggest that landowners can affect the structure of the economy by using both labor coercion and factor price manipulation.

5.7 Demographic change

In this section, we empirically analyze whether politically powerful landowners affected the demographic transition of local governments. Again, one could expect that the demographic transition would be affected if landowners are able to block industrialization, economic development and growth. Specifically, we would expect the marriage rate to be negatively affected by labor coercion since the Master and Servant Act made it difficult for a large number of farm workers (i.e., farm hands and maids) to marry and have kids. To save on space, we do not show the results separately for large and small landowners.

Panel A in Table 21 shows the results of the log of the population size. All estimated effects in Panel A are mostly in the range of -0.45 to -0.74. Thus, the population size decreased by 45-74% if landowners have had the majority all the times compared to when industrialists always held the majority in a local government. This finding is thus consistent with the notion that industrialization leads to population growth and urbanization.

Turning to the marriage rate, Panel B displays the results of the log of the share of people married in the adult population. The effect is negative for all specifications and in the range of -0.04 to -0.06, thus lending support that the Master and Servant Act impeded marriage.

Considering fertility, Panel C shows the results of the log of the crude birth rate. All estimated effects are negative and in the range of -0.18 to -0.26. As a result, fertility decreased by 18-26% if landowners have had the majority all the times compared to when industrialists always held the majority in a local government. This is again consistent with the notion that the Master and Servant Act acted as an obstacle to marriage and fertility.

Considering the crude mortality rate, Panel D reveals suggestive evidence that more people died in places controlled by landowners, which is because the share of older people

(65+) was larger in those places.[79] There was, however, little or no effect on infant mortality (Panel E).

6. Captured democracy

In this section, we present the results of the persistence of political institutions and to the extent to which previously politically powerful landowners can capture the political process in local governments even after democratization in 1919 when the one-person one-vote system was introduced.

To reiterate, Acemoglu et al. (2005) argue that the distribution of political power is a key determinant of the evolution of future political institutions. Indeed, Acemoglu and Robinson (2008) develop a more specific model showing that dysfunctional political institutions might persist even if there is significant change in them, such as a switch from a nondemocracy to a democracy. Their argument for a dysfunctional democracy is that the entrenched elite (i.e., landowners) can invest in *de facto* political power that offsets their loss of *de jure* political power. Thus, democracy may be captured by elites.[80]

In this section, we test this prediction of elite capture by running OLS regressions of the following form:

$$(9) \quad Y_i = \alpha + \beta \bar{X}_i + v_i,$$

which is the same OLS regression as (8), but with the important difference that we do not control for taxable income. The reason we do not control for taxable income in the regression is that we would like to estimate the effect of political power that originates from investments in *de facto* power after the loss of landowners' *de jure* power due to the abolishment of the weighted voting system in 1918. Thus, for obvious reasons, we cannot hold taxable income constant if we are interested in the effect of landowners' *de facto* political power on Y_i since income and wealth determines the amount of their *de facto* power as noted previously.

We analyze four outcomes that all should reflect the degree of functionality of a democracy, namely, the type of democracy (i.e., direct or representative), the degree of party competition (i.e., single or multiparty system), voter turnout, and the share of organized citizens.

[79] The estimated effect from an OLS regression of the share of people above 65 on the political power of landowners is 0.02, with a standard error of 0.002. Moreover, we find no effect on the share of people aged 15-65 but a negative effect of -0.02 on the age below 15, with a standard error of 0.004. Thus, places controlled by landowners had relatively more old and young people but similar shares of working age people.

[80] For evidence of elite capture at the local level, for example, see Hinnerich and Pettersson-Lidbom (2014), Anderson, Francois, and Kotwal (2015) and Martinez-Bravo, Mukherjee and Stegmann (2017).

Starting with the type of democracy, this test builds upon the results reported by Hinnerich and Pettersson-Lidbom (2014), who compare the economic outcomes between two types of democracies at the local level, i.e., direct or representative democracy, during the period 1919-1938. As noted above, before 1919, all local governments had direct democracy in the form of town meetings, but after the democratization in 1919, local governments could choose to keep their old type of town meeting form of government or switch to a representative form of government. However, if the population was above 1,500, the local government was required to have representative democracy. Hinnerich and Pettersson-Lidbom (204) exploit this population threshold by using a regression-discontinuity design to test whether these two types of democracies have different economic policies and development outcomes. They find that local governments with representative democracy spend more on social welfare than those with direct democracy. They interpret these results as evidence that landowners are able to capture the political process in direct democracy and that they are therefore able to block industrialization and economic development.[81] Consequently, we expect that a local government that was previously politically controlled by landowners should retain the town meeting form of government after 1919. Thus, we test another link, i.e., the persistence of dysfunctional political institutions, in Acemoglu et al. (2005) 's framework. The dependent variable is defined as an indicator variable that assumes the value of 1 if the local government had town meetings, and zero if it had a representative democracy. Clearly, for this test to make sense, we need to restrict the data to local governments that could choose their own type of democracy, i.e., local governments with a population size below 1,500. We perform this test for the following two different years: the first year after the introduction of universal suffrage, i.e., 1920, and the final year before the change in the population threshold to 700, i.e., 1938. Columns 1 and 2 in Table 22 show the results for 1920 and 1938, respectively. Panel A shows that the effect of political power on the choice of having a direct democracy increased from 0.09 percentage points to 0.22 percentage points during the 1920-38 period, a finding which holds both for large landowners (Panel B) and small landowners (Panel C). Thus, we find that there is high persistence of extractive political institution in areas previously controlled by landowners.

[81] Hinnerich and Pettersson-Lidbom (2017) find that local governments with representative democracy are much more urban and industrialized than those with town meetings. Moreover, they also find that local governments with representative democracy have higher death rates among adults, which is mostly due to the higher incidence of tuberculosis (TB).

Turning to the second measure of the degree of functionality of a democracy, the degree of party competition in the representative system, i.e., an indicator of whether a local government has a single or multiparty system, perhaps somewhat surprisingly, a single-party system is observed in a fairly large number of local elections. For example, in the first election in 1919, 30 percent of the local governments had a one-party system. On average, during 1919-1938, 19 percent of all elections had a single party running uncontested. Columns 3 and 4 in Table 22 show the results for years 1920 and 1938, respectively. The results indicate that the single party system is much more common in areas previously controlled by landowners despite the finding that the effect decreases over time (e.g., the effect decreased from 0.17 percentage points to 0.06 in Panel A). The results also hold for large and small landowners. Again, these results suggest that previously politically powerful landowners invest in *de facto* political power in order to capture the political process in the representative system after democratization.

Our third measure of the degree of functionality of a democracy is voter turnout in local elections in 1919 and 1934; columns 5 and 6 in Table 22 display these results, respectively. The estimated effect ranges from -0.06 to -0.08. Thus, voter turnout was 6 to 8 percentage points lower in local governments where landowners historically were in control as compared to local governments were industrialists had all the power. These effects are substantial since the average voter turnout was 50% in 1919 and 58% in 1934. Again, these results suggest that previously politically powerful landowners invest in *de facto* political power in order to reduce voter participation.

Finally, as the fourth measure of the degree of functionality of a democracy, we analyze how well citizens are organized at the local level by using the share of the population that belongs to a social movement (i.e., labor unions, temperance lodges and free churches). According to this measure, the percentage of organized citizens was nearly 9 percent during the period 1919-1938. Columns 7 and 8 in Table 22 display these results. The estimated effects are around -0.06 in 1919 and -0.13 in 1938. Consequently, the share of organized citizens was much lower (70%-140%) in local governments where landowners always were in control as compared to local governments were industrialists always held all the power.

Taken together, the results of this section strongly suggest that previously politically powerful landowners can capture the political process, even a long time after democratization, by exercising their superior *de facto* political power along the lines of Acemoglu et al. (2005) and Acemoglu and Robinson (2008).

7. Case Study Evidence

In this section, we describe in detail how a single landowner could completely block economic development by exercising political power at town meetings and by using both labor coercion and factor price manipulation. We base this discussion on the work by Nyström (2003), who investigates the local government of Bjurum.

In 1892, Bjurum had 609 inhabitants, but only 17 were entitled to vote. The total sum of votes for the eligible voters was 3,187, while 3,152 votes originated from landownership. Thus, the vote share of landowners in Bjurum was 98%. Moreover, one landowning family, the Jönsson family, had 2,664 votes; consequently, the Jönsson family had full political control, i.e., 84% of the vote share, over Bjurum. In addition, the head of the Jönsson family held all important political positions, including the chairmanship in town meetings, in Bjurum. In fact, the Jönsson family was even able to hold the chairman position until 1952, i.e., the year in which the town meeting form of government was abolished by the Swedish central government. Thus, this evidence strongly suggests that having a town meeting form of government after the 1919 democratization of Sweden made it possible for the Jönsson family to exercise its *de facto* political power to block economic development, as discussed by Hinnerich and Pettersson-Lidbom (2014, 2017).

The Jönsson family also exercised its *de jure* political power at town meetings before the introduction of universal suffrage in 1919. For example, the family never built or invested in any local railways despite having a long way to transport its heavy goods (e.g., very large liquor barrels) to the closest state-owned railway station. Instead, tenant farmers were required to transport these heavy goods to the railway station as part of their corvée labor obligations, as noted previously.[82] Another revealing example of how the Jönsson family exercised its *de jure* political power at town meetings is from 1895. It was then decided that the summer vacation in primary school (ages 7-14) would be shortened by 14 days and that those children should instead have a vacation of 45 days so that they could help with both the potato harvest and planting.

The Jönsson family could also block economic development by using labor coercion in the agricultural sector and manipulating factor prices to keep agricultural wages very low. The family had made its economic fortune by growing potatoes that were used for liquor production. Potatoes were an extremely labor-intensive crop and therefore highly sensitive to the rising

[82] That most Swedish landowners were against railway construction has also been extensively documented by Mellquist (1971), as discussed in section 2.4. However, in those cases, the landowners could not block the railways, despite significantly outnumbering the industrialists, since they did not have enough combined votes.

wages caused by industrialization. Thus, the economic prosperity of the Jönsson family depended on having a reliable supply of cheap labor. To that end, it used an agricultural production system based on labor coercion where it used both corvée labor and contracted laborers.[83] The labor contracts were governed by the feudal Master and Servant Act, as discussed earlier. The contracted workers performed approximately 15% of the total work on the Jönsson family farm, while tenant farmers and their families performed most of the other work. In 1872, there were approximately 65 tenant farmers, many of whom were required to work 5 days per week without being paid, i.e., corvée labor. In addition, they provided a total of more than 14,000 extra working days that were paid considerably below the market wage in the surrounding areas.[84] The number of extra days demanded by the Jönsson family also increased over time. Figure 7 clearly shows that the Jönsson family could manipulate factor prices since it could keep the wages that it paid for these extra days almost constant over the period 1887-1916 even though the agricultural wages of many other rural areas were strongly affected by industrialization. This finding, however, is not surprising since the Jönsson family had complete monopsony power in the local labor market of Bjurum. Moreover, it made extensive use of the tenant farm system, which effectively stopped any out-migration of agricultural labor from Bjurum. Another interesting fact is that the potato production process did not begin to be mechanized in Bjurum until the late 1920s,[85] which is not surprising since the cost of labor could be kept low via labor coercion and factor price manipulation.

In conclusion, the local government of Bjurum can be characterized as a "labor-intensive, low-wage, low-education and repressive economy".[86]

8. Conclusion

This paper provides a novel explanation of Sweden's long-term economic development based on a political economics framework developed by Acemoglu, Johnson and Robinson (2005). The point of departure for the analysis is that in the beginning of the 19th century, Sweden was a feudal society (i.e., mainly a system of labor coercion) with a labor-repressive agricultural system and in which landowners controlled all political power. Moreover, a social conflict existed between landowners and industrialists regarding the institutional organization of the

[83] Contracted workers were employed by the year and included both married ("statare") and unmarried farm hands ("drängar").
[84] These extra days were typically not performed by the family head in the leasehold but by unskilled agricultural workers such as sons, farm hands, daughters, farm maidens, wives or children.
[85] Another illustrating fact of the economic backwardness of Bjurum is that oxen rather than horses were used as draught animals.
[86] Acemoglu and Robinson (2006, p. 326) use this description of the US South after the Civil War.

labor market. Specifically, landowners preferred having feudal labor market institutions so that they could coerce and control their labor force at all times, while industrialists favored more free labor markets. As a result of this social conflict over economic institutions, i.e., the type of labor market, Acemoglu et al. (2005) argue that landowners should oppose industrialization, economic development and growth out of fear of losing both their future economic and political power.

We test this hypothesis by exploiting a suffrage reform in 1862/63 that extended voting rights to industrialists at the local government level. Consistent with the social conflict view of economic institutions, we find that landowners tried to block technological change and economic development in local governments where they could retain their political control after the suffrage reform. Specifically, we show that politically powerful landowners tried to directly coerce their labor along the lines suggested by Acemoglu and Wolitsky (2011) and to manipulate factor prices as a means of indirectly controlling their labor, as discussed by Acemoglu (2006). We also find that there was high persistence in both extractive economic and political institutions even after Sweden democratized and introduced universal suffrage in 1919 in local governments previously controlled by politically powerful landowners.

Taken together, the above findings strongly suggest that changes in local political and economic institutions played a key role in the Swedish growth miracle, i.e., transforming Sweden from one of the poorest countries in Europe in the mid-19th century to one of the richest countries worldwide in the 1960s.

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Figure 1. Number of votes in the local government of Ytterlännäs

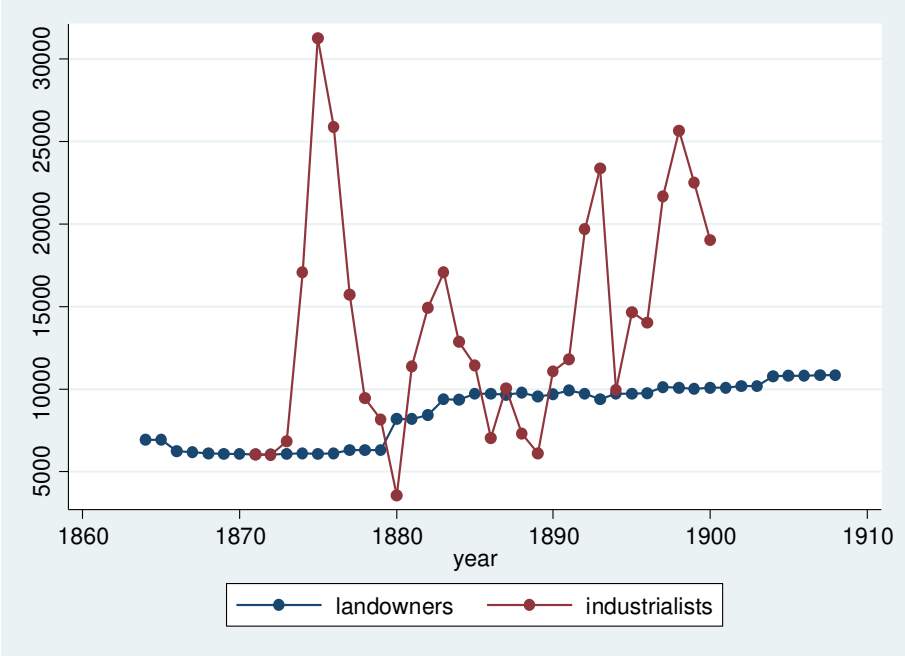


Figure 2. Total number of votes (million)

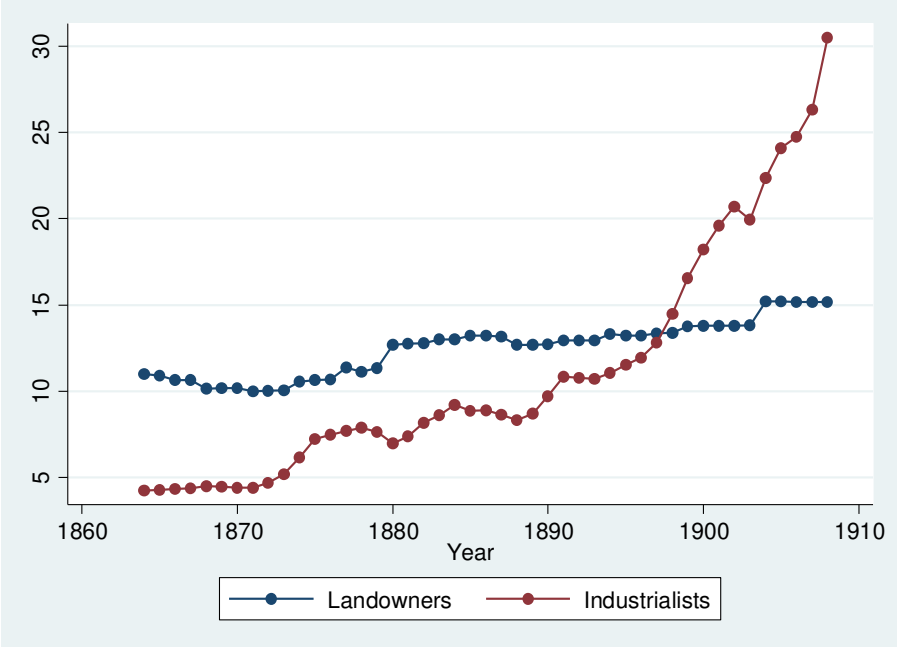


Figure 3. Length of state and local railway networks

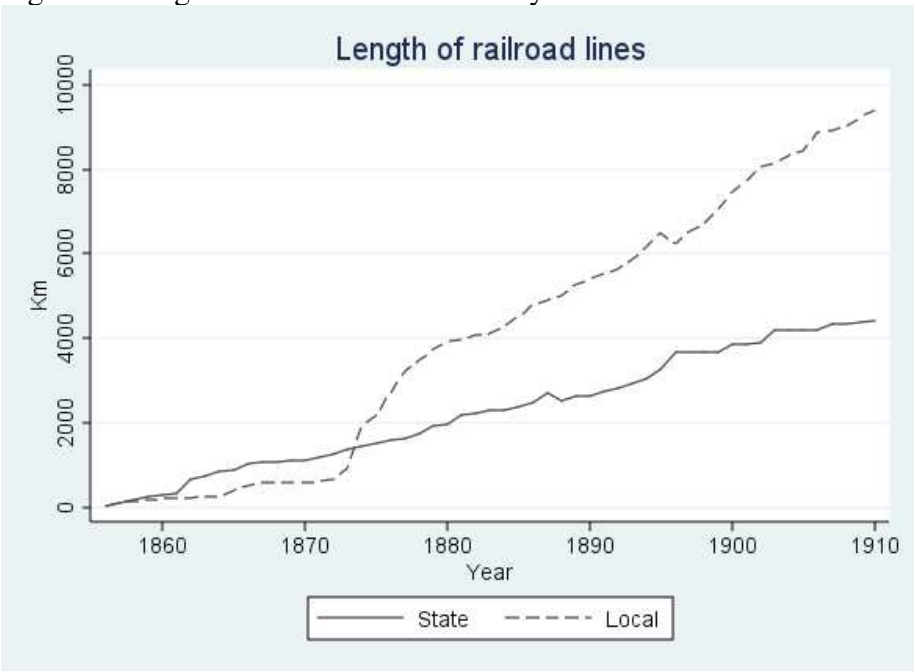


Figure 4. Number of local governments with a local railway line, 1862-1908

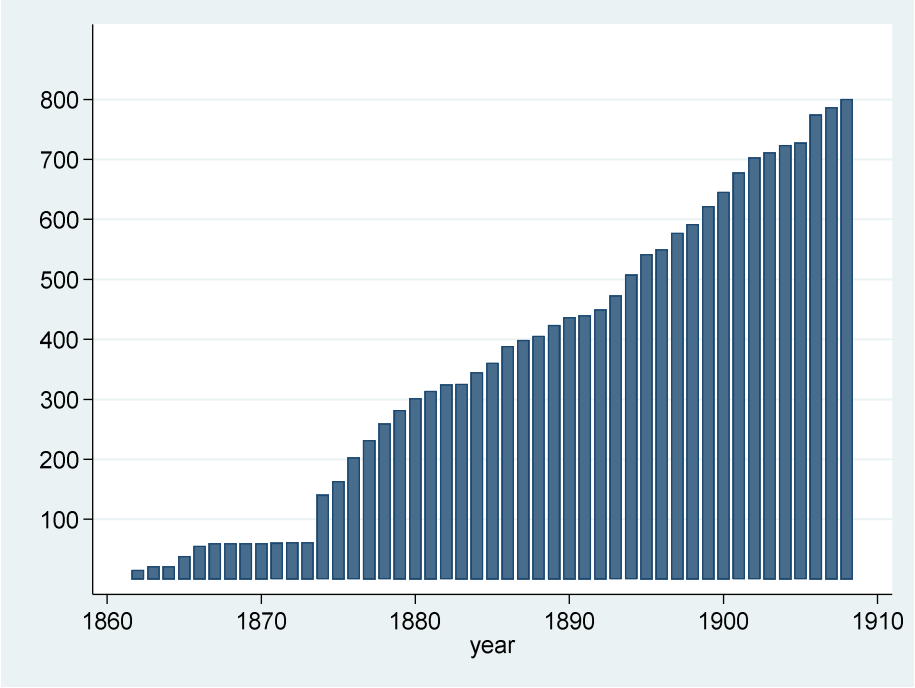
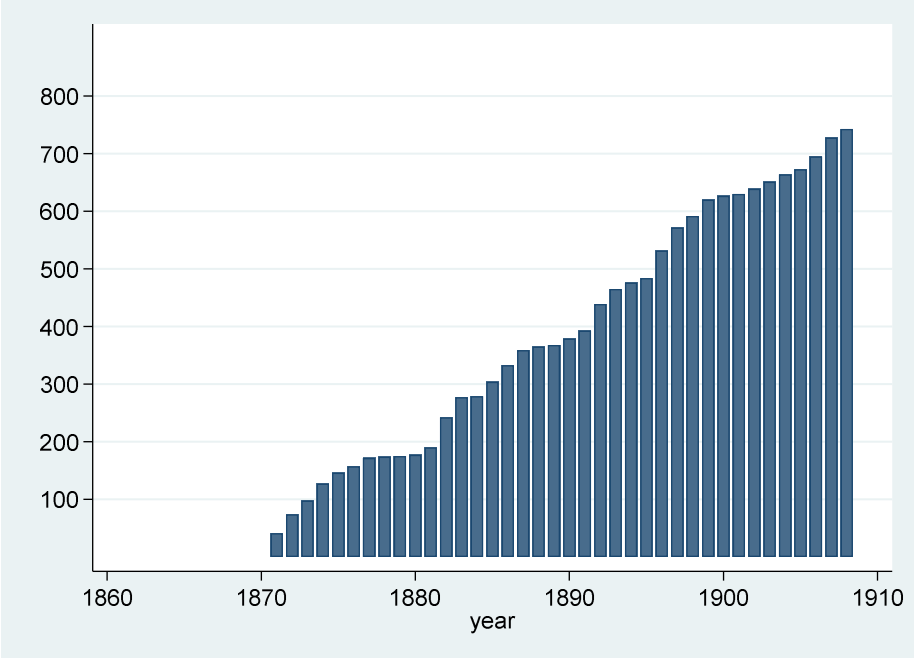


Figure 5. Number of local governments with a railway loan, 1870-1908



Note: Data before 1870 are missing

Figure 6. The distribution of the average majority of landowners

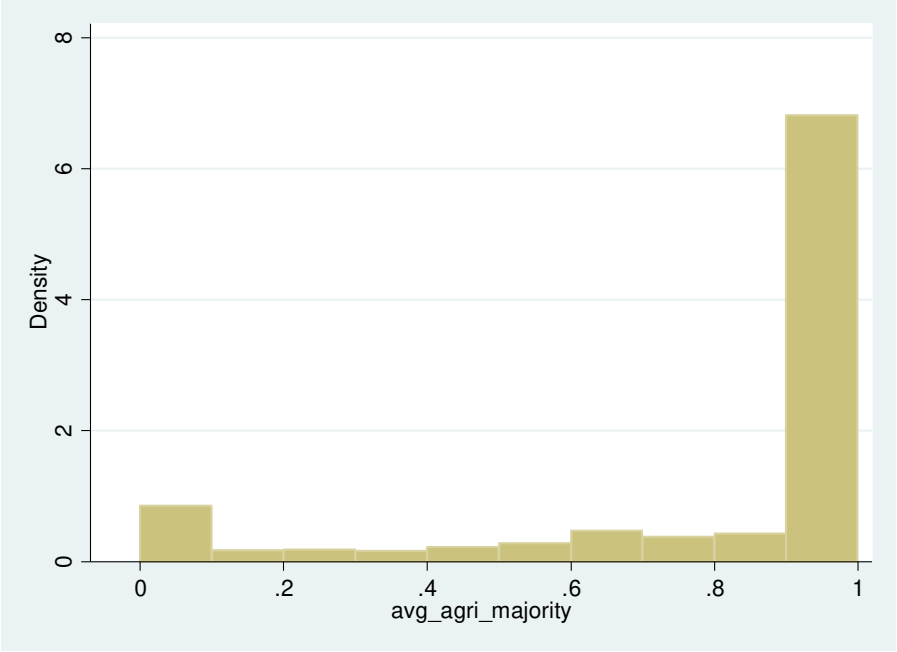
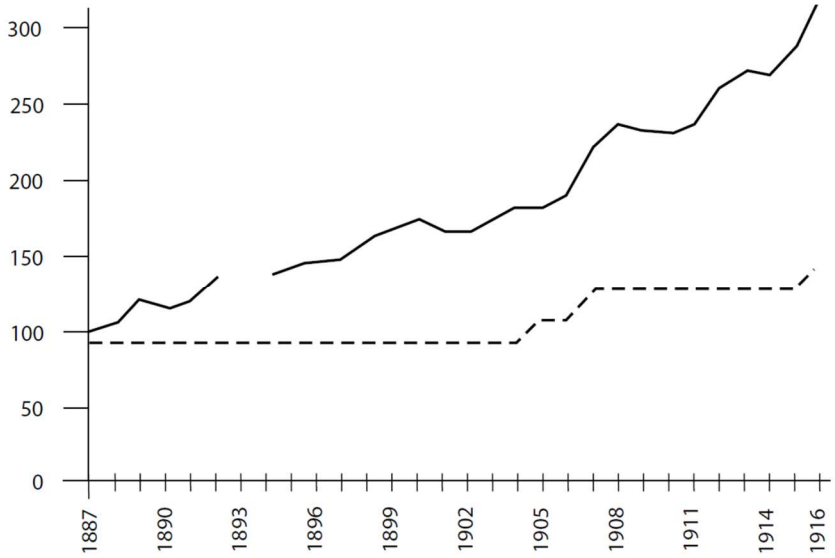


Figure 7. Nominal wages of casual agricultural laborers, 1887-1916



Notes: The dotted line shows the nominal wages (in terms of "ören") paid by the Jönsson family, while the solid line shows the average wage in the surrounding areas.

Table 1a. Endline outcomes (circa 1908)

Variables	Mean	St. Dev.	Min	Max	Obs.
Political power of landowners					
Average majority status: 1864-1908	0.81	0.31	0	1	2,354
Economic policies of local governments					
Railways lines (=1)	0.33	0.47	0	1	2,354
Education spending per capita	5.4	3.8	0	55.3	2,214
Poor relief spending per capita	2.6	2.3	0	38.1	2,380
Church spending per capita	3.0	3.4	0	80.1	2,235
Total spending per capita	12.8	7.6	0.95	98.7	2,180
Labor coercion in the agricultural sector					
Feudal labor contracts: large landowners	0.45	0.50	0	1	1,246
Feudal labor contracts: small landowners	0.54	0.50	0	1	1,605
Tenancy rates: large landowners	0.52	0.18	0.005	1	1,100
Tenancy rates: small landowners	0.14	0.12	0.0005	1	2,267
Average tenant farm size: large landowners	20.3	34.6	0.8	619	1,109
Average tenant farm size: small landowners	10.3	9.1	0.5	99	2,266
Labor movements					
Share of organized labor	0.007	0.03	0	0.93	2,354
Share of left-wing voters 1911	0.16	0.20	0	0.90	2,351
Outcomes in the agricultural sector					
Daily real wage of casual laborers (summer + winter)	2.70	0.43	1.52	4.64	1,988
Daily real wage of casual laborers with meals (summer + winter)	1.82	0.35	0.80	3.25	1,891
Yearly real wage of contract workers	341	65	3	839	1,404
Share of employment	0.62	0.16	0.02	0.95	2,307
Labor productivity: per worker	1,011	693	1.3	6,399	2,091
Land productivity	281	128	0	732	2,205
Labor-saving technology: ratio of oxen to horses	0.21	0.37	0	3.21	2,304
Outcomes in the industrial sector					
Share of employment	0.12	0.09	0	0.60	2,320
Manufacturing activity of larger firms	0.51	0.50	0	1	2,354
Labor productivity: per worker	4,762	7,353	0	137,324	1,223
Technology adoption: share of firms with electric motors	0.22	0.33	0	1	1,223
Demographic outcomes					
Population size	1,653	1,841	118	21,436	2,354
Share of married people	0.49	0.05	0.34	0.66	2,307
Crude birth rate	0.023	0.007	0	0.058	2,327
Crude mortality rate	0.015	0.005	0.002	0.051	2,328
Infant mortality rate	0.075	0.075	0	0.75	2,305

Table 1b. Baseline outcomes (circa 1862)

Variables	Mean	St.Dev.	Min	Max	Obs.
Political power of landowners					
Average majority status before 1864	1	1	0	1	2,354
Economic policies of local governments					
Railways lines (=1)	0.006	0.07	0	1	2,354
Education spending per capita	1.69	0.97	0	11	2,155
Poor relief spending per capita	1.11	0.63	0	10	2
Church spending per capita	2.05	1.58	0	22	2,237
Total spending per capita	5.40	2.56	0	28	2,128
Labor coercion in the agricultural sector					
Feudal labor contracts: large landowners	1	0	1	1	2,354
Feudal labor contracts: small landowners	1	0	1	1	2,354
Labor movements					
Share of organized labor	0	0	0	0	2,354
Share of left-wing voters	0	0	0	0	2,354
Outcomes in the agricultural sector					
Share of employment	0.67	0.12	0	0.97	1,529
Labor productivity: per worker	99	71	0	774	2,122
Land productivity	165	206	0	7,526	1,967
Labor-saving technology: ratio of oxen to horses	1.41	1.63	0.00	21.84	2,116
Outcomes in the industrial sector					
Share of employment	0.04	0.05	0	0.76	1,529
Technology adoption: share of firms with electric motors	0	0	0	0	2,354
Demographic outcomes					
Population size	1,439	1,281	123	1,6217	2,328
Share of married people	0.34	0.03	0.22	0.69	2,092
Crude birth rate	0.06	0.01	0.02	0.11	2,328
Crude mortality rate	0.019	0.006	0.002	0.082	2,257
Infant mortality rate	0.127	0.057	0	0.55	2,302

Table 2. Factor price manipulation: infrastructure investments in local railways

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
	Panel A. All local governments				
Political power of landowners	-0.24***	-0.20***	-0.19***	-0.19***	-0.19***
	(0.03)	(0.04)	(0.04)	(0.04)	(0.05)
	Panel B. Local governments controlled by large landowners				
Political power of landowners	-0.34***	-0.28***	-0.29***	-0.30***	-0.24***
	(0.04)	(0.05)	(0.05)	(0.05)	(0.06)
	Panel C. Local governments controlled by small landowners				
Political power of landowners	-0.10**	-0.07	-0.07	-0.07	-0.08
	(0.05)	(0.07)	(0.07)	(0.07)	(0.07)
Observations in Panel A	2,354	2,354	2,078	2,078	2,078
Observations in Panel B	1,346	1,346	1,198	1,198	1,198
Observations in Panel C	1,180	1,180	880	880	880

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is an indicator variable taking the value 1 if the local government has a local railway in 1908, and the baseline is from 1862. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 3. Factor price manipulation: spending on primary education

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
	Panel A. All local governments				
Political power of landowners	-0.32***	-0.23***	-0.24***	-0.21***	-0.17***
	(0.03)	(0.04)	(0.04)	(0.05)	(0.06)
	Panel B. Local governments controlled by large landowners				
Political power of landowners	-0.32***	-0.21***	-0.24***	-0.21***	-0.16**
	(0.04)	(0.05)	(0.05)	(0.05)	(0.08)
	Panel C. Local governments controlled by small landowners				
Political power of landowners	-0.30***	-0.24***	-0.23***	-0.22***	-0.23**
	(0.05)	(0.06)	(0.07)	(0.08)	(0.10)
Observations in Panel A	2,176	2,176	1,926	1,809	1,809
Observations in Panel B	1,223	1,223	1,223	1,031	1,031
Observations in Panel C	953	953	833	778	778

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the log of per capita spending on primary education in 1908, and the baseline is from 1874. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 4. Factor price manipulation: spending on poor relief

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
	Panel A. All local governments				
Political power of landowners	-0.32***	-0.18***	-0.22***	-0.26***	-0.27***
	(0.04)	(0.05)	(0.05)	(0.05)	(0.07)
	Panel B. Local governments controlled by large landowners				
Political power of landowners	-0.35***	-0.27***	-0.27***	-0.29***	-0.26***
	(0.06)	(0.07)	(0.07)	(0.07)	(0.10)
	Panel C. Local governments controlled by small landowners				
Political power of landowners	-0.27***	-0.07	-0.14*	-0.21***	-0.30***
	(0.06)	(0.07)	(0.07)	(0.07)	(0.11)
Observations in Panel A	2,344	2,344	2,069	2,021	2,021
Observations in Panel B	1,340	1,340	1,192	1,167	1,167
Observations in Panel C	1,004	1,004	877	854	854

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the log of per capita spending on poor relief in 1908, and the baseline is from 1874. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 5. Labor coercion: having feudal labor contracts at larger farms (>100 hectare)

		OLS		LDV	DiD
	(1)	(2)	(3)	(4)	(5)
		Panel A. All local governments			
Political power of landowners	0.29***	0.23***	0.21***	0.21***	0.22***
	(0.04)	(0.05)	(0.06)	(0.05)	(0.05)
		Panel B. Local governments controlled by large landowners			
Political power of landowners	0.33***	0.28***	0.25***	0.25***	0.25***
	(0.05)	(0.06)	(0.07)	(0.07)	(0.06)
		Panel C. Local governments controlled by small landowners			
Political power of landowners	0.20***	0.16*	0.11	0.11	0.12
	(0.08)	(0.09)	(0.10)	(0.10)	(0.10)
Observations in Panel A	1,236	1,236	1,121	1,121	1,121
Observations in Panel B	818	818	739	739	739
Observations in Panel C	418	418	382	382	382

Notes: Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is a dummy variable for having feudal labor contracts in the agricultural sector in 1924 and the baseline outcome is from 1862. The baseline outcome is 1 since all local governments had exactly the same feudal labor contracts in 1862. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 6. Labor coercion: having feudal labor contracts at smaller farms (<100 hectare)

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
	Panel A. All local governments				
Political power of landowners	0.17***	0.13**	0.12**	0.12**	0.14**
	(0.04)	(0.05)	(0.06)	(0.06)	(0.06)
	Panel B. Local governments controlled by large landowners				
Political power of landowners	0.17**	0.14**	0.13*	0.13*	0.14*
	(0.05)	(0.06)	(0.08)	(0.08)	(0.07)
	Panel C. Local governments controlled by small landowners				
Political power of landowners	0.19***	0.18**	0.13	0.13	0.15*
	(0.07)	(0.07)	(0.09)	(0.09)	(0.09)
Observations in Panel A	1,588	1,588	1,434	1,434	1,434
Observations in Panel B	891	891	805	805	805
Observations in Panel C	697	697	629	629	629

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is a dummy variable for having feudal labor contracts in the agricultural sector in 1924 and the baseline outcome is from 1862. The baseline outcome is 1 since all local governments had exactly the same feudal labor contracts in 1862. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 7. Labor coercion: the prevalence of corvée labor at both larger and smaller farms

	Average size of tenant farms				Share of land cultivated by tenant farmers			
	Larger farms		Smaller Farms		Larger farms		Smaller farms	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A. All local governments							
Political power of landowners	0.45***	0.35***	0.47***	0.48***	0.07	-0.12	0.27***	0.34**
	(0.11)	(0.15)	(0.06)	(0.08)	(0.12)	(0.17)	(0.07)	(0.10)
	Panel B. Local governments controlled by large landowners							
Political power of landowners	0.41***	0.40***	0.54***	0.55***	0.00	-0.04	0.19**	0.34***
	(0.12)	(0.16)	(0.07)	(0.10)	(0.14)	(0.17)	(0.09)	(0.13)
	Panel C. Local governments controlled by small landowners							
Political power of landowners	0.49**	0.29	0.41***	0.38***	0.28	0.29	0.41***	0.38**
	(0.22)	(0.27)	(0.09)	(0.12)	(0.26)	(0.27)	(0.11)	(0.12)
Controls for taxable income	No	Yes	No	Yes	No	Yes	No	Yes
Observations in Panel A	1,103	1,005	2,220	1,946	1,107	1,008	2,232	1,987
Observations in Panel B	860	786	1,260	1,132	862	788	1,267	1,138
Observations in Panel C	243	219	960	844	245	219	965	844

Notes: Each entry is a separate regression. Columns with odd numbers include no control variables, while those with even numbers include taxable income for both landowners and industrialists both at the baseline and endline. The dependent variable in columns 1-4 is the log of the average size of tenant farms in 1919, and in columns 5-8, it is the log of the share of land cultivated by tenant farmers in 1919. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 8. Labor coercion: the share of workers in labor unions in 1908

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
	Panel A. All local governments				
Political power of landowners	-0.029***	-0.021***	-0.022***	-0.022***	-0.023***
	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)
	Panel B. Local governments controlled by large landowners				
Political power of landowners	-0.036***	-0.030***	-0.031***	-0.031***	-0.030***
	(0.005)	(0.006)	(0.007)	(0.007)	(0.007)
	Panel C. Local governments controlled by small landowners				
Political power of landowners	-0.019***	-0.09***	-0.010**	-0.010**	-0.011**
	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)
Observations in Panel A	2,334	2,334	2,077	2,077	2,077
Observations in Panel B	1,332	1,332	1,198	1,198	1,198
Observations in Panel C	1,002	1,002	879	879	879

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the share of workers in labor unions in 1908, and the baseline is from 1862. The baseline outcome is 0 since there were no labor unions in 1862. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 9. Labor coercion: the share of left-wing voters in the general election in 1911

		OLS		LDV	DiD
	(1)	(2)	(3)	(4)	(5)
			Panel A. All local governments		
Political power of landowners	-0.23***	-0.16***	-0.15***	-0.15***	-0.13***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
			Panel B. Local governments controlled by large landowners		
Political power of landowners	-0.26***	-0.20***	-0.20***	-0.20***	-0.16***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
			Panel C. Local governments controlled by small landowners		
Political power of landowners	-0.17***	-0.09***	-0.08***	-0.08***	-0.06***
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Observations in Panel A	2,316	2,316	2,061	2,061	2,061
Observations in Panel B	1,322	1,322	1,190	1,190	1,190
Observations in Panel C	994	994	871	871	871

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the share of voters voting for left-wing parties in the general election in 1911, and the baseline is from 1862. The baseline outcome is 0 since there were no left-wing parties in 1862. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 10. Labor coercion: spending on the local clergy

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
			Panel A. All local governments		
Political power of landowners	0.19***	0.17***	0.17***	0.17***	0.21*
	(0.04)	(0.04)	(0.05)	(0.05)	(0.12)
			Panel B. Local governments controlled by large landowners		
Political power of landowners	0.20***	0.19***	0.21***	0.19***	0.00
	(0.05)	(0.05)	(0.06)	(0.06)	(0.16)
			Panel C. Local governments controlled by small landowners		
Political power of landowners	0.19***	0.16***	0.16**	0.18***	0.49***
	(0.05)	(0.04)	(0.04)	(0.04)	(0.17)
Observations in Panel A	2,193	2,193	1,947	1,820	1,820
Observations in Panel B	1,234	1,234	1,105	1,022	1,022
Observations in Panel C	959	959	842	798	798

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the log of per capita spending on church in 1908, and the baseline is from 1874. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 11. Total spending

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
	Panel A. All local governments				
Political power of landowners	-0.19***	-0.11***	-0.12***	-0.11***	-0.07
	(0.03)	(0.03)	(0.04)	(0.04)	(0.05)
	Panel B. Local governments controlled by large landowners				
Political power of landowners	-0.20***	-0.12***	-0.11**	-0.12***	-0.12*
	(0.04)	(0.04)	(0.05)	(0.05)	(0.07)
	Panel C. Local governments controlled by small landowners				
Political power of landowners	-0.17***	-0.09*	-0.12***	-0.07	0.00
	(0.05)	(0.05)	(0.06)	(0.06)	(0.08)
Observations in Panel A	2,154	2,154	1,905	1,784	1,784
Observations in Panel B	1,212	1,212	1,082	1,017	1,017
Observations in Panel C	942	942	823	767	767

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the log of total per capita spending in 1908, and the baseline is from 1874. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 12. Real wages of three different types of agricultural labors

	Casual labors with meals		Casual labors without meals		Workers with feudal contracts	
	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A. All local governments			
Political power of landowners	-0.10***	-0.10***	-0.06***	-0.07***	-0.06***	-0.05*
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)
			Panel B. Local governments controlled by large landowners			
Political power of landowners	-0.08***	-0.09***	-0.06***	-0.06**	-0.07**	-0.06**
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
			Panel C. Local governments controlled by small landowners			
Political power of landowners	-0.12***	-0.10***	-0.08***	-0.08***	-0.05	-0.03
	(0.02)	(0.03)	(0.02)	(0.03)	(0.04)	(0.04)
Controls for taxable income	No	Yes	No	Yes	No	Yes
Observations in Panel A	1,873	1,676	1,966	1,757	1,400	1,288
Observations in Panel B	1,007	908	1,149	1,037	1,041	950
Observations in Panel C	866	768	817	720	359	338

Notes: Each entry is a separate regression. Columns with odd numbers include no control variables, while those with even numbers include taxable income for both landowners and industrialists both at the baseline and endline. The dependent variable is the log of the real wage. The local wage data is from 1914, and the local price index is from 1919. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 13. Technology adoption in the agricultural sector: labor saving technology as proxied by the ratio of oxen to horses

		OLS		LDV	DiD
	(1)	(2)	(3)	(4)	(5)
		Panel A. All local governments			
Political power of landowners	0.15***	0.13***	0.12***	0.10***	0.16
	(0.02)	(0.02)	(0.03)	(0.02)	(0.13)
		Panel B. Local governments controlled by large landowners			
Political power of landowners	0.11***	0.09***	0.08***	0.06*	0.10
	(0.03)	(0.03)	(0.03)	(0.03)	(0.15)
		Panel C. Local governments controlled by small landowners			
Political power of landowners	0.18***	0.18***	0.17***	0.17***	0.17
	(0.03)	(0.03)	(0.04)	(0.04)	(0.26)
Observations in Panel A	2,271	2,271	2,026	1,861	1,861
Observations in Panel B	1,292	1,292	1165	1,070	1,070
Observations in Panel C	979	979	861	861	791

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the ratio of oxen to horses in 1917, and the baseline is from 1858. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 14. Technology adoption in the industrial sector: the share of firms having an electric motor in the production process

		OLS		LDV	DiD
	(1)	(2)	(3)	(4)	(5)
		Panel A. All local governments			
Political power of landowners	-0.33***	-0.27***	-0.28***	-0.28***	-0.28***
	(0.02)	(0.03)	(0.04)	(0.04)	(0.03)
		Panel B. Local governments controlled by large landowners			
Political power of landowners	-0.35***	-0.30***	-0.31***	-0.31***	-0.30***
	(0.03)	(0.04)	(0.05)	(0.05)	(0.04)
		Panel C. Local governments controlled by small landowners			
Political power of landowners	-0.29***	-0.22***	-0.24***	-0.24***	-0.25***
	(0.04)	(0.04)	(0.06)	(0.06)	(0.06)
Observations in Panel A	1,192	1,192	1,036	1,036	1,036
Observations in Panel B	707	707	619	619	619
Observations in Panel C	485	485	417	417	417

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the share of firms having an electric motor in the production process in 1914, and the baseline is from 1862. The baseline is 0 for all local governments since the electric motor had not yet been invented in 1862. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 15. Land productivity

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
			Panel A. All local governments		
Political power of landowners	0.13***	0.17***	0.14***	0.14***	0.20***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.05)
			Panel B. Local governments controlled by large landowners		
Political power of landowners	0.10***	0.13***	0.02	-0.01	0.18***
	(0.03)	(0.06)	(0.04)	(0.05)	(0.07)
			Panel C. Local governments controlled by small landowners		
Political power of landowners	0.18***	0.23***	0.25***	0.29***	0.25***
	(0.04)	(0.05)	(0.06)	(0.07)	(0.10)
Observations in Panel A	2,300	2,300	2,052	1,751	1,751
Observations in Panel B	1,318	1,318	1,184	1,038	1,038
Observations in Panel C	982	982	808	713	713

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is land productivity per hectare in 1914, and the baseline is from 1858. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 16. Labor productivity in the agricultural sector

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
			Panel A. All local governments		
Political power of landowners	1.34***	1.14***	1.15***	0.86***	0.61***
	(0.06)	(0.07)	(0.08)	(0.07)	(0.07)
			Panel B. Local governments controlled by large landowners		
Political power of landowners	1.48***	1.20***	1.09***	0.72***	0.54***
	(0.08)	(0.08)	(0.10)	(0.10)	(0.10)
			Panel C. Local governments controlled by small landowners		
Political power of landowners	1.17***	1.07***	1.12***	0.92***	0.68***
	(0.07)	(0.10)	(0.11)	(0.11)	(0.11)
Observations in Panel A	2,075	2,075	1,851	1,710	1,710
Observations in Panel B	1,193	1,193	1,071	998	998
Observations in Panel C	882	882	780	712	712

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is land productivity per hectare in 1914, and the baseline is from 1858. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 17. Labor productivity in the industrial sector

	OLS		
	(1)	(2)	(3)
	Panel A. All local governments		
Political power of landowners	-0.48***	-0.34***	-0.39***
	(0.06)	(0.06)	(0.08)
	Panel B. Local governments controlled by large landowners		
Political power of landowners	-0.53***	-0.44***	-0.50***
	(0.07)	(0.08)	(0.10)
	Panel C. Local governments controlled by small landowners		
Political power of landowners	-0.39***	-0.22**	-0.22
	(0.10)	(0.10)	(0.13)
Observations in panel A	1,190	1,190	1,035
Observations in panel B	705	705	618
Observations in panel C	485	485	417

Notes: Each entry is a separate regression. Column 1 includes no control variables. Column 2 includes taxable income for both landowners and industrialists at the endline. Column 3 also includes taxable income at the baseline. The dependent variable is the log of labor productivity in 1914. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 18. Structural change: the share of workers in the agricultural sector

		OLS		LDV	DiD
	(1)	(2)	(3)	(4)	(5)
		Panel A. All local governments			
Political power of landowners	0.32***	0.27***	0.28***	0.25***	0.20***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
		Panel B. Local governments controlled by large landowners			
Political power of landowners	0.34***	0.28***	0.29***	0.29***	0.21***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
		Panel C. Local governments controlled by small landowners			
Political power of landowners	0.28***	0.24***	0.26***	0.21***	0.20***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Observations in Panel A	2,276	2,276	2,035	1,361	1,361
Observations in Panel B	1,299	1,299	1,170	797	797
Observations in Panel C	977	977	865	564	564

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the share of agricultural workers in 1910, and the baseline is from 1855. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 19. Structural change: the share of workers in the industrial sector

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
			Panel A. All local governments		
Political power of landowners	-0.18***	-0.15***	-0.13***	-0.13***	-0.08***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
			Panel B. Local governments controlled by large landowners		
Political power of landowners	-0.20***	-0.17***	-0.16***	-0.17***	-0.10***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
			Panel C. Local governments controlled by small landowners		
Political power of landowners	-0.14***	-0.11***	-0.10***	-0.07***	-0.07***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
Observations in Panel A	2,276	2,276	2,035	1,361	1,361
Observations in Panel B	1,299	1,299	1,170	797	797
Observations in Panel C	977	977	865	564	564

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. The dependent variable is the share of industrial workers in 1910, and the baseline is from 1855. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 20. Structural change: having a large industry

	OLS		
	(1)	(2)	(3)
	Panel A. All local governments		
Political power of landowners	-0.60***	-0.54***	-0.59***
	(0.03)	(0.03)	(0.04)
	Panel B. Local governments controlled by large landowners		
Political power of landowners	-0.61***	-0.57***	-0.57***
	(0.03)	(0.04)	(0.05)
	Panel C. Local governments controlled by small landowners		
Political power of landowners	-0.58***	-0.49***	-0.62***
	(0.05)	(0.05)	(0.06)
Observations in panel A	2,354	2,354	2,078
Observations in panel B	1,346	1,346	1,198
Observations in panel C	1,008	1,008	880

Notes: Each entry is a separate regression. Column 1 includes no control variables. Column 2 includes taxable income for both landowners and industrialists at the endline. Column 3 also includes taxable income at baseline. The dependent variable is a dummy variable for whether a local government has large firm in 1914. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 21. Demographic change

	OLS			LDV	DiD
	(1)	(2)	(3)	(4)	(5)
		Panel A. Population size			
Political power of landowners	-1.25***	-0.77***	-0.69***	-0.45***	-0.46***
	(0.05)	(0.04)	(0.06)	(0.04)	(0.04)
		Panel B. Share of people married in the adult population			
Political power of landowners	-0.05***	-0.04***	-0.03***	-0.03***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
		Panel C. Crude birth rate			
Political power of landowners	-0.26***	-0.18***	-0.21***	-0.22***	-0.21***
	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
		Panel D. Crude mortality rate			
Political power of landowners	0.05**	0.04	0.05	0.05*	0.07**
	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)
		Panel E. Infant mortality rate			
Political power of landowners	-0.011***	-0.01	0.00	-0.01	-0.01
	(0.004)	(0.01)	(0.01)	(0.01)	(0.01)

Notes: Each entry is a separate regression. Column 1 includes no control variables. Columns 2-5 include taxable income for both landowners and industrialists at the endline. Columns 3-5 also include taxable income at the baseline. All the outcomes are from 1908, and the baseline is from the period 1860-62. The dependent variable for each separate regression is the log of the population size in Panel A, the log of the crude marriage rate in Panel B, the log of the crude birth rate in Panel C, the log of the crude mortality rate in Panel D, and the log of the infant mortality rate in Panel E. The taxable income variables are from 1908 and 1857. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

Table 22. Captured democracy: investments in *de facto* political power to offset the change in *de jure* political power

	Choice of having a direct democracy		Single party system		Voter turnout		Organized citizens	
	1920	1938	1919	1934	1919	1934	1919	1938
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Panel A. All local governments				
De facto political power	0.09***	0.22***	0.19***	0.12***	-0.06***	-0.07***	-0.06***	-0.13***
of landowners	(0.04)	(0.05)	(0.04)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
				Panel B. Local governments controlled by large landowners				
De facto political power	0.07	0.19***	0.20***	0.09***	-0.06*	-0.08***	-0.09***	-0.14***
of landowners	(0.04)	(0.07)	(0.06)	(0.03)	(0.03)	(0.02)	(0.01)	(0.01)
				Panel C. Local governments controlled by small landowners				
De facto political power	0.14*	0.27***	0.16***	0.05*	-0.07**	-0.06***	-0.06***	-0.11***
of landowners	(0.07)	(0.09)	(0.06)	(0.03)	(0.03)	(0.02)	(0.01)	(0.01)
Observations in Panel A	1,505	1,557	897	1055	839	962	2,332	2,304
Observations in Panel B	929	956	446	551	425	495	1,332	1,312
Observations in Panel C	576	601	451	504	414	467	1,000	992

Notes: Each entry is a separate regression. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

APPENDIX (NOT FOR PUBLICATION)

In this section, we use data from Karadja and Prawitz (2019) to estimate the OLS relationship between Swedish emigration to the U.S. and our measure of the political power of landowners.[87] Table A1 shows these results with and without controls for taxable income. We find no relationship between emigration and political power once we control for taxable income in Column (2). Thus, emigration cannot be a potential mechanism, i.e., a mediating factor, in our analysis.

Table A1. Dependent variable: log emigration to the U.S. for the period 1867-1920.

	OLS	
	(1)	(2)
	Panel A. All local governments	
Political power of landowners	-0.11	0.01
	(0.07)	(0.09)
	Panel B. Local governments controlled by large landowners	
Political power of landowners	-0.25**	-0.09
	(0.10)	(0.11)
	Panel C. Local governments controlled by small landowners	
Political power of landowners	0.02	0.09
	(0.10)	(0.12)
Observations in Panel A	2,190	2,190
Observations in Panel B	1,265	1,265
Observations in Panel C	925	925

Notes: Each entry is a separate regression. All regressions include the log of the population in 1862. Column 2 includes taxable income for both landowners and industrialists at the endline. Coefficients significantly different from zero are denoted as follows: *10%, **5%, and ***1%.

[87] We thank Erik Prawitz for providing the data.