The Agricultural Effects of Land and Economic Reforms in Chile, 1965-2000

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Reforms are intended to achieve change. Land reforms traditionally seek to change the asset distribution, providing land and opportunity to the rural poor and curtailing wealth and political power for previous landowners. Increased growth is sometimes a goal of land reform as well. Countrywide economic reforms, particularly those that attempt to change fundamental economic institutions and structures, seek to reduce economic distortions, increase market efficiency, spur innovation and technical change and increase growth. Each type of reform requires great effort and is achieved at high cost. Historically, reforms have been undertaken because they promise great gain. However, reforms have often been halted short of completion. Sometimes they failed because they did not bring about the intended effects, either because of policy error or because the short term effects were negative even if the long term effects might have been positive. On numerous occasions, reforms have created resistance and opposition from those who were affected negatively.

Economic reforms have occurred in recent decades with much greater frequency than land reforms and rarely have both reforms been carried out in the same country. Thus, Chile, which carried out both types of reforms, provides an important opportunity for study. Chile’s agricultural sector was the focus of controversy during the late 1950s

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and early 1960s. Land was concentrated in the hands of few owners, concentrating political as well as economic power (CIDA, Barraclough), and agricultural production was growing slowly, leading to a rising agricultural trade deficit and continuing poverty among agricultural workers (Valdes, 1973). Two reforms were proposed to resolve these problems during the Eduardo Frei administration, 1965-70\(^2\): 1) land reform, which was intended to improve land management and increase economic and political equity (Kaufman), and 2) trade and price reforms, which were intended to open the economy, reduce the implicit tax on agriculture imposed by an import substituting industrialization strategy and remove other price distortions, thereby improving incentives for agricultural development (Echeverria). Each of these reforms was eventually carried out, though each process was somewhat fitful.

Land reform began during the Frei administration. Most land expropriation was undertaken by the Salvador Allende administration (1970-73) and most land redistribution was carried out by the military government of Augusto Pinochet (1974-1989). Land reform changed as it evolved, created a strong political reaction, and was truncated. Nonetheless, it permanently changed many aspects of Chile’s agricultural sector. Tentative economic reforms were initiated during the Frei Administration, but these reforms were set back during the Allende administration, which significantly increased State intervention. Subsequently, and somewhat in response, deep and widespread economic reforms were carried out by the Pinochet administration. These reforms were largely embraced, if somewhat fine-tuned, by the democratic administrations that followed (1990-2000). Chile’s economic reforms were among the

\(^2\) Eduardo Frei Ruiz-Tagle, son of Eduardo Frei Montalva, was President of Chile in 1994-2000. As most reforms were completed before this time, when we refer to the Frei administration, we refer to the father’s, 1965-1970.
most sweeping and profound of any carried out in a developing country in the last three decades and the reforms were maintained and extended into present, despite a few, relatively minor setbacks. Though not in general aimed at agriculture, per se, these reforms had great short and long term effect on the agricultural sector.

This paper assesses the longer-term effects of the two types of reform on Chile’s agricultural sector, separately and via their interaction. We show that Chilean agriculture has modernized rapidly since 1965, though this progress has been mainly evident only since about 1985. We argue that both types of reform played an important role. Indeed, Chile is in many senses a dramatic example of the benefits that economic reform can achieve – and we believe that land reform also had positive effect. It is important to note that our interpretation often relies on personal interpretation. Many aspects of Chile’s economy have been studied closely during the past 4 decades, but the agricultural sector has received less attention. Some of the issues discussed here have not been subjected to rigorous hypothesis-based testing and, as a result, our views must be regarded as tentative, subject to validation or rejection by further research.

The paper is organized as follows. In Section 2, we provide an overview of the policy reforms of the last four decades. Section 3 contains an analysis of the expected and actual effects of these reforms. Section 4 presents the main conclusions and policy lessons.

2. Overview of Policy Reforms

Land reform was designed to encourage agricultural investment and improve farm management, while simultaneously shifting a significant proportion of land from the relatively small number of large landowners to the much larger number of male workers
that comprised the permanent labor force on large farms (Thome, Kaufman). The plan was to leave existing large farmers with a significant plot of land that they could continue farming, provided that they demonstrated that their farm was adequately capitalized and well managed, while expropriating the rest and redistributing it. The process of expropriation began in 1965, but was most intense between 1967 and late 1973, when the process ended abruptly following the overthrow of the Allende administration by a military coup. Redistribution of the expropriated land continued until the late 1970s (Jarvis, 1985).

Although the Frei administration initiated trade and price reforms in the late 1960s, the Allende administration attempted to increase state power, expropriating industrial firms as well as farms, intervening in markets and moving towards greater protection of domestic industry. In 1974, the Pinochet administration responded with more radical economic reforms, seeking to transform a closed economy with substantial state ownership and intervention into an open economy with little state ownership or intervention. International trade was liberalized, domestic markets were deregulated and parastatal enterprises were privatized. Reforms affected nearly every aspect of the economy, e.g., international trade, finance, labor, natural resource, and tax and public expenditure policies, as well as the political sphere. Additional aspects of the land and economic reforms are outlined below, insofar as they affected agriculture.

2.1. Land Reform Policy

In 1965, 55% of Chile’s agricultural land, measured in terms of productive capacity, was held in about 5,000 farms, while the remaining 45% of land was held in 238,000 smaller farms. Chile’s land distribution was, characteristic with many other
Latin American countries, considerably more skewed than that of most countries in the world (CIDA). Approximately 43% of Chile’s agricultural land was expropriated between 1965 and 1973 (Jarvis, 1981a, 1985). Nearly all large farms were partly or wholly expropriated. After 1974, 28% of the expropriated land was returned to the previous landowner, the government retained about 10%, 5% was auctioned, and the remaining 57% was distributed to approximately 50,000 land reform beneficiaries. Thus, even though most large farmers recovered substantial land, an amount equal to about 25% of Chile’s total land was redistributed to land reform beneficiaries, with significant effect on the size distribution of land.  

3 In 1979, slightly more than 50% of Chile’s land was held in parcels of less than 20 hectares, rather small by Chilean standards. 

The land reform beneficiaries constituted about half of the 100,000 adult males previously resident on the transitional land reform farm entities (asentamientos) that had been created by expropriation. The other 50,000 adult males were abruptly dismissed, becoming landless laborers in search of work. The dismissal of so many workers, equal to about 10% of the agricultural labor force, caused a large increase in agricultural unemployment (already high because of the macroeconomic and structural adjustments proceeding). Their absorption required significant wage adjustment and time. 

Policies toward the beneficiaries were not designed to encourage their success.  

4 The selection process for the beneficiaries excluded those who had been leaders of the farm workers and rewarded men with large families. While having some welfare rationale, most beneficiaries were not well qualified as farmers and, moreover, they were

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3 The parcels averaged 9 Basic Irrigated Hectares (BIH). A BIH was the amount of land estimated to have the equivalent productive potential of 1 ha of prime irrigated land in the Maipo River valley, one of Chile’s best agricultural regions.

4 The government argued that it would be unfair to sell the beneficiaries their land at a discounted rate and also provide them with subsidized credit or technical assistance since other poor also needed assistance.
effectively barred by government policy from subsequently receiving technical assistance or credit. Many policy makers in the late 1970s did not want land reform to succeed and policies toward the beneficiaries reflected this attitude (Jarvis, 1985). However, many beneficiaries would doubtlessly have failed even had they received significant assistance given their lack of skills and experience.

By the early 1980s, about 40 percent of the land reform beneficiaries had sold their parcels (Jarvis, 1985); the figure was significantly higher in the early 1990s, reaching nearly 100% in many areas. Land reform beneficiaries sold their parcels for many reasons. Principal among them were the beneficiaries' lack of capital and technical assistance, their lack of farming and entrepreneurial skills, and the simple desire of some to leave farming. Moreover, the fruit boom, which dramatically increased the value of land suitable for fruit production, made it attractive for many farmers who did not have the means to produce fruit to sell to others who could. In turn, declining agricultural prices and growing competitive pressures made farming less attractive for those who could not implement new technologies. Note that many large landowners also left farming in the same period. Some left because they had been soured by their land reform experience, others because of age, a lack of capital and/or managerial ability, rising competitive pressures, and many were enticed by the high prices offered for their land.

It has been debated whether land reform stimulated or retarded agricultural development (Quiroz, et al., Jarvis 1990). There is evidence that reform led to more rapid growth, except for a brief period during the Allende administration. Output rose in 1965-1970, declined sharply in 1971-73, and recovered quickly after expropriation ended to a level higher than the pre-reform level. As noted below, output then rose substantially
more rapidly in the 20 years following the end of reform than it did in the 20 years prior to reform, though it is difficult to fully identify cause and effect for such a complex phenomena. Land reform contributed to a more dynamic land market that facilitated expansion by progressive farmers and entry by investors from industry, commerce and mining (Jarvis, et al.), and these new entrepreneurs were crucial to rapid fruit sector development after 1975. Success in fruit production set the stage for subsequent innovative agricultural developments. Indirectly, the land reform process also fundamentally changed the relationship between landowners and farm workers, contributing in the long run to a more independent, skilled and competitive labor force.

2.2 Exchange Rate Policy

Chile traditionally imposed a high level of domestic protection, resulting in an overvalued peso. The Arturo Frei administration initiated movement towards a higher real exchange rate from 1965-70 (Figure 1), but this policy was reversed during the Allende administration, 1971-73. The military government that took power in late 1973 began a series of devaluations aimed at achieving and maintaining a higher real exchange rate in the face of high inflation. In 1974, it implemented a monetary shock policy that caused a 14% decline in GNP in 1975/76. In 1976, the government also began to sharply reduce import tariffs and quantitative restrictions. Then, surprisingly, it revalued the peso slightly in 1976 and 1977, despite continuing high inflation. The government believed that consumers’ inflation expectations were influenced by the rate at which the government devalued the peso and sought to manipulate expectations and thereby the inflation rate through exchange rate policy. Inflation declined, but remained high.
The government then fixed the nominal exchange rate from 1979 to 1981, hoping to provide an “anchor” that would further reduce inflation. It did, significant real peso appreciation occurred. Foreign capital was readily available to the private sector, economic growth was robust from 1976 to 1981, and, given that protection had been greatly reduced, imports surged. Domestic producers suffered from foreign competition even as consumers benefited. Many businesses borrowed heavily in US dollars at high real interest rates to remain liquid. Eventually, the deteriorating balance of trade forced Chile to abandon a fixed exchange rate. Many businesses, including the financial sector, collapsed. GNP fell sharply in 1982/83, again by 14%.

Chile was only one of many Latin American countries that faced a large international debt and an unfavorable economic situation at this time. Within this context, foreign capital inflows decreased sharply and Chile’s real exchange rate depreciated rapidly from 1982 to 1985. In response, Chile’s macroeconomic policy became more balanced. Growth gradually resumed, inflation was contained and the benefits of ongoing reform became clearer. Although foreign capital inflows revived, the (floating) real exchange rate remained much higher after 1985 than during any recent historical period. Maintenance of a higher real exchange rate favored the prices of tradable goods, which include most agricultural products.

2.3. Trade Liberalization

Prior to the trade reforms initiated in 1976, Chile protected many domestic activities, including domestic food production. Tariffs averaged 98%, rates were highly differentiated, and import quotas were common. From 1976 to 1979, Chile moved to implement an essentially uniform 10% tariff, prompting significant economic
Restructuring. Opening the economy allowed Chileans access to new products, technologies and perspectives. The fruit subsector was one of the first to benefit because strong external markets provided strong incentives to obtain new varieties and other technologies. As the sector boomed, attitudes and vocabulary changed; farmers began to speak about the need to follow “comparative advantage” and pushed for export-friendly policies.

Following the economic crisis in 1982, Chile temporarily increased the uniform tariff, first to 20% and then to 35% in 1984. Specific import tariffs were reintroduced in 1983 for wheat, sugar and edible oils, and a minimum import price was adopted for dairy products. After eradicating foot and mouth disease, Chile also imposed sanitary restrictions on imported beef from neighboring countries with foot and mouth disease, causing the domestic beef price to rise. Agricultural price bands that, as designed, offered additional protection were then introduced for major cereals. The increased protection stimulated output. However, as Chile’s economy improved, the special tariffs on agricultural commodities were removed and the (almost) uniform tariff was reduced to 30%, 20%, 15%, and finally to 11% in 1991. The adoption of the low uniform tariff encouraged significant productivity gains throughout the economy. These gains were somewhat delayed in some parts of agriculture because of the special policies adopted there, mainly to ease the harsh welfare effect on small farmers, but gains occurred.


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5 The price bands offered progressively less protection through the late 1980s.
as Chile’s economy strengthened, attracting foreign capital, and exports grew. However, as the world economy weakened in the late 1990s, the exchange rate depreciated again. Chile also became an associate member of the Southern Cone Free Trade Area (MERCOSUR), which required it to reduce tariffs on products imported from other MERCOSUR nations (Argentina, Brazil, Paraguay and Brazil). This agreement will gradually increase agricultural competition since Chile’s MERCOSUR partners are low cost producers of crops and livestock.

Trade liberalization initially had mixed effects on agricultural growth, as it reduced protection on many important crops traditionally produced for the domestic market while also sharply reducing tariffs and quotas on inputs used in agricultural production. In the longer run, trade liberalization encouraged important shifts in the crop mix toward Chile’s comparative advantage and facilitated access to inputs and new technology.

2.4. Financial Liberalization

Prior to 1973, the financial sector was largely state run or heavily regulated, inefficient, and small. Chile had suffered from high inflation for many years (Hirschman). As a result of controls on bank lending rates, real bank interest rates were usually low, few banks lent to agriculture and those that did lent only to large farms. Financial liberalization began in 1975, allowing the formation of new banks and freeing banks to set interest rates as they chose. The intent was to improve intermediation and extend the financial services provided. Liberalization did result in growth of the financial sector during the late 1970s, but not all the effects were positive for agriculture. First, as a result of the monetary shock policy implemented in 1975, real short-term interest rates
rose sharply, to 65% in 1976. Those real short-term rates gradually declined to about 15% in 1980, but then rose again to 35% in 1981 (Marfan and Bosworth). The high real interest rates and capital scarcity that prevailed from 1975 to the mid-1980s constrained investment. Farmers who had previously been in debt found it difficult to repay with interest rates so high. Many banks capitalized interest during the period, but this left many farmers in poor financial condition. Long term capital for agricultural investment became available through formal credit institutions in the late 1970s, primarily through credit lines from international agencies like the World Bank. Real interest rates on these long-term credits were also high, about 20%, but declined to about 12% in 1980. Some loans were denominated in US dollars during the period when Chile’s exchange rate was fixed. These loans appeared inexpensive since the government promised not to devalue. However, Chile was forced by financial conditions to devalue in 1982, causing widespread bankruptcy, including for many farmers. Nonetheless, many farmers avoided foreclosure despite default through a variety of “stratagems”. The systematic difficulty of collecting agricultural debt caused a significant decline in bank lending to agriculture in the 1980s.

On a national basis, nearly all commercial banks went bankrupt during the 1982/83 crisis. It became clear that regulation had been insufficient. Essentially all banks were effectively nationalized, recapitalized, and reprivatized under new banking regulation. These changes placed the financial sector on much more solid terms. It recovered, created additional financial products and services, and improved its efficiency. Development of a competitive financial market allowed increasingly efficient

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6 Credit to establish fruit plantations was often available through fruit exporters, who obtained funds from abroad to promote fruit development. As a result, this subsector managed to expand rapidly.
intermediation, including direct access to funds for larger firms, some of which are involved in agricultural production. Nonetheless, of the various reforms undertaken, the financial reforms probably had the least positive effect on agriculture. (CITATION from Brookings; read more)

2.5. Labor Regulation

From 1965 to 1999, government policy played a major role in making the agricultural labor force more competitive and efficient, though the process took many turns. Large Chilean farms traditionally relied on service tenants (inquilinos) for their permanent labor force. Service tenants received usufruct rights to small amounts of land, in-kind payments of food and housing, and a small amount of cash in exchange for labor services. Most landowners had a paternalistic relationship with their workers and loyalty to the owner was an important employment consideration. The incentive system was weak and labor productivity was low. Farm worker unionization had been prohibited in 1938 and large landowners contracted labor without significant government interference. Temporary workers were employed during periods of peak labor demand. Many temporary workers had small plots (minifundia) which they farmed.

From 1965 to 1973, the government attempted to improve agricultural labor conditions. Employers were required to pay their permanent workers a minimum cash wage and other benefits. Real wages and employment security rose significantly. In 1967, unionization of farm workers was legalized. Indeed, the government encouraged the formation of agricultural unions, political parties competed to unionize the greatest number of workers and most permanent agricultural workers were unionized. In the early

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7 More than 90% of agricultural workers were functionally illiterate in 1965, though educational achievements began to increase after the government began to establish rural public schools in 1957.
1970s, with encouragement from the Allende administration, unionized farm workers actively sought and usually achieved expropriation of the farms on which they worked, using land reform legislation. By late 1973, many of those who had been permanent workers on large farms were resident on the transitional land reform units (asentamientos) that had been established until the course of land reform was decided. Others were still employed on the land retained after land reform by the original landowner, and still others had found employment and/or residency on the smaller farms that were not directly affected by land reform.

In 1974, the military government ended land reform and sharply repressed union activity, in agriculture and elsewhere. Large farmers recovered substantial land, but rehired only part of their previous employees. The traditional paternalistic relationships largely ceased. Legislation implemented in 1976 specifically prohibited farm unions unless farms had more than eight permanent workers. Enforcement of remaining labor laws became more lax. Landowners strongly supported such action. The political context allowed them to easily reduce the number of workers permanently employed, i.e., to less than eight workers. Some of the dismissed permanent workers were hired back “temporarily,” for 11 months each year, so that they did not qualify for employment security or fringe benefits. Numerous landowners deeded their farm worker housing and small surrounding plots to their ex farmworkers in the hopes of guaranteeing a resident labor force, but one for which they had no legal responsibility. Agricultural unemployment rose sharply during the late 1970s, particularly after the distribution of plots to land reform beneficiaries left many other workers in the reform sector without
land or employment, and real wages fell.\textsuperscript{8} Unemployment rose still more during the economic crisis of 1982/83.

Although total agricultural labor demand declined in the late 1970s, the demand for labor in fruit production rose rapidly. Fruit production and post-harvest handling became highly labor intensive as it became clear that improved handling could improve fruit quality and, thus, the prices received in foreign markets (Jarvis, 1982). Fruit production initially accounted for only about 4% of agricultural labor use, but labor demand grew rapidly. By the mid-1980s, fruit production had increased sufficiently that total agricultural employment was rising. Nonetheless, the supply of agricultural labor proved very elastic. Unemployed workers were available and movement between the agricultural and other sectors was relatively easy. Women, who traditionally had not worked as paid agricultural workers, entered the labor force and found ready employment in the fruit sector, particularly as temporary workers during the peak season (Jarvis and Vera-Toscano). As a result, agricultural wages rose only slowly. Family incomes rose more significantly, however, as two or more workers found employment, at least on a temporary basis (Jarvis and Vera-Toscano). New incentive systems, e.g., payment on a contract or piece rate basis instead of a wage, were utilized to allow incorporation of heterogeneous workers and encourage effort; these contributed to rising labor productivity (Newman and Jarvis).

By 1999, the market for agricultural labor functioned competitively. Legislation still inhibited the unionization of agricultural workers. Workers’ educational levels and skills had steadily increased. Skilled temporary workers performed much agricultural land or employment, and real wages fell.\textsuperscript{8} Unemployment rose still more during the economic crisis of 1982/83.

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\textsuperscript{8} The social security tax was also sharply cut, from 40\% to 10\%, to reduce the cost of labor and encourage greater employment, though this impact occurred slowly.
work. Women comprised a significant fraction of these temporary workers during peak periods, primarily in packing plants, but also in the fields. A rising proportion of agricultural workers lived in rural towns, where access to markets and services was better. Non-agricultural income was rising as a proportion of total income for rural families (Berdegue, et al.).

2.6. Protection of Property rights

Land reform was possible because the Chilean constitution permitted expropriation of private assets at less than market value. This experience traumatized property holders. When the military government ended land reform, it wished to ensure the security of private property and wrote such a guarantee into the 1980 constitution. The greater guarantee provided private property is often believed essential to renewed investment in agriculture. This may be true, though significant fruit sector investment occurred before the guarantee became effective.\(^9\) Regardless, few Chileans are interested in land reform today, given the tremendous costs associated with the previous land reform and the agricultural modernization that has occurred. The rural sector still contains many poor farmers and workers, but other policies are now deemed more appropriate than land reform for dealing with this problem.

2.7. Infrastructure development

Chile historically had a poorly developed rural infrastructure. A number of basic infrastructure investments were made during the 1960s, but rural public investments were reduced in the 1970s and in much of the 1980s, along with other government expenditures. However, the Pinochet administration invested heavily in infrastructure

\(^9\) An inefficient judicial system creates uncertainty in rural property contract disputes and this uncertainty has restricted agricultural lending.
essential to the export of agricultural products, in ports in the late 1970s, and in road and highways in the late 1980s. The Pinochet administration also privatized telephone service, electric generation and distribution, and facilitated private airline development. Rising efficiency of these businesses under private management, e.g., the rapid introduction of the cellular phone and fax machines that greatly improved communications, reduced costs and allowed for effective management and product marketing. The Pinochet administration sharply reduced large-scale irrigation infrastructure investments during the 1970s and 1980s, but implemented subsidies for private on-farm irrigation 1980s. This program benefited mainly larger farmers who had sufficient capital and knowledge to take advantage of the program, but did little for smaller farmers. Civilian governments expanded this program and extended it to smaller farms and also revived larger-scale irrigation investments in the 1990s. Civilian governments have also greatly expanded other types of rural infrastructure, including schools and health posts, as well as roads.

3. The Expected and Actual Effects of Reforms

3.1 Agricultural Prices

Reformers expected that economic liberalization would increase the prices of tradable goods relative to non-tradables, but liberalization had was much less effect than anticipated. For example, agricultural prices rose relative to industrial prices as the reforms were introduced in 1975-76, but agricultural prices then declined fairly steadily to show little or not long-term effect. Indeed, the real producer price of many of Chile’s traditional agricultural products declined considerably, though the prices of most fruit products rose. See Figure 2.
To help understand this phenomenon, we decompose the movements in real domestic prices for several important agricultural products into three components: changes in real international prices, changes in the real exchange rate, and a residual that captures changes in policy and other factors, including transmission effects. If the law of one price holds perfectly, the residual should equal zero (Quiroz and Valdes, Helfand and Castro de Rezende). If a good is not fully tradable or if there are important changes in policy that affect prices, the residual will capture these effects. See Table 1.

Wheat, an importable, was traditionally Chile’s most important crop in terms of area planted and value added. The first column indicates that the domestic price of wheat declined considerably over the 35-year period observed, with most of this effect a result of a declining international price (column 2), which more than offset the effect of a higher real exchange rate (column 3). The final column of Table 1 shows the effect of policy/residual on the real domestic price of goods. The domestic wheat price fell sharply in 1972 and 1973, when the Allende administration imposed a state monopsony at low producer prices. The price was increased in 1974, but subsequently fell again as protection was reduced. Following the 1982 crisis, devaluation and increased protection (directly and via price bands) caused prices to rise again, but once the crisis was over, prices rapidly deteriorated again due mainly to the decline in protection and declining international prices. Prices of other cereals and oilseeds followed similar patterns.

Temperate fruits emerged as a major exportable product after the reforms. Table grapes alone account for more than half of Chile’s fresh fruit exports. The explosive growth of table grapes began in 1974-5, when the international price rose sharply due mainly to a higher real exchange rate and rising US demand (Jarvis, 1992). Although the
international price of table grapes fell slightly through 1999, as shown in Table 1, this effect was offset by the effect of a rising real exchange rate. The fluctuation in the residual (last column of Table 1) reflects changes in exporter margins, port costs, and freight. Chile did not impose export taxes. Thus, Chilean farmers enjoyed essentially constant or improving domestic table grape prices. Nonetheless, the domestic price of apples declined (Table 1) and its pattern is representative of most other fruits.

Economic reforms did significantly alter the relative prices of different agricultural products, reducing the prices of the main products grown for domestic consumption, which previously had enjoyed high levels of protection, relative to the prices of products like fruit (and wine), nuts and forestry that were grown increasingly for export and that had not previously enjoyed protection. The international prices of Chile’s traditional crops also declined, while those of its exports prices rose or remained the same, and so reinforced the changes caused by changes in tariff policy. The resulting changes in relative prices led gradually to large changes in Chile’s crop mix.

3.2 Technical Change and Productivity

Economic reform and, particularly, the adoption of a (nearly) uniform tariff rate allowed farmers access to a wide range of foreign technology that was previously unavailable. In the late 1970s and 1980s, farmers, input suppliers and fruit exporters traveled abroad to observe agricultural practices in other countries and adopted/adapted technologies that seemed appropriate to Chilean conditions. New seeds, rootstock and animal species were imported. Mechanization increased and new types of machinery were adopted. Fertilizer applications increased (Figure 3). Irrigation technology, e.g., aspersión and drip systems, and extended. Input suppliers, machine shops, banks, and
labor contractors proliferated in rural areas. Farmers developed new management techniques to increase production and improve labor and financial management. Agriculture became a technologically leading sector (Jarvis, 1992). Yields and other indicators of productivity rose rapidly (Figure 4).

3.3. Agricultural growth

Agricultural growth was slow from 1975 to 1983, lagging the rest of the economy, and varying erratically from year to year (See Figure 5.). Total agricultural value added rose about 2% per year. (See Figure 6). This performance occurred within the context of reduced protection for agricultural products, rising peso overvaluation, and, in 1982-83, an economic crisis. Nonetheless, the fruit sub-sector grew rapidly and forestry plantings increased (See Figures 7, 8a and 8b) throughout this sub-period.

Growth of agricultural value added accelerated from 1984 to 1991, rising more than 7% a year. The fruit and forestry sub-sectors continued to grow rapidly, stimulated by the high profitability of exports. New technology diffused throughout the agricultural sector, affecting all of Chile’s traditional crops, livestock, seed production and vegetables. The temporarily increased protection for wheat, oilseeds, and sugar (tariffs, minimum import prices, and the subsequent creation of price bands for a number of years), also stimulated these products. Livestock output increased as domestic demand recovered; poultry and pork production were especially affected by new technology (Figure 9).

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10 Land reform ended in late 1973. Official data show that agricultural output increased 25% in 1974, to a level of output equal to that in 1970. However, the figures for 1972 and 1973 are questionable since it is hard to know whether the decline shown is true or is due to the omission of (unrecorded) black market transactions. We believe that relatively little change in output occurred in these years since the increase in agricultural output in 1974 occurred prior to the resolution of land reform disputes and with little change in policy as most crops were already planted.

11 Fourteen crops made up what were called Chile’s “traditional” crops. These included cereals like wheat, corn and rice, oilseeds, grain legumes and sugarbeets, among others.
The market for fruit exports weakened in the early 1990s due to world recession and peso appreciation. Fruit sector investment temporarily slowed, but production continued to rise due to improving technology and maturation of planted trees. Fruit acreage and output rose again in the late 1990’s. Livestock output increased rapidly in response to a rapidly growing domestic market. Cereal, legume and oilseed production stagnated or declined as domestic prices fell (Figure 5).

3.4. An Overview of Agricultural Value Added

Chile's import substitution industrialization strategy long discriminated against the agricultural sector (Valdes, 1973; Krueger, et al.). Agriculture was therefore expected to be a prime beneficiary of economic reform. That expectation was significantly borne out. Agricultural value added declined during the two macroeconomic crises of 1975/76 and 1982/83, but nonetheless grew at an average rate of more than 4% from 1974 to 1999, considerably more rapidly than 2%, the long term agricultural growth rate prior to 1965 (Figure 6). Although a higher real exchange rate helped, we believe that agriculture benefited most from access to new inputs and technologies, the creation of more efficient factor and product markets, and the gradual improvement of the labor force and farm management. Land reform contributed to several of these developments, contrary to what is often believed. Agricultural growth slowed sharply during the late 1990s, as agricultural prices worldwide suffered a slowdown and as domestic protection declined. Competing imports from MERCOSUR partners began to increase. It is too early to tell how the sector will fare in the 21st century, but the sector is continuing to innovate and increase efficiency.
As indicated previously, agricultural activities experienced a fairly dramatic shift from the traditional crops produced primarily for domestic consumption such as cereals, sugar beets, grain legumes and oilseeds, toward new crops produced mainly for export such as fresh and processed fruit, forestry products, and wine. The area planted to traditional crops decreased from about 1.2 million ha to about 800,000 ha. Temperate fruit acreage rose from about 120,000 ha to about 275,000 ha. Fruit output rose proportionately more, from about 1.25 billion tons to about 4.1 billion tons (Figure 7) and Chile became the dominant Southern Hemisphere fresh fruit exporter.

The notable rise in yields also captures only part of the technological improvements occurring in fresh fruit production, since fruit quality and condition also improved markedly (Jarvis, 1992). Wine grape planted area fell slightly as Chile obsolete vineyards were replanted with improved rootstock. Yields rose, winemaking techniques improved and value added rose. Similarly, planted forests (mainly pino radiata and eucalyptus), rose from about 550,000 ha to about 1.1 million ha. Forest genetics and husbandry greatly improved, resulting in a huge increase in production of logs, mechanical and chemical pulp, and sawn wood, most of which was exported (Figure 10).

The expansion of fruit and nut production occurred mainly in the most fertile parts of the Central Valley, resulting in significantly higher agricultural value added, employment, and incomes in these areas. In the rest of the country, however, agriculture shifted toward lower value added activities, i.e., livestock and forestry, which were also less labor intensive in production. These crop shifts contributed to significant population moves, though displaced agricultural workers usually moved from rural areas to towns

12 Total output rose as higher yields offset the acreage decline (See Figure 5.).
13 Fruits not of export quality were largely used for industrial processing (pulp and juice). Technological improvements here are also large.
and cities in the same region. A growing number of farmers with small plots have also given up farming. Roads, telecommunications, public services, housing, commerce and services have improved, particularly in fruit producing areas.

3.5 *Agricultural Balance of Trade.*

The agricultural balance of trade, already negative in the 1960s (Valdes, 1973), deteriorated sharply during the Allende administration (Figure 11). Following initiation of economic reforms in the late 1970s, recovery began. The agricultural balance of trade became positive in 1985. By 1990, the agricultural trade surplus exceeded $1 billion, with exports of about $1.5 billion (not counting forestry and fisheries) and imports of about $500 million. By 1999, agricultural exports reached nearly $3 billion. Imports of agricultural products also rose rapidly in the 1990s, as Chilean consumers developed tastes for a variety of products not previously available, but agricultural exports still considerably exceeded agricultural imports (Figure 11).

3.6 *Agricultural employment and wages.*

Land and economic reforms had varying effects on agricultural employment. The agricultural labor force varied somewhat from year to year, increasing from 1965 to 1990 due to population growth and reduced rural to urban migration and then declining. Agricultural labor accounted for about 19% of the total labor force in the mid-1980s, but in 2000 had fallen to 13%.

Agricultural employment, as opposed to the labor force, had a similar pattern, though comparability is inhibited by sample redefinition that significantly increased the absolute number of counted agricultural workers. However, the data indicate that employment increased significantly from 1982 to 1987, remained approximately constant
till 1990, and then declined. The apparent employment decline from 1975 to 1981 occurred when growth was slow, as prices of traditional crops declined and the sector adjusted following land and economic reforms. Employment expanded thereafter due to increased employment in the fruit subsector, which was rapidly gaining importance, to the temporary increase in agricultural protection and to the rising real exchange rate.

Labor force composition also changed. A growing proportion of workers were skilled temporary workers, hired for relatively short periods to undertake specific tasks, mainly in fruit production. Some worked only during the peak summer season, but most sought jobs throughout the year. A rising proportion of the temporary workers were female. Women constituted about 18 percent of the total agricultural labor force in 1997 (Berdegue, et al.) and their importance is higher in fruit producing areas.

Agricultural wages fell dramatically in and immediately after 1974. By 1979, shortly after half of the workers on the asentamientos had been expelled, real agricultural wages for comparable jobs were estimated to be about 35% lower than their 1965 pre-unionization levels (Jarvis, 1985). Wages recovered gradually after 1979, but real wages did not surpass 1968 levels until the early 1990s. Agricultural remuneration also changed; the old system that provided service tenants with usufruct rights to land and in-kind payments was quickly replaced by workers hired at salary, a daily wage or, increasingly for many tasks, on a contract or piece rate basis. With pay tied more closely to productivity, impetus was provided for workers to acquire skills and provide greater effort. It appears that productivity rose more rapidly than did workers’ earnings (Jarvis and Vera-Toscano, 2002).

3.7. Agricultural Land Prices.
Land prices provide an additional indicator of the impact that the reforms, and the changes they engendered, had on agricultural profitability. Morande and Soto (1992) constructed a series for raw agricultural land prices, 1975 to 1989, using price quotations from advertisements placed in *El Mercurio*, Chile’s most important daily newspaper. Their data show that agricultural land prices rose fairly steadily throughout the period, jumping sharply in 1977, 1982-84, and 1988-89. Over the 14-year period, land prices more than quadrupled, providing an average annual gain of nearly 11%. This rather exceptional rate of increase suggests that farmland, at least in the regions where the advertised farms were located, was a very attractive investment.

4. Conclusions and Policy Lessons

We conclude that Chile’s broad-based land and economic reforms, which sought to increase agricultural efficiency and rural equity, had great positive effect over time, but these effects were not always as anticipated. Begun in the 1960s and 1970s, policy changes and policy errors caused short-term setbacks and significant political and economic upheaval. The reforms’ positive effects were not wholly clear until around 1990. The Chilean experience demonstrates the complexity of reform, the likelihood that errors will be made, and the need for continuity and persistence in the process.

Under land reform, considerable land was expropriated from large farmers, thereby significantly reducing their wealth and political power. However, such farmers retained sufficient power and/or sympathy within the military government. As a result, much land was returned to them when the reform was terminated, with the rest redistributed to their workers, relatively few of whom became viable independent farmers.

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14 The authors adjusted the quoted prices to remove the effects of farm size and of major investments. Price quotes were used only from land in Regions V, VI, VII, and VIII, the principal growing area of Chile’s Central Valley.
in the long run. As noted, most land reform beneficiaries ultimately sold their land and
took up work as employees again. They were unprepared to manage, received little
government assistance, and could not cope with the changes required by the new
economic context. Ironically, economic reforms created conditions that made it more
difficult for land reform beneficiaries to succeed as producers, but did confer upon many
of them sizeable capital gains through higher prices offered for their land. The reform
process did not successfully convert employees into a stable class of small farmers, but
government policy during the military government was, on balance, did not assist
beneficiaries. Notably, however, owners of large farms also often sold part or all of their
land in the years after the reform ended, or passed land to younger family members who
were better prepared to farm within the new economic context. Numerous investors from
outside the sector, e.g., commerce, industry, mining and the skilled professions, also
purchased land and initiated farming, particularly in fruit production.15

Chile’s agricultural land market was traditionally thin and illiquid and many
agricultural workers had been employed on a single farm for most of their life. Land
reform disrupted this traditional system, increasing the number of parcels and breaking
down employer-employee relationships. During and after land reform, workers and
employers went through a lengthy period of tense relationships, but then gradually settled
into a new period of modern relationships. Workers, who had once voted largely as
directed by their employers, now vote independently. Employers, who had once
emphasized worker loyalty, increasingly emphasize efficiency and skill, use new
incentive systems to better reward productivity and encourage worker education. Though

15 Many of these units were relatively small (15-30 ha.) until the 1990s, but substantial consolidation then
occurred, as economies of scale became increasingly important.
the labor market disruptions brought about by land reform also had many costs, they contributed directly to the development of more efficient land and labor markets, which facilitated the entrance of new entrepreneurs, the development of new crops, especially fruit, and rising labor and management skills.

Chile’s economic reforms removed previously severe economic distortions and opened the economy to international trade in goods and technologies. As a result, agriculture altered its product mix to match Chile’s comparative advantage. The sector became more technologically advanced, and management and workers gained skills and became more highly motivated. Labor and land productivity increased.

During the first 10 years following the end of land reform and the implementation of economic reforms, growth of agricultural value added was only moderate, about 2% annually. Once macroeconomic policy became more effective and structural se issues were resolved, agriculture grew rapidly for more than a decade, with value added averaging more than 7% annually. Growth slowed sharply after 1995, due to a depressed international market.

As a result of the altered context created by economic reforms, the agricultural product mix shifted away from the grains and oilseeds produced traditionally for the domestic market and toward high value activities fruits and nuts for export.16 Nonetheless, output of grains and oilseeds remained roughly constant as rising yields offset a declining planted area. Livestock and forestry output also rose sharply. This

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16 The fruit industry is the leading success story of agriculture. Judgments regarding the reform’s success frequently point to the fruit subsector, which boomed after 1974. Although the economic reforms were essential to the exceptional success achieved, such success built on the scientific, institutional and farm development initiated by government policy in the late 1960s. The case thus supports both government intervention and free market theories. Although highly profitable, fruit production was highly risky and many who anticipated success subsequently failed.
transformation required significant adjustment in terms of jobs, population, and infrastructure.

The two reforms heightened political and social equity not so much because wealth was redistributed from rich to poor in the land reform, but because land reform changed the traditional rural structure and the economic reforms then created a more competitive environment that offered greater opportunity to many. However, the social costs of reform were high and were spread unevenly across the population. The main losers were the farmers who suffered expropriation, the permanent workers who did not receive a land reform parcel, the workers who were unemployed and/or who received lower wages for nearly two decades and the landowners, large and small, who were forced to sell their farms by changing economic conditions.

There is no conclusive evidence regarding change in the rural distribution of income over the last four decades, but it appears little changed. However, real income per capita has increased significantly and the rural poor enjoy improved access to a much greater range of goods and services, as well as heightened educational and employment opportunities and greater socio-political independence. An increasing number of workers have moved to town where they have greater access to education, health care, and other services, as well as greater employment options, including non-agricultural employment. Many females have entered the agricultural labor force. Their earnings have increased family income, as revealed in improved housing, a growing stock of household consumer durables, motorscooters and even cars. Women enjoy greater gender equity. Although rural areas still lack the infrastructure available in urban areas, they are more favorably equipped now. Life in rural areas is becoming more attractive for many.
The reforms placed great competitive pressure on small farmers and minifundistas. Employment opportunities have improved, but most have had increasing difficulty earning a living farming. Many have sought alternative employment. Continued emphasis is needed on assisting with the transition of many, poorer farmers and agricultural workers towards employment in other sectors of the economy. The impact of the reforms on small farmers is an aspect of the Chilean experience that warrants much closer analysis. One of the goals of land reform sought was the creation of a large group of viable small farmers, originating from modest origins, capable of transforming rural areas economically, socially and politically. That has not occurred. Further, most pre-existing small farmers and minifundistas have struggled. However, given the rate at which Chilean agriculture has modernized, even had land reform be carried out as originally anticipated by its designers, it is hard to say how their presence would have affected agricultural policy, or how modernizing agriculture might have affected them in recent years.

Contrary to the historical decline in employment, agricultural employment increased during the 1980s, as fruit and other labor-intensive sectors grew rapidly. Reforms led to important changes in the size and composition of the labor force. Farmers sharply reduced the number of permanent employees, hiring most workers on a regular, but “temporary” basis. As the need for specialized, time sensitive tasks increased, employers hired more skilled, truly temporary workers, increasingly working through labor contractors. Many women entered the labor force and play a particularly important role in meeting peak labor demand.
The order of the reforms were important to the effects achieved (Adelman and Morris). Had the economic reforms occurred prior to land reform, the huge increase in the value of land that occurred as a result of opening the economy to new technologies would have accrued to traditional landowners. It is unlikely that they could have developed the fruit sector at the same pace, as most did not have the needed entrepreneurial skills to do so. These gains would have increased their relative wealth and helped solidify their political power, which would also probably have had unattractive effect on Chilean growth and democracy given their traditional position as one of Chile’s most conservative groups. Instead, the benefits of economic reform were shared among a much wider set of the population.

As it was, many specialized fruit “farmers” became defenders of liberal economic policies rather than of protection. Though the farms of traditional landlords would doubtlessly have become more export oriented, it is unclear whether they the traditional landlords would have supported economic reforms during the crucial years when the traditional agricultural activities were suffering a sharp decline in profitability as protection was removed.

While government intervention was traditionally seen as essential to economic and social development, the "market" and "private enterprise" have gained substantial adherence. Political and economic ideologies have shifted toward moderation. Chileans came to believe that they can compete internationally.
REFERENCES

Adelman & Morris


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Source: Own elaboration.
Figure 2. Agriculture Prices/Industrial Prices (Dec 1974=100)

Source: INE
Figure 3. Fertilizer Consumption (Metric Tons)

Source: FAO
Figure 4. Cereals Total: Yield (Kg/Ha)

Source: Banco Central de Chile
Figure 5. Cereals Total Production: Area harvested (Ha) and Tons

Source: Banco Central de Chile
Figure 6. Chile Economic Growth. Index of Production, Base 1965=100

Sources: Banco Central, ODEPA, ECLAC.
Figure 7. Total Fruits Production: Area harvested (Ha) and Tons

Source: FAO
Figure 8a. Forestry: New Area Planted. Thousand of Ha

![Graph showing the new area planted from 1965 to 1999.](image)

Source: ODEPA

Figure 8b. Forestry: Pulpwood Production (Thousand of Tons)

![Graph showing the pulpwood production from 1965 to 1999.](image)

Source: Banco Central de Chile
Figure 9. Livestock Output Index (1965=100)

Source: FAO
Figure 10. Agricultural Exports index (1965=100)

Source: FAO
11. Total Agricultural Exports and Imports. 1999 prices in Thousand US$

Source: FAO
Figure 12. Agricultural Employment in Thousand of People.

Source: Banco Central de Chile
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Source: Morande and Soto (1992)