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The Agrarian Reform Experiment in Chile

History, Impact, and Implications

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ABSTRACT

The study of past land reform efforts can serve to guide policy analysts and policymakers in their evaluation of the merits and the possible design of future reforms to land tenure systems. The key question about land reform is; What is its potential to improve equity and efficiency? The answer is not obvious; indeed, history shows that reforms are complicated, are often messy, and sometimes fail, because they are based on incorrect assessments not only of the problems motivating reform but also of the farm model intended to be the solution. This paper examines the Chilean experience in detail in order to better understand the history of a major agrarian reform effort in Latin America. Agrarian reform was more than a redistribution of land from large holders to small—in fact, that was not the original intention. Rather, the reform efforts were subject to a complex political and economic dynamic, with the process acquiring a life of its own. Once initiated, it was difficult to anticipate its evolution and final results. This paper presents what is known about the role of agrarian reform and the subsequent *counter reform* in producing a successful dynamic evolution of Chilean agriculture.

Beginning in the mid-1960s and until 1973, agrarian reform in Chile redistributed land from larger private estates to large cooperative and collective farms on the same estates, leaving preexisting small farms unaffected. The initial beneficiaries were permanent workers in the commercial farm sector. After the elections of September 1970, however, under President Salvador Allende, reform became part of a broader goal of a Socialist economic transformation, and agricultural productivity per se was not the central objective. Coordination problems arose in setting incentives, with policy planners focused on staple goods, even though the comparative advantage of the country leaned toward higher-valued products, which required high per-hectare capital investments (such as for orchards, vineyards, dairy). The discovery process for new products and export opportunities, especially the questions of who absorbs the risk of new products and of unpredictable international prices, was perhaps unsuited to the farm model on which the Chilean agrarian reform was based. In addition, the fiscal costs of reform were high, even though the program compensated only a fraction of the value of expropriated land. Based on an analysis of records from the agrarian reform agency, the transfer of one additional dollar in land wealth to beneficiaries of the reform required real government expenses of between 46 and 74 cents (not including the total value of the land transferred).

One hypothesis currently circulating (Jarvis, et al., 2004; Moreno, 2013) postulates that without the shock of reform and the subsequent redistribution of land to smallholders under the military government, there would not be the environment—especially land markets—for a more entrepreneurial class of farmers to take advantage of the deregulation, privatization, and trade reforms that followed. An alternative hypothesis, circulating among economists even during the 1960s but not accepted by policymakers at the time, was that adverse economic incentives, distorted by government interventions, discouraged investments and productivity improvements. Under this latter hypothesis, land expropriation would not be the required policy response. Although there is not a black-or-white choice between hypotheses (in fact, they are not mutually exclusive), the ex post view presented in this study is that the incentive-distortion effect was real and not minor. Certainly today, the successful nature of Chilean farming and the incentive structure that agriculture faces are radically different from that seen in the 1960s. Another lesson is that the farm production model is critical in determining what is observed in the longer term. In Chile, as in other land-abundant, low-population-density countries, there is an evolution of farming toward more capital-intensive and often larger operations; attempting to force or subsidize a predetermined model of farm size is likely not to be sustainable. This theory does not contradict the possible merits of targeted assistance to small farmers, whether for social objectives or to resolve possible market failures.

Keywords: Chile, agrarian reform, farm structure, land tenure, incentive structure, *asentamientos*

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1. INTRODUCTION

Can the study of the past help policymakers evaluate the suitability and design of land tenure reform? In the minds of many, land reform has the potential to improve equity and efficiency, and in some circumstance it could be the case. History has shown, however, that the practical implementation of land redistribution faces significant complications; certainly, many attempts have failed. According to the *World Development Report 2008* (WDR 2008) successful “land reforms are rare and often associated with exceptional events, such as war and political upheaval” (World Bank 2007, 163). In Latin America, where initial inequalities in farm size and income levels were high, attempts at land reform had various disparate outcomes, but “the impact on poverty has been disappointing” (World Bank 2007, 163).

This paper examines the Chilean experience in detail. Chile’s land reform—known as agrarian reform because it is more than a redistribution of land from large holders to small—was subject to a complex mixture of dynamic political and economic factors, with the process acquiring a life of its own. Once the reform was set in motion, it became difficult to anticipate its evolution and final results. Unlike the then-recent land reform efforts undertaken with authoritarian mandates in Taiwan, Japan, and South Korea, Chile’s reforms efforts from 1965 to 1973 were the result of the normal politics of a representative democracy. As such, the evolution of Chile’s reform was not the product of a single vision; instead, it was subject to imperfectly predictable changes in political leaders and coalitions. Today, the country’s agricultural sector is radically different—more productive and economically healthier—than what it was when reforms were initiated in the 1960s. What role did agrarian reform and the subsequent “counterreform” from 1965 to 1978 play in producing the successful dynamic evolution of Chilean agriculture?

Before examining the Chilean case in detail, the reader should understand how land reform—or more appropriately agrarian reform—was defined and recognized at the time by Chilean government and political leaders, as well as by academics, farmers and others. In the economic and development literature addressing the theme in the 1960s and today (with the WDR 2008 being a prominent example) and to most interested academics, land reform was and still is often thought of as redistribution of productive assets from a small number of large (perhaps even feudal) estates to a large number of small-scale farmers who were formerly landless workers. The Chilean reform was, in fact, initially proposed in the early 1960s as both a remedy to poorly performing farm sectors and a social measure to promote equity and the welfare of poor, rural workers. It was initially advertised as a plan to give land to small farmers; however, it evolved within a few years into something notably different—that is, a quasi-cooperative model of large-scale production. The rationalizations for the Chilean reforms often conflicted and certainly were more complex than a simple call for equal land distribution. Proof of this can be seen in the distinct visions of land reform offered by Barraclough (1972), Lehman (1971), Chonchol (1972), and others writing during the reform process. The objectives, methods, and results of land reform in Chile varied significantly over time, interwoven in a larger political narrative.

The Chilean agrarian reform can be divided into three broadly defined periods with different political foci. The first, before 1965, was a relatively modest attempt by a traditionalist, anti-Socialist administration to divide some large estates into smallholdings. The second, beginning in 1965 and lasting until September 1973, was a much more ambitious land reform, called agrarian due to its aim to remake agriculture. Remaking agriculture meant not just land redistribution but also an economic rationalization of what was thought to be a conservative, traditional, and inefficient system of *inquilinaje*, or labor tied to estates, and of *latifundia* by transferring extensive landholdings to large cooperatives and collectives. After 1973, during the third period (often called the counter reform), expropriations ended, and cooperatives and collectives broke up into smaller private farms, accompanied by a return of some land to the original owners.

The second period saw a significant amount of complementary help, involving technical assistance and credit. In the third period, the policy of land subdivision and redistribution of previously expropriated properties to cooperative workers individually, who then became small farm owners, is the

type of program that most readers likely have in mind when thinking about land reform. However, the military government delivered land to smallholders in the context of the then-existing set of limited extension and credit programs, which might have inhibited the success of the small farm sector. To put this in context, at that time, the government was facing a severe fiscal constraint, with a budget deficit of about 20 percent of gross domestic product (GDP) and annual inflation rates of more than 500 percent.

Prior to implementation, the agrarian reform of 1965 was offered by the political authorities as an implicit promise to redistribute land to small farmers. By breaking up large and presumably inefficiently managed holdings, the logic held, productivity gains that benefit both producers and consumers could be achieved. In addition, land expropriations would reduce the political influence of large landowners in local communities. Finally, the redistribution of land to small farmers would solve efficiency problems and promote equity and poverty reduction.

The objective of redistribution to smallholders, however, was achieved neither under President Eduardo Frei nor under the subsequent Allende administration. Instead of being divided and redistributed to small farmers, land was transferred to *asentamientos*, or land reform settlements, ostensibly meant to be collective cooperatives. These large holdings were initially promoted as temporary, lasting three to five years, which would allow beneficiary *campesinos* time to receive sufficient training to become independent operators. Training was meant not only for production but also for dealing with input and output markets—or so this novel experiment in *transition* was presented. In reality, few *asentamientos* were broken apart and redistributed during the Frei period, and under the Allende administration, the purpose of land expropriation changed altogether.

This paper examines the history of the agrarian reform in Chile from the early 1960s to the late 1970s. It first discusses the policies, programs, and process of reforms, including fiscal costs and emphasizing the changing policy approaches to land tenure, before, during, and after reforms. Then it turns to a description of the structure of farming and the growth and composition of production before, during, and after the reforms, as well as the resulting state of Chilean farming. The study then addresses impacts of the reforms, first on productivity (and its relation to the management model adopted during agrarian reform) and second on transfer efficiency (considering gains to beneficiaries, losses to previous owners, and fiscal costs). Then it presents information about what happened to small farms following the redistribution phase. This paper's approach is primarily descriptive; it does not address agrarian reform in the context of an encompassing sociopolitical model of the world—for example, in the context of “the laws of motion of capital and the social class structure in Latin America” (de Janvry 1981).

One hypothesis that arose after the transition to democracy is that the process of agrarian reform and its various stages led to a shake-up of antique, rigid structures, stimulating land markets and drawing in an entrepreneurial class of farmers (for example, see Jarvis, Cansino and Vera-Toscano, 2004, and Moreno, 2013). This shake-up led to a more flexible sector able to innovate, in turn contributing to the success, beginning in the early 1980s, of Chilean agriculture in local and export markets. Another hypothesis, not necessarily contradictory, is that the poor performance of the farm sector prior to agrarian reform was a consequence of price and trade interventions, which for many years had reduced returns to agriculture relative to other activities, stunting its growth and reducing the incentives for the entrance of new entrepreneurs. Developments since the late 1970s took place within a larger context of economywide reforms: deregulation and the end of price controls, privatization, and trade liberalization. In addition, the reforms led to the elimination of the implicit anti-export bias of the trade regime. To address these two hypotheses, this study presents an overview of agricultural incentives before, during, and after the reform process, with an emphasis on trade and direct price policy, industrial protection, and exchanges rates. Finally, this paper concludes with lessons learned from Chile's agrarian reform.

2. POLICIES, PROGRAMS, AND THE PROCESS OF REFORMS

The Ideological Context

The policy debate regarding development strategies in Chile, especially during the 1950s and early 1960s, was strongly influenced by the structuralist school of Prebisch and Singer,¹ which held that agriculture in the aggregate was unresponsive to incentives (such as an inelastic supply), in part due to an outdated land tenure structure. Agrarian reform, therefore, was thought to be a means of breaking up a rigid model of production. Meanwhile, the political thinking of the more traditional political parties in the Americas on how land reform ought to be carried out was influenced by President John Kennedy's administration, which favored a pro-small-farmer land reform that would break up large estates into many small properties.² For example, by the early 1960s in Taiwan, Japan, and to some extent India, large estates with many tenant farmers had been dissolved, and the farmers had become owners of land that they already had been cultivating. In Bolivia, large estates were split into many new parcels and distributed to smallholders. In Mexico, estates were converted into *ejidos*, a form of cooperative ownership with individual management of small parcels. And in Cuba, farmland was expropriated and converted into large state farms.

In the Cold War environment following the Second World War, Latin America experienced an intense ideological debate, absorbing aspects of Western European and Soviet socialism and developing several homegrown ideological variations. An important example of the latter was liberation theology, made famous in a 1968 book by Dominican priest Gustavo Gutiérrez; the core of this theology was the claim that Socialist policies ran parallel to the teachings of Catholicism. Of course, not all church authorities supported this idea, but in several Latin American countries (not in Mexico), the Catholic church was perhaps the preeminent nongovernmental institution at the time, and influential church leaders embraced many of the social positions of the ideological Left regarding poverty and redistribution, including pro-poor land reform. This affinity to social commitments (*compromiso social*) was expressed largely through the conference of Church figures in the Latin American Episcopal Council (CELAM; *Consejo Episcopal Latinoamericano*).

More radically socialist measures to promote economic equality were taken in Cuba after the Fidel Castro-led communist revolution of 1959, which was also supported by farmers. Redistributive land reform became a key platform for the revolutionaries and was implemented in two stages between 1959 and 1963. Cuban agrarian reform was modeled on Soviet *sovkhozy*, or large-scale state farms, and *kolkhozy*, or collective farms. By 1961, this Soviet model had received significant criticism from American economist T. W. Schultz and others for carrying inherent incentive problems—in particular, the bimodal *kolkhozy*, which was “based on big tractors and many hoes.”

One aim of the US policy response to both liberation theology and the risk of the spread of the Cuban revolution to the larger region was Kennedy's Alliance for Progress (AFP), which promised US financial aid for redistributive programs such as land reform in order to reduce revolutionary social pressure. The original AFP document called for “replacing latifundia and dwarf holdings by an equitable system of land tenure so that land will become for the man who works it the basis of his economic stability, the foundation of his increasing welfare and the guarantee of his freedom and dignity.”³

¹ R. Prebisch was director of the UN Economic Commission for Latin America and the Caribbean (CEPAL), with headquarters in Santiago, Chile. CEPAL had a significant influence on empirical and analytical contributions to the debate, as well as to the conceptual framework in which data were interpreted and solutions developed. See Prebisch (1950, 1959) and Singer (1949).

² Although in a small scale, the Catholic church in Chile began experimenting with cooperative and sharecropping systems in large farms in the 1950s, before the initiation of government-led land reform programs. An organization (created by the church) called INPROA implemented a real-life experiment in cooperative farming, which was closely followed by the agrarian reform proponents (see Thiesenhusen 1966, 1974).

³ US Department of State, Alliance for Progress, Declaration of Punta del Este; August 17, 1961

The intellectual arguments for land reform in general were supported by the structuralist school, which maintained that agricultural production was stagnant throughout many parts of Latin America because productivity was held in check by outdated and unequal divisions of land.⁴ It was thought that by breaking up large landholdings, productivity would increase, and farmers would be more responsive to incentives. This philosophy was evident in several United Nations reports on Latin America, specifically the Inter-American Committee for Agricultural Development, which released a key report in 1963 that “strongly recommended” land reform in Chile (Barracough 1999).

Chile’s first land reform under President Jorge Alessandri was far from *sui generis*. At least initially and throughout the 1960s, the push for land reform did not come from *campesinos*. Instead, agrarian reform was a result of debates arising in the political class, including (market-oriented) liberals, conservatives, Catholic reformists, and socialists. In addition, the debate was informed by many international experts. With the expansion of farm labor unions under Frei, however, *campesinos* became more involved in the expropriation of farms, and under Allende the extralegal takeover of farms became more frequent.

The Phases of Agrarian Reform

Between 1958 and 1978, one can distinguish four different phases of reforms. The expropriations during the agrarian reform period are shown in Table 2.1. The official causes of the expropriations are shown in Table 2.2.

Table 2.1 Expropriations during agrarian reform

Item	1962–1964	1964–1967	1967–1970	1970–1973	1973–1980
Expropriated farm units	17	495	797	4,207	141
% of total expropriated units	0.30%	8.75%	14.08%	74.36%	2.49%
Expropriated physical hectares	154,853	1,136,025	2,909,050	5,477,514	224,895
% of total expropriated physical hectares	1.56%	11.47%	29.37%	55.31%	2.27%
Mean physical hectares	9,109	2,295	3,650	1,302	1,595
Median physical hectares	566	423	370	361	386
Value at the 95th percentile	91,090	7,728	10,110	4,056	5,537

Source: Acemoglu, Gallego and Robinson (2009), from CORA data.

Notes: During the earliest period, there were no forced expropriations; however, government land, such as that owned by the national health system, were transferred to CORA and redistributed to smallholders. After September 1973, there were no expropriations.

⁴ For a accessible and thorough review by a sympathetic author of structuralism in the Latin American context, see Jameson (1985).

Table 2.2 Number and causes of expropriation

Legal cause	1964– 1967	1967– 1970	1970– 1973	1964– 1967	1967– 1970	1970– 1973
Plots divided between 1965 and 1967	2	82	0	2.1%	9.8%	0.0%
May serve a social purpose	3	0	6	3.2%	0.0%	0.1%
Large units	2	306	1,917	2.1%	36.4%	46.1%*
Inefficiently managed	1	11	918	1.1%	1.3%	22.1%
Coming from division of a big farm	1	22	7	1.1%	2.6%	0.2%
Corporate owners	1	63	291	1.1%	7.5%	7.0%
Owned by two or more people	0	0	89	0.0%	0.0%	2.1%
Offered by owners before involuntary expropriation	7	354	930	7.4%	42.1%	22.4%
Law 15.020	78	2	1	82.1%	0.2%	0.0%
Total	95	840	4,159	100%	100%	100%

Source: Acemoglu, Gallego and Robinson (2009), from CORA data.

Note: In reality, during 1971–1973, the Allende administration expropriated some farms which were smaller than 80 HRB, citing that they were too large (more than 80 HRB).

Phase 1: Pre-1964

The first phase was a small-scale reform process under the administration of President Jorge Alessandri (1958–1964) and specifically mandated by Agrarian Reform Law 15.020 (signed in 1962) and the Constitutional Reform 15.295 (signed in 1963), which did not allow forced expropriations without full compensation and was oriented toward small family units and individual property rights. These laws established the precedent that title to land was subject to the government's social objectives. Moreover, the 1963 law established that payments might be spread out over time, though with interest added and adjustments made for price inflation. This program, which made use of government land held by various agencies, was the *Caja de Colonización*,⁵ an instrument to foster small operations. It had a marginal impact on land distribution. The widespread damage of the 1960 earthquake and the desire to access cheaper credit from multilateral institutions were major reasons for the Alessandri government to commit to land reform, which was a prerequisite of the AFP. Ironically, the policy instruments of expropriation and deferred payments, used in the more intense, forced reforms under Frei and Allende, were forged during the officially conservative administration of Alessandri.

Phase 2: 1965–1971

A large-scale program of agrarian reform began in 1965 (announced in September 1964) under President Eduardo Frei of the Christian Democratic Party. This reform had two main stated objectives. The first was to eliminate the farm labor system, known as the *inquilino* system, which was viewed as cementing a semifeudal relationship between powerful patrons and semi-illiterate, submissive workers. The *inquilino* system had already begun to shift after electoral reforms introduced fully secret ballots in 1958 (a subject to which we return below). The second objective was to raise farm production to reduce dependence on imported food. Not only were food imports consuming foreign exchange, but there was also a perception that cost-of-living increases were driven by food prices, which in turn created wage pressure and a cost-push inflation spiral. The possible role of distorted prices and government interventions in creating an environment of incentives that stunted Chilean agriculture's productivity was discussed among academics, though not rigorously documented until much later,⁶ and was displaced in political reasoning

⁵ The *Caja de Colonización Agrícola* was established in 1928 and authorized to "purchase estates offered for sale in order to subdivide them into family-sized units" (Barraclough 1999, 23.). The settlement program operated until further land reform was passed in 1962, at which time the program had 3,500 beneficiaries.

⁶ See Valdés (1973) on the role of trade and exchange rate policies in determining agricultural incentives in Chile from 1951 to 1965.

by the diagnosis of more basic structural problems in rural society and economy. Section 4 of this paper returns to the question of incentives.

The Frei administration initially used the 1962 law; however, a new law in 1967 (Law 16.640) expanded the scope for expropriating farms of more than 80 standardized hectares (*hectáreas de riego básico*, HRB), regardless of management practices and productivity, and for expropriating abandoned and poorly managed farms of any size. Joint ownership of a property larger than 80 HRB was also subject to expropriation. The HRB reference for standardizing farm land allows comparison between farms with lands of differing productivity. The reference unit is an irrigated hectare in the Maipo valley. The measure accounts for differences in irrigation, soil quality, slope and other factors that affect productivity. For example, a farm of 10 irrigated hectares in the Maipo valley could be the equivalent of 100 physical hectares in the unirrigated South of Chile.

Landowners who were expropriated due to excess size retained the right to a reserve of land and movable capital (machines, tools, and animals).⁷ Under the legal changes, expropriations came with only partial compensation for the land in the form of government bonds, not adjusted for inflation; in real terms, the present discounted value of the compensation was a fraction of what would have been the market value. In addition, new legislation (known as the Ley Aylwin) in 1970 took the expropriation process away from regular judicial review, leaving the administration and resolution of disputes to the Corporation of Agrarian Reform (CORA). During its entire tenure, the Frei administration's program adopted a cooperative model of farms with *asentamientos* as the farm unit; this model existed under close supervision of CORA. One should note that these cooperatives were limited in nature: the members were not owners (CORA maintained ownership), but they could—at least officially—participate in management decisions. As with the Soviet *kolkhozy*, government officials guided *asentamiento* management; therefore the model was more of a pseudocooperative.

Between 1965 and 1970, the government expropriated 1,400 properties, accounting for almost four million hectares (*not* counted in HRB), or about one-sixth of all agricultural land accounted for in the 1965 census. Still, no permanent model for the organization of the expropriated farms existed. The *asentamiento* remained a transitional model formally, without the government committing itself to a final farm model. The *asentamiento* was meant to be exploited collectively, in most cases keeping the same size as the original farm expropriated; only a few cases⁸ saw the distribution of small units or the granting of property rights to the *asentados* (permanent hired workers).⁹

Phase 3: 1971–1973

Under President Salvador Allende and the government of the Popular Unity (UP), agrarian reform became an integral component of the economic transition to socialism. Once in office, the UP moved toward state control of many industries, including most large manufacturers, the entire financial sector, and medium and large farms. The system emphasized central planning to guide resource allocation and price controls, which had already been established. The UP accelerated the expropriations of farms above the size limit in the 1967 Law (80 HRB) and adopted the formation of state farms on expropriated units instead of private or collective ownership. Expropriations of farms below the 80 HRB limit increased, based on the rationale of the (purportedly) poor management of those farms.¹⁰ Within the first six months

⁷ In the case of the very large landholdings in the extreme south (range farming of sheep in Patagonia), corporate ownership prevailed, and owner reserves were not considered an option.

⁸ Felipe Amunátegui, subsecretary of Agriculture and vice president of the Christian Democrat Party under Frei during the late 1960s, said, “*Nosotros no queríamos hacer propietarios individuales*” – We would not want to create individual owners. Responding to a question about whether the *asentamiento* was meant to be transitional, Amunátegui replied, “*Claro, eso es lo que decíamos, pero sinceramente ninguno de los estábamos a cargo del proceso de Reforma Agraria queríamos propiedad individual. Queríamos mantener la propiedad colectiva*” – Sure, that’s what we were saying, but sincerely none of us in charge of the process of Agrarian Reform would have wanted individual ownership. We wanted to maintain collective ownership. (Interview of Amunátegui with L. A. Ganderats in *Mundo Dinero*, April 1993, as quoted in A. Fontaine, 2001).

⁹ The *asentamiento* excluded external salaried workers and smallholders of expropriated estates.

¹⁰ There was a disagreement between the Socialist and Communist parties regarding the strategy for eliminating private

of Allende's presidency, the government had expropriated almost as many farms as had been taken during the previous six years.

The Allende administration also made changes designed to overcome the recognized shortcomings of the *asentamientos* system. The UP decided to establish no more *asentamientos* of the former cooperative type; instead, new expropriations were provisionally given one of three types of organizations: agrarian reform centers (CERAs), state farms, or *campesino* committees. The CERAs, as established by law, were provisional entities that would last five years and that were greater in operational size than the *asentamientos*. At the end of the transition period, the land either would be assigned to a cooperative formed by the workers or would continue as a state farm. The UP expropriated 4,403 estates, totaling six million hectares (or about one-fifth of available farmland) and encompassing 55,279 farm workers.

The Allende government moved much more rapidly than the previous administration in expropriating farmland. Some parties in the governing coalition were ready to reject a commitment to work within the existing legal framework, stating that the laws were a bourgeois obstacle to the transition to socialism. Although the Allende government was pressured to move quickly, it wished to maintain a "semblance of order and authority."¹¹ Labor conflicts, which could be claimed to stop farm work, were used as pretexts for expropriations, without the usual bureaucratic routine. Such takeovers evaded the legal barriers of normal due process, and CORA could quickly establish control of a farm by naming an *interventor* (a type of executor) to manage the operations.¹² Government agencies (such as Instituto de Desarrollo Agropecuario [INDAP]) promoted direct action by *campesinos* as a means of facilitating expropriations.

During the Allende years, there was a sense of disorder in rural Chile. As Loveman (1976, 283) noted:

Like the Christian Democrats, the Allende government came to power with the commitment to eliminate the hacienda system, but without a concrete program for an alternative system of rural proprietorship and agricultural production. Highly critical of the *asentamiento* and the resultant agrarian reform cooperatives, intellectuals and party leaders within the government coalition did not agree upon the structural foundation for a 'socialist' agriculture in Chile.

Some government leaders and advisers wanted state farms; others wanted large cooperatives; but all agreed on the need for an increase in the size of agricultural units. The common view was to destroy "the *campesinos*' localist identification with the existing hacienda or fundo, and preventing the type of stratification or 'kulakization' of the countryside, which they believed they saw in the *asentamiento*" (Loveman 1976, 283). A national farmers' council (the Consejo Nacional Campesino) was created during the Allende administration to unite disparate rural groups and to give legitimacy to the government's policy of moving from *asentamientos* to a more Socialist model that allowed state access to the "social surplus" being captured by *asentados*. However, given the rural stakes involved, rural interests remained fragmented—a situation made even more complicated by the movement of the Christian Democrats, powerful in rural areas, toward opposition to the recently installed Allende government.

property in agriculture, which was the goal of both parties. The Communists wished to accomplish the goal by stages—first expropriating large farms, without threatening the small and medium farms until the first stage was complete. The Socialists wanted a quick, direct elimination of private property across all farm sizes. The Socialist logic was that small and medium farm owners would develop a preference for maintaining their property rights (Cousiño Vicuña and Ovalle Gana 2013, 57).

¹¹ See Chapter 9 in Loveman (1976).

¹² According to Loveman (1976), "While maintaining a symbolic commitment to law, the Allende government moved even further than had the Christian Democrats in removing private proprietorship from the protection of the state. Infrequent use of the police to uphold private property rights did nothing to convince rural proprietors of the government's willingness to apply legal sanctions against *campesino* movements which disposed the landowners" (281).

Phase 4: Post-1973

By the time of the military coup in September 1973, the agrarian reform under Frei and Allende had expropriated over 5000 estates or over 9 million hectares (59 percent of Chile's agricultural farmland). After the coup, the military government initiated what has been often called a "capitalistic counter-reform"—that is, the government discontinued expropriations, no longer enforced the *asentamientos*, and offered *asentados* the option of receiving a privately owned small farm (*parcela*), all under an overall economic model of limited government interventions. After managing the transition to redistributed landholdings, CORA was closed, in what served as a final signal of the new government's commitment to discontinue the process of land reform. During the transition, some irregular expropriations of land were returned to original owners (at least in part), but most expropriated land was distributed to former *asentamiento* workers (and some non-*asentamiento* applicants). The disposition of expropriated land by 1978 is shown in Table 2.3.

Table 2.3 Disposition of expropriated land as of 1978

Category	Number of farms	Physical hectares	Standardized hectares (HRB)
Expropriations	5,809	9,965,900	895,752
Redistribution			
Cooperatives	202	1,107,144	95,885
Individual plots	2,427	2,022,460	365,929
Subtotal	2,629	3,129,604	461,814
Restitutions			
Expropriation revoked in entirety	1,558	2,182,338	132,749
Partial restitution	2,156	685,125	108,794
Subtotal	3,714	2,867,463	241,543
Residual for CORA disposition		3,968,833	
CORA reserves		662,936	
CORA transfers or auctions		223,604	
CORA reserves unassigned as of March 1978		3,082,293	

Source: *Panorama Económico de la Agricultura* (1978).

Note: HRB = Hectareas de Riego Básico – hectares of equivalent productive capacity standardized with reference to an irrigated hectare in the Maipo valley. CORA = Corporación de Reforma Agraria – the Corporation for Agrarian Reform.

Box 2.1 The *asentamiento* model

The non-Chilean reader is likely unfamiliar with the type of farm unit that replaced the large-scale farms expropriated under agrarian reform. The idea of the *asentamiento* was to maintain the basic farm operation but replace the old system of owner-manager with a collectively managed system. The explicit policy intent was to have a transitional, learning-by-doing organization in which, for three years (postponable to five), farm workers would prepare themselves to manage their own, individual (and much smaller) farms created from the dissolution of the *asentamiento*. During the collective-management period, workers were organized in a *Sociedad Agrícola de Reforma Agraria* (SARA), an agrarian reform farm association. Not all farm workers could qualify to be an *asentado*; those eligible had to be both established permanent workers on that farm and heads of families. In other words, single young males did not qualify, and rarely were females of any age able to qualify.

The *asentados* received a small plot (garden or orchard) for their own use, a house, and a share of the earnings of the collectively managed farm. Eventually, land titles to smaller farms (8 to 10 hectares) were to be offered to individuals after the transition, but workers could decide to register ownership jointly with others. Moreover, even with individual titles, management of several farm units could continue being collective. (The amount of land was limited, and those not receiving land were to be compensated as a form of an indemnization for some period of years.) In any event, farmers were to have continued working as a cooperative after the planned dissolution of the *asentamiento*, together marketing products and buying inputs. For those who were to have received a land title, there were prohibitions on land sales, rental, or subdivision for no fewer than 15 years. Even subdivisions for inheritance were not to be allowed. Landownership would come with a commitment to remain on the farm, and the property assignment would come with a debt to the Corporation of Agrarian Reform (CORA) for the value of the land, to be repaid over 30 years.

In response to a question about the guiding lessons from the rest of the world that were to support the *asentamiento* model, Rafael Moreno, director of CORA under Frei, said recently, “No, no. It was our own common sense” (Cousiño Vicuña and Ovalle Gana 2013, 137). That is, although there might very well have been important external lessons on which to base Chilean policy, those in charge of Agrarian Reform relied on their own ideas. It is interesting that he expressed little appreciation for or even knowledge of the Soviet experience with *sovkhoz* and *kolkhoz*, which even by the early 1960s were subject to scrutiny and some criticism.

The intent to subdivide and assign farms to individuals was not implemented in full. By the end of the Frei administration, out of 826 *asentamientos*, 254 had completed the transition period, and only 77 were subdivided. In part, this incomplete implementation was due to ideological pressures from within Frei’s Christian Democrats to push a form of communitarian socialism and to avoid the “kulaks problem” of small capitalist farmers who would extract the social surplus.¹³ There was also a realization that scale economies for some types of farms would prevent efficient subdivision. Dairy farms, for example, were likely to be better managed with larger herds. Arguments were also made that the scale restriction to subdivision was applicable even to sugar beets and maize. For larger operations that remained undivided, the ownership was to remain as a collective. Unsurprisingly, the *asentados* preferred individual titles.¹⁴

Beginning in 1971, although the Allende administration continued expropriating land, the organizational form of collective farms was changed from *asentamientos* to what could be described as a type of state farm. The *Centro de Reforma Agraria* (CERA; “Agrarian Reform Center”) and then the *Centro de Producción* (CEPRO; “Production Center”) were the legal forms adopted. The intention of establishing CERAs was both to enlarge farm units even more by joining *asentamientos* and to promote class solidarity and “create a classless society in the countryside.”¹⁵ After a transition period of five years, the CERA farm could continue as a single large unit as a CEPRO or become a cooperative, in which members could have individual property in the form of houses and garden plots (a type of *kolkhoz*, or collective farm). The larger farm operation would remain collectively managed.

Source: Authors.

¹³ Independent small farm owners in the Soviet Union of the 1930 were suppressed as class enemies largely for resisting the expropriation of their land to create collective farms.

¹⁴ Interviews with Chonchol and Moreno in Cousiño and Ovalle, 2013.

¹⁵ Loveman, page 293.

In the resulting counter-reform after 1973, approximately 50,000 small farm units were created, and another 5,000 farmers received houses and small plots. In addition, some common areas and land reserves were created. The units of farmland distributed by CORA were a standardized size—the *Unidad Agrícola Familiar* (UAF)—that was considered a minimum size to generate an acceptable family income. These UAFs could not exceed 12 HRB and varied in physical hectare size according to climate, soil types, and other productivity-related characteristics. The number of UAFs available on expropriated land was fewer than the number of applicants (*asentados* and other farm labor applicants); therefore, some beneficiaries were assigned smaller plots with a house.

Much of the early agrarian reform in the 1960s was done in a provisional fashion, with much ambiguity regarding the final model or structure that farming would eventually take. Under Frei, the transitional farm model of large, self-managed cooperatives was influenced by the Yugoslav model of the time, which emphasized the large scale of efficient farm enterprises and workers' control of production decisions. In reality, workers had less to say regarding production and investments than did the technicians of CORA.

Under Allende, the explicit economic ideology rejected land property rights and small-scale agriculture in favor of a traditional Marxist-Socialist view of the role of technology and large-scale operations for state and collective enterprises, where the surplus generated could be, in principle, transferred to the rest of society. Indeed, during the early 1970s, agrarian reform was part of an economywide transformation toward a Socialist economy, with central planning and direct state control of the financial system, trade, and all so-called strategic enterprises in all sectors. Although the system never had time to mature and was never officially announced as such, one concludes from the structure of farms following expropriation that the Allende administration's agricultural model was influenced by the extensive collective and state farms (*sovkhozy* and *kolkhozy*) of the former Soviet Union.

The market-based land reform approach,¹⁶ adopted first in South Africa after the apartheid-ending elections in 1994 and later in Brazil in the late 1990s, involved a willing seller and therefore a market value of land. Under the Agrarian reform in Chile, however, lands were forcibly expropriated and former owners remunerated in the form of cash (between 1 and 10 percent of the officially assessed value), but mainly in the form of government promissory notes (which could result in deferred nominal payments at 5, 25, and 30 years into the future). Remuneration essentially meant a large wealth transfer to the state for two notable reasons. First, payments were based on real estate tax evaluations in nominal pesos from previous decades, representing a fraction of pre-reform commercial value. Second, government notes used in payment were worth a fraction of their nominal values in secondary markets. Note that Table 2.2 shows that a significant number of "expropriated" lands were offered by the owners, very likely in anticipation of inevitable expropriations under much less favorable terms. The process was highly discretionary; the reserved hectares for the former owner were expected to be larger if the transfer were voluntary (Fontaine 2001). Table 2.2 also shows not only a large increase in total expropriations under Allende, but also a large increase in expropriations due to poor management. The number of large farms available for expropriations had naturally declined; therefore, there was an incentive to expropriate smaller operations, using their purported inefficiency as a means of sidestepping the 80-HRB limit.

¹⁶ See Deininger (2001).

In short, the design and implementation of the Chilean agrarian reform before 1974 was radically different from a standard, development textbook model of land reform, which would redistribute land concentrated in a few hands to many individual *peasants*. In Chile, the peasants benefiting from agrarian reform were really permanent farm workers (*campesinos*) on large estates. Reforms prior to 1974 excluded already-established small farmers. Figure 2.1 shows an overview and a timeline of the agrarian reform process, where one can follow the major aspects of the reform process, the legal and constitutional changes supporting reforms, accompanying agricultural policies, and the type of data available to monitor the evolution of Chilean agriculture.¹⁷ Table A.1 (in the Appendix) presents a similar timeline in the form of a list.

¹⁷ There are small differences in the count of expropriations and in hectares taken between the data from Acemoglu, Gallego and Robinson (2009) and the data presented by Panorama Económico. In the case of the former data derive from exiting “fichas” or record cards of official land expropriations and transfers. In the case of the latter, data derived from CORA official reports from the 1970s. A possible source of the difference could be that during a period immediately prior to military government, several expropriations were extra-legal, which might not have ended up on official record cards.

Figure 2.1 Timeline of agrarian reform in Chile

Source: Authors

3. WHAT WERE THE IMPACTS?

The Structure of Farming, Before and After Reform

Analysis of the effects of land reform on the structure of farming is complicated by the fact that relevant data are often limited to the agricultural censuses, which generally take place each decade. This paper uses census data to make some general conclusions on the condition of farming in terms of plot size and structure before, during, and after land reform. In general, we find that over the two decades between 1965 and 1976, the number of farm units and proportion of land held by very large farms is reduced, whereas medium-sized farms experience some gains. Analysis is further complicated because farm sizes are measured in physical hectares. The standardized HRB classification would facilitate comparison by considering the productive capacity of land; unfortunately, HRB measures are not always available.

Broadly speaking, the period of land reform in Chile saw a dramatic increase in the number of farm units and minor increases in total land farmed. Table 3.1 shows that in 1955, Chile had 151,082 farm units spread across 27.7 million hectares. By 1976, the number of farm units more than doubled, whereas nonforestry land farmed rose to only 28.8 million hectares. Although the number of farm units shows large variation over time, the proportion of farms by size remains strongly consistent from 1955 to 2007, with small farms (smaller than 10 hectares) making up an average of 58.2 percent of all farms. Table 3.2 shows that farms smaller than 100 hectares made up about 90 percent of all farms in all periods. It is important to note that even as the overall number of farms increased significantly across the reform period, there was a decrease in the number of farms larger than 1,000 hectares (most farms are in regions of low productivity, including mountains and rangeland in Patagonia). This finding makes intuitive sense, given the goals of the initial periods of reform. It also implies that even if the initial reform land units were large, they did not remain so for long, especially after the post-1973 counterreform.

Table 3.1 Evolution of the total number of farm units and agricultural and forestry hectares, 1930–2007

Agricultural census	Total count of farm units	Total land area (1000s hectare)	Number of agricultural and livestock production units				Forestry	
			Total units	Units with land	Land area (1000s hectare)	Units without land	Number of units	Land area (1000s hectare)
VII Census 2007	301,269	36,439.5	280,484	278,660	29,681.7	1,824	20,785	6,657.8
VI Census 1997	329,563	36,638.4	316,492	312,302	26,502.4	4,190	13,071	10,136.0
V Census 1976	314,249	37,226.8	311,324	305,518	28,771.9	5,806	2,925	8,454.9
IV Census 1965	262,420	31,562.8	258,657	253,532	30,644.1	5,125	3,763	918.7
IV Census 1955	151,082	27,712.3	151,082	151,082	27,712.3	—	—	407.3
III Census 1936	201,997	27,633.7	—	201,997	27,633.7	—	—	—
II Census 1930	146,244	27,313.0	—	146,244	27,313.0	—	—	—

Source: Instituto Nacional de Estadísticas de Chile, Agricultural Census, 1930, 1936, 1955, 1965, 1976, 1997, and 2007.

Table 3.2 Change in structure of land tenure, Coquimbo to Llanquihue, 1965–1976

Size (standardized HRB)	Farm units (%)			Land area (%) in HRB		
	1965	1973	1976	1965	1973	1976
Less than 5	81.4	79.4	71.4	9.7	9.7	9.7
5–20	11.5	11.4	20	12.7	13.1	24.9
20–40 (or 20– 80 in 1976)	3	3.3	7.5	9.5	11.6	44.4*
40–60	1.3	2.5	—	7.1	14.5	—
60–80	0.8	1.1	—	5.7	10.5	—
80 and greater	2.2	0	0.1	55.3	0	20.9
Reform sector	0	2.4	0	0	40.6	0
Total	100	100	100	100	100	100

Source: Data from ICIRA, cited in Gomez and Echenique (1988), and from Ricker (1976), as cited in Villela (1979).

Note: HRB = Hectareas de Riego Básico – hectares of equivalent productive capacity standardized with reference to an irrigated hectare in the Maipo valley.

The figures on the proportion of farms by farm area tell a similar story. Table 3.3 shows that from 1955 to 2007, large farms (larger than 1,000 hectares) make up about 70 percent of total farmland (a high proportion of which is of little productivity); this figure does decrease slightly between 1965 and 1976 and rebound after 1997. Generally, this finding shows high levels of land-size inequality across farmers: few large farms (1–2 percent) make up more than two-thirds of all farmland, but this is in terms of physical hectares, not of equal productivity. In 1955, 50 percent of the farms held less than 1 percent of the physical hectares in farms. By 1976, the percentage of small farms grew to about 60 percent, but making up less than 2 percent of the land.

Table 3.3 Total and proportion of farm area by size category (physical hectares), 1955–2007 (excluding forestry)

Farm size class	1955	1965	1976	1997	2007
Less than 10	217,605	217,604	520,107	593,444	552,923
%	0.8%	0.8%	1.8%	2.23%	1.85%
10–99	1,833,720	1,833,720	2,857,844	3,325,939	2,769,274
%	6.6%	6.6%	9.9%	12.54%	9.3%
100–1,000	5,365,040	5,365,040	6,181,398	4,966,942	4,275,792
%	19.4%	19.4%	21.5%	18.74%	14.35%
Over 1,000	20,295,944	20,295,944	19,199,814	17,617,042	22,183,702
%	73.2%	73.2%	66.8%	66.46%	74.48%
Total	27,712,309	27,712,308	28,759,161	26,502,364	29,781,691
%	100%	100%	100%	100%	100%

Source: Instituto Nacional de Estadísticas de Chile, Agricultural Census, 1955, 1965, 1976, 1997, and 2007. Data for 1965 are from Bellisario (2006).

When accounting for the productivity of land using the HRB measure, initial inequality is less stark. The number of physical hectares represented by 1 HRB varies; for example, in Osorno, which lies 800 km south of Santiago and where farming is rain fed, 1 HRB is about 100 physical hectares. In drier Temuco, about 600 km south of Osorno, 1 HRB is about 50 physical hectares. The best data for analysis of the change in land tenure under Chilean agrarian reform comes from a 1976 mimeo by Ricker (1976). Ricker's data are in standardized hectares and are restricted to the country's main agricultural region—between Coquimbo and Llanquihue. Table 3.2 shows that in 1965, small farms (smaller than 5 HRB) in this region accounted for slightly more than 80 percent of the number of farms but only 9.7 percent of the HRB land. Just over 2 percent of the farms were large (over 80 HRB), but such farms accounted for 55 percent of the HRB land. This agricultural zone accounts for close to 90 percent of farm units and about half of the country's land in farms. The pre-1974 land reform captured the largest farms (larger than 80

HRB), which in 1965 represented just 2.2 percent of the number of farms but over 50 percent of the productive land area. By 1976, it appears that the land distribution program had returned a small portion of these large farms intact, and these farms accounted for 21 percent of productive land area in that year. Between 1973 and 1976, medium-sized farms (between 20 and 60 HRB) grew both in number and in proportion of productive land held. Between 1965 and 1976, farms between 5 and 20 HRB doubled the proportion of productive land held from 12.7 percent to 24.9 percent. The proportion of productive land held by farms of 20–60 HRB expanded even further, from 9.5 percent to 44.4 percent by 1965.

The evolution of farm sizes (in standardized units HRB) appears to have been toward larger farms. As can be seen in Table 3.4, most farms are less than 30 hectares HRB, and the present distribution appears bimodal, with one mode centered on small farms smaller than 2 hectares HRB, and another mode centered on approximately 100–300 hectares. Small farms (12 hectares or less) represent around 20 percent of standardized hectares.¹⁸

Table 3.4 Distribution of farmland (HRB, including forestry) by farm size class, 2007

HRB land size class	Farm units	Hectares physical	Hectares HRB	% of HRB land
< 2	221,435	2,102,037	118,483	6.16%
2– 6	40,373	2,020,719	139,798	7.27%
6–12	15,358	2,004,649	129,610	6.74%
12–15	3,580	880,765	48,011	2.50%
15–20	3,850	1,028,868	66,594	3.46%
20–25	2,444	982,435	54,585	2.84%
25–30	1,670	813,500	45,757	2.38%
30–35	1,251	675,802	40,538	2.11%
35–40	932	529,003	34,829	1.81%
40–45	769	520,973	32,590	1.70%
45–50	609	404,381	28,963	1.51%
50–100	2,859	2,941,303	196,963	10.24%
100–300	1,743	4,948,235	281,523	14.64%
300–500	301	2,509,890	114,405	5.95%
500–1,000	186	2,862,833	129,704	6.75%
1,000–5,000	124	5,745,985	244,997	12.74%
5,000–10,000	9	2,069,885	62,877	3.27%
10,000–20,000	3	870,517	43,669	2.27%
> 20,000	3	1,323,063	109,130	5.68%
Total general	297,492	35,231,644	1,922,676	100%

Source: Personal communication with M. Galan, INDAP, July 13, 2013, who derived these figures from the Agricultural Census of 2007

Note: HRB = Hectareas de Riego Básico – hectares of equivalent productive capacity standardized with reference to an irrigated hectare in the Maipo valley..

¹⁸ For small-farm households, farming is but one source of income. According to 2007 Agricultural Census data (the first year in which the question was asked), although there are almost 200,000 “farms” of between 0 and 2 HRB, only 23 percent of them earn more than 50 percent of their income from agriculture; that is, about 50,000 farms. Of the approximately 70,000 farms with 2–12 HRB, about 40 percent (about 28,000 farms) receive 50 percent or more of their incomes from agriculture. Adding up “small farms” then, we get about 98,000 dependent on agriculture for their livelihood. Even more telling is that 62 percent of the farms smaller than 2 HRB earn less than 25 percent of their household income from farming, and 41 percent of 2–12 HRB farms earn less than 25 percent from agriculture—that is, many of the small farm units counted by the census are not farms in the traditional sense of being the principle activity of families.

Land Use and the Composition of Production

What happened to the composition of production? It appears that during the agrarian reform of 1965–1973, there was little significant change in land use that could be attributed to expropriations and *asentamientos*. Most large changes in land use emerged after the structural reforms following 1973 and the close of the agrarian reform experiment. The trade, exchange rate, and property rights policies following the liberalization, privatization, and deregulation reforms entering in force after 1978 are likely to have had at least as great an impact on producer incentives in the choice of crops as any previous land redistribution outcomes.

Not only has the composition of production changed over the past half century (see Figure 3.1), but land productivity has also increased significantly. From 1955 to 1976, yields per hectare of major crops did not change notably (see Table 3.5 and Figure 3.2). However, in the two decades following 1976, yields for all major crops increased significantly. For example, between 1976 and 1997, wheat more than doubled in yields, and maize more than tripled. Looking at the 2007 census, one finds even higher yields. Something similar happened in the case of livestock, especially dairy—per cow milk yields have grown to the point at which Chile has moved from being an importer to a net exporter of milk products. Similarly, poultry and pork production have industrialized and shown rapid growth.

Figure 3.1 Evolution of the composition of land use in Chilean farming

Source: Instituto Nacional de Estadísticas de Chile, Agricultural Census, 1955, 1965, 1976, 1997, and 2007.

Table 3.5 Average per hectare yields, main crops, and quintals (100 kg), census years 1955, 1965, 1976, 1997, and 2007

Category	1955	1965	1976	1987	1997	2007
Rice	26.9	29.2	33.3	39.5	41.7	50.77
Oats	13.8	11.7	11.9	23	32.2	41.8
Forage barley	16.1	19.3	15.1	29.5	28.2	41.52
Rye	10.3	11.9	9.2	20.2	29.2	44.97
Maize	14.4	29.7	25.9	71.2	90.5	108.32
Potato	87.6	77.2	80.5	126	161.7	154.54
Wheat hard white	13.9	15.1	12	27.7	37.8	47.77
Wheat durum		19.3	16.1		57.6	52.36
Sunflower	14.2	14.1	13.2	21	19.5	21.34
Rapeseed	16.9	12.5	14.6	20.3	26.4	38.8
Sugar beets (100)	21.6	37	34.79	53.7	57.68	77.769
Tobacco	20.3	19.9	18.6	33.8	31	30.48

Source: Instituto Nacional de Estadísticas de Chile, Agricultural Census, 1955, 1965, 1976, 1997, and 2007.

Figure 3.2 Average per hectare yields, main crops, and quintals (100 kilogram), census years 1955, 1965, 1976, 1997, and 2007

Source: Instituto Nacional de Estadísticas de Chile, Agricultural Census, 1955, 1965, 1976, 1997, and 2007.

What Can Be Said About Productivity?

In broad terms, one can describe the history of Chilean agriculture over the past five decades as slow growth prior to the economywide reforms of the late 1970s and early 1980s, and dynamic growth afterward. Figure 3.3 presents the evolution of agricultural value-added since 1960 in real terms (adjusted for inflation). Several studies have made important contributions in attempts to dissect the various explanations for these productivity gains.

Figure 3.3 Chilean agriculture-forestry value-added (thousands of millions of 2003 pesos), 1960–2010

Source: Instituto Nacional de Estadísticas de Chile, adapted from Echenique (2011), expanded by authors.

Coeymans and Mundlak (1993) presented a rigorous time-series analysis of the Chilean economy, broken into agriculture, mining, manufacturing, and services and accounting for endogenous, intersectoral resource flows (labor and capital) for 1962–1982. The general-equilibrium nature of the estimated model allowed the authors to ask some counterfactual questions regarding sectoral growth under different conditions. In the case of the agricultural production function (Coeymans and Mundlak 1993, Table 1), agrarian reform influences production through both a simple dummy variable and a reform intensity measure. The values of the elasticity of agricultural output with respect to the agrarian reform, on an annual basis, are positive for the initial period (1965–1968) and slightly negative for 1969–1973). The effect of the agrarian reform on the capital share is negative; therefore, labor’s share increases. The authors attributed the negative effects to the uncertainty of property rights, which would have discouraged private investment of still non-expropriated farms. This uncertainty effect, however, should not have affected the behavior of *asentamientos* on expropriated lands.

The agricultural production function includes explanatory variables representing incentives that were influenced by general economic policy and by agrarian reforms. As Coeymans and Mundlak (1993a, 87) wrote, “The decline in agricultural output during 1969–1973 reflects the negative effects of the land reform” (see their Figure 42). In discussing the effects of agrarian reform, the authors concluded, “The direct effect on productivity, as measured through the effect on the production function, was marginal. The

uncertainty generated by the process reduced private investment in agriculture, and thereby discouraged production.”¹⁹

Acemoglu, Gallego, and Robinson (2009) explored various aspects of Chile’s agrarian reform process, with special emphasis on the effects of reform on productivity. About 50 percent of the country’s total arable land in physical hectares and about 40 percent of HRB were subject to the expropriation phase in 1965–1973. About 20 percent of land was subject to the redistribution phase after 1973. Despite these significant proportions, Acemoglu et al. found that at the national level, Gini coefficients for landownership before and after the reform remained basically unchanged. They concluded that in the long run, land inequality was not affected in a permanent way by the reform (between 1965 and 2007) but that there were new entrants into land markets.

In terms of the impact of the reforms on production, Acemoglu, Gallego, and Robinson (2009) came to two conclusions relevant to this discussion. First, at the municipal level, they showed that the intensity of agrarian reform in a locality (measured by the proportion of total land affected) had a direct and negative impact on production, measured both by gross output and by output per worker. However, this result is evaluated at the mean. Second, the interaction between the intensity of land reform and the degree of initial inequality in land distribution had a positive and significant effect on output. Their estimates suggest that the production level in municipalities with an initial land inequality above 0.2 standard deviations from the mean would actually increase with reform intensity. On average, the negative impact of reform intensity dominates; however, in highly unequal municipalities, the net effect of reform is positive. Although these results are preliminary, they appear to be robust at least to changes in measures of price distortions.

Ringlien (1971) suggested that initial reform phases under Frei had positive results, and that early reform remedied the low productivity problem via a change in management.²⁰ In addition, the fear of expropriation during this phase led to an intensification of input use (in part pushed by the expansion of agricultural credit). The result, according to Ringlien, was a slight increase in the annual growth rate of the agricultural sector’s value-added from 1.6 percent during 1940–1964 to 2 percent during 1964–1970. This result is supported by Valdés (1974), who noted that between 1960 and 1970, output value (as opposed to sectoral GDP) showed an annual rate of increase of 2.6 percent in livestock and 1.8 percent in crops.

Ringlien (1971) also noted that despite these initial increases in growth rates, certain symptoms of inefficiency began to be observed for “reformed” enterprises during the late 1960s. A 1967 study (FAO-ICIRA 1967) shows that the effective income of *asentados* as both workers and owners was less than salaries received by workers on non-expropriated lands. In other words, once net returns to capital are taken into account, the *asentado* as capitalist and laborer earned less than what would otherwise have been his labor income on non-expropriated lands alone.

In contrast to the positive growth rates of the agricultural sector during the initial expropriation phase, the sector not only slowed but also had negative growth rates during 1970–1973 (Tables 3.6 and 3.7). This period of the Allende administration saw a fall in production in the commercial, non-expropriated sector and an underutilization of land in the *asentamiento* sector.

¹⁹ From Coeymans and Mundlak (chapter 9 in Bautista and Valdés, 1993b, page 204).

²⁰ Ringlien (1971), as discussed in *Panorama Económica de la Agricultura* (1979).

Table 3.6 Agricultural gross domestic product annual growth rate

Period	Percentage growth rate
1940–1964	1.6
1964–1970	2.0
1970–1973	–4.6
1973–1977	8.7

Source: *Panorama Económico* (1979).

Table 3.7 Annual changes in production performance measures, 1971–1973

Period	Year-to-year change in value of output (%)			Year-to-year change in food imports (%)	
	Crops	Livestock	Total	Value	Volume
1970–1971	—	—	—	60	44
1971–1972	–6.8	0.8	–3.6	91	43
1972–1973	–22.5	–6.4	–13.7	27	—

Source: Valdés (1973), who reported output changes from *Oficina de Planificación* ODEPLAN; imports from ICIRA, UNDP, and FAO (1972).

Note: The change in value of imports for 1973 is projected.

In the reform sector, labor productivity was low. Land and fixed capital belonged to the state, which also provided technical assistance and credit. It was anticipated that at least 80 percent of land would be collectively farmed, with the remainder assigned to farmers individually. Members of the *asentamiento*, as well as being officially in charge of managing the farm, were required to work a minimum number of days for the collective. The campesino received a daily wage (based on the minimum wage), which was an advance on the collective's final profits. There was no incentive to incorporate new members, who might share in collective profits. Later surveys showed that about 30 percent of work days on the *asentamiento* were supplied by nonmember wage labor, who received no share of the final profits.²¹

In 1973, the Oficina de Estudios y Políticas Agrarias (ODEPA) warned that there were problems in *asentamiento* labor management. First, because there was no clear labor responsibility assigned to individuals and all *asentados* were collectively responsible, effective responsibility was in fact diluted among all workers. Second, the wages advanced were fixed and not correlated with work quality (such as marginal product), and the final distribution of profits was by simple division, with no reference to individual contribution. Unsurprisingly, then, labor productivity in the collective effort was low.

As Valdés (1973) noted, the pernicious incentive structure of the *asentamiento* was exacerbated by the fact that CORA did not provide the annual balance sheets for the *asentamiento*. Members, therefore, were ignorant of what they owed CORA or the state bank. At year's end, members were expected to pay the state between 10 and 15 percent of the difference between gross revenue and all nonlabor variable costs. Without proper accounting, there was no basis for calculating true profits or the rents owed for land and fixed capital. In addition to the problems of dilution of responsibility and the principal-agent problems associated with fixed, advanced wages, future profits were uncertain. Therefore, members were encouraged to concentrate attention on their own individual plots, which represented only

²¹ For a discussion of micro-incentives facing *asentados* in 1972, see Valdés (1974).

a fraction of the *asentamiento*'s land area. The result was an inefficient allocation of labor between individual and collective cultivation, and thus forgone production. This inherent miscoordination of incentives was also observed in the Soviet Union on *kolkhozy*. Furthermore, members of the *asentamiento* had an incentive to limit membership and invest in capital-intensive technology. As de Janvry and Ground (1978) pointed out, "The form in which the reform enterprises are organized may also create negative employment effects". Citing Barraclough and Fernandez (1974, 100), de Janvry and Ground (1978, 132) also noted,

Between 1970 and 1972, the importation of machinery increased 306 percent while the importation of fertilizers declined 29 percent. ... This strong trend of labor displacement in the reform sector was in great part a consequence of, on the one hand, the continuing subsidization of capital and, on the other, the policy of boosting the living standards in the reform sector with state credit.

FAO and other government analysts during the early 1970s began to raise questions about the reform sector's incentive structure. A 1972 report (ICIRA, 1972) for the Chilean Ministry of Agriculture, and edited by Barraclough,²² underscored the difficulties with the state's farm model and with the effectiveness of practical management.

CORA's experience with the *asentamiento* system between 1965 and 1970 led to changes in the management model. The Allende government announced that it planned to establish no more *asentamientos*, promising to replace them with three types of enterprises: agrarian reform centers (CERAs), state farms, and campesino committees. Table 3.8 shows the numbers of these new types of management models and of the *asentamientos* as of mid-1972. The objectives of these three management models were as follows:

- Increase employment on the collective operations, eliminating the hiring of workers
- Reduce the amount of individual plots
- Capture scale economies by uniting *asentamientos*
- Increase members' participation in management
- Increase autonomy from the state

Table 3.8 Number of farm operations by farm type in the reform sector, mid-1972

Reform sector farm type	Number
CERAs	150
<i>Campesino</i> committees	921
State farms (excluding Patagonia)	27
<i>Asentamientos</i>	766

Source: Valdés (1974, 412).

Note: CERAs = Centros de Reforma Agraria

Specifically, CERAs were consolidated *asentamientos* (planned to last five years). All persons older than 16 years had equal rights and obligations in a general assembly, and executive decisions were the responsibility of a control committee. Wages were fixed, but workers also earned a share in profits. The family house and garden plot were individually owned. Surpluses were to be distributed in the following way: up to 20 percent for *campesino* distribution, 10 percent for capital formation, and the

²² The report was jointly sponsored by Instituto de Investigación y Capacitación en Reforma Agraria (ICIRA), UN Development Programme (UNDP), and the UN Food and Agriculture Organization (FAO).

remainder for a community development fund. At the end of the transition, the land would either be assigned as a cooperative or become a state farm, with the final decision being a political one, though with promised participation of the *asentados*.

The *campesino* committee, in contrast, had a maximum duration of one year and was the alternative to the CERA if *asentados* objected. However, the government's intention was to transform these committees into CERAs. State farms were to be for operations with greater levels of capital, such as those with orchards, forests, and breeding stock, and for isolated regions, such as Patagonia.

Although the government attempted to convince *asentados* to move toward CERAs, many workers objected. The government eventually made concessions, which resulted in the management models not operating as designed; in fact, the models continued to operate as *asentamientos*, albeit under a different name. The state did maintain control of capital investment—mainly machinery—but had insignificant control over production plans. The entire reform sector had been exempted from land taxes since the beginning of the agrarian reform law, but beginning in 1973, these collective operations were also exempt from rent on land and fixed capital.

The dual-exploitation model, with conflicting incentives regarding the allocation of effort to collective and individual production, increasingly tended to put emphasis on personal outcomes. In 1972, evidence suggested that almost half of the livestock within the reform sector belonged to individual persons, and not less than one-third of all production was sold by individual farmers (ICIRA, UNDP, and FAO 1972). CORA directed land and capital to collective efforts (80 percent of land), whereas individual members of the *asentamiento* were directing labor efforts to their individual plots, with the predictable loss in output.

The Fiscal Costs of Administering Agrarian Reform and Implicit Wealth Transfers

The fiscal costs of the agrarian reform between 1964 and the close of CORA in 1978 included the cost of acquiring the land and the physical assets of expropriated farms, the current expenses and capital investments made by CORA during its operation, and the net costs of credit programs to beneficiaries (primarily from the state bank). It should be noted that although no expropriations occurred after 1973, CORA still had to maintain the *asentamientos* until redistribution or transfer to other agencies, such as in the form of public lands. The total of such costs should be net of tax revenues received from the *asentamientos*. A study by Yrarrazaval (1979) covers the three last phases of the reform process between 1964 and 1978 and is based on the detailed data from CORA.

With respect to the costs associated with expropriated land, CORA paid former owners in the form of a down payment of between 1 and 10 percent of assessed land value (based on real estate tax evaluations²³). The remainder of compensation was in the form of nominally valued 5- to 30-year government bonds, with an annual interest rate of 3 percent, which effectively ensures a negative interest rate, given inflation. In addition, compensation included livestock, machinery and equipment, and improvements not included in tax-related assessments; however, these additional values were assessed by CORA itself and were appealable to a local agrarian tribunal. In practice, compensations were a fraction of the market value prior to the agrarian reform.

Operational costs in 1977 dollars are reported in Table 3.9 for current and all capital expenses during the year (which includes transferred properties to beneficiaries). The table also translates current expense costs into present values as of 1978. Current expenditures include salaries, office supplies, transportation, and a fraction of capital expenditures. Table 3.9 presents the flow of capital expenses in a particular year as 10 percent of the capital costs, excluding transfers. In estimating annual flows of capital expenses, Yrarrazaval (1979) assumed an annual flow equivalent to 10 percent of the total annual value. Moreover, he deducted those expenses for land, buildings, and credit net of repayments, with these investments representing transfers between former owners and beneficiaries as opposed to real social

²³ The tax evaluation is an estimate of the flow of net income the property could generate, referred to as *renta presunta*.

costs. Table 3.9 also reports the annual flows of current and capital expenditures (expressed in US 1977 dollars) and their corresponding value (expressed as their present value as of 1978).

Table 3.9 Current and flow of capital expenses (1977 dollars) of the Corporation for Agrarian Reform

Yearly expenses			Expenses capitalized up to 1978	
Year	Current expenses (1,000s US\$)	Capital expenses (1,000s US\$)	Current expenses (1,000s US\$)	Capital expenses (1m000s US\$)
1964	2,667.0	3,935.0	13,033.9	1,274.6
1965	3,464.8	5,996.6	15,118.6	1,844.9
1966	4,996.7	14,437.4	19,467.0	3,942.0
1967	7,466.6	26,441.5	25,972.9	6,211.9
1968	8,277.5	36,570.2	25,708.7	6,713.2
1969	9,109.8	54,657.1	25,262.2	9,317.3
1970	10,850.9	73,264.3	26,866.4	9,216.7
1971	17,394.1	83,705.6	39,116.0	13,809.1
1972	19,290.1	86,575.1	38,076.4	14,418.2
1973	11,695.6	33,810.8	20,611.6	3,344.0
1974	14,254.5	17,506.3	22,429.7	1,214.6
1975	9,381.6	7,646.7	13,180.5	-73.2
1976	8,749.3	18,069.3	10,975.1	-45.9
1977 ^a	8,000.0	10,000.0	8,960.0	-33.6
1978 ^a	7,000.0	5,000.0	7,000.0	-20.0

Source: Yrarrazaval (1979).

Note: The fourth column for capital expenses does not include the transfer of land and structures, because they represent simple transfers from owners to beneficiaries, as opposed to social costs.

Table 3.9 shows the substantial increase in current and capital expenditures required for agrarian reform beginning in 1965. (Again, these estimates include neither the value of the land expropriated nor the implicit transfers through subsidized credit programs from other agencies to the *asentamientos*, particularly from the state bank.) As discussed in Cortázar and Downey (1977), the data available make it difficult to distinguish between credit from state agencies and other banks for the reformed farm sector and credit to the unreformed sector. This difficulty clearly complicates any estimation of the true costs of reform.

In the context of the redistributive impacts of the reform process through 1977, government expenditures under CORA represented a large fraction of beneficiaries' gains. CORA's expenses were approximately US\$380 million in present value terms as of 1977. This figure does not include a large portion of the value of land expropriated, because that amount was not compensated at the time. In terms of transfer efficiency, the Yrarrazaval (1979) study concludes that the transfer of one additional dollar in land wealth to beneficiaries required government expenses of at least 46 cents. Note that this figure does not include the total value of the land transferred, which would be included under a market-based land reform scheme. Current administrative costs amounted to US\$312 million in 1977 dollars (about a quarter of the sector's value-added at the time), which means that one dollar of land wealth transferred to beneficiaries required 39–62 cents of costs in the form of overhead in administration and assistance.

Losses to Expropriated Owners and Transfers to Beneficiaries Until 1973

Assessing the relative distributive efficiency of the agrarian reform program faces relevant and analytically challenging issues. One question is simple: From whom and to whom did redistribution take place? In the case of the Chilean agrarian reforms involving expropriation with only partial compensation, redistribution is from former owners of land and taxpayers toward the direct and indirect beneficiaries of the program. Directly, beneficiaries are obviously the permanent members of the *asentamientos* (recalling that many made use of hired labor).

Indirect beneficiaries are less clear. The pressure from farm labor unions, which arose under 1965 labor legislation (with the consequential risk of a farm takeover by workers), and the almost automatic initiation of the expropriation by CORA in the nonreformed farms could have induced a more thorough compliance with the labor legislation—and perhaps a wage raise. Such indirect effects are nearly impossible to quantify. Yrarrazaval (1979) presented estimates of both the net wealth loss by owners of expropriated farms, under alternative estimates of land values, and the net transfers (wealth) received by beneficiaries of the reform. These estimates were made in 1977, after CORA had paid partial compensation to a fraction of farm owners. In some cases, partial compensation was a return of a portion of the original land expropriated; these were cases in which CORA had not followed due legal procedures according to the 1967 law (mostly during the Allende administration).

The Yrarrazaval (1979 estimates, expressed in present value, measure the net wealth loss to owners (Table 3.10) and net wealth benefit to *asentados* (Table 3.11). Using a commercial value of US\$1,500 per HRB equivalent (in 1978 dollars), the commercial value of the land expropriated totaled US\$894 million. The present value of the compensation received by former owners totaled US\$89 million; thus the net wealth loss of owners totaled US\$805 million. For beneficiaries, the net wealth gain (also at a value of US\$1,500 per HRB) was estimated at US\$499 million. At land prices of US\$2,000 per hectare HRB), these values increase to US\$1,100 million and US\$800 million, respectively. In other words, the transfer from former owners was estimated at a range of US\$800–1,100 million in 1978 dollars,²⁴ and the wealth benefit for beneficiaries was estimated at a range of US\$500–800 million. If CORA's expenses of approximately US\$380 million in present value terms as of 1977 (discussed above) are included and if the value of land expropriated but not compensated is excluded, then the transfer of one additional dollar in wealth to beneficiaries of the land reform required government expenses of between 46 and 74 cents.

Table 3.10 Estimation of capital losses to property owners affected by land expropriations

Area expropriated between 1965 and 1973	895,754 HRB
Land regularized until May 31, 1978	241,544 HRB
Land to be regularized	57,717 HRB
Land effectively expropriated	596,491 HRB
Value of expropriated land	
at US\$1,500	\$894,734,790
at US\$2,000	\$1,192,979,720
Net present value compensation for expropriated property (10%)	
at US\$1,500	\$89,473,479
at US\$2,000	\$119,297,972
Loss to property owners	
at US\$1,500	\$805,261,311
at US\$2,000	\$1,073,681,748

Source: Yrarrazaval (1979, Table 3).

²⁴ To put these figures in perspective, note that between 1978 and 2012, the US consumer price index increased by slightly more than 370 percent.

Table 3.11 Estimation of capital gains to direct beneficiaries of land transfers under agrarian reform

Land area assigned as of May 31, 1978	461,814 HRB
Land to be assigned	96,196 HRB
All land assigned	558,010 HRB
Commercial value of assigned land	
at US\$1,500	\$837,015,000
at US\$2,000	\$1,116,020,000
Value charged by CORA for assigned land	\$444,733,970
Implicit subsidy in form of payment	\$107,430,170
Corrected value of land charged by CORA	\$337,303,800
Effective value of transfer	
at US\$1,500	\$499,711,200
at US\$2,000	\$778,716,200

Source: Yrarrazaval (1979, Table 3).

It is important to keep in mind that the analysis in 1977 includes the fourth and last phase of reform, after the periods of expropriations (ending 1973) and when the land had been, or was in the process of, being distributed to smallholders (mainly *asentados*).

Until the end of 1973, *asentamientos* were being operated as collectives, and beneficiaries could not sell their rights to the land. During this period, the contribution of *asentamientos* to a worker's net wealth would only have reflected the flow of income during the worker's life as a member of the collective, with the land and physical capital being inalienable. Beginning in 1974, however, the worker was the landowner, earning income from farming or rental but also able to reap the present value of the land and capital through land sales.

Approximately 53,000 families benefited from the final land redistribution phase of reforms, receiving land parcels in UAF, a standardized size based on land productivity. Therefore, in 1977 dollars, a beneficiary family received between US\$9,400 and US\$15,000. As a reference, in 1977, Chile's GDP per capita was US\$1,246. In other words, on average, a beneficiary family would have received between 7.5 and 12.0 times the per capita income of the period. In 2010 dollars, the average beneficiary would have received the equivalent of transfers of between US\$33,400 and US\$53,400.

What happened to farms after the beginning of redistribution in 1974? The agrarian reform as originally conceived ended in 1973 with the military government. During the fourth phase of the reform process, CORA ended the creation of new *asentamientos* and offered members of existing *asentamientos* the option of continuing in a collective or receiving individually owned smaller-scale farms. For *asentamientos* whose members chose to receive individual plots, CORA began distribution projects.

Individual persons applied to a selection process that ranked applicants and then assigned them to UAF units that had been created after surveying and physically subdividing the larger estate. Water rights (which were attached to the land before the 1982 law that allowed transferable rights independent of land) were also assigned at the time, and common areas were defined.

Information from mid-1979 shows that CORA had assigned 37,508 UAF parcels, with another 377 in process of assignment at that time. In addition, 6,185 families were assigned a housing lot, and 9,886 beneficiaries remained in the cooperatives. Adding other beneficiaries, the total number of families benefiting from the CORA program amounted to approximately 56,000. Table 3.12 breaks down the land assignments as of April 1979. The total land assigned represented about one-fourth of all agricultural land in HRB in the central zone between Coquimbo and Llanquihue.

Table 3.12 CORA land assignments by type of unit, April 1979

Type of land assignment	Physical hectares	Standardized hectares (HRB)
Cooperatives	1,087,144	95,865
UAF farm family units	2,031,590	371,367
DL 2247, assigned marginal lands (such as arid coast and piedmont)	393,129	19,065
Lots for housing	9,278	1,696
Total	3,521,141	487,993

Source: Ministerio de Agricultura, 1979, "Conferencia Mundial sobre la Reforma Agraria y Desarrollo Rural," Rome: FAO, cited in Panorama Económico de Agricultura (1978).

Note: DL2247 was a legally binding decree by the governing Junta. DL stands for *Decreto con la Fuerza de Ley*.

After the land assignments, many new owners remained in farming. However, many others began renting or selling their land. Although CORA originally planned that farmers would retain their land as farmers for at least five years, in reality there emerged an informal land market that thwarted this design. CORA soon decided to ignore the five-year restriction when it was discovered that beneficiaries were selling below-normal commercial value due to the lack of freely transferable titles. In 1979, ICIRA surveyed 353 ex-*asentados* and obtained information on 848 UAFs, all located between the IVth and Xth regions (ICIRA 1979). By 1979, 9 percent of the UAFs had changed ownership, 1.2 percent had been rented in long-term contracts of 10 years or more, 2.2 percent were under short-term rentals, and 1.6 percent were in sharecropping. In addition, 6.3 percent had partial rental of the UAF, and 16.5 percent had partial sharecropping. In other words, 14 percent of the assigned units were not under the management of the beneficiary originally assigned. An additional 22 percent of the units were under at least partial management of another renting or sharecropping farmer. It is relevant to note that following 1973, land prices began to rise rapidly. In the center north of the country, land prices rose from 1974 to 1978 at an annual real rate of 12 percent. In comparison, in central and southern Chile, land prices during the same period rose at an annual rate of 3 percent (Hurtado, Bustos and Galmez, 1979).

After 1979, the number of farm units declined. With the increase in nonfarm income sources, the dependence of farm households on farm income declined even more. The section in this paper on farm structure shows the evolution of the number and average size of farms since 1976 to the present in physical hectares. Farm sizes expressed in HRB show that over time, the small-farm sector represents a declining share of farmland and value of production. Moreover, as a group, farms smaller than 12 HRB reduced their allocations to products that have become Chile's main agricultural exports, such as fresh fruits. Overall, the trend from 1997 to 2007 is a decline in hectares devoted to cereals and improved pastures and an increase in fruits, table and wine grapes, and plantation forestry. According to ODEPA's interpretation of the 2007 agricultural census, (ODEPA, 2009) as a share of gross value of output, the small-farm sector declined 10 percent, the medium-farm sector increased 9 percent, and the number of large farms increased by 69 percent. There has also been substantial structural change over the past decades, with exportable products being the main growth area.

Small farms are becoming less important to overall agricultural production, and farming has become less important as an income source for small farmers. Moreover, the number of families dependent on labor income from salaried agricultural work is of increasing relative importance. It is in this group that the incidence of poverty historically has been higher than for farmers. Interestingly, Valdés et al. (2010) showed that from 1990 to 2006, salaried workers in Chilean agriculture have gained a larger share of total farm income and that their autonomous income per person has increased more rapidly than that of the self-employed agricultural workers. In addition, recent household surveys show that Chile and Uruguay have the lowest rates of rural poverty and of severe poverty in all of Latin America, with rural poverty rates now officially below urban rates (CEPAL 2012).

4. AGRICULTURAL INCENTIVES BEFORE, DURING, AND AFTER AGRARIAN REFORM: TRADE, EXCHANGE RATE, AND DIRECT PRICE POLICIES

In the late 1950s and early 1960s, during the public debate about Chile's agrarian reform, a central reason for promoting a profound change in the structure of land tenure was the presumed inefficiency of commercial farms and their unresponsiveness to economic incentives. The dominant view at the time was that the relative stagnation of agricultural output was the consequence of structural conditions. This view was expressed by influential economists, such as Prebisch (1950), and was applied generally to Latin America, with no exceptions. However, a different view on agricultural growth placed more emphasis on problems associated with an inadequate structure of incentives facing farmers. This view was illustrated by T. W. Schultz's influential book *Transforming Traditional Agriculture* (1964), which identified the potential role for new technology, education, and price incentives in resolving the agricultural growth problem in developing countries. The lack of appropriate econometric tools and time series at the time,²⁵ however, did not permit the generation of supply-response estimates that would have allowed an assessment of what was ultimately an empirical question. Today, few economists would defend the unresponsive-supply hypothesis, at least for South America.

Even during the 1950s and 1960s, there were hints that agriculture was not immune to economic forces and incentives. Baland and Robinson (2008) showed, for example, that farmland prices were sensitive to policy changes—most important, to a shift from open voting to a fully secret ballot made possible by the *cédula única* (unified ballot), which undermined landowners' political influence and therefore the value of owning land.²⁶ Under the *inquilino* system, there were complex labor and wage arrangements, and wages reflected investments in human capital (experience and schooling), as shown in Valdés (1971), based on survey information from 1962.

During the Alessandri administration, between the late 1950s and the mid-1960s, the three main goals of economic policy important to agriculture were the control of inflation, the reduction of the budget deficit, and the improvement of net foreign exchange earnings. To stabilize prices, the government had a policy of fixing nominal farm prices for essential products (wage goods, such as wheat, bread, beef, milk, rice, sugar, and oilseeds), nominal exchange rates, and marketing margins at the retail level. The government placed prohibitions on the export of certain products (wheat, flour, lamb, and others) but promoted the export of fruits. After a brief attempt at trade liberalization, the government increased tariffs and revived import quotas and licenses, at the end of 1961. Agriculture had differentiated tariffs and prior deposits on imports on products and agrochemicals and machinery. In addition, there were development programs, particularly for livestock, with subsidies for milk producers, state aid in the construction of slaughterhouses, and other investment incentives. Rationing of beef (through *meatless days*) and the prohibition of the slaughter of young and pregnant cattle were also part of the policy package. There were state credit lines at subsidized rates and subsidies on railway transportation for wheat, cattle, and forages. In 1960, the government established a marketing board (*Empresa de Comercio Agrícola*, ECA) for purchases and sales, beginning with wheat and byproducts, and later extending the authority to all products in an attempt to guarantee a “normal supply” of products. The board also gained a monopoly on imports.

²⁵ After the contribution of M. Nerlove (1958) on the distributed lag approach in the late 1950s and early 1960s, there grew a literature on estimating supply elasticities for individual crops for many developing countries. The overall conclusion was that their values were not different from estimates for developed countries. However, the question of the elasticity of aggregate supply response remained unsolved, practically until the pioneering econometric studies published in the early 1990s led by Yair Mundlak at IFPRI, in collaboration with colleagues in Argentina (Mundlak, Cavallo and Domenech, 1989) and Chile (Coeymans and Mundlak, 1993).

²⁶ Baland and Robinson (2008, 601) noted, “A characteristic of rural Chile at this time were patron-client relations based on the *inquilino* 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.” Before 1958 each party issued its own ballot, making it easy to monitor for which party someone was voting.

How distorted were farm prices in Chile during the early 1960 and 1970s? The period indeed saw evidence of an effective tax levied on agriculture due to both domestic price controls and trade and exchange rate policies (Valdés 1973). A detailed analysis of the structure of incentives for Chile during 1960–1984 is now available from studies such as Krueger, Schiff, and Valdés (1991), who measured the impact of direct interventions—namely, agricultural trade and direct price policies—in conjunction with the impact of indirect interventions (exchange rate misalignment and industrial protection on domestic relative prices).²⁷ Faced with high rates of inflation during the 1950s, government interventions included maintaining a fixed-nominal exchange rate; fixing prices for rice, wheat, oilseeds, milk, sugar, and so forth; and setting up marketing boards to control wholesale commodity prices, tariffs, quotas, and licenses on imports and exports. The supply of credit at subsidized interest rates (and credit consequently rationed) was seen as a partial compensation to farmers for price controls. Relative to previous administrations, the Alessandri administration of 1958–1964 began to slowly reduce the scope of interventions, in an attempt to generate a more favorable business climate for farming. The Frei administration (1964–1971) went further in its effort to modernize agriculture and recognize the role of price incentives (though not unfettered markets). This administration moved to a crawling-peg exchange rate system and introduced a tax refund of up to 30 percent of the freight-on-board price for fresh fruits (not applicable to other farm products). Tariffs were relaxed to some degree, with the uniform tariff equivalent falling from 94 percent in 1966 to 38 percent in 1970. Restrictive tariffs were still in place, and there were price controls for consumers and minimum prices for producers, which fixed marketing margins for the major staple crops, export quotas, licenses, and prohibitions and quotas on wheat, flour, milk and beef.

To encourage production, the Frei administration recognized the importance of relative prices. Farm prices were allowed to rise more quickly than nonagricultural prices. To diminish marketing margins, the government intervened in marketing channels by increasing storage and processing facilities, improving transport systems, holding food security stocks of staples, and operating marketing boards to support the prices of wage goods. Of course, a tension emerged between the dual objective of increasing production through higher prices and raising rural wages relative to urban and the objective of restraining wages in the nonagricultural sector.

During the Allende regime (1971–1973), the interventionist economic policy intensified. Inflation accelerated, and given the logic of the prevailing economic model, the government responded with even more severe controls of prices. Intense inflation and price controls led to food shortages and black markets. The government reacted with an attempt to monopolize the markets of fertilizer, wheat, maize, milk, sugar, and other products. Regarding foreign trade, the government accentuated the previous administration's protectionism by fixing the nominal exchange rate, and the state import monopoly and export controls became stricter.

In late 1973, after being confronted with hyperinflation, large deficits in internal and external accounts, and a large part of the economy generally (including agriculture) being held in state hands, the military government radically changed economic and agricultural policies toward market-based resource allocations. The government's role in the economy was reduced, trade was liberalized, and private property rights were strengthened. During the first phase of overall economic reforms, between 1973 and 1983, sector-specific reforms were deferred, with the key considerations being macroeconomic stabilization and the desire to bring credibility to the reform effort.

Measures of Price and Trade Interventions

The diagnostics regarding the causes of the slow growth of agriculture before the agrarian reform tended to emphasize structural factors that inhibited innovation, investments, and growth on the farm. What was often overlooked at the time, however, was the influence of trade, price, and exchange rate policies. Such policies influenced incentives, not only directly via product-price interventions but also indirectly via

²⁷ An update of the direct interventions for Chile during 1985–1995 is available in Valdés and Schaeffer (1996); for up to 2004, see Anderson and Valdes (2008).

relative prices. This finding does not negate the possibility of endemic problems in the land tenure system, leading to observed inefficiencies and backwardness in agriculture; however, it does suggest that the symptoms of an inefficient farming sector had perhaps multiple causes and that debate tended to ignore the incentive issue. Indeed, at the time, policymakers were unaware of the analytical tools that might assess problems with the structure of incentives.

Table 4.1 presents the direct and total nominal and effective rates of protection for three importables (wheat, beef, and milk) and two exportables (apples and grapes). Direct rates of protection account for protection resulting from sector policies, including border measures, and direct net subsidies on products and tradable inputs. The direct rate of protection is estimated as an ad valorem tariff equivalent by comparing border and domestic prices. Total rates of protection is the sum of direct and indirect protection, where the indirect protection accounts for exchange rate misalignment and the effect of nominal protection on industrial products, which has an effect on domestic relative prices. Note that these measures of protection are sensitive to world price changes.

One conclusion to draw from these protection measures is that the indirect effects from exchange rates and industrial protection were influential and negative for agriculture. For example, in nominal protection, during 1970–1974, the positive nominal rate on milk was +16 percent; on beef, –24 percent. Accounting for indirect effects, the total nominal rate declined to –4 percent and –38 percent. For wheat, the direct nominal rate was –11 percent; however, when including indirect effects, the rate declined to –28 percent. During 1970–1974, the total nominal rate of protection was negative for importables. It was also negative during 1964–1969 for all products—importables and exportables—except for a small positive protection for milk. The effective rates of protection show mixed results, though with many negative and high rates.

A cautionary note on the interpretation of the effective protection estimates during 1970–1974: effective rates incorporate price distortions in tradable inputs. During the Allende years, there was high inflation, price controls, and rationing, which all affected the delivery of purchased inputs. The officially quoted prices of inputs would not well reflect the effective per-unit cost of the inputs when actually purchased. Often, inputs simply were not available in the quantities demanded, or when they were available, they were purchased in informal markets at higher prices than official quotes. The downward adjustment to nominal rates of protection, which would come from accounting for protection on inputs, is likely underestimated during this period; thus, the effective rates are likely overestimated.

For 1960–1983, the average total rate of protection for a sample of agricultural tradables was –22 percent, and even the direct rate was –1.2.²⁸ Although there were fluctuations over time and between products, Chile taxed agriculture overall until the mid-1980s.

²⁸ See Table 2.1 and discussion on page 15 of Schiff and Valdes (1992).

Table 4.1 Nominal and effective rates of protection, direct and total, for selected Chilean crops, 1960–1984

Direct nominal rate of protection					
Period	Wheat	Beef	Milk	Apples	Grapes
1960–1964	5	–10	186	11	12
1965–1969	13	–26	39	27	28
1970–1974	–11	–24	13	42	44
1975–1979	9	5	28	0	1
1980–1984	15	8	16	0	0
Direct effective rate of protection					
1960–1964	25	–9	96	23	21
1965–1969	17	–31	–23	34	14
1970–1974	135	–30	–23	56	53
1975–1979	20	–3	22	–11	–1
1980–1984	18	6	1	–25	–3
Total nominal rate of protection					
Period	Wheat	Beef	Milk	Apples	Grapes
1960–1964	–41	–49	61	–37	–37
1965–1969	–17	–45	2	–4	–4
1970–1974	–28	–38	–4	14	16
1975–1979	33	27	56	22	23
1980–1984	2	–5	2	–7	–7
Total effective rate of protection					
1960–1964	–37	–54	0	–36	–37
1965–1969	–14	–47	–42	3	–5
1970–1974	93	–33	–25	39	47
1975–1979	77	–16	28	32	47
1980–1984	2	3	1	–20	–10

Source: Krueger, Schiff, and Valdés (1991, 114).

5. LESSONS LEARNED FROM CHILE'S AGRARIAN REFORM

Was the Chilean experience with agrarian reform a success? It began with what could be called, in hindsight, a questionable diagnosis of what was truly ailing the country's agricultural sector. The prevailing opinion among the political class at the time was that the sector performed poorly due to structural reasons: a precapitalist, semifeudal land tenure system that was inefficient and unresponsive to normal economic incentives, with peasant workers tied to large estates. An alternative hypothesis, circulating among economists but not accepted by policymakers, was that adverse economic incentives, distorted by government interventions, discouraged investments and productivity improvements. Although there is not a black-or-white choice between hypotheses (and, in fact, they are not mutually exclusive), this paper's ex post view, based on good documentation, is that the incentive-distortion effect was real and not minor. Certainly today, the successful nature of Chilean farming and the incentive structure that agriculture faces are both radically different from that seen in the 1960s.

The *inquilinaje* model of labor tied to large estates—a notorious symbol to reformists of the antique system—had arisen due to the micro problem of attracting and holding labor for distant farms in an era of poor transport and communications. In the 1960s, in addition to money wages, *inquilino* workers were remunerated in part with housing on the estates as well as with small, individual farm plots. Perhaps the precapitalist, semifeudal characterization of Chilean agriculture, though attractive and simple, was not an accurate description of the situation by the time more radical reforms were being implemented. Without agrarian reform, the *inquilinaje* model would likely have become unstable as labor markets became more integrated (due in part to improved roads, transport, and communications), but certainly it would have been disrupted by the change in labor law in the late 1960s, which facilitated unionization of farm workers. With agrarian reform, the worker's formal dependence on the patron and his medium or large farm was ended completely with the *asentamientos*. On the smaller farms that were left unexpropriated, the change in labor law spurred mechanization.

Agrarian reform was fiscally costly. After an initial increase in production, there were negative effects on output. Agrarian reform as *land tenure* reform veered from its objective as originally sold. During Frei's administration, and even more so under Allende's, the adopted production model was that of a large-scale, collective farm operation, with anticipatable principal-agent incentive problems. The *asentamiento* model was perhaps in error due to predictable problems arising from its logic of incentives. Individual workers (the *asentados*) had incentive to concentrate their best efforts on their own small plots, as shown under the *kolkhoz* system; the collectivized large farm received workers' residual attention. Labor concentrated on individual plots, while land and fixed capital were allocated to the collective, with the predictable loss in overall productivity.²⁹

There were winners, however. In 1977 dollars, a beneficiary family received between US\$9,400 and US\$15,000. (GDP per capita that year was US\$1,246). On average, a beneficiary family would have received between 7.5 and 12.0 times the per capita income of the period. In 2010 dollars, the average beneficiary would have received the equivalent of between US\$33,400 and US\$53,400 in transfers.

What Lessons Can Be Learned for Other Countries from the Chilean Experience with the Agrarian Reform Process?

The results of land reform depend greatly on initial agricultural market conditions, the existence of complementary policies, and, certainly, the objectives of reform. There is reason to doubt that, *ceteris paribus*, changes in land tenure will produce significant productivity gains, especially in the context of countries that are not land constrained (that is, most of South America). *Reforms* do not, by themselves, produce efficiency gains. Context and complementary policies are required. The Chilean reform efforts until 1973 redistributed land from medium and large private estates to medium and large cooperative and

²⁹ See Valdés (1974) for a discussion written in 1972 of the predictability of mismatched incentives on collectivized farms in Chile.

collective farms on the same estates, leaving the preexisting small farms unaffected. Under the Frei administration, few small farms were distributed to worker-beneficiaries as individual private property, and none under Allende. The beneficiaries were permanent workers in the commercial farm sector, who reaped their benefits through wages and a share of the net income of the *asentamientos*.

However, farm productivity might not be the central goal of large-scale reforms. Certainly, the reforms under President Frei were ostensibly aimed at productivity gains, because the old hacienda model was considered unresponsive to incentives. Under President Allende, however, agrarian reform was part of a broader goal of a Socialist economic transformation. State ownership or control of agricultural resources—as well as of trade, financial services, marketing, and other activities throughout the economy—was meant to both rationalize resource use *and* gain more equitable distribution of economic surplus. Agricultural productivity per se was not the central objective.

The practical political context is also important. One political-economic motive for the initial push for land tenure reform in Chile was to reduce the political power of large landowners (the *latifundistas*), who linked electoral influence to control over land. However, an important reform in 1958, before land expropriation, was the change in voting laws to make voting completely secret. This change reduced the ability of landowners to enforce block voting on those workers who depended on owners for work or land. The new law indeed led to a change in voting patterns and reduced the political value of large landholdings (and sales value). The 1966 agrarian reform law was likely approved because of the changes to the composition of congress, itself a consequence in part of the prior electoral reforms.

In terms of results from changes in the land tenure system, the lesson is that the farm production model is critical in determining what is observed in the longer term. Which sustainable business model can take advantage of land redistribution? Relative land abundance is likely to favor the evolution of the farming structure toward medium and larger operations, at least in terms of the shares of output by farm size, though not necessary in terms of the number of farms. This evolution has been observed in the United States, Brazil, Argentina, Paraguay, and other land-abundant countries, such as Russia and post-1990 Ukraine. The trend in Chile has been similar. Attempting to force or subsidize a predetermined model of farm size is likely not to be sustainable. However, this finding does not contradict the possible merits of targeted assistance to small farmers, whether for social objectives or to resolve possible market failures.

The model of production put into place with Chile's agrarian reform was one of large cooperatives and collective farms. With the hindsight of many similar experiments in various countries, such a production model was perhaps inherently inefficient from the beginning. Coordination problems certainly arose in setting incentives that would guide the use of resources—especially labor—within the enterprise. In addition, at the time of the establishment of *asentamientos*, the policy planners were focused on staple goods. In time, however, the comparative advantage of the country leaned toward higher-valued products (orchards, vineyards, dairy), which require high per-hectare capital investments. The discovery process for new products and export opportunities, especially the question of who absorbs the risk of new products and of unpredictable international prices, was perhaps unsuited to the farm model on which the Chilean agrarian reform was based.

Other market forces external to the reform process are also important. The evolution of land tenure in Chile has been influenced by changes in the marketing chain, especially the growing importance of processing and quality, as well as by the associated incentives to incorporate sophisticated technology on the farm itself in the production of high-valued goods for domestic and foreign buyers. As observed by various authors (see Reardon and Berdegue 2002), supermarkets developed very rapidly in Latin America in response to changing logistical capacities and growing consumer demand for standardization and credence attributes in products (in particular fruit and horticulture, dairy, and meats). At the same time buyers for exports were responding to increasing demands for standardization, quality, traceability, and reliable large-scale deliveries. These changes tended to give an advantage to medium and large farm enterprises in fruit and horticultural crops, especially in terms of the fixed costs of reaching the levels of sophistication necessary to engage with export markets.

In contrast, staples and traditional cash crops in some countries are less subject to requirements of credence, and therefore scale questions would be centered on on-farm costs rather than on responses to the marketing chain. Any reform should bear in mind the inherent dynamic and stochastic nature of national and global supply and demand. Currently, Chile seems well positioned and well adjusted vis-à-vis global supply chains, but clear causality cannot be attributed to either the agrarian reforms of the 1960s and early 1970s or to the economywide reforms beginning in the late 1970s. Nevertheless, the rapid rise in land productivity experienced by Chilean agriculture occurred after the implementation of privatization, deregulation, and the reestablishment of property rights in land (see Figure 3.2). The acceleration in farm incomes followed the trade liberalization of the early 1980s and the devaluation of the peso after a period of strong appreciation (1979–1982).

Costs to the government and the economy in general are obviously important as well. The fiscal costs of the agrarian reform process were high, though the program compensated only a fraction of the value of expropriated land. As discussed in this paper, CORA's expenses alone (in constant dollars) increased on the order of 40–50 percent per year during the second phase of the reforms and by 60 percent during 1970–1971. In terms of the fiscal burden on the state, one should add to these expenses the capital expenses, which also rose until 1973. Based on Yrarrázaval's (1979) analysis of the CORA records, the transfer of one additional dollar in land wealth to beneficiaries of the reform required real government expenses of between 46 and 74 cents. Note that this figure does not include the total value of the land transferred, which would have been included under a market-based land reform scheme. Capital expenses by CORA were for compensations actually paid. The accumulated present value of current expenses (administrative costs) alone amounted to US\$312 million (in 1977 dollars), which would mean that one dollar of land wealth transferred to beneficiaries required 39–62 cents of costs in the form of overhead in administration and assistance.

The costs of complementary policies are also critical. What might have happened if the present system of extension and credit subsidies for small farmers (started in 1977) had been in place in 1974, when the land redistribution began? At the end of 1973, Chile was suffering from hyperinflation due, in part, to a pronounced expansion in the size of the public sector. The military government implemented a drastic reduction in public expenditures, which lasted until 1977–1978. The fiscal crisis limited expenditures on all sectors, including extensions and subsidized credit for small farms. Although the counterfactual cannot be answered empirically, after 30 years of INDAP programs exclusively for small farmers, the small-farm sector is decreasing in terms of its role in agricultural production and is only marginally involved in exports.

Professor Jarvis (2004), echoed later by Rafael Moreno (2013) (director of CORA under Frei), raised the hypothesis that agrarian reform permitted the rapid transformation of Chilean agriculture after economywide policy reforms were instituted in the late 1970s. The contention is that without the shock of reform, and the subsequent distribution of land to smallholders under the military government, there would not have been the environment (especially land markets) for a more entrepreneurial class of farmers to take advantage of the deregulation, privatization, and trade reforms that followed. This hypothesis calls for a counterfactual that is hard to prove. What would have Chilean agriculture looked like in the mid-1960s, if the economic reforms of the late 1970s had been implemented under Alessandri in the early 1960s instead? How many large estates would have been sold, subdivided, rented, and transformed in the light of new economic opportunities?

Before major reforms, farmland was a hedge against inflation (more than 30 percent annually was common) in a country with relatively underdeveloped financial markets. Under such circumstances, farm owners were encouraged to retain land, which would have raised nominal land prices. But land prices also tended to be low due to low returns generated by the old price regime depressing output prices and raising the cost of tradable inputs. In addition, it was due, in the 1960s, to the risk of expropriation.

One final observation concerns the importance of the uncertainty regarding the design and implementation of reform laws. The Chilean agrarian reform was not implemented mechanically; rather, its interpretation was left in the hands of CORA. Moreover, starting in 1969 (with Law 17.280 changing an article of Law 16.640), the accountability for CORA decisions was purely administrative, rather than

in the court system. What resulted was the ability of CORA to take possession of farms before the normal process of assessment and the procedures of the original law were completed. Those about to lose their land were effectively expropriated without access to the standard, independent judicial system. Under the Allende administration, the legally fixed 80-HRB lower limit for farms subject to expropriation was effectively reduced without a change in the statutes. CORA used its administrative discretion to widely apply the legal rule that inefficient management was a condition for expropriation for farms smaller than 80 HRB. The problem, however, was with the definition of *inefficient management*. These conditions produced much uncertainty for farmers who operated on less than 80 HRB and who might have otherwise had an incentive to invest in enhancing their productive efficiency. The result was a decline in private investment and eventually a decline in output from the sector as a whole.

Other questions to be explored in the future could arise from this look at Chilean agrarian reform. What would have been the evolution of agriculture if the reform model had been based on redistribution to small farmers from the beginning in 1965? On the one hand the inquilino system would have been undermined by the small farm model and by changes in the labor law soon to be implemented. On the other hand, in 1965, the economywide reforms were as yet unknown to politicians; therefore, the incentive structure would have remained unfavorable to commercial farms relative to the situation at the end of the 1970s. Very likely, however, a reform effort in the mid-1960s that began with small farms would have facilitated land transactions, the entry of new actors, and the exit of unsuccessful farmers, albeit without the stimulus to the export orientation of commercial operations in fruits, horticulture, and wine that followed later economywide trade reforms.

APPENDIX: SUPPLEMENTARY TABLE

Table A.1 Timeline relevant to Chile's agrarian reform, 1958–2007

Year/Period	Reform
1958	<ul style="list-style-type: none"> Secret vote introduced in Chile to avoid electoral fraud.
1961	<ul style="list-style-type: none"> US President John F. Kennedy establishes the Alliance for Progress.
1962	<ul style="list-style-type: none"> Vote made obligatory in Chile, which together with the establishment of secrecy in 1958, increases the electoral participation of rural voters, especially for leftist parties. The Alessandri government passes the first law targeting agrarian reform (Ley de Reforma Agraria No. 15.020), resulting in the creation of the <i>Corporación de Reforma Agraria</i> (CORA), the <i>Consejo Superior de Fomento Agropecuario</i> (CONFSA), and the <i>Instituto de Desarrollo Agropecuario</i> (INDAP).
1963	<ul style="list-style-type: none"> Constitutional reforms passed to allow the state to more easily divide rural property.
1964	<ul style="list-style-type: none"> Establishment of the Agricultural Research Institute (Instituto de Investigaciones Agropecuarias, INIA).
1965	<ul style="list-style-type: none"> Agricultural Census
1967	<ul style="list-style-type: none"> Legal status given to farmer syndicates (16.625). The Second Agricultural Reform Law (16.640) changes the direction of reform. The new law created two new institutions: the <i>Servicio Agrícola y Ganadero</i> (SAG) and the <i>Instituto de capacitación e Investigación en Reforma Agraria</i> (ICIRA). The Constitutional Reform of 1967 removes guaranteed protection of private property rights.
1969	<ul style="list-style-type: none"> Land Reform Law amended (17.280) by the so-called "Ley Aylwin," which further altered the rules on government takeover of private lands.
1970–1973	<ul style="list-style-type: none"> Dramatic radicalization of land reform process under the presidency of Salvador Allende.

Table A.1 Continued

Year/Period	Reform
1973–1978	<ul style="list-style-type: none"> • Military takeover, September 1973. • Suspension of collective negotiation and general implementation of policies in line with the neoliberal economic doctrine.
1974	<ul style="list-style-type: none"> • Water rights privatized, with state financing limited to large works deemed to be economically and socially necessary. • Government subsidies given to forestry sector. • Financing for the agricultural sector moves from public to private institutions.
1974–1975	<ul style="list-style-type: none"> • Revocation of lands expropriated under CORA.
1974–1978	<ul style="list-style-type: none"> • The existing Empresa de Comercio Agrícola (ECA) continues to operate as a state buyer of major agricultural imports, with discretionary flexibility to expand or diminish its purchase activities.
1975	<ul style="list-style-type: none"> • Water rights protected under civil rights without limitation to use. Previously, water rights were considered an administrative right. • Privatization of public companies in charge of regulation of distinct agricultural markets.
1976–1980	<ul style="list-style-type: none"> • Massive redistribution of expropriated lands (CORA).
1976	<ul style="list-style-type: none"> • Agricultural Census • Elimination of the Fund for Union Education and Extension (Fondo de Educación y Extensión Sindical).
1977	<ul style="list-style-type: none"> • Clauses added to labor law, changing the requirements for termination of employment.
1978	<ul style="list-style-type: none"> • Legal end of the agricultural reform process, the formal end to legal expropriation, and the formalization of private property rights guarantees for all activities at a national level. • Dissolution of CORA.
1979	<ul style="list-style-type: none"> • Funding reduced for research and development at the National Institute for Agricultural Research (INIA).
1980	<ul style="list-style-type: none"> • End of legal protection of indigenous lands, which facilitated its division and sale.

Table A.1 Continued

Year/Period	Reform
1981	<ul style="list-style-type: none"> • Formal end of state intervention (via prices, quotas, and subsidies) in all products through the parastatal with import monopoly on food products – <i>Empresa de Comercio Agrícola</i> (ECA).
1982–1990	<ul style="list-style-type: none"> • General expansion of state intervention into agricultural prices following a severe financial crisis. • Creation of the Confederation of Agricultural Cooperatives (Confederacion Nacional De Cooperativas Del Agro Ltda., COPAGRO) and the creation of a government-sponsored buyer of last resort for wheat (Comercializadora de Trigo, S.A., COTRISA). • Government price bands used for imported wheat, sugar, and seed oils. • Surcharge on milk products established. • Reactivation of public water works via subsidy and private investment.
1990–1998	<ul style="list-style-type: none"> • Broadening of sanitation program for rural landholdings. • Establishment of a rotating consolidation fund for smallholder families wishing to legalize hereditary communities. • System of price bands established as a mechanism to ease shocks from international price changes: wheat, wheat flour, sugar, and oil. • Wholesaling for wheat and rice via COTRISA. • Additional rate tariff applied to the manufacturers value added (VAM) for flour. Price band related to the already-established band for wheat. • Stock market for agricultural products established. • Small farmer supply centers established by INDAP. • Transaction rules established. • Commercialization of products facilitated by the establishment of rules and norms regarding physical and chemical characteristics of certain products, including marigolds, wheat, milk, rice, and rape seeds. • General process of standardization of technical norms for buying and selling wheat, redefining norms in the case of corn products, and determining the norms for industrial output of rice.

Table A.1 Continued

Year/Period	Reform
1990–1998 (continued)	<ul style="list-style-type: none"> • Rules for classification of meat products established. • Characterization of bovine meats in accordance with animal age and other attributes. • Production information system stores title and regional-level data to improve the transparency of the internal market. • Sectoral information system for the geopolitically sensitive “extreme” regions in the far north and south. • Modification of Law 18.525. • The Agricultural Ministry begins participation in the Commission on (Price) Distortions. • Information systems for regional prices (Sistema de Información de Precios, SIPRE - ODEPA). • Market Information systems for small farmers (ODEPA-INDAP). <p>Strengthening of the prosecution of economic and financial crimes, especially at the regional level.</p>
1997	<ul style="list-style-type: none"> • Agricultural Census
2007	<ul style="list-style-type: none"> • Agricultural Census

Source: Authors’ compilation.

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