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The political value of land: inquilinos, hacendados and land prices in Chile, American Journal of Political Science, Forthcoming.

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Link to publication

The political value of land: inquilinos, hacendados and land prices in Chile[*]

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June 2006

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Abstract: In this paper we investigate the economic consequences of electoral corruption in agrarian economies. While providing workers with employment, landlords also impose some degree of political control. When voting is not secret, it takes the form of vote control. As votes are used by the landlords to accumulate political rents, vote control increases the demand for labor and for land. The introduction of secret ballot should lead to a fall in the price of land in those areas where patron-client relationships and vote control were the strongest.

We test the predictions of the model by examining in detail the evolution of land prices in Chile in 1958, for which we found original data. A characteristic of rural Chile is the inquilinaje, by which a worker, the inquilino, enters into a long term, often hereditary, employment relationship with a landlord, and lives on his landlord's estate. We show that the introduction of the secret ballot in 1958 had implications for land prices which are perfectly consistent with the predictions of our model. Political rents represented 25% of the value of the land in Chile prior to 1958.

1. Introduction

Historically, that landlords control the political activities of their workers has been a pervasive characteristic of agrarian economies. For instance, Mann (1995) argues (p26-27) that the spread of the franchise before World War I in Europe had little impact on political outcomes because "voters obeyed the 'country magnates', *notables*, *Honoratioren* and *caciques* who ran most provincial areas.....through most of the twentieth century many communities continued behaving publicly (including voting) the way that dominating landlords, priests and notables told them to." Goldstein (1983, p15) concurs, "open balloting greatly facilitated the use of pressure and manipulation by ... local elites, especially in rural areas ... where landlords continued to exercise a semi-feudal domination over the peasantry until well into the twentieth century."

Throughout the nineteenth century radicals and reformers complained about the lack of a secret ballot in Britain (Ricardo [1824], 1951-1973). In Germany, despite the early introduction of a democratic parliament in 1848, there is a mass of evidence that rural voters were controlled by landed interests. Indeed, Bismarck supported an extension of voting rights in 1871 because he thought that the control exercised by landlords over rural voters would offset the rising influence of urban workers (see Gosnell 1930). One landlord in Prussian Silesia announced during the 1863 election that those who voted against "the disposition and will of his Majesty and his ministers," would: "if they are workers in the forest or on the estates be dismissed,...; that the supervisory personnel ... shall be given notice; that final accounts shall be settled... with the merchants who sell them anything" (Hamerow 1974, p299-300).

Landlords control over rural elections was greatly facilitated where balloting was open (see Goldstein, 1983, p. 15). One widespread way of controlling elections even when there was supposedly a secret ballot was for individual political parties to print their own ballots. In the German case this was common, for example Anderson (1993, p1467) notes, "given that ballots had to be obtained from the candidates themselves or from their agents, it was often physically impossible for a poor man to vote for anyone but the squire's choice." (see also Blackbourn, 1988,

and Gibson and Blinkhorn, 1991). Even countries, such as France which moved early to universal male suffrage (after 1848) and free elections (after 1871) only introduced an effective secret ballot in 1913. Before this "the ballots frequently had subtle but distinct marks, such as paper thickness, colour and size, from which the election officials could deduce a voter's decision. This information was then passed on to notables who could easily punish such wayward voters since they frequently were his tenants or employees," (Kreuzer 1996, p108).

Similar tactics were used and remain up to the present day in democratic third world countries.[1] Nowhere is the evidence about landlord control of elections so conclusive as in Latin America. Despite the early adoption of liberal constitutions, with few exceptions Latin American societies did not become consolidated democracies with free regular elections contested by all adults until the 1980's.[2] The best documented case is that of Chile which we discuss at length in Section 3. There, the control of voting by landowners was very frankly discussed in the debate leading up to the introduction of the secret ballot in 1958. For example, Socialist senator Martones argued in favor of introducing the secret ballot because, "if that law [the old electoral law without a secret ballot] did not exist, instead of there being 9 Socialist senators there would be 18, and you [the Conservatives] would be reduced to 2 or 3 ... [laughter] you laugh, but the truth is that there would be not 2 Conservative senators from O'Higgins and Colchagua, which corresponds exactly to the number of *inquilinos* in the fundos which belong to the Conservative hacendados in that region. Conservatives would have only one or perhaps none."[3]

In this paper, we investigate the connection between employment and political control and focus on its implications for resource allocation in agrarian economies. Why is it that some individuals are able to politically control others? This possibility arises anytime that an economic relationship generates *rents* for one party, and the party conceding the rent has the ability to terminate the relationship uni-

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[1] For evidence from India see Kohli (1990, pp. 227-228) and Breman (1974).

[2] See Engerman and Sokoloff (2001) and Hartlyn and Valenzuela (1998). For Brazil see Pang (1973), Graham (1990) and Martins (1996).

[3] A "fundo" is a large farm and a "hacendado" a large landowner and an *inquilino* was a permanent worker on such farms. Quoted in *El Mercurio*, Saturday May 19, 1958, p. 20.

laterally. A rent is a return received in excess of the minimum needed to attract workers to that activity. Such rents arise in many circumstances, for example when there is asymmetric information, when individuals bargain over the surplus from an exchange or contract, or when there are market frictions. As employers can threaten to terminate the contract, workers are prepared to work hard and lose political freedom for fear of losing these rents. For instance, Wilson (1961, p. 370) in his discussion of how political machines in the United States used public sector employment as a way of securing political support defines: "Patronage jobs are all those posts, distributed at the discretion of political leaders, the pay for which is greater than the value of the services performed. This 'unearned increment' permits the machine to require that the holder perform party services as well." Scott (1972) develops a similar argument in his analysis of 'locked-in electorates' where "the voter was connected to the larger political system through his agent-patron whose control over his political will was a function of his control over his means of subsistence." In such a system, "There was no sense in parties or candidates appealing directly to "locked-in electorates." By definition, these were voters who could be mustered most easily by coming to terms with their landlord, their employer, or their master who could deliver their votes in the election." (Scott, 1972, pp. 98-9).

In a companion paper (Baland and Robinson, 2006) we provided the first formal analysis of how employment may imply political control and we developed the implications of this connection for electoral outcomes in the absence of a secret ballot. There, we developed a model of employment under moral hazard, where landlords are conceding rents to workers as part of an optimal labor contract. When voting is not secret, landlords control the voting behavior of the worker. In the present paper, we develop the economic implications of this type of control. Indeed, controlling votes gives an extra incentive to hire labor since there is now a political profit in addition to any economic profits. The desire to attain power over others and the benefits it brings may significantly influence the way the labor and the land market function. In Section 2, we develop a simple model to investigate how political profits resulting from vote control drive up the demand for labor and the demand for land. As a result, the price of land is too

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high, as it incorporates political rents. The predictions of the model can be tested by investigating the impact of the introduction of an effective secret ballot which took place in 1958 in Chile. As we show in Baland and Robinson (2006), this institutional reform had a profound impact on political outcomes in the countryside, where landlords controlled the voting of their workers, and particularly the inquilinos which were attached to them in a long term patron-client relationship.[4] The reform led to the rapid decline of the landed oligarchy. In this paper, we argue that such a reform also removed the incentive to employ people to control their voting. In consequence, we should observe changes not only in electoral outcomes, but also in the price of land. To this end, we collected data on land prices, the employment of *inquilinos* and voting outcomes before and after the reform to see if the implications of our model were consistent with what happened.

We show in section 3 that the empirical predictions of our model are highly consistent with the data. In particular, we find that land prices were systematically higher in provinces where inquilinos form an important part of the labor force, but fell dramatically in exactly the same provinces after the 1958 electoral reform. We also present a variety of other pieces of evidence which support our interpretation, and discuss the close association that existed before 1958 between landownership, the employment of inquilinos and right-wing support.

Our work is related to a large literature on the efficiency of rural resource allocation and property rights (see e.g. Mookherjee (1997) and Banerjee, Gertler and Ghatak (2002)). However, the relationship between political rents and inefficiencies in the land market has never been exploredbefore. Our work is also related to a large literature in political science on electoral corruption and clientelism (e. g. Snyder, 1991), even though this literature does not focus on the economic implications of political control and electoral corruption. Moreover, it has not tackled the key question of why vote controlling exists, particularly in the absence of direct coercion. Most closely related to our research, Summerhill (1995) developed a simple model of the idea that political rents accrue to landowners, with an application to the nineteenth century Brazil.

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[4]Although our model emphasizes the political attractiveness of the inquilinaje, there are also economic reasons why these contracts could be offered, see for example, Sadoulet (1992).

2. Political control and the Employment Relation

We first present a simple model to explore the link between employment and political control. (A complete dynamic model describing how moral hazard in conjunction with limited liability can lead to vote control is provided in Baland and Robinson, 2006). Consider an agrarian economy with $n+\ell$ agents: ℓ landlords and n workers, who do not have access to the capital market. There are L units of land available, owned by the landlords. To simplify notations we assume that all landowners are endowed with the same amount of land s, with $s = L/\ell$.[5] The production function of a farm using s units of land and employing m workers is $F(s,m)$, which is strictly increasing in both arguments, concave and exhibits constant returns to scale. We let $f(\frac{s}{m}) = F(s,m)/m$ stand for the output per worker on such a farm. Workers own no land and have no access to the capital market. They all have the option to be self-employed and earn a real income of $\underline{w}$.

We assume that when working for a landlord, workers earn a real wage, w, which is higher than their reservation wage, $\underline{w}$. Such rents may arise for a variety of reasons, for instance to induce workers to exert the optimal level of effort when working. Let R denote the amount of labor rent that a landlord must concede to each of his workers to induce optimal effort: $R = w - \underline{w}$.[6]

Now introduce voting behavior and imagine that agents also have ideological preferences, so that each agent gets an increase in utility equal to σ when he can freely vote for the party or politician of his choice. To simplify, let us assume that workers prefer the left-wing party, while the landlords prefers the right-wing party. Utilities are linear in income, so that the utility for an agent working for a landlord and voting freely is given by:

$$U^w = \underline{w} + R + \sigma, \tag{2.1}$$

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[5]This assumption is irrelevant to the results described below as we assumed constant-returns to scale. Under decreasing returns to scale, access to the capital market by right-wing agents would make the distribution of land equal across farms.

[6]For a more detailed model of the labor contracts offered to *inquilinos* see Sadoulet (1992).

while that of a self-employed worker voting freely is given by:

$$U^{se} = \underline{w} + \sigma. \tag{2.2}$$

Political parties buy votes, and propose a price per vote equal to p, which we consider as exogenously given here. (One should think of the type of favors that can be exchanged for votes quite generally. Only in some cases will this actually be a transfer of income.) We now argue that the threat of taking away a worker's rents can be used by the landlord to control his vote. For this to be true, the worker should find it optimal to work for the landlord and vote the way he wants him to, which implies that the utility he gets there is (weakly) greater than his utility as a self-employed agent selling his vote to whichever party he wishes:

$$\underline{w} + R \geq \underline{w} + p + \sigma. \tag{2.3}$$

Because the employer is already giving rents to the worker, if large enough, the threat of withdrawing these rents allows him to control his voting behavior. Employment does not simply generate profits, it also gives *power* to control the behavior of others. Hence, the first Proposition:

Proposition 2.1. *If $R \geq p + \sigma$, the landlord controls the votes of his workers, and sells them to the party of his choice.*

We now consider how the presence of vote buying influences market clearing. We first consider the optimal demand for labor in a farm of size s with m workers. When workers are politically controlled, profits are,

$$f\left(\frac{s}{m}\right) m - wm + pm \tag{2.4}$$

The first term in (2.4) is revenues (we assume that the produced good is the numeraire), the second the expected wage bill, and the third the political rents that the landlord gets from selling the votes of his m workers at the price p. The

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optimal demand for labor is determined by the first-order condition with respect to m,

$$\left(f\left(\frac{s}{m} \right) - f'\left(\frac{s}{m} \right) \frac{s}{m} \right) - w + p = 0 \tag{2.5}$$

The equation (2.5) implicitly defines the optimal demand for labor as a function of parameters, which we write $m(s, p, w)$. The equilibrium price of a plot of land must now adjust so that profits are zero or,

$$\left(f\left(\frac{s}{m(s, p, w)} \right) - w + p \right) \frac{m(s, p, w)}{s} = \pi \tag{2.6}$$

Equation (2.6) implies the following result.[7]

Proposition 2.2. *In equilibrium the price of land incorporates political rents.*

Acquiring land is desirable not only for productive purposes, but also for the political rents attached to the political control of the workforce employed on it. Equilibrium prices on the land market reflect this mechanism. As a consequence, a political reform with stops votes being bought and sold, such as the introduction of an effective secret ballot, removes the ability of landlords to sell the votes of their workers and has the following implications:

Proposition 2.3. *The introduction of a secret ballot leads to a fall in employment, a fall in the price of land and a fall in the vote share of the right-wing party.*

To see this result, note that political reforms remove the price of votes from (2.5) and (2.6). The introduction of a secret ballot stops vote buying and therefore the vote share of the right-wing party always falls.

We are now in a position to discuss some of the assumptions made. First, note that when condition (2.3) does not hold, labor rents are not large enough to enable the landlord to control voting behavior. To elicit the appropriate voting behavior

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[7]For simplicity, we assume here that in equilibrium, $m\ell \leq n$, implying that some left-wing agents end up self-employed in equilibrium.

the landlord must raise the wage further. In this situation, political reforms which stop vote buying lead to a fall in the wage rate. Second, if all agents had access to capital markets then there would be no land concentration: all land would be farmed by smallholders with no votes being controlled. To see this note that the price a self-employed agent is willing to pay for a plot of land of size $\frac{s}{m}$ is equal to $f(\frac{s}{m}) - \underline{w}$. The price that a landlord would be willing to pay is given by (2.6). Comparing those two expressions, and using condition (2.3), we obtain that a smallholder is always ready to offer a higher price than a landlord, because his labour cost is lower ($\underline{w}$ instead of $w - p$):

$$f(\frac{s}{m}) - \underline{w} \geq f(\frac{s}{m}) - w + p. \tag{2.7}$$

The fact that, with perfect capital markets, smallholders are always willing to outbid landowners for land follows from the fact that the labor rents that landlords transfer to workers exceed the political rents they receive from parties. Therefore, even though it is still true that the ability of landlords to sell votes increases their demand for land, land is still more valuable to smallholders. The interaction of the two market failures is therefore crucial. With imperfect capital markets but without labour rents, electoral corruption would not affect the price of land, as workers would then have to be fully compensated for the control of their votes. With labor rents but no capital market imperfections there is no inefficiency either.

3. The Impact of the 1958 Ballot Reform in Chile

3.1. Political control in Chile

The model presented above has several important empirical predictions with respect to the impact of political reform on land prices, employment and voting patterns. We examine these implications by considering the electoral reforms which took place in 1958 in Chile. Many scholars have claimed that, before the reforms, there was widespread electoral corruption and control of voting behavior in the countryside which were ended by the successful introduction of the secret ballot in 1958.

Like most Latin American countries, upon gaining independence from Spain, Chile adopted republican institutions. These became institutionalized in the 19th century and elections determined presidential succession without military or other intervention. Like all other nascent democracies in the nineteenth century, the franchise was restricted by wealth and literacy restrictions. Moreover, voting was not secret. Fraud, coercion and electoral corruption were all used to systematically influence the outcomes of elections and consolidate landed interests (see Posada-Carbó, 2000, and Lehoucq and Molina, 2002). Even the ending of open voting with the Electoral Law of 1925 did little to restrict corruption: to vote for a particular party, a voter had to request that party's ballot, thus making it possible to know who he or she was voting for (Castro, 1941, p. 35, Cruz-Coke, 1984, pp. 27-29). Petras and Zeitlin (1968, p. 510) document that: "until 1958, elections were carried out with each political party having a separate ballot. (...) Thus the *patrones* often simply gave the ballots for the party of their choice to the *inquilinos*, and provided them and nearby peasants with transportation to and from the polling places."(For more evidence see also Kaufman, 1972 and Loveman, 1976.) In the countryside, "there was an absolute control of peasants by their patrones, and elections in rural communes depended on the political preferences of the landowners" (Millar, 1981, p. 172). "This type of control is pervasive ... The situation was publicly accepted, and it was even used as an argument in electoral legal complaints, particularly in order to show that any result against the preferences of the latifundistas was fraudulent, or to justify an unanimous electoral result in a rural locality" (Millar, 1981, p. 173). The control of rural votes by landlords was made possible by the relatively good working conditions of the *inquilinos* compared to the possible alternatives, and the available evidence is that they earned substantial rents that made their position enviable compared to other agricultural workers (Baland and Robinson, 2006, Bauer, 1995, pp. 27-28).

On the basis of these institutions, Chile formed a relatively stable, though restricted democracy (with the exception of the military coups between 1924 and 1932, a period dominated by Colonel Carlos Ibáñez). Stability was based on an explicit compromise between the growing power of urban groups and the power of the traditional landed elites. As Arturo Valenzuela (1978, p. 26) puts it "un-

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derlying this state of affairs was a tacit agreement between rural and urban elites. Rural elites were willing to endure the hardship of price controls on agricultural goods imposed by an industrially orientated middle class which relied....on support from parties of the Left with similar interests. In return, centrist and leftist parties did not alter the basic political and social structure of the landed elite."[8] Part of this pact involved the banning of agricultural unions, a policy which allowed severe labor repression to be carried on in the countryside (see also Scully, 1992). Dismissal of unionized or protesting workers was frequent, and backed by the police. According to a former minister of interior in the 1940s, Arturo Olavarria: "...a group of carabinieros would arrive at a fundo accompanied by a convoy of trucks. When the *inquilinos* were assembled in the area, the carabinero officer would order those who wished to continue the strike to stand on his left. The officer would then order that the strikers gather their families, cats, dogs, chickens and belongings and get in the trucks to be evicted. ... This tactic I converted into a system....as the good ones went on the right and the bad ones on the left, as I hoped will occur one day in the valley of Josafat." (as quoted in Loveman, 1971, p. 163).

By the 1950's the political landscape in Chile was dominated by several main parties. The traditional nineteenth century parties, the Conservatives, Liberals and Radicals were all still effective. The Conservatives and Liberals were furthest to the right and united in most things except in their attitudes to the Church (the Conservatives were closely associated with the Catholic Church while the Liberals tended to be anti-clerical). The Radicals were more towards the center politically and were strongly anti-clerical. Also in the center, though very small in the 1950's were the Christian Democrats. To the left were the Socialists and then the Communists (the latter were officially banned between 1948 and 1958 though they competed under different names). The landed oligarchy provided the traditional constituency of the two right-wing parties, the Conservative and the

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[8]There is an interesting analogy between the structure of these institutions which helped to sustain Chilean democracy before 1973 and Weingast's (1998) analysis of how the Missouri compromise kept the Union together from 1821 to the start of the Civil War in 1860. The Chilean pact is discussed in more detail in Scully (1992, p. 108-109) and Collier and Collier (1991, p. 565-73).

Liberal (see, e.g., Gil, 1966). The existing party system was shocked however by the return of the former dictator Carlos Ibáñez as a populist presidential candidate in 1952. Ibáñez formed a very heterogenous coalition of mostly leftist groups and capitalized on the general disillusionment with the traditional parties. In 1958, in an attempt to destabilize the current statu quo, he supported the introduction of the full Australian ballot. Law 12.889 was promulgated and effectively put an end to the control of votes.

3.2. The political impact of secret ballot in Chile

In Baland and Robinson (2006), we provide a detailed analysis of the political changes that followed the introduction of the secret ballot in 1958. We summarize the main trends at the provincial level here. The sources, and the precise methodology followed, are described in Appendix 1. In Table 1, we present information on the proportion of inquilinos in 1955 and 1965, as well as the electoral results for the 1957 and 1961 parliamentary (all of the congress and half of the senate) elections across the main regions of Chile. (The picture is similar if one takes the 1965 parliamentary election results instead.) The presence of inquilinos in the agricultural labour force is the strongest in the Central Urban and the North Central Valley regions, where inquilinos make up 19.4% of the total agricultural labour force. These two regions, and in particular, the provinces of Aconcagua, Colchagua and O'Higgins, were also the ones dominated by the landed oligarchy in Chile, and provided a very stable support to the right-wing parties throughout the 20th century. The share of right-wing votes in these two regions in 1957 is equal to 46% of the votes. In the province of Colchagua, it was 70.2 %, in Aconcagua, 58.5% and in O'Higgins, 47.4%, much higher than the national average (33%) or the scores obtained in other rural provinces.

INSERT TABLE 1 HERE

The introduction of the secret ballot had an immediate impact on the balance of political power in Chile. Loveman (1976, p. 219) notes: "The introduction of a public ballot meant that landowners could no longer effectively control the votes of rural labor. The electoral hegemony of the Right in the countryside thus

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gave way to forces that advocated social change in the rural areas ... In 1958 the performance of the FRAP (Socialists and Communists) in rural districts left little doubt that landowners' control over rural votes had considerably declined." Interestingly however, despite these changes, the Conservative Jorge Alessandri won the presidential election in 1958, principally on a platform emphasizing conservative monetary policies which were a response to the populism of the Ibáñez regime. We report the results for the 1961 parliamentary elections in column 4 of Table 1. The fall in right-wing votes is important in the Central Urban and the North Central Valley provinces where the right-wing party lost 11.4% of the votes, compared to a nation-wide loss of 5.6%. The fall even reaches -21% in Colchagua, -20.0% in Aconcagua and -17.8% in O'Higgins. In the 1965 elections, the fall of the right wing party continued in Chile, with vote losses of 14.6% nation-wide and of 19.0% in the Central Urban and the North Central provinces. Simultaneously, the rise of the Christian-Democrats and the left-wing parties is equally dramatic, with an increase in votes of 17.4% nationwide. These parties increased their vote shares by 20% in the Central Urban and North Central Valley provinces, and even more when one looks to three provinces we already singled out: + 26.6% in Colchagua (from 6.6% to 33.2% of the votes), + 30.3% in Aconcagua and +26.2% in O'Higgins, more than in any other province.

Two major trends emerge from these figures: (i) before 1958, support for the right-wing parties came from provinces where the inquilinaje was the most prevalent, and (ii) this support disappeared after the introduction of the secret ballot, with large falls in the votes for the right-wing parties, and large rises in votes for the christian democrat, and to a lower extent the left-wing parties.

Lastly, note that between 1955 and 1965 the proportion of *inquilinos* in the agricultural labour force fell nationwide, from 12.4% to 7.6%. Part of this fall might be part of a declining long-run trend in patron-client relationships in the countryside. However, the 1958 ballot reform certainly played a role by reducing the attractiveness of such relationships, and undermining the strength of the landed oligarchy. In this respect, it is interesting to note that the agricultural labour force grew significantly (by 32.0%) over the period, while the total number of inquilinos fell by 10.3%. In Colchagua, O'Higgins and Aconcagua, three

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provinces of high agricultural growth, agricultural employment went up by 92%, while the number of inquilinos increased by barely 8.1%! Unfortunately, we could not develop a more formal test here, since the information from the agricultural censuses is available every ten years only, and the impact of the electoral reform is then not distinguishable from other long term changes in the agricultural sector.

3.3. Land prices and the introduction of the secret ballot

Our model predicts that the electoral reforms of 1958 should lead to a fall in the price of land.[9] To examine this issue, we collected data from the most important national Chilean newspaper, *El Mercurio*, from August 1956 to December 1960 (22 months before and 31 months after the reform). This newspaper has a large advertisement section each week which provides nation-wide announcements of farms offered for sale. While the content of the advertisements vary widely, we restricted our sample to farms of more than 50 hectares offered for sale for which we know the size of the farm, its price and its province of location and left out all the other sales advertised.[10] By doing so, we gathered information on 1117 farms proposed for sale over this period.

The information we have is subject to a number of problems. First, these are asking prices by sellers, and not final sale prices. Moreover, while many farms for sale were advertised in *El Mercurio,* not all of them were, which may matter if those two types of farms differ systematically along some dimension. This problem may also be reinforced by our collection strategy, which excluded small farms and offers with not enough information. Lastly, another worry arose as inflation was high during this period, and we only had at our disposal the annual consumer price indices (or the index of agricultural prices which follows a very similar pattern). We therefore had to compute within each year (by loglinear interpolation from

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[9]We found two published studies of the behavior of land prices in Chile over this period (CIDA, 1966, p. 343, and Hurtado et al., 1979) both of which find, as we do, significant falls in land prices after 1958. We do not emphasize the results of these studies because their samples and methodologies are unclear.

[10]Sizes came in two different measures, the hectare and the Chilean cuadra. We assumed here that one cuadra was equal 1.44 hectare. We attempted to avoid repeated announcements by deleting identical announcements, within 18 months of the first announcement.

July, 1 of year Y to July, 1 of year $Y + 1$) the average weekly consumer price index, which was then used to deflate the nominal price of land (1/7/56=100) to obtain the real price of land (real price per hectare), the variable of interest here.

In Table 2, we present some descriptive statistics about the average price of one hectare of land before and after the promulgation of the electoral reform law on May 31, 1958. Across Chile, the real land prices fell by 36% following the reform, from an average of 171,000 pesos per hectare before 1958 to 109,000 pesos per hectare after. The median price per hectare followed a similar trend, as it fell by 30% from 81,000 to 56,000 pesos per hectare. The second and third lines of Table 2 report the average price of land according to the presence of inquilinos in the agricultural labour force. Two stylized facts emerge: (i) land was more expensive in provinces where there are more inquilinos and (ii) the price of land fell much more in provinces with a lot of inquilinos.

In our data, land sales tend to be concentrated in the Urban Central Valley, the North Central Valley and the Frontier, which together represent 72 percent of the sales, though only 11 out of 25 provinces. This is a bit unfortunate, since one would ideally contrast areas with a lot of inquilinos, such as the North Central Valley to areas with very little of them, such as the Great North, the Little North and the Canals regions (which together make up only 3.2 percent of the sales). Moreover, while it is true that there are on average more inquilinos in the Central Valley, the pattern is far from homogenous. The proportion of inquilinos in the agricultural labour force was for instance substantially lower in the Maule province in the South Central Valley than in the Osorno province in the Lakes region (11.4% versus 17.3%). If a geographical pattern has to be proposed, it would contrast the the two main regions of the Central Valley, the Central Urban (Aconcagua, Santiago, Valparaiso) and the North Central Valley provinces (Ohiggins, Colchagua, Curico, Talca), which have on average 19.4% of inquilinos in their agricultural labour force, to the other regions taken as a whole, with an average of 8.8% of inquilinos. This is what we do in the bottom of Table 2. Again, land prices are higher in regions with more inquilinos, but they also fell more there. Thus, in the Central Urban and North Central Valley, the price of land fell from 266$ per hectare before the reform to 160$ per hectare after. In comparison, the price of land in all the other

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provinces went from 87$ to 56$ per hectare. (All the differences across regions and across time are significant at the 1% level).

INSERT TABLE 2 HERE

We now turn to the regression estimates. The model proposed in the preceding section implies that provinces where inquilinos constitute a more important part of the agricultural labour force should exhibit (i) higher land prices before the reform and (ii) a larger fall in land prices following the reform. For each farm i offered for sale during week t, we know its province of origin, I, its size, s_{it}, and its price per hectare, π_{it}. In the basic model, the prevalence of inquilinos is measured by the proportion of inquilinos in the agricultural labour force in the province of the farm, $\left(\frac{I}{l}\right)_I$. Controlling for farm size and various time trends, we investigate the existence of a structural break on the day of the reform (31st of May, 1958) in the relationship between land prices and the prevalence of inquilinos in the province. The basic equation we estimate is the following:

$$
\ln \pi_{it} = \beta_0 + \beta_1 \ln s_{it} + \beta_2 \left(\frac{I}{l}\right)_I + \beta_3 t \tag{3.1}
$$

$$
+\delta_0 R_t + \delta_1 R_t \ln s_{it} + \delta_2 R_t \left(\frac{I}{l}\right)_I + \delta_3 R_t t + \sum \gamma_T Y_T + D_I + \varepsilon_{it}, \tag{3.2}
$$

where Y_T are year dummies taking the value one if the sale takes place in year T, t is a weekly time trend, R_t is the reform dummy, which takes the value one if the sale is advertised after May 31, 1958, and zero otherwise, and D_I is a province fixed-effect, which takes a value one if the sale took place in that province. In Appendix 2, we provide the model underlying the estimation proposed in equation (3.2) which justifies the use of the proportion of inquilinos in the agricultural labour force as a key explanatory variable, as well as the use of logarithms for land prices and farm sizes. Moreover, the use of the logarithm is also desirable given the potential presence of outliers in land prices.

INSERT TABLE 3 HERE

The results of the estimation are given in Table 3. The two first columns correspond exactly to the specification described in equation (3.2). In column (1), the equation is estimated under OLS with no provincial fixed effects, which allows us

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to estimate, β_2, the impact of inquilinos on land prices before the reform. In column (2), we added provincial fixed effects. The pattern is striking: provinces with more inquilinos in the labour force tend to exhibit significantly higher prices before the reform. However, prices fall more in those provinces following the reform, as the coefficient attached to $\left(\frac{I}{l}\right)_I$ after the reform is negative and significant.[11] Moreover, the reform dummy in itself is not significant: absent its effects through the proportion of inquilinos in the agricultural labour force, the reform had no impact on land prices. Finally, land prices per hectare are lower in larger farms, which may reflect (unobserved) difference in fertility or cropping intensity across farms. After the reform, it is possible that land prices fell more in larger farms, but that particular estimate is not robust.

Columns (3) and (4) present parallel estimations using the proportion of inquilinos in the population, with very similar results. In columns (5) and (6), we distinguished between the Central Urban and the North Central Valley provinces regions which correspond to the political base of the landed oligarchy, and the other regions. In columns (7) and (8), we used the real price per hectare, instead of its logarithm, as the dependent variable. Our results are extremely close across those various alternatives. Although not reported here, our results are remarkably robust to alternative measures of the predominance of inquilinos, alternative measures of land prices (total price of the farm, current prices instead of deflated prices,...), various functional alternatives (such as the use of a quadratic or higher degree functions for farm size, or the use of the total price of the farm, or the price per hectare without imposing the logarithmic function) and truncations of the sample (large farms only, ...).

Clearly, the 1958 electoral reform had a stronger impact in provinces with a high proportion of inquilinos. There is a clear structural break in farm prices, with farm prices falling more in provinces with a strong presence of inquilinos. The coefficient attached to the proportion of inquilinos in the labour force following the reform is equal to -1.996. Given that the price of land is estimated in logarithms and that the standard deviation in the proportion of inquilinos is equal to 0.054,

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[11]It does not exactly compensate for the higher price before the reform, but this may be due to differences in fertility or cropping intensity across provinces.

an increase in one standard deviation in the proportion of inquilinos led on average to a fall in land prices of 11% (-1.996x0.054) after the reform. With an average proportion of inquilinos in Chile of 12.4%, the average fall in land prices that can be attributed to the presence of inquilinos is equal to 24.8% (-1.996x0.124). We interpret this figure as a measure of the share of political rents associated with vote control which are embodied in the price of land.

3.4. Vote buying and political rents

Direct buying of votes by parties, a system known as the 'cohecho', was a major instrument used by political parties to rally urban voters at the beginning of the century, but it was never systematically used in the countryside, as landlords maintained their control over rural voters and were benefitting from their political influence in a variety of ways, among which were electoral positions for themselves and their relatives. Heise points out "There were even candidates that offered to pay more for votes than any other candidate in printed ads. (...) The working class was convinced that a congressional or presidential candidate was entitled to pay for votes." Many voters thought that "when votes are not bought, politicians had stolen the money that the government had sent for the elections" (Heise, 1982, p. 228-30). By the 1950's however, direct vote buying by the parties had virtually disappeared (see e.g. Scully, 1992, or Sinding, 1972), and the 1958 electoral reform formally banned this practice.

From the few pieces of information provided by historical studies, we have an estimate of the price of a vote for the elections of 1909, 1915 and 1918 only. Prices vary a lot from one source to another (they are directly comparable since there was no inflation during this period), depending on the type of election (presidential or parliamentary), and the degree of competition between political parties. Thus, according to Heise (1982) prices vary between 25 and 35 pesos in 1909, 10 to 40 pesos in 1915, and 100 to 200 pesos (and even between 400 and 500 pesos, "equivalent to a one-year salary for a lower class person") for the 1918 parliamentary elections. The political history by Rivas Vicuña (1964, p. 579), himself an active politician in this period, reports an exceptional price of 2000

pesos for the 1915 presidential election.

Even though there is thus large uncertainty about these amounts, as well as whether they are a good indicator of the potential political rents a landlord could secure by controlling votes, it is tempting to use these figures to estimate the corresponding amount in the 1950's. We shall do this by using two prices: a lower estimate of 40 pesos per vote in 1915, and a high price of 100 pesos per vote in 1915, so as to obtain a reasonable range of estimates. We focus on year 1952, which precedes the high inflationary period under Ibañez regime, and 1957 as this is a year for which we have farm prices data.

We first have to take into account the change in the number of registered voters and inflation. The number of registered voters in 1915 was 383000 (Cruz-Coke, 1984, p. 36-7).[12] The number of registered voters in 1952 was 1,100,027, and 1,284,159 in 1957 (Direccion del Registro Electoral, 1953, 1957). A vote in 1952 is thus equal to 0.54 of a vote in 1915 (0.54=591,000/1,100,027). Similarly, a 1957 vote is equal to 0.46 units of a 1915 vote. Inflation is endemic in Chile over this period, particularly in the 1950's (see the discussion above). The Consumer Price Index (CPI) went from 1 in 1915 to 24.4 in 1952 and 181.3 in 1957 (Mitchell, 1998, Table H2, p. 712-3). Wheat prices followed a similar trend, as 1 peso of wheat in 1915 was priced at 18.7 in 1952 and 117.6 in 1957. (The general index of agricultural producer prices similarly went from 1 in 1915 to 28.4 in 1952 and 189.0 in 1957, see Mamalakis, 1983, Volume 4, Table 4-5, p. 222-3). Using the CPI, our simple computation yields the following result: taking into account inflation and the change in the number of registered voters, a price of 40 pesos for one vote in 1915 is equivalent to 340 pesos in 1952 and 2162 pesos in 1957. Similarly, a price of 100 pesos in 1915 corresponds to 850 pesos in 1952, and 9405 in 1957.

As the average real annual earning of an agricultural worker was 2864 pesos in 1952 (Mamalakis, 1983, Volume 2, Table 14.2), the price of a vote equals 12% of average earnings of an agricultural worker or 44 work-days. (It is also worth

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[12]This number is the one set after the electoral reform of 1915. In 1912, out of the 591,000 registered voters, only 51% actually voted. They then decided to organize a system of permanent voter registration, to be renewed every nine years.

7.8% of the average real earnings of a worker for all industries, which corresponds to 28 work-days). In 1957, the minimum daily wage of an agricultural worker in Talca, a North Central Valley province, was set at 35 pesos (Mamalakis, 1983, Volume 2, Table 14.3), so that the price of a vote in 1915 corresponds in 1957 to 62 work-days at the minimum wage. If instead we use the higher price of 100 pesos in 1915, the sale of a vote was equivalent to 60 % of the average annual earnings of an agricultural worker in 1952, or 310 work-days at the minimum wage in 1957.

The above exercice can be extended by computing the discounted value of all political rents accruing to the lifetime voting right of one person. To do this, we first take into account the frequency of elections: every 24 years, there are 13 elections (6 parliamentary, 4 presidential and 3 congressional, as only half of the Congress is re-elected at each parliamentary election). As a result, there are on average 0.54 elections per year. At an interest rate of r, the current discounted value of the political rents associated with a right to vote, R, is:

$$R_t = \frac{0.54 * Pv}{r}$$

where Pv is the value of one vote. In Table 4 below, we present the value of the political rents corresponding to the 1915 prices of 40 and 100 pesos per vote, using two different discount rates of 0.03 and 0.05. As Table 4 shows, the rents associated with the control of one vote lied between 16 and 60 months of average earnings for an agricultural worker.

INSERT TABLE 4 HERE

We illustrate the implications of these estimates by considering a large farm in the provinces of O'Higgins, Colchagua and Aconcagua in 1957. In those provinces, a large fam between 500 and 5000 hectares employed between 45.2 and 73.4 workers, out of which between 16.8 and 23.7 were *inquilinos* in the 1955 agricultural census. We computed the value of the farm by taking the mean value of a farm in that size range that was offered for sale in those three provinces. We then used the value of the political rents given in Table 4 under three different scenarii: a price per vote of 40 and a real interest rate of 3%, a price per vote of 100, and a real interest rate equal to 3% and to 5%. As a percentage of the value of a farm, the political rents associated with the control of the *inquilinos'* votes then represent

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something between 2.6% and 8.5% of the value of the farm. Most *inquilinos* (and workers) lived with their families on the estate, and it is likely that the landlord also control their families' votes, and in particular that of their spouse. The political rents associated with the control of inquilinos, when we also include those arising from these additional votes, represent between 5.2 and 17.0% of the value of the estate. (In the absence o precise information on the structure of inquilinos families on such farms, we simply doubled the number of votes controlled). Though the evidence presented above as well as much of the historical discussion we cited emphasizes that *inquilinos* were the most likely to be politically controlled, it is also interesting to investigate the implications of the political control of all employees on such a farm. In this case, the political rents represent between 6.5% and 26.3% of the value of a farm. The discussion is summarized in Table 5 below.

INSERT TABLE5 HERE

This exercise is of course at best indicative of the value of a vote in 1957 since we have to assume some correspondence between the nature of electoral corruption in the 1950's and the system of vote buying which took place at the beginning of the century. Moreover, inflationary pressures may have distorted relative prices. The figures obtained are also lower than the political premium estimated in the regression (24.8% of land prices for Chile). They certainly constitute a very conservative estimate of the political rents enjoyed by large landlords. First, the number of dependents on a large farm is probably underestimated, even if we take into account all workers since we omitted for instance the workers' spouses, the landlord's tenants or his main trading partners. Secondly, the sale of votes is to some extent a metaphor which certainly does not capture all the political rents, including the social prestige, the electoral positions and the influence over policies (such as those with respect to the ability of trade unions to organize, or the allocation of local infrastructure), that landlords enjoyed. Thus Heise calculates that until the end of the parliamentary period (1925), more than 90% of political leaders are large landowners.

3.5. Alternative Hypotheses

It seems hard to imagine that there is a plausible alternative story which can explain the facts we have shown before 1958 and what happened afterwards in Chile. However, there may be other possible interpretations of part of this evidence. Clearly, it is possible that real land prices might have fallen for several reasons apart from the fact that the secret ballot removed the political rents which had previously accrued to land ownership (and were capitalized in its value).

There is one other obvious main alternative hypothesis that accepts the fact that before 1958 electoral corruption stopped rural voters expressing their political preferences, but it emphasizes different mechanisms linking electoral reform to the data. This idea is that after electoral reform, a left-wing president and government was much more likely. Such a government would aim at redistributing income and assets, particularly land. Such redistribution, once anticipated, would clearly tend to reduce the attractiveness of holding land, thus leading to a fall in land prices. This hypotheses seems all the more convincing because we know ex post that agrarian reform became such an important political issue in the late 1960's and early 1970's in Chile.

There are two main problems with this mechanism. The first concerns the implausibility that the land reforms of the late 1960's and early 1970's could have been anticipated in the late 1950's. The second concerns its inconsistency with our data. Firstly, the Alessandri government between 1958 and 1964 was Conservative and did not adopt a redistributive agenda at all. Therefore the politics of this government cannot account for the fall in real land prices. A clear piece of evidence on this is that after the 1958 election, the stock market actually rose! Figure 1 shows the real value of the stock market index in Chile from 1928 to 1978. The real value of stocks declined continuously from the 1930's through to the coup of 1973, reaching its nadir with the election of Salvador Allende in 1970. Crucial for our argument here however is that there was an increase after Alessandri's election. Though the increase itself is small, what the picture does show is that the fall in the index actually levelled off after 1958 and only resumed its fall around 1966. This is directly contrary to the claim that asset prices were

falling because of the anticipation of socialism. If this were true one would have expected a more rapid fall, not a rise.

INSERT FIGURE 1 HERE

Moreover, while agrarian reform had been occasionally discussed in Chile since the early 1920's, it was not treated as a policy that might seriously be implemented until the end of the 1960's. Some marginal land purchases and redistributions took place between 1962 and 1964 under the 1962 Law 15020, but they were explicitly targeted towards unused or abandoned estates. Very little land was redistributed during this period. (Actually, 70% of the land thus affected came from abandoned state farms, and 40% from a single large state farm in Talca.) As a result, the value of cultivated farm land could not have been affected by these minor reforms (for a detailed account of these, see Loveman, 1976). As Kaufman underlines, "the Alessandri administration did initiate some legislation dealing with peripheral issues in the land-tenure problem ... But it pointedly avoided any approach to the question of expropriating and redistributing large, private estates" (Kaufman, 1967, p. 9).

Land reform based on the size of properties only became a real issue in 1964-66 with the success of the Cuban revolution and the counterrevolutionary drive of United States foreign policy, particularly Kennedy's Alliance for Progress (see the discussion in Loveman, 1976, p. 220). The law was however voted only in July 1967, and its implementation started only in 1969. Consistent with this Swift (1971, p. 68) argues that "landowners did not really begin to fear expropriation until after July 1967, when it became possible to expropriate land for the motive of size alone." Moreover, after a study of agricultural investment behavior in the early 1960's, Swift concludes (p. 68): "The examination of investment behavior, therefore, does not clearly support an interpretation of lower investment through fear of expropriation". The evidence therefore suggests that the anticipation of land reform cannot have been the factor depressing land concentration and prices in the late 1950's. Instead, the most plausible explanation is the one proposed by our theory; with the introduction of the secret ballot the price of land fell since the return to landownership fell.

The second problem with this alternative hypothesis is that while the evidence

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we discussed above shows that land prices were generally falling after 1958, as one would expect if agrarian reform were anticipated, it is not in fact generally true that land concentration was falling. Actually, land concentration increased in 9 provinces. It was only in the Central Valley provinces where the traditional oligarchy and patrón-inquilino relations were concentrated that land distribution became more egalitarian. This observation is important because the land reform legislation that began to threaten the expropriation of large farms after 1967 in no way discriminated against the oligarchic Central Valley provinces. A large farm in Tarapacá or Talca, was just as likely to be redistributed as one in O'Higgins. While our theory does not explain why land concentration increased in provinces like Tarapacá, it is perfectly consistent with the fact that concentration went up (for example because of changes in technology). It seems implausible however that in provinces where land concentration was already extremely high, people anticipating land reform would purchase more land and form larger farms.

One can think of other hypotheses consistent with parts of our story. First, there might be a secular falling trend in land prices (though actually the evidence in Hurtado et a. 1979, shows that deflated land prices rose steadily from the 1930's until the late 1950's). Yet, that the fall is closely associated with the presence of inquilinos in the province and tends to be more pronounced in exactly those provinces dominated by the landed oligarchy, directly supports our hypothesis. Second, the fall in land prices after 1958 might be due to the fact that land is often held as a hedge against inflation and, under the Alessandri government, the post 1958 period enjoyed much more monetary stability than the years before. As a result, landholders may have decided to sell the land they accumulated during the inflationary period, so that a general fall in land prices should occur after 1958. Once again, we cannot entirely disprove this other hypothesis, even though the fact that fewer land transactions occurred after 1958 argues against it (see Table 2). Alternatively, over the long-run demographic or technological factors could explain why land concentration may have fallen in some areas rather than others, or inter-provincial differences in the evolution of land prices.[13] First, there

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[13]Remember that we controlled long run trends by using year dummies, provincial fixed effects and weekly trends.

were no major demographic or technological changes over this period. Second, our data collection strategy was designed to avoid the impact of those long run trends on inter-provincial patterns of land prices evolution since we collected land prices during a very short period of time (53 months around the reform). Nevertheless, these ideas can at best explain part of the overall picture while our theory provides a unified account of a whole set of political and economic phenomena.

4. Conclusions

In this paper we investigated the economic consequences of electoral corruption in agrarian economies. While providing workers with employment, landlords also impose some degree of political control. The latter needs not be coercitive however since, if the employment relationship gives rents to the workers, landlords can threaten to terminate the contract and withdraw these rents. When voting is not secret, political control typically bears upon one's workers votes. As votes are used by the landlords to accumulate political rents, vote control increases the demand for labor and generates an added incentive to own land. Land becomes desirable not only as a productive input, but also because it allows landlords to control the votes of those working on it. As a result, the equilibrium price of land incorporate political rents.

We tested the predictions of the model by examining in detail the evolution of land prices in Chile in 1958, for which we found original data. A characteristic of rural Chile is the inquilinaje, by which a worker, the inquilino, enters into a long term, often hereditary, employment relationship with a landlord, and lives on his landlord's estate. In this patron-client relationship, landlords fully controlled the votes of their inquilinos as long as voting was not secret. We showed that the introduction of the secret ballot in 1958 had implications for land prices which are perfectly consistent with the predictions of our model. The political premium associated with vote control and embodied in the price of land is not negligible: we estimate that the political premium represents, on average, 25% of the value of the land.

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Appendix 1 Sources and methodology

'Total agricultural labour force' and 'inquilinos' are the total number of agricultural workers and the total number of *inquilinos* working in the agricultural sector in 1955 and 1964-5 respectively. Source: III Censo Nacional Agricola Ganadero, 1955, Vol. 1-6, Servicio Nacional de Estadistica y Censos, Republica de Chile; IV Censo Nacional Agro-pecuario 1964-65, Vol. 1-26, Direccion de Estadistica y Censos, Republica de Chile.

'Right-wing votes' is the proportion of votes in favor of the 'Conservador', 'Conservador Tradicionalista' and 'Liberal' parties in the total number of valid votes, in the parliamentary elections of 1957 and 1961 respectively; 'radical' refers to the proportion of votes in favor of the 'Radical' and 'Radical Doctrinario' parties in the total number of valid votes, in the parliamentary elections of 1957 and 1961; 'christian democrat' is the proportion of valid votes in favor of the 'Falangia Nacional' in 1957 and the 'Democrata Christiano' party in 1961. The 'left' includes the proportion of valid votes in favor of the 'Communista', 'Socialista' and 'Socialista Popular' parties in 1957 and 1961. The regrouping of the political parties was made according to the methodology proposed by Valenzuela (1978). The sources for the electoral results are: Direccion del Registro Electoral, Election ordinaria de senadores y diputados al Congreso Nacional (periodo constitucional 1953-7), Chile; Direccion del Registro Electoral, Variacion Porcentual de los Partidos Politicos, 1957-1971, Chile.

Land prices were collected from the real estate section of El Mercurio, for all weeks running from August, 1 1956 to December, 31 1960. All the newspaper edition were available on microfilms at the UC-Berkeley library.

The data on inquilinos and agricultural workers in O'Higgins used in Table 5 can be found in the III Censo Nacional Agricola Ganadero, 1955.

Appendix2:A model of land prices

We let I_i represent the number of inquilinos employed in farm i and the price of a farm of size s_i to be equal to $\pi_i \, s_i$. Equation (2.6) can be rewritten as:

$$\pi_i \, s_i = (f_i - w_i)l_i + R \, I_i. \tag{4.1}$$

We assume that $(f_i - w_i)$, the economic profit per worker on farm i, can be represented as follows:

$$(f_i - w_i) = \theta \left(1 + \delta_I + \delta_i\right),$$

where θ represent the average economic profit per worker in Chile, δ_I is a province specific fixed effect on the profit per worker, and δ_i is the random noise in profit per worker at the farm level. Equation (4.1) becomes:

$$\pi_i \; s_i = \theta \left(1 + \delta_I + \delta_i\right) l_i + R \; I_i = \theta l_i \left(1 + \delta_I + \delta_i + R \; \frac{I_i}{l_i}\right). \qquad (4.2)$$

We assume that the demand for a worker on farm i is given by $l_i = e^{\eta_I + \gamma_i} \left(s_i\right)^\alpha$. Using the latter expression in (4.2), taking logarithms on both sides, and using the approximation $\ln(1 + x) \simeq x$, for x small enough, we obtain:

$$\ln(\pi_i) = \ln \theta + (\alpha - 1) \ln(s_i) + R \; \frac{I_i}{l_i} + \eta_I + \delta_I + \gamma_i + \delta_i. \qquad (4.3)$$

In the above expression, the logarithm of the price per hectare is a linear function of the logarithm of farm size, of the proportion of inquilinos in the agricultural labour force $\frac{I_i}{l_i}$, and of a province fixed effect, $\eta_I + \delta_I$.

Table 1: Agrarian relations, land concentration and electoral results in Chile

Region	Proportion of inquilinos in the labour force in 1955 (%)	Proportion of inquilinos in the labour force in 1965 (%)	Proportion of right-wing votes in 1957 elections (%)	Proportion of right-wing votes in 1961 elections (%)	Proportion of christian-democrat and left-wing votes in 1957 (%)	Proportion of christian-democrat and left-wing votes in 1961 (%)
Urban Central and North Central Valley provinces (Valparaiso, Santiago, Aconcagua, O'Higgins, Colchagua, Curico, Talca)	19.4	11.9	46.1	35.7	14.7	34.6
South Central Valley, Frontier and Little North Provinces (Maule, Linares, Nuble, Concepcion, Bio-bio, Arauco, Malleco, Cautin, Atacama, Coquimbo)	11.4	6.7	34.2	27.6	18.3	36.1
All other provinces (Valdivia, Osorno, Llanquihue, Chiloe, Aysen, Magallanes, Tarapaca, Antofagasta)	5.7	5.2	26.6	26.5	24.4	38.4
Chile	12.4	7.6	33.0	29.4	20.1	37.5

Note: except for Chile, the figures reported are simple averages across the provinces in the region.

Table 2: Real Prices per hectare before and after the reform (May 31, 1958)

	Proportion of inquilinos in the agricultural labour force (%)	Real price of land per hectare before the reform $(10^3\$)$			Number of sales observed before the reform	Real price of land per hectare after the reform $(10^3\$)$			Number of sales observed after the reform
		Simple average	Median	Standard error		Simple average	Median	Standard error	
Chile	12.4	171	81	217	585	109	56	144	532
Provinces with a low proportion of inquilinos in the agricultural labour force (below Chilean average)	7.6	83	49	106	170	66	36	93	156
Provinces with a high proportion of inquilinos in the agricultural labour force (above average)	17.6	207	110	207	415	127	71	158	376
Central Urban and North Central Valley regions	19.4	266	200	269	274	160	108	173	269
Other regions	8.8	87	53	101	311	56	32	77	263

Note: the figures reported are simple arithmetic means for the relevant cell.

Table 3: Real Prices per hectare before and after the reform (May 31, 1958)

	Dependent variable: logarithm of real price per hectare						Dependent variable: real price per hectare	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inquilinos in the agricultural labour force	6.215*** (0.683)	___	___	___	___	___	1445.6*** (121.9)	___
Inquilinos in the agricultural labour force*reform dummy	-2.223** (0.959)	-1.996** ((0.985)	___	___	___	___	-810.5*** (171.1)	-723.1*** (173.9)
Inquilinos in population	___	___	19.394*** (4.453)	___	___	___	___	___
Inquilinos in population*reform dummy	___	___	-14.204** (6.288)	-13.992** (6.138)	___	___	___	___
Central Urban and North Central regions dummy	___	___	___	___	0.567*** (0.073)	___	___	___
Central Urban and North Central regions dummy*reform dummy	___	___	___	___	-0.196* (0.106)	-0.208* (0.107)	___	___
Reform dummy (=1 if sale occurs after May 31, 1958)	0.270 (0.484)	0.174 (0.492)	0.369 (0.490)	0.145 (0.479)	-0.014 (0.46)	-0.034 (0.461)	13.79 (86.31)	-33.25 (86.87)
Log of Farm size	-0.631*** (0.025)	-0.621*** (0.026)	-0.672*** (0.026)	-0.625*** (0.025)	-0.638*** (0.025)	-0.621*** (0.026)	-61.55*** (4.47)	-60.80*** (4.53)
Log of Farm size*reform dummy	-0.078** (0.038)	-0.074* (0.038)	-0.078** (0.039)	-0.062 (0.037)	-0.074* (0.039)	-0.074* (0.039)	15.31** (6.81)	16.52** (6.78)
Weekly trend, weekly trend*reform dummy, year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
R2	0.608	0.523	0.574	0.523	0.597	0.523	0.364	0.239

Note: Within R2 is reported for provincial fixed effect estimates. The total number of observations is 1117.

Table 4: Price of a vote and political rents in 1952 and 1957

	1952		1957	
	Discounted value of a voting right, R (1952 $)	# months of work of an agric. worker at the average real wage	Discounted value of a voting right, R (1957 $)	# months of work of an agric. worker at the minimum real wage
Pv=40, r=0.03	6139	26.0	39038	36.7
Pv=40, r=0.05	3684	15.6	23423	22.0
Pv=100, r=0.03	15347	60.0	97595	91.7
Pv=100, r=0.05	9210	39.1	58557	55.0

Table 5: Political rents of a large farm in the Central Valley (1957)

Province	Farm size (hectares)	Value of a farm in 1957 ($10^3$$)	Number of inquilinos per farm	Number of agricultural workers per farm	Political rents from inquilinos in % of the value of the farm			Political rents from inquilinos in % of the value of the farm when spouses are included		Political rents from all agricultural workers in % of the value of the farm	
					r=0.03, Pv=40	r=0.03, Pv=100	r=0.05, Pv=40	r=0.03, Pv=40	r=0.03, Pv=100	r=0.03, Pv=40	r=0.03, Pv=100
O'Higgins	1244	27050	23.7	73.4	3.4	8.5	5.1	6.8	17.0	10.5	26.3
Colchagua	1511	27050	16.8	45.2	2.4	6.0	3.6	4.8	12.0	6.5	16.2
Aconcagua	1512	27050	17.9	46.5	2.6	6.5	3.9	5.2	13.0	6.7	16.8

Figure 1. Chilean Real Stock Market Index, 1928-1978

Table A1: Description of the main variables used

Variable	# obs.	Mean	Standard Dev.	Median	Minimum	Maximum
Proportion of inquilinos in the agricultural labour force in 1955	25	0.118	0.104	0.130	0.008	0.240
Proportion of inquilinos in the agricultural labour force in 1965	25	0.076	0.059	0.078	0.004	0.143
Right-wing votes in 1957	25	0.350	0.129	0.343	0.133	0.702
Right-wing votes in 1961	25	0.294	0.114	0.296	0	0.496
Left and Christian-Democrat votes in 1957	25	0.192	0.113	0154	0.021	0.441
Left and Christian-Democrat votes in 1961	25	0.365	0.092	0.372	0.211	0.573
Real price of land per hectare between 1956 and 1960 ($10^3$$ per hectare)	1117	141.3	188.5	66.8	0.7	2093.0
Real price of a farm between 1956 and 1960 ($10^6$$)	1117	36.49	45.28	22.48	1.38	423.64
Current price of land per hectare between 1956 and 1960 ($10^3$$ per hectare)	1117	251.2	330.4	111.4	1	2857.1
Current price of a farm between 1956 and 1960 ($10^6$$)	1117	61.6	65.5	42.0	3.0	560.0
Proportion of inquilinos in the population in 1957	1117	0.026	0.009	0.026	0.003	0.041
Farm size between 1956 and 1960	1117	1337	5192	258	50	78500

Table A2: Alternative regressions, using the real price of land

	Dependent variable : Real farm prices (10^6\$)				Dependent variable : Real price per hectare (10^3\$)					
Inquilinos in the agricultural labour force	210.6*** (31.4)	___			1615.2*** (127.3)	___				
Inquilinos in the agricultural labour force*reform dummy	-157.7*** (43.9)	-148.1*** (45.3)			-842.8*** (178.0)	-750.8*** (180.1)				
Inquilinos in population			495.4** (201.6)				3370.5*** (865.1)	___		
Inquilinos in population*reform dummy			-475.9* (279.9)				-2949.3** (1202.4)	-2879.4*** (1140.7)		
Central Urban and North Central regions dummy				17.10*** (3.32)					156.7*** (13.5)	___
Central Urban and North Central regions dummy*reform dummy				-10.94** (4.83)					-70.5*** (19.7)	-70.7*** (19.6)
Province fixed effects	No	Yes	No	No	No	Yes	No	Yes	No	Yes
R2	0.258	0.256	0.230	0.246	0.297	0.171	0.180	0.163	0.210	0.168

In all these regressions we also control for a polynomial of farm size (linear, square, cubic and quartic) by themselves and interacted with a reform dummy, for a polynomial of the time trend (linear, square, cubic and quartic) by themselves and interacted with a reform dummy, the reform dummy and year dummies. The regressions with provincial fixed effects not reported here produced very similar results to the ones shown above. Within R2 is reported for provincial fixed effect estimates. The total number of observations is 1117. The standard errors are given between brackets.

Table A3: Alternative regressions, using the nominal price of land

	Dependent variable: Logarithm of the nominal price of the farm				Dependent variable : Logarithm of the nominal price per hectare					
Inquilinos in the agricultural labour force	5.24*** (0.71)	___			7.86*** (0.73)	___			6.23*** (0.68)	___
Inquilinos in the agricultural labour force*reform dummy	-1.95** (0.99)	-1.71* (1.02)			-1.86* (1.02)	-1.55 (1.04)			-2.22*** (0.959)	-1.98** (0.981)
Inquilinos in population			16.06*** (4.60)				22.9*** (4.93)			
Inquilinos in population*reform dummy			-11.95* (6.38)				-13.7** (6.83)			
Central Urban and North Central regions dummy				0.468*** (0.075)				0.742*** (0.077)		
Central Urban and North Central regions dummy*reform dummy				-0.182* (0.109)				-0.108 (0.113)		
Province fixed effects	No	Yes	No	No	No	Yes	No	No	No	Yes
Using logarithm of farm size	No	No	No	No	No	No	No	No	Yes	Yes
R2	0.212	0.194	0.166	0.194	0.555	0.473	0.491	0.542	0.616	0.534

In all these regressions we also control for a polynomial of farm size (linear, square, cubic and quartic) by themselves and interacted with a reform dummy (except for the last two columns where we used the logarithm of farm size, and its interaction with the reform dummy), for a polynomial of the time trend (linear, square, cubic and quartic) by themselves and interacted with a reform dummy, the reform dummy and year dummies. The regressions with provincial fixed effects not reported here produced very similar results to the ones shown above. Within R2 is reported for provincial fixed effect estimates. The total number of observations is 1117. The standard errors are given between brackets.