

The Political Value of Land: Political Reform and Land Prices in Chile

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*In this article, we argue that when patron-client relations are grounded in economic relationships, such as between landlord and worker, we should expect clientelism to influence not just how public policy, the state, and the political system work, but also how the economy works. We develop a simple model of the economic consequences of electoral clientelism when voting behavior can be observed. Landlords/patrons provide economic rents to workers, and in exchange workers vote for parties favored by landlords. As votes are used by the landlords to accumulate political rents, vote control increases the demand for labor and for land. The model implies that the introduction of the Australian ballot, which destroys this form of clientelism, should lead to a fall in the price of land in those areas where patron-client relationships are strongest. We test the predictions of the model by examining in detail the evolution of land prices in Chile around May 31, 1958, for which we collected original data. A characteristic of rural Chile at this time were patron-client relations based on the *inquilinaje* system, by which a worker, the *inquilino*, entered into a long-term, often hereditary, employment relationship with a landlord and lived on his landlord's estate. We show that the introduction of the Australian ballot in 1958 led to a fall of about 26% in land prices in the areas where these patron-client relationships were predominant.*

Patron-client relations involve an exchange of political services (from the client) for benefits (from the patron) (Hicken 2011; Kitschelt and Wilkinson 2007). In democratic settings, such services are typically voting in a particular way which favors the patron. The main consequences of such clientelistic influence on elections have typically been seen to be mainly on public policy, the quality of democracy, and the effectiveness of the state. Clientelism is thought to reduce accountability (even to introduce what Stokes 2005 calls “perverse accountability” where citizen/clients are accountable to politician/patrons; see also Kitschelt et al. 2010), to lead to the under supply of public goods, to undermine the effectiveness of the state and bureaucracy, and to facilitate corruption (Hicken 2011 reviews these and other channels).

The focus of attention on the impact of clientelism is natural given that most of the literature examines the use of clientelism by politicians or the use of state resources, such as jobs or contracts, to implement clientelism (see, e.g., Ziblatt 2008, 2009). Yet many patron-client relations do not directly involve the state, but are rather based on economic relationships, such as those between landlord and worker. This emphasis on the extrapolitical bases of patron-client relationships was common in the early research on clientelism (see the first section of Hicken 2011), and there is a large historical and case-study literature discussing how in democracies electoral fraud was used to protect landlords' interests. This literature is particularly developed in the Latin American context since most Latin American countries adopted various types of democratic election after independence

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(Lehoucq 2002; Lehoucq and Molina 2002; Posada-Carbó 2000).

In the context of Chile, long regarded as the subcontinent's most democratic country, Baland and Robinson (2008) provide one of the most rigorous attempts to investigate the implications of landlord-worker clientelism for electoral outcomes. Until 1958, landlords used their economic control over dependent workers, known as *inquilinos*, to determine whom they voted for. This practice was feasible since, although a secret ballot had been introduced in 1925, it allowed the political parties to print the ballot papers, which they either distributed directly to workers or which they could observe the workers taking into voting booths. As a result, balloting was in effect observable until the introduction of the Australian ballot in 1958. Baland and Robinson (2008) showed that the 1958 reform had a profound impact on political outcomes in the countryside and led to a rapid decline in votes for right-wing political parties, particularly in those districts in which clientelism was the most prevalent.

In this article, we argue that the consequences of such clientelistic control of elections and their ending by institutional reform will not simply be manifested in changes in electoral outcomes and public policies. The fact that the patron-client link between landlord and worker is primarily based on an economic relationship has implications for relative prices and the allocation of economic resources. In particular, the control landlords enjoyed over rural votes should be embodied in the value of those assets that allow such clientelism to occur, namely land. We build a simple, formal model which predicts that, prior to 1958, the political benefits that accrued to landlords from clientelism would be capitalized in the price of land. The model predicts that the introduction of an effective Australian ballot, such as in Chile in 1958, ought to lead to a fall in the price of land. We then use weekly data on land prices between August 1956 and December 1960 and show that the empirical predictions of our model are highly consistent with the data. In particular, we find that prior to the introduction of the Australian ballot, land prices were systematically higher in provinces where *inquilinos* formed 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 land ownership, the employment of *inquilinos*, and support for right-wing political parties.

The main contribution of our article is therefore to explore and test a new consequence of clientelism outside of its implications for public policy or democratic accountability. Through a rigorous identification strategy,

we show how a particular form of patron-client relations has a significant impact on relative prices and, hence, resource allocation.

In this article, we take the 1958 reforms in Chile as exogenous and study their impact on relative prices. One of the features of the literature on clientelism is that institutional reforms, such as democratization, seem to have heterogeneous effects on clientelism sometimes leading to its demise, but often not. More generally, in the Latin American context, "authoritarian practices" often survive the introduction of a secret ballot in elections (Acemoglu, Robinson, and Santos 2009; Gibson 2005; Lehoucq and Molina 2002; Levitsky and Way 2002; O'Donnell 1993; Shedler 2006). Why the 1958 reforms in Chile were so successful is not clear, but we argue that this does not bias the estimates of the effects of clientelism on the economy we present. One notable difference of Chile was that it developed a much more effective and strong central state than other Latin American countries, which allowed it to effectively implement the reform. Moreover, this state was strong in precisely the areas on the central valley where traditional patron-client relations built around *inquilinos* were strong (this is not one of O'Donnell's "brown areas").

Our article builds on a large historical literature which has emphasized that the form of voting procedures influences the extent of clientelism in the context of agrarian economies (Goldstein 1983; Hamerow 1974; Ricardo [1824] 1951–73). Even after the public ballot was abolished, voting often remained effectively observable because individual parties were allowed to print their own ballots which could be given directly to clients, as in the Chilean case (see Anderson 1993 and Blackburn 1988 for the German case; or Kreuzer 1996 for France). In the case of Imperial Germany (1871–1912), Ziblatt (2008, 2009) shows how, despite the adoption of universal male suffrage in 1871 and of the secret ballot in 1903, electoral fraud was pervasive as judged by legal complaints and was directly related to the level of inequality in landholding. In this particular context, the influence of landed elites took place mostly through the "capture" of rural public officials manipulating the elections on their behalf. Similar tactics were used and remain up to the present day in many developing countries (see, e.g., Breman 1974 and Kohli 1990 for India and Finan and Schechter 2009, who show how social networks and reciprocity can substitute for the absence of observable voting).

Our article also contributes to the vast literature on the economic consequences of democracy and democratic reforms, on which the empirical evidence is rather surprisingly unsettled. The consensus view is that democracy has no effect on economic growth (Barro 1997;

however, see Persson and Tabellini 2006, 2008), though some scholars find it to have positive effects on education (Avelino, Brown, and Hunter 2005; Baum and Lake 2003; Brown and Hunter 2004; Lindert 2003; Stasavage 2005) or life expectancy (Besley and Kudamatsu 2006; Kudamatsu, 2006). There is also a literature arguing that democracy has little impact on public policy (Cheibub 1998; Gil, Mulligan, and Sala-i-Martin 2004), though more recent studies argue that this effect is conditional on other circumstances, such as state capacity (Soifer 2009), the strength of elites at the time of transition (Albertus and Menaldo 2009), or democratic history (Bond et al. 2005). The contribution of our article is to show that the effects of a democratic reform, such as the introduction of an effective Australian ballot, may be directly on the economy and not just through public policy. Focusing on within-country variation can hopefully control for many of the problems of inference that bedevil cross-national empirical work.

More closely related to ours, some recent articles have attempted to isolate particular changes in electoral institutions and relate them to economic outcomes. In particular, Besley, Persson, and Sturm (2010) show that the abolition of literacy tests and poll taxes by the Voting Rights Act in 1965 led to large changes in taxation and economic performance in the U.S. South by facilitating the voting of black people. Further, Ansolabehere and Snyder (2008) and Bruhn, Gallego, and Onorato (2009) show that legislative malapportionment in the United States and elsewhere has important implications for public good provision and the distribution of government expenditures. Finally, Naidu (2009) shows that the disenfranchisement of blacks in the U.S. South in the 1890s led to an increase in land prices by lowering tax rates on landowners.

Our research is also related to the literature on the efficiency of rural resource allocation and property rights (Banerjee, Gertler, and Ghatak 2002; Mookherjee 1997) and to the long-term implications of landlordism for growth and income distribution by shaping socioeconomic institutions (Banerjee and Iyer 2005; Galor, Moav, and Vollrath 2008), as well as by affecting the supply of public education (see in particular Wegenast 2010 on the resistance of the Brazilian landed aristocracy to public instruction).

Our theoretical model of patron-client relations is related to that in Baland and Robinson (2008), though they did not examine the implications for land prices or the economy. Dekel, Jackson, and Wolinsky (2008, 2009) independently developed a model of vote buying and studied how the equilibrium price of a vote relates to the underlying fundamentals and institutions. They did

not, however, examine the consequences of vote buying for asset prices nor consider the comparative statics of reform.

Political Control and the Employment Relation

We first present a simple model to explore the link between land prices and landlord-worker clientelism. Consider an agrarian economy with $n + \ell$ agents: ℓ landlords and n workers. The workers have no access to the capital market. There are L units of land available, owned by the landlords. Workers have no land. To simplify notation we assume that all landowners are endowed with the same amount of land s , with $s = L/\ell$.¹ There is a single produced consumption good which is chosen as numeraire and has its price normalized to unity. 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 is 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. All agents 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} implying rents. 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: $R = w - \underline{w}$.²

We now consider 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, assume that workers prefer the left-wing party, while the landlords prefer 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:

$$U^w = \underline{w} + R + \sigma, \quad (1)$$

¹This assumption is irrelevant to the results described below as we assume 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.

²Sadoulet (1992) and Baland and Robinson (2008) provide two complementary analyses of the labor contracts offered to *inquilinos*, under the form of a permanent (resident) laborer contract involving some rents. The evidence of such rents is discussed at length in Bauer (1975), who describes *inquilinos* as first-class workers, with much higher living standards than the *peons*, who were largely underpaid and underemployed.

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

$$U^{se} = \underline{w} + \sigma. \quad (2)$$

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:

$$\underline{w} + R \geq \underline{w} + p + \sigma. \quad (3)$$

Because the employer is already giving rents to the worker, if $R \geq p + \sigma$, the threat of withdrawing these rents also allows him to control his voting behavior. Employment does not simply generate profits—it also gives *power* to control the behavior of others. (For a more elaborate microfoundation, see Baland and Robinson 2008.)

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

$$f\left(\frac{s}{m}\right)m - wm + pm. \quad (4)$$

The first term in (4) is revenues, 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 optimal demand for labor is determined by the first-order condition with respect to m ,

$$\left(f\left(\frac{s}{m}\right) - f'\left(\frac{s}{m}\right)\frac{s}{m}\right) - w + p = 0. \quad (5)$$

Equation (5) implicitly defines the optimal demand for labor as a function of parameters, which we write $m(s, p, w)$. As landlords compete to have access to land, in equilibrium land prices are such that profits are zero:

$$\left(f\left(\frac{s}{m(s, p, w)}\right) - w + p\right) \frac{m(s, p, w)}{s} = \pi \quad (6)$$

Equation (6) implies the following result.³

³For simplicity, we assume here that in equilibrium, $m(s, p, w)\ell \leq n$, implying that some left-wing agents end up self-employed in equilibrium.

Proposition 1. *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 stops votes from being bought and sold, such as the introduction of an effective secret ballot that removes the ability of landlords to sell the votes of their workers and has the following implications:

Proposition 2. *The introduction of the Australian ballot leads to a fall in the price of land.*

To see this result, note that political reforms remove the price of votes from (5) and (6). The introduction of the Australian ballot stops vote buying and destroys the feasibility of patron-client exchanges. As a consequence, the vote share of the right-wing party and the demand for labor by landlords also fall.

We are now in a position to discuss some of the assumptions made. First, we also assumed that the workers, in the Chilean case *inquilinos*, have an ideological preference that goes against that of the landlord. Clearly, in the labor contract, the lower σ is, the larger the utility of the worker as his political preferences coincide better with those of the landlords. Under condition (3), his wage rate remains, however, unaffected. When condition (3) does not hold, labor rents are not large enough to enable the landlord to control voting. To elicit the appropriate voting behavior, the landlord must raise the wage further. In this situation, political reforms which stop vote buying lead to a fall in the wage rate.

Under an alternative model where ideological preferences differ across workers and cannot be observed, the wage rate still remains given by the moral hazard constraint, and any worker with σ low enough will choose to work for a landowner. Highly ideological workers do not accept the contract and are self-employed in equilibrium.

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 $f\left(\frac{s}{m}\right) - \underline{w}$. The price that a landlord would be willing to pay is given by (6). Comparing those two expressions, and using condition (3), we obtain that a smallholder is always ready to offer a higher price than a landlord, because his labor cost is lower (\underline{w} instead of $w - p$):

$$f\left(\frac{s}{m}\right) - \underline{w} \geq f\left(\frac{s}{m}\right) - w + p. \quad (7)$$

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 labor 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.

The Impact of the 1958 Ballot Reform in Chile

Political Control in Chile

Like most Latin American countries, upon gaining independence from Spain, Chile adopted republican institutions, even though voting was not secret. Fraud, coercion, and vote buying (locally known as the *cohecho*) were all used to systematically influence the outcomes of elections and consolidate landed interests (see Lehoucq and Molina 2002 and Posada-Carbó 2000). 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, 35; Cruz-Coke 1984, 27–29). Petras and Zeitlin 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” (1968, 510; see also Hellinger 1978; Kaufman 1972; Loveman 1976).

On the basis of these institutions, Chile formed a relatively stable, though imperfect democracy (with the exception of the military coups between 1924 and 1932, a period dominated by Colonel Carlos Ibáñez). By controlling the votes of their dependent workers, the landed oligarchy provided the traditional constituency of the two right-wing parties, the Conservative and the Liberal (see, e.g., Gil 1966). In the early twentieth century, more than half of all senators and deputies directly owned large rural estates: “between 1850 and 1930, the Correa, Errázuriz, Balmaceda, Echenique are only a few out of many examples of families who used their rural base to launch several sons into law and politics” (Bauer 1975,

217).⁴ The domination of large estate owners in national political offices persisted till the late 1950s (Kaufman 1972).

The populist Carlos Ibáñez was elected as president in 1952, on the basis of a heterogeneous and unstable coalition. In 1958, the general disillusionment and the weakening support of the traditional parties led Ibáñez to support the introduction of the full Australian ballot, most likely in an attempt to destabilize the current status quo. Law 12.889 was promulgated and effectively put an end to the control of votes. The most important aspect of that law was to introduce the *cedula unica* (unified ballot), so that, after 1958, each voter received a single official ballot, which contained all party slates for any single type of election in his district, and an open-list system was adopted so that voters did not have to respect any official ordering of candidates (see Cruz-Coke 1984, 27–29 for a discussion of this law).

Most parties supported the 1958 reform, which was viewed as a compromise composed of two central elements (for more details, see Parrish, von Lazar, and Tapia-Videla 1977). On the one hand, the introduction of the Australian ballot system was expected to put an end to the electoral abuses engaged in by the Conservative and Liberal parties. Parties on the left rightly expected this to lower the share of rural votes in favor of the right. On the other hand, the electoral reform also outlawed the system of electoral pacts in elections for the Chamber of the Deputies, a measure detrimental to the left (the 1962 electoral law extended this prohibition to senatorial elections). The d'Hondt system used in the Chilean proportional representation tended to distort votes in favor of the larger parties, and the left was traditionally much more fragmented. This fragmentation was further aggravated by the simultaneous relegalization of the Communist Party. (For more on the impact of the d'Hondt system on Chilean politics, see Aninat and Navia 2002.) The fact that the 1958 presidential election was expected to be won by a tight margin also prompted the adoption of the reform, by stressing “the necessity for the Alessandrista forces (. . .) to put forward as ‘democratic’ a posture as possible in the 1958 presidential election” (Parrish, von Lazar, and Tapia-Videla 1977, 260).

As shown in Baland and Robinson (2008), the reform had a profound impact on the political balance of Chile. Even though Alessandri won the presidential elections in 1958, the share of rural votes going to the

⁴This number excludes all the members of the same family who did not directly inherit the estate. As Calbucurra (2011) shows, the Conservative and the Liberal parties in the 1950s also displayed a very high concentration of senators with political family antecedents, in sharp contrast with the other parties.

right fell consistently in the 1961 and 1965 elections, particularly in those provinces where the institution of *inquilinaje* was the most prevalent (in the Central Urban and the North Central Valley regions). The introduction of the Australian ballot system effectively put an end to the political control traditionally enjoyed by the landed oligarchy over their permanent employees. As a consequence, the overrepresentation of landed interests in political offices declined after 1958. Thus, in 1964, only 24% of the deputies, mostly from the Liberal and Conservative parties, directly held a large estate (Kaufman 1972, 80).

Land Prices and the Introduction of the Australian Ballot

Our model predicts that the electoral reforms of 1958 should lead to a fall in the price of land. 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 nationwide announcements of farms offered for sale. While the content of the advertisements varies 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. To avoid repetition, we also deleted announcements which were identical to an announcement made during the prior 18 months.⁵ We thus gathered information on 1,117 farms proposed for sale.

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 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.

⁵Sizes came in two different measures, the hectare and the Chilean *cuadra*. We assumed here that one *cuadra* was equal to 1.44 hectares.

A major advantage of this data set is that it spans across a relatively limited time period (53 months). Longer-term data would have suffered from major inference problems due to the role played by long-term demographic and technological factors. By reducing the time period of observation to a narrow window, we are in a better position to isolate the effects of the reform against the other long-term changes that may have occurred around that period. Another major advantage is that there were no restrictions at that time on the working of the land market, which makes it more amenable to an empirical analysis.

In Table 1, 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, 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 1 report the average price of land according to the presence of *inquilinos* in the agricultural labor force. Two stylized facts emerge: (1) land was more expensive in provinces where there are more *inquilinos*, and (2) the price of land fell much more in those provinces. In Figure 1, we report the average land price per month over the whole period. Average land prices fell substantially after the reform, with no particular trends discernible over the two subperiods. Figure 2 represents average land prices in provinces with a low or a high proportion of *inquilinos* (compared to the Chilean average) before and after the reform. While before the reform, land prices are higher in provinces characterized by a strong presence of *inquilinos*, after the reform they fall much more strongly in precisely those provinces. By contrast, in provinces with fewer *inquilinos*, the fall in land prices is much less pronounced.

We found some alternative data sources that are consistent with these major trends. Figure 3 below was constructed using the land price index provided by CIDA (1966) and presents the evolution of land prices in Chile between 1952 and 1962. The plain line represents real land prices, with the Consumer Price Index used as a deflator, while the dotted line represents the ratio of land prices to wheat wholesale price. The two lines exhibit a similar pattern: while land prices remained essentially stable till around 1958, they fell between 1958 and 1959 by about 20% and then stabilized at a level 15% below their 1958 prices. Further evidence consistent with Figure 2 comes from Hurtado, Bustois, and Galmez (1979), who examined average land prices over five-year periods and showed that, between 1953–58 and 1959–64, the real price

TABLE 1 Real Prices per Hectare before and after the Reform (May 31, 1958)

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

of land fell by about 30% in the Central Valley provinces. We do not emphasize further the results of these studies because their samples and methodologies are not entirely clear.

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 labor force should exhibit (1) higher land prices before the reform and (2) 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 labor force in the province of the farm, $(\frac{I}{T})_I$. Controlling for farm size and various time trends, we investigate the existence of a structural break on the day of the reform (May 31, 1958) in the relationship between land prices and the prevalence of *inquilinos* in the province.

The basic equation we estimate is the following:

$$\pi_{it} = \beta_0 + \beta_1 \ln s_{it} + \beta_2 \left(\frac{I}{T}\right)_I + \beta_3 t + \phi AgrPA_{It} + \varphi LvstPL_{It} + \delta_0 R_t + \delta_1 R_t \ln s_{it} + \delta_2 R_t \left(\frac{I}{T}\right)_I + \delta_3 R_t t + \sum \gamma_T Y_T + D_I + \epsilon_{it}, \tag{8}$$

where *Y_T* are year dummies taking the value 1 if the sale takes place in year *T*, *t* is a weekly time trend, *R_t* is the reform dummy, which takes the value 1 if the sale is advertised after May 31, 1958, and 0 otherwise, and *D_I* is a province fixed effect, which takes a value 1 if the sale took place in that province. Our main test focuses on the sign of β_2 , which should be positive, and the sign of δ_2 , which should be negative. The two last controls, *AgrPA_{It}* and *LvstPL_{It}*, represent the relative profitability of agricultural production and livestock production in province *I* in year *t*. These measures were computed by multiplying the average share of farmland allocated to crop in each province by the wholesale price of crops in year *t*, and the share of farmland allocated to livestock production by the wholesale price of livestock in year *t*. These controls are justified by the fact that (1) the employment of *inquilinos* may be correlated with the structure of agricultural production which, in the present context, is measured by the share of cultivated crops as compared to livestock, and (2) the relative profitability of these activities may have changed after the reform. By including these controls, we are effectively ensuring that the changes in the relation between farm prices and *inquilinos* that we explore are not driven by the fact that, for instance, *inquilinos* are more intensively used in a particular agricultural

FIGURE 1 Monthly Real Price per Hectare before and after the Reform

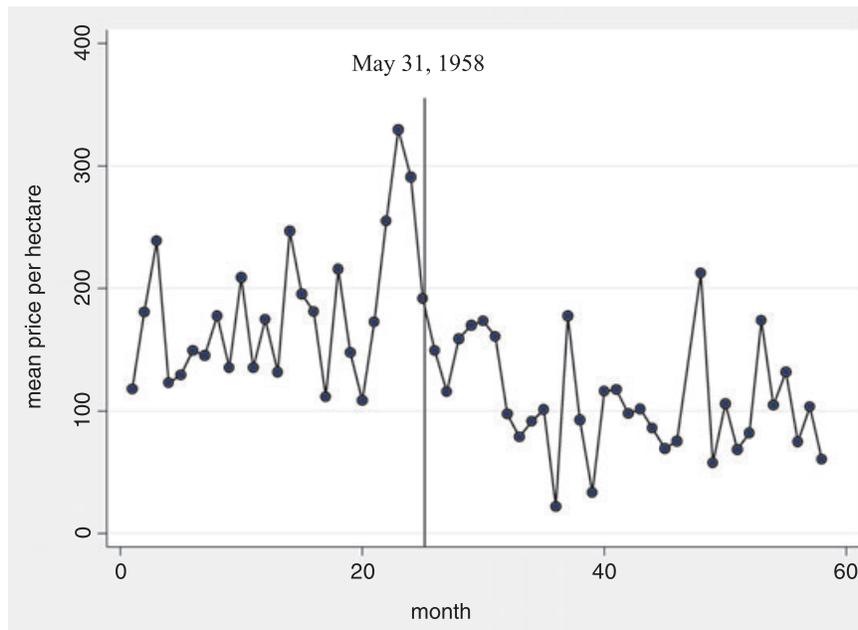
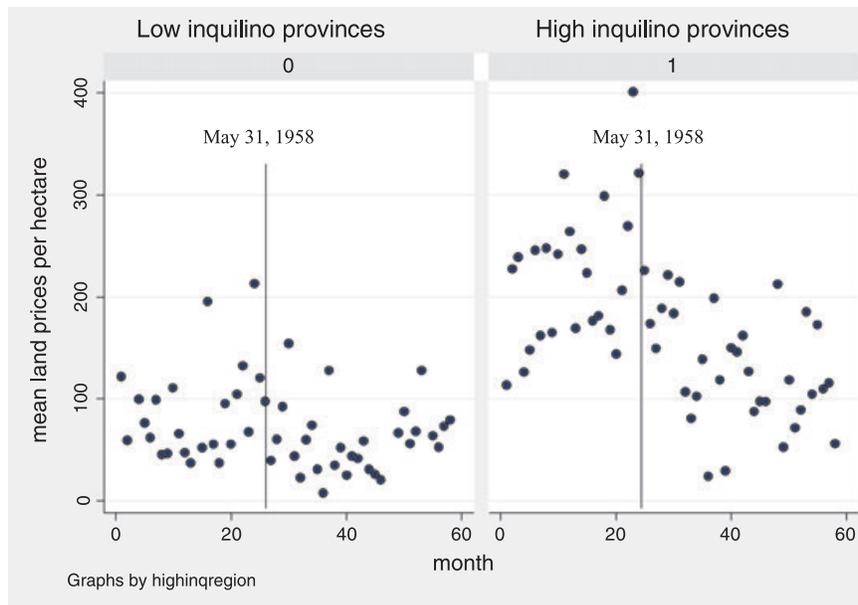


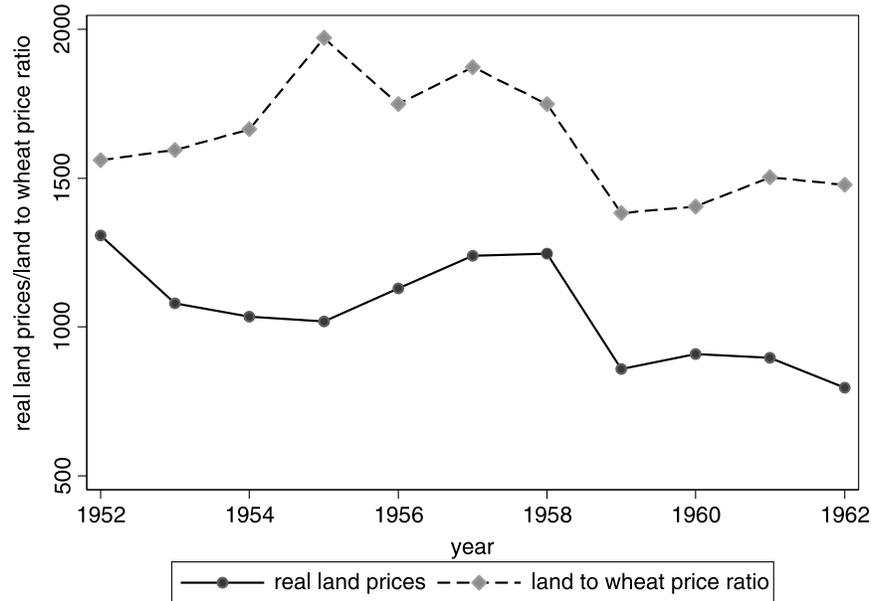
FIGURE 2 Monthly Real Price per Hectare in Low and High Inquilino Provinces



production, the prices of which fell after the reform. All the estimates provided are quite robust when these controls are not included, as they play little effective role in our estimations.

The inclusion of the province fixed effect, D_I , controls for all time-invariant province characteristics that may affect the relative profitability of a farm in that province, such as soil quality, remoteness, or access to

FIGURE 3 Real Land Prices and Land to Wheat Price Ratio in Chile, 1952–62



Sources: CIDA (1966, 343), French Davies (1973, 246), and Dirección de Estadística y Censos (1966, 197).

infrastructures. Unfortunately, since our measure of the proportion of *inquilinos* in a province is also constant over the period, when using those fixed effects, we are not able to estimate the effect of the presence of *inquilinos* on farm prices before the reform. We can only estimate the differential impact of the reform across provinces according to their relative population of *inquilinos*. This explains why, in most of the results presented here, we also report the estimations obtained when no provincial fixed effects are included.

Finally, the structure of the time variables used allows us to control for most of the fluctuations that may have affected farm prices on average over all provinces (a weekly linear trend, a reform dummy, the interaction between the two, and finally, year dummies). In particular, the use of year dummies effectively controls for all the changes affecting the average value of farms across Chile in a given year, such as the level of agricultural wages, the relative price of agricultural to industrial products, or the impact of overall export promotion policies. We will return to these issues in the discussion section.

The main results of our estimation are given in Table 2. The two first columns correspond exactly to the specification described in equation (8). In column (1), the equation is estimated using Ordinary Least Squares with no provincial fixed effects, which allows us 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 labor force tend to exhibit significantly higher land prices before the reform. However, prices fall more in those provinces following the reform, as δ_2 , the coefficient attached to $(\frac{I}{T})_I$ after the reform, is negative and significant.⁶ Moreover, the reform dummy in itself is not significant: absent its effects through the proportion of *inquilinos* in the agricultural labor force, the reform had no impact on land prices. Finally, land prices per hectare are lower in larger farms, which may reflect (unobserved) differences in fertility or cropping intensity across farms.

Columns (3) and (4) present parallel estimations using the proportion of *inquilinos* in the population, with very similar results. As our theory suggests, however, this particular measure of *inquilinos* is less directly related to our main argument, since what matters for the value of a farm is the number of permanent employees you are able to control relative to the other agricultural workers. It is therefore presented here mostly as a robustness check, and the results obtained are remarkably consistent with those presented in the first two columns. In columns (5)

⁶It 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.

TABLE 2 Land Prices per Hectare before and after the reform (May 31, 1958)

Dependent variable	Real price per hectare						Log (real price per hectare)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Inquilinos in the agricultural labor force	1239.1*** (138.5)	-	-	-	-	-	1308.0*** (311.7)	-	5.97*** (0.78)	-
Inquilinos in the agricultural labor force*reform dummy	-772.5*** (171.5)	-814.2*** (181.9)	-	-	-	-	-677.9** (275.4)	-648.0** (286.0)	-2.24** (0.96)	-2.34** (1.03)
Inquilinos in population	-	-	2743.8*** (791.2)	-	-	-	-	-	-	-
Inquilinos in population* reform dummy	-	-	-2470.6** (1088.9)	-2673.5** (1091.4)	-	-	-	-	-	-
Central Urban and North Central regions dummy	-	-	-	-	111.8*** (14.4)	-	-	-	-	-
Central Urban and North Central regions dummy* regions dummy	-	-	-	-	-66.5*** (18.8)	-76.7*** (19.8)	-	-	-	-
Reform dummy (= 1 if sale occurs after May 31, 1958)	0.89 (86.1)	-14.6 (87.5)	-73.5 (86.3)	-106.8 (85.1)	-93.9 (81.8)	-107.0 (81.7)	-44.1 (96.4)	-29.1 (98.8)	0.23 (0.48)	0.25 (0.49)
Log of Farm size	-61.6*** (4.5)	-60.1*** (4.5)	-68.1*** (4.5)	-63.0*** (4.5)	-62.8*** (4.5)	-60.5*** (4.6)	-61.1*** (4.5)	-59.3*** (4.7)	-0.63*** (0.03)	-0.62*** (0.03)
Log of Farm size*reform dummy	15.8** (6.8)	15.7** (6.8)	19.8*** (6.9)	21.9*** (6.6)	16.6** (6.9)	16.2** (6.8)	16.6** (7.0)	14.5 (7.2)	-0.07* (0.04)	-0.08** (0.04)
Share of cultivated land per farm per province*price of agricultural goods	-0.03 (0.03)	0.34 (0.33)	-0.12*** (0.03)	-0.02 (0.32)	-0.08** (0.03)	0.25 (0.33)	0.004 (0.08)	0.51 (0.35)	0.0003* (0.0001)	0.001 (0.002)
Share of pastures per farm per province*price of livestock	0.04* (0.02)	-0.56* (0.31)	0.08*** (0.02)	-0.29 (0.31)	0.03 (0.02)	-0.56* (0.32)	0.05 (0.06)	-1.10** (0.44)	0.0003*** (0.0001)	-0.002 (0.002)
Weekly trend, weekly trend*reform dummy, year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Province-specific trend	No	No	No	No	No	No	Yes	Yes	No	No
R ²	0.376	0.241	0.336	0.232	0.365	0.238	0.374	0.249	0.610	0.524

Note: Within R² is reported for provincial fixed effect estimates. Standard errors in parentheses. The total number of observations is 1,117.

and (6), we distinguished between the Central Valley region, which corresponds to the political base of the landed oligarchy, and the other regions, and find a very strong effect of the reform on land prices in that area.

In columns (7) and (8), we provide an even more demanding test by interacting each province with the linear time trend. By so doing, we allow land prices to follow a specific trend in each province, owing for instance to long-term (linear) trends in local weather or production conditions. We again find farm prices to initially be higher but fall more importantly after the reform in provinces with a lot of *inquilinos*. In columns (9) and (10), we used the logarithm of the real price per hectare as the dependent variable. While this measure has the advantage of better controlling for the potential outliers (by giving them much less weight), it suffers from a contraction bias, where variations in the dependent variable are reduced, thereby potentially affecting the significance of the results.⁷ The results obtained are again consistent with the ones obtained in the previous estimates. We also did all the estimates using a more flexible specification for the time trend and farm size (such as the use of a quadratic or higher degree polynomials for farm size and time), as well as alternative measures of farm prices (such as the total price of the farm), and various truncations of the sample, for example by considering only large farms (over 200 hectares). The estimations obtained remain very robust across all those alternatives, and some of these alternatives are presented in the supporting information attached to this article.

A possible weakness of the estimations above is that they may be biased by the presence of heteroskedasticity and autocorrelation.⁸ The data we have collected is a repeated cross-section of farm prices per province per week, with sometimes more than one farm for sale in a province on a particular week, but, much more frequently, many weeks with no observation for some provinces. We cannot therefore use the usual correction methods and had to transform our data, so as to have a balanced panel data set. To do this, we regrouped the provinces into the eight geographic regions of Chile (North Central, Frontier,

Little North, Lakes, etc.) and the weekly observations into trimestrial observations in order to compute the average price of a farm in a given region during a trimester. Doing so drastically reduces the sample size to 75 observations.

To provide a useful basis of comparison, we first replicate on this new data set the province fixed effects specifications used in Table 2. The results are presented in the first three columns of Table 3. In the next three columns, we provide Newey-West estimators of the parameters that correct the effects of heteroskedasticity and correlation in the error terms. We use two lags in those estimates and weighted the observations by the number of observations in each cell. Finally, in columns (7) to (9), we provide Arellano-Bond estimates of the parameters, based on generalized methods of moments, which are also robust to autocorrelation. This last method suggests some autocorrelation in our data for the first two lags in the variables. Longer lags turned out to be insignificant. Overall, the magnitude and the significance of the coefficients obtained under these two alternative methods are strikingly close to the ones obtained before, in spite of the fact that they are based on a much smaller sample (with the exception of the Arellano-Bond estimates for the proportion of *inquilinos* in the total population, which turned out to be insignificant). This also suggests that the presence of heteroskedasticity and autocorrelation did not seriously bias the results obtained in Table 2.

Clearly, the impact of the 1958 electoral reform on farm prices is related to the presence of *inquilinos*. Overall, we find clear evidence of a structural break in farm prices, with farm prices falling more in provinces with a strong presence of *inquilinos*. The coefficient estimated suggests that farm prices should have fallen by about \$70,000 per hectare in the Central Valley provinces. Given an initial average price of \$266,000, this corresponds to a fall of about 26%.⁹ We interpret this figure as a measure of the share of political rents associated with the control of votes which are embodied in the price of land.

Vote Buying and Political Rents

Is the observed magnitude of the fall in land prices a plausible consequence of political reform? We could have checked this if we had had direct evidence on the value of a vote. We, however, have some indications on how much a vote cost to buy. 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

⁷The estimations when using the logarithm of the dependent variable are sensitive to the range of values taken by that variable and therefore produce biased estimates.

⁸Multicollinearity may also be present. However, in this data set, correlations between the explanatory variables of interest are rather low. In particular, the correlation between the proportion of *inquilinos* and the logarithm of farm size is equal to -0.23 . It is worth noting that the correlation between the proportion of *inquilinos* in the agricultural labor force and the two other measures of *inquilinos*' presence is rather high: it is 0.53 with the proportion of *inquilinos* in the population and 0.82 with the Central Valley dummy.

⁹The 95% confidence interval for this estimate is 13%–39%.

TABLE 3 Land Prices per Hectare before and after the Reform (May 31, 1958): Arellano-Bond and Newey-West Estimations on Trimestrial Averages

Dependent variable: Real price per hectare	Fixed effect regressions			Newey-West estimates			Arellano-Bond estimates		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Inquilinos in the agricultural labor force	-	-	-	1194.6*** (191.4)	-	-	-	-	-
Inquilinos in the agricultural labor force*reform dummy	-1021.0*** (211.7)	-	-	-888.8*** (239.8)	-	-	-602.3** (263.9)	-	-
Inquilinos in population	-	-	-	-	4233.6*** (940.3)	-	-	-	-
Inquilinos in population *reform dummy	-	-3611.8** (1384.4)	-	-	-3572.7*** (1334.5)	-	-	-1610.4 (1521.4)	-
Central Urban and North Central regions dummy	-	-	-	-	-	93.3*** (17.4)	-	-	-
Central Urban and North Central regions dummy*reform dummy	-	-	-73.7*** (15.9)	-	-	-68.1*** (19.9)	-	-	-41.6** (19.7)
Reform dummy (= 1 if sale occurs after May 31, 1958)	91.8 (116.7)	-45.8 (124.5)	-13.4 (112.4)	-117.2 (88.8)	-238.1** (98.6)	-129.4** (82.7)	-126.0 (98.2)	-239.5*** (82.4)	-189.9** (86.0)
Log of Farm size	-14.7** (6.9)	-21.6*** (7.7)	-12.5* (7.1)	-25.4** (10.2)	-30.1** (12.3)	-23.1** (10.2)	-26.4*** (8.7)	-34.1*** (8.5)	-25.3*** (9.1)
Log of Farm size*reform dummy	14.4 (10.0)	27.7** (11.4)	11.2 (10.3)	28.6** (11.6)	39.7*** (14.0)	24.2** (11.7)	26.2** (11.4)	35.1*** (11.8)	24.7** (11.7)
Share of cultivated land per farm per province*price of agricultural goods	0.23** (0.10)	0.32*** (0.11)	0.21** (0.10)	0.06 (0.05)	-0.10** (0.04)	-0.09** (0.04)	0.10 (0.07)	0.13* (0.07)	0.09 (0.07)
Share of pastures per farm per province*price of livestock	0.36*** (0.11)	0.47*** (0.12)	0.35*** (0.11)	0.19*** (0.04)	0.27*** (0.03)	0.16*** (0.04)	0.18 (0.12)	0.19 (0.12)	0.19 (0.12)
Trend, trend*reform dummy, year dummies, province fixed effects	Yes	Yes	Yes	No	No	No	No	No	No
Number of lags	-	-	-	2	2	2	2	2	2
Number of observations	75	75	75	75	75	75	75	75	75

Note: Standard errors in parentheses. The Newey-West estimates are weighted by the number of observations in each cell.

the century (see in particular Heise 1982, but also Scully 1992 and Sinding 1972). Some parties even advertised the price of a vote in newspapers. From the few pieces of information provided by historical studies, prices at that time varied between around 30 pesos in 1909 to 150 pesos for the 1918 parliamentary elections (see Heise 1982).

Assuming the price of a vote in 1915 to be 100 pesos, and taking into account the change in the number of voters (from 591,000 in 1915 to 1,284,159 in 1957) and inflation (the CPI changed from 1 to 181.3 between those two years; see Mitchell 1998, Table H2, 712–3), the equivalent value of a vote in 1957 is 8,340 pesos.¹⁰ To compare this to farm prices, we compute the discounted value of all political rents accruing to the lifetime voting right of one person. There are on average 0.54 elections per year (every 24 years, there are six parliamentary, four presidential, and three congressional elections). At an interest rate of r , the total discounted value of a vote, R , is given by $R = \frac{0.54*V}{r}$, where V is the value of one vote in one election. Under these assumptions, the lifetime value of a vote, at a discount rate of 3%, is equal to \$150,120. We now compare the size of that estimate to the value of a farm in the Central Valley. In 1957, a large farm (between 500 and 5,000 hectares) in the province of O'Higgins employed 73.4 workers, out of which 23.7 were *inquilinos* (according to the 1955 agricultural census). The mean value of such a farm in our data is equal to \$27,050,000. As a percentage of the value of a farm, the political rents associated with the control of the *inquilinos*' votes then represent 13.2% of the value of the farm (or 26.4% if we furthermore assume that landlords also control the *inquilinos*' spouses).

This exercise is clearly at best indicative of the value of a vote in 1957 since we have to assume (1) a strong correspondence between the nature of electoral corruption in the 1950s and the system of explicit vote buying which took place at the beginning of the century (in particular, regarding the degree of electoral competition and the size of the overall political rents), (2) that the price of a vote in the beginning of the century also correctly captures the social prestige, the political positions, and the influence over policies that landlords enjoyed, and (3) that the number of *inquilinos* properly reflects the number of dependents (e.g., trading partners) over which landlords had some control. Moreover, the choice of the discount rate or of the initial price of a vote was partly arbitrary, and the use of a higher discount rate, or a lower price per vote in 1915, would reduce those numbers above cor-

respondingly. Still, their magnitude is comparable to the political premium estimated in the Central Valley (26%).

Alternative Hypotheses

In this article, we have shown that, prior to the 1958 electoral reform, land prices were higher in provinces in which *inquilinos* made up a large part of the agricultural labor force and that the reform led to a larger fall in land prices in precisely the same provinces. 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 afterward in Chile. Two other pieces of evidence support our interpretation. First, as shown by Baland and Robinson (2008), these changes were accompanied by an important fall in the proportion of right-wing votes in the rural areas. Second, during the decade 1955–65, the actual number of *inquilinos* declined substantially in all provinces. As a proportion of the agricultural labor force, the average number of *inquilinos* fell from 12.4% in 1955 to 7.6% in 1965 in Chile (and from 19.4% to 11.9% in the Central Valley). For instance, in the province of O'Higgins, the share of right-wing votes fell from 47.4% in 1957 to 21.8% of the votes in 1965. Simultaneously, the area controlled by large farms (above 200 hectares) fell from 73.6% to 53.1%, and the proportion of *inquilinos* in the agricultural labor force fell from 20.2% to 11.0% between 1955 and 1965. In the Colchagua province, also located in the North Central Valley, right-wing votes fell from 70.2% in 1957 to 22.1% in 1965, while the proportion of *inquilinos* fell from 20.4 to 12.0%.¹¹ While this change may reflect long-term technological and demographic changes, it is also compatible with the idea that, once the landlords lost their ability to politically control the *inquilinos*, the advantages of maintaining them on the farms were substantially reduced.

However, there may be other possible interpretations of part of our results. Clearly, it is possible that real land prices might have fallen for several reasons apart from the fact that the Australian ballot removed the political rents which had previously accrued to landownership (and were capitalized in its value). A major competing explanation for the decline in land prices is that the profitability of farming changed dramatically over the period considered, due to changes in the environment faced by the agricultural sector. In Table 4, we provide some

¹⁰This number is obtained by multiplying \$100 by 181.3 and by 0.46 (=591,000/1,284,159).

¹¹Given that the information is only available per province in 1955 and 1965, we could not develop a more formal test here, as the impact of the electoral reform is not distinguishable from long-term trends in agrarian relations.

TABLE 4 Agricultural Prices and Wages in Chile, 1956–1960

Year	Real prices of wholesale agricultural and livestock products*	Wholesale agricultural/ industrial relative prices (%)	Real wages in agriculture*	Agricultural crops/ livestock relative prices (%)
1956	22.1	104	121	70
1957	22.3	107	128	92
1958	20.4	89	135	80
1959	20.5	90	115	79
1960	21.8	103	114	87

Note: *Divided by the CPI. The source for these figures is Mamalakis (1983).

information on the evolution of agricultural prices and wages over the period.

It must be noted that, compared to industrial prices, agricultural prices went down in 1958 and 1959 before going up again in 1960. They then remained relatively stable until the late 1960s, where they started to rise dramatically. Agricultural wages also fluctuated and fell in 1959 and 1960 before going up in the next decade (Mamalakis 1983); overall, there is some controversy about the profitability of farming in Chile during that period (see Thiesenhusen 1967).¹² First, these changes tend to affect the overall profitability of farming across Chile and should not in principle have a differential impact on those provinces that rely more intensively on the *inquilino* system. As discussed above, the inclusion of year dummies and time trends in our estimation is meant to control for all the changes that affect average farm prices each year, across all provinces. A change in the profitability of farming compared to other productive activities is therefore captured by those controls. In particular, the use of year dummies allows the average price of land to differ every year.

Second, a hypothetical decline in the profitability of farming should have prompted potential sellers to offer more farms on the market after 1958, while, actually, fewer land transactions occurring after 1958 argues against it: the average number of farms offered for sale every month

actually fell from 27 before the reform to 17 afterward.¹³ Third, we chose to focus on a relatively narrow time window (53 months) so as to obtain results that are relatively insensitive to long-term changes. It is hard to see, within such a narrow interval of time, why farm prices should be affected differently because of the long-term trends in the profitability of farming.

The possibility remains, however, that within the agricultural sector, relative prices have changed, affecting some provinces more than others. The two major agricultural products in Chile at that time were cereals (mainly wheat) and livestock (mainly beef). It is possible that, compared to the price of livestock, the price of cereals has changed substantially over the period and that the production of one of these two goods relies more extensively on the use of *inquilinos* in the labor force. Table 4 indicates that the relative price of crops with respect to livestock changed over the period, rising substantially in 1957, then falling in 1958 and 1959 to rise again in 1960. It can therefore be argued that the differential fall in farm prices is related to the 1958 fall in crop prices relative to livestock. However, at the level of the province, we find very little correlation between the production of crops at the province level and the prevalence of the *inquilino* system. If anything, we find a positive correlation (0.54) between the share of land used as pastures (and therefore, livestock production) and the proportion of *inquilinos* in the agricultural labor force. As a result, the relative decline of crop prices in 1958 should have increased the relative profitability of farms in provinces with more *inquilinos*. More importantly, in the estimates we explicitly take these changes into account when controlling separately for the share of agricultural land that is cultivated or that is used as pasture land for each province (multiplied by the price index for crops and for livestock, respectively).

Another interpretation would be to ascribe the fall in land prices after 1958 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. This hypothesis, however, again implies a general fall in land prices, which we control for by the introduction of time variables, and a greater number of land transactions after the reform, which we do not observe. Again, these interpretations cannot explain the fact that the fall in land prices is closely associated with

¹²According to Thiesenhusen (1967), minimum salaries in agriculture were falling until the mid-1960s. Expressed in 1960 escudos, the minimum agricultural wage was \$99 in 1953–54, while in 1960, it was \$62. The gap between rural and urban workers was also widening. Thus, in 1965, urban workers received minimum wage adjustments up to the full amount of inflation in 1964—about 38%. Rural workers' minimum wages were adjusted only about half as much (Thiesenhusen 1967, 23).

¹³There were 585 farms offered for sale in the 22 months preceding the reform and 532 during the 31 months that followed it (see Table 1).

the presence of *inquilinos* in the province and tends to be more pronounced in exactly those provinces dominated by the landed oligarchy.

Another major hypothesis accepts the fact that before 1958 electoral corruption stopped rural voters from expressing their political preferences, but it emphasizes a different mechanism linking electoral reform to the data. This idea is that after electoral reform, a left-wing president and government were 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 hypothesis seems all the more convincing because we know *ex post* that agrarian reform became such an important political issue in the late 1960s and early 1970s in Chile.¹⁴

There are two main problems with this alternative mechanism. The first concerns the implausibility that the land reforms of the late 1960s and early 1970s could have been anticipated in the late 1950s. The second concerns its inconsistency with our data. First, 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 4 shows the real value of the stock market index in Chile from 1928 to 1978. The real value of stocks declined more or less continuously from the 1930s through to the coup of 1973, reaching their 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 leveled 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.

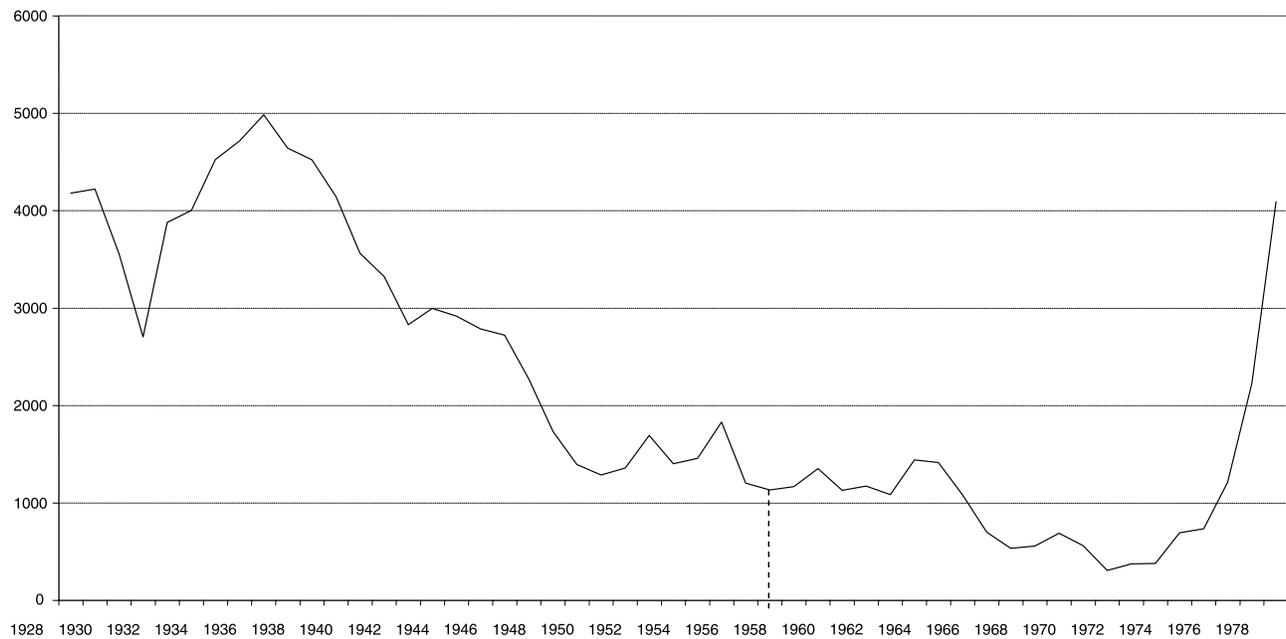
Moreover, while agrarian reform had been occasionally discussed in Chile since the early 1920s, it was not treated as a policy that might seriously be implemented until the end of the 1960s. Some marginal land purchases and redistributions took place between 1962 and 1964 under the 1962 Law 15020, but they were explicitly targeted toward 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 farmland could not have been affected by these minor reforms (for a detailed account of these, see Loveman 1976 and Gonzales 2010). 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" (1967, 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, 220 and Gonzalez 2010). The law was, however, voted only in July 1967, and its implementation started only in 1969. Consistent with this, Swift 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" (1971, 68). Moreover, after a study of agricultural investment behavior in the early 1960s, Swift concludes: "The examination of investment behavior, therefore, does not clearly support an interpretation of lower investment through fear of expropriation" (68). The evidence therefore suggests that the anticipation of land reform cannot have been the factor depressing land concentration and prices in the late 1950s. Instead, the most plausible explanation is the one proposed by our theory; with the introduction of the Australian ballot, the price of land fell since the return to landownership fell.

The second problem with this alternative hypothesis is that while the evidence 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 several provinces. Thus, the share of land owned by farms above 200 hectares increased by more than 10% between 1955 and 1965 in five provinces (Osorno, Antofagosta, Chiloé, Aysen, and Atacama). Additionally, the area operated by farms larger than 1,000 hectares fell only slightly by –1.6% on average and actually increased in eight provinces. It was only in the Central Valley provinces where the traditional oligarchy and patron *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

¹⁴Rural labor laws, with their strong restrictions on labor unionization, were another important issue that also changed in the late 1960s. The arguments against this line of interpretation are, however, very similar to the ones we develop for land reforms. Moreover, real wages fell in the few years after the reform (see above).

FIGURE 4 Chilean Real Stock Market Index, 1928–1978

Source: Couyoumdjian, Millar, and Tocornal (1992).

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.¹⁵

Finally, in our estimates, the reform does not seem to have driven the prices of large farms down, as almost all of the coefficients in Tables 2 and 3 for farm size after the reform are significantly positive. One would have anticipated the opposite sign if the main mechanism through which the reform influenced land prices was the anticipation of future land reform.

Conclusions

In this article, we developed a formal model of rural clientelism where landlords employ clients and concede eco-

nomie rents to them in exchange for controlling their voting behavior in elections. In rural areas, 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 incorporates political rents.

Political reforms which make voting behavior unobservable destroy this type of clientelism, and the model implies that such political reform should lead to a fall in land prices. 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 was the institution of *inquilinaje*, by which a worker, the *inquilino*, entered into a long-term, often hereditary, employment relationship with a landlord and lived 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 Australian 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 was not negligible, as it represented on average 26% of the value of the land.

¹⁵ Finally, unlikely as it is, consider the idea that the resistance to land reforms by the landed oligarchy was more advantageous to those provinces where *inquilinaje* was more prevalent and that the electoral reform therefore led to a fall in farm prices in these areas. While the mechanisms underlying this interpretation are partly different than the one proposed here, and rely more directly on the functioning of the political process, the benefits from resisting these policy changes can actually be reinterpreted as part of the rents enjoyed by the landlords for their control of the rural votes.

More broadly, the central contribution of our article is to advance and test a new hypothesis about the implications of clientelism outside of those for public policy or democratic accountability. We show that clientelism also has important implications for relative prices and resource allocation. In particular, as patron-client relations provide extra-economic rents to the patron, clientelism distorts the relative prices of those assets that allow the employment and the control of the clients. The research design of the article exploits an institutional reform which put a stop to landlord-worker clientelism to test for the existence of these economic effects.

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