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## LABOR MARKET MALADJUSTMENT IN CHILE: STRUCTURAL ECONOMIC REFORMS AND FRICTION AMONG SUB-MARKETS

LUIS A. RIVEROS \*

The World Bank

### Abstract:

This paper discusses the main features of the labor market performance in the Chilean economy during the 1970s. Its purpose is to analyze several explanations for Chile's high unemployment levels on the basis of the stylized facts surrounding labor market behavior. Several interpretations on the heavy unemployment prevailing in Chile have been based on the role played by either the labor demand downfall or the abnormal increase in the labor supply. However, those hypotheses have failed in providing a satisfactory explanation for the lack of adjustment seen in the labor market. In this paper, the available evidence on sectoral shifts of production and employment is analyzed in terms of their implications for the unemployment persistence. Owing to the demands for inter-industry labor reallocation stemming from the change in the productive structure, the role played by the existence of industry-specific human capital is stressed. The results detailed here suggest that the persistence of heavy unemployment can be importantly attached to a series of disruptions in different industries; that these disruptions could not be accommodated smoothly in the short run, and that the market has been responding but only slowly.

### 1. Introduction

The economic reforms carried out in the Chilean economy since 1973 seem to have affected the functioning of the labor market both directly (through deregulation) and indirectly (as a by-product of the objective of improving macro-efficiency). Predictably,

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rising observed unemployment rates were interpreted as a short-term outcome of the productive reorganization of the economy. Nevertheless, heavy unemployment has persisted in spite of rapid economic growth since 1976. In fact, labor market statistics show that the unemployment rate in Greater Santiago<sup>1</sup> averaged 5.9 percent in the 1960s and 3.5 percent in 1970-1973 but that it jumped to over 16 percent during the 1974-1980 period. Hence, an striking feature of labor market performance after 1978 was the persistence of heavy unemployment despite that a notable economic recovery was in course.

This paper reviews the main features of labor market performance in the Chilean economy during the 1970s. Its purpose is to analyze several explanations for Chile's high unemployment levels, on the basis of the stylized facts surrounding labor market performance. Section 2 offers a rough description of the macroeconomic environment of the 1970s, and is mainly intended to highlight the extent to which the Chilean reforms induced fundamental changes in economic relationships and affected labor market equilibrium. Section 3 discusses the main observed trends in the supply and demand for labor during the decade; it identifies the main areas of conflict and the way in which they can provide us with insights for a global explanation of the unemployment problem. Section 4 briefly describes some institutional aspects of the Chilean labor market and discusses how they may have accounted for some of the observed trends in employment and wages. Section 5 analyzes the available evidence on sectoral shifts in production and employment, emphasizing its implications in terms of persistent high unemployment.

## 2. The Economic Reform of the 1970s.

### 2.1. Trade Reforms

The heavy protective structure prevailing in the Chilean economy in 1973 (see, for instance, Torres, 1982) was one of the most important targets for the new economic policy. The opening up policy implemented from 1973 onwards was carried out in several stages (Corbo, 1982). From 1973 to July 1975 tariff rates were significantly reduced with the initial aim of reaching an average rate of 60 percent by 1977. During this period quantitative restrictions were virtually eliminated and the average nominal tariff rate was reduced to 57 percent by 1975. In the second stage, an experimental tariff structure was introduced with six nominal tariff rates ranging from 10 to 35 percent; the implementation target was achieved ahead of schedule in the third quarter of 1977. Finally, a more radical speeding up of trade liberalization took place with the introduction by the end of 1977 of a uniform 10 percent nominal tariff, (which was basically intended to act as a brake on inflationary expectations).

Owing to its consequences on the labor market adjustment, it is important to realize that trade liberalization did not start off with any precise goal in terms of tariff levels, and subsequent shifts in targets produced much speculation about the ultimate goals of the economic authorities. Uncertainty stemming from the absence of well defined objectives probably affected employment generation in the productive sector while, at the same time, the introduction of a nominal 10 percent tariff was a major blow to manufacturing employment.

A second area of concern was the opening up of the capital account, a move that was made after the trade reforms but that was also far reaching in its scope and consequences. This meant that, even when real interest rates remained high, large firms had

easy access to external credit, thus reducing their costs of acquiring new capital. In turn, this might have been an important cause of lower employment generation owing to the adoption of capital-biased technologies.

In the area of exchange rate policy, the government's objective from 1973 onwards was the establishment of a single exchange rate. After an initial 300 percent peso devaluation, a series of mini-devaluations were carried out such that the real exchange rate reached a peak value in the fourth quarter of 1975. From then on, the real exchange rate deteriorated sharply culminating in a 10 percent peso appreciation in June 1976. Another series of mini-devaluations was subsequently implemented in accordance with a preannounced daily schedule. In spite of the adverse effect on export activities, the government used the real peso appreciations to help to support the stabilization program that was then being applied. To control inflationary expectations further, the government then decided to carry out a new peso appreciation in March 1977; from then until December 1978, a daily devaluation schedule was used for periodic currency depreciations based on past inflation.

The economic authorities maintained that devaluations played a crucial role in the formation of inflationary expectations and assigned great importance to the law of one price for interpreting the dynamic of domestic prices. Consequently, devaluations proceeded at decreasing rates starting with a monthly rate of 2.5 percent and ending with one of 0.75 percent in December 1978. Thereafter, during the first half of 1979, the devaluation program pursued an even more passive currency depreciation, while the inflation rate did not fall as expected<sup>2</sup>. From June 1979 onwards a nominally fixed exchange rate was introduced and maintained till mid-1982, when a dramatic process of peso devaluations was undertaken in the wake of the world recession.

### 2.2. The Reduction of the State's Economic Role After 1973

The reduction in the role of the public sector as employer and owner of strategic and otherwise important firms was seen as particularly urgent. In Table 1 (Cols. (2) and (3)) the ratios of fiscal expenditures to GDP and the fiscal deficit to GDP illustrate the very large fluctuations in the government's economic role in Chile. During 1970-1973, fiscal activity increased tremendously, supported by a persistent growth in the fiscal deficit which had reached almost 25 percent of GDP by 1973. From then on, the state's economic role was sharply reduced through cuts in the public sector budget massive firings of public employees and the reassignment to the private sector of a significant segment of public sector firms as well as those previously expropriated under Allende.

The simultaneous modification or elimination of several labor market institutions that had traditionally been run by the government also affected the way the market performed. These developments, together with the much greater economic efficiency displayed by the public sector, seem to have contributed importantly to the newly competitive environment and in determining the observed unemployment trend of the period.

### 2.3. The Consolidation of Micro-efficiency After 1973

A central objective of the reform programa embarked upon in 1973 was to improve resource allocation through an efficient prices system. Micro-economic measures to free markets and hence promote efficiency were therefore given top priority.

The new economic policy, which ran counter to what could be considered a long historical tradition of price fixing, almost completely eliminated price regulation. Thus, an era in which more than 3,000 individual prices were fixed and ultimately controlled was followed by one in which only 33 commodities remained under control, a number that was later reduced still further. At the same time, and based in the same principle, the interest rate for capital market transactions was deregulated, quantitative restraints were also eliminated.

As we shall see, however, price deregulation took place much more slowly in the labor market than in the goods and capital markets. Meanwhile, because some changes in labor market institutions were made relatively quickly, the authorities may have felt that speedy price deregulation was not necessary. In any event, widespread market deregulation created more extensive competition and much stronger pressures towards efficient production.

TABLE 1  
CHILE: ECONOMIC INDICATORS

	Inflation rate (1)a	Fiscal expend. (2)b	Fiscal deficit (3)c	GDP Growth (4)d	Unemp. rate (5)	Trade Balance (6)e	M1 Growth (7)f
1960/64	24.7	22.2	4.7	4.5	5.7	-0.6	36.0
1965/69	25.4	23.3	2.0	4.5	5.6	1.2	40.1
1970	36.1			2.1	5.7	1.6	53.1
1971	26.5	33.4*	12.8*	9.0	3.8	-2.0	100.1
1972	178.2			-1.2	3.1	-5.8	98.4
1973	813.6			-5.6	4.8	-4.3	291.1
1974	369.2	32.4	10.5	1.0	9.2	-2.6	296.6
1975	343.2	27.4	2.6	-12.9	15.3	2.1	232.2
1976	197.9	25.8	2.3	3.5	20.6	3.1	207.8
1977	84.2	24.9	1.8	9.9	19.2	-2.2	158.4
1978	37.2	23.8	0.8	8.2	18.0	-5.9	83.7
1979	38.0	22.8	-1.7	8.3	17.2	-3.2	59.2
1980	31.2	23.2	-3.1	7.8	16.5	-4.5	59.7

a: Percentage change from December to December.

b: The ratio of fiscal expenditure/GDP x 100.

c: The ratio of fiscal deficit/GDP x 100.

d: Yearly rate of growth.

e: Hundred of millions of dollars.

f: Rate of growth of M1 (December to December).

\*: The figure corresponds to the average for the period 1970-1973.

SOURCES: Yáñez (1979), Cortázar and Marshall (1980), Central Bank (1982), Edwards (1985) and Riveos (1985).

## 2.4. The Stabilization Policy of 1975-1976

As column (1) of Table 1 shows, inflation was still very high as late as 1975, implying a need for corrective measures. As a result, simultaneously with the implementation of the structural reforms described above, the Chilean economy underwent a dramatic stabilization program, which mainly involved tightening of monetary and fiscal policies.

On the fiscal side, public sector spending was cut by 29 percent across the board<sup>3</sup> and income taxes were increased to achieve a reduction in the fiscal deficit from 10.5 percent of the GDP to 2.6 percent in 1975<sup>4</sup>. While a tighter monetary policy was pursued, the main feature of the stabilization program was the tremendous fiscal shock produced by a real reduction of 78 percent in the deficit, which the government proudly claimed to be the main reason for the observed drop in the inflation rate. Nonetheless, as Cortázar (1983) has argued, much of this "achievement" probably reflected "processing errors" committed in the calculation of the official CPI<sup>5</sup> that produced underestimates of price inflation. At the same time, since wage adjustments were legally based on past inflation rates as measured by the official CPI, such "errors" seem to have been decisive for the success of the stabilization program.

The cost of the stabilization program was significant in terms of unemployment. Table 1 shows the huge increase in the open unemployment rate during 1975-1976 which resulted from a sharp decline in GDP and persisted at high levels at the same time that the inflation rate was being curbed. As Edwards (1985) has suggested, this program also had consequences for long run economic growth owing to the large reduction in the level of economic activity that it produced.

In summary, the Chilean economy experienced a huge structural transformation and a dramatic stabilization program during the 1970s. The next section will present statistical evidence showing the effects of this transformation on labor market equilibrium. It is important to recall that official policy was designed to promote greater productive efficiency, and that high transitional unemployment was an expected outcome. To the extent that other policy measures were not consistent with more dynamic employment growth, however, persistently and unexpectedly high unemployment levels can be traced to the clear policy emphasis on reducing inflation.

## 3. Observed Trends in the Supply and Demand for Labor

The persistence of high unemployment rates even though basic macro-equilibrium had been reached after 1976, was a matter of hot debate for some years. Most of the positions taken in the controversy can be summarized in terms of whether unemployment was believed to reflect a large demand shortfall or an abnormal increase in labor supply. Most of the arguments along those lines, however, failed to give a convincing explanation for the persistent disequilibrium observed in the labor market. This section outlines the major controversies about the observed supply and demand shifts, and tries to establish the stylized facts underlying the observed employment, unemployment and labor force trends.

### 3.1. Unemployment and Trends in Labor Supply

Three hypotheses based on the behavior of the labor supply have been advanced to explain the existence of persistent high levels of unemployment. These hypotheses draw on theories about shifts in income-leisure choices and changing demographic trends, but they ultimately fail to offer a comprehensive explanation for the persistence of high unemployment since they do not offers reasons underlying the evident failure of the market to clear.

The first hypothesis maintained that Chile's high and persistent unemployment was the result of a change in the balance of preferences within the secondary labor

force between income on the one hand and leisure on the other. Two reasons were postulated to explain this change. First, it was suggested that the income lost as a result of initial increases in unemployment and falling wages had meant that more secondary workers were looking for jobs. Second, it was hypothesized that the greater availability of goods in the market place, which in turn stemmed from trade liberalization, had significantly raised the real value of wages, making the substitution effect weaker than usual; in other words, higher unemployment figures stemmed largely from a "shopping effect". However, both Castañeda (1983) and Riveros (1984) have quantitatively supported a view contrary to this hypothesis, claiming that the participation rates have experienced a downfall, not an increase, during the 1970s. They also suggested that added worker theory was not supported by the data since participation rates showed a very clear procyclical trend.

A second hypothesis maintained that there had been a massive shift of individuals formerly classified as "seeking inactives" into "active search" status. The argument was that this process resulted from the absence of information on job opportunities and the large reduction in wealth caused by macro-economic adjustments during 1975-1976. When examining this idea it is important to realize that labor market statistics can be used to construct alternative definitions of labor force groups and that none of them can be considered exhaustive. The Chilean statistics include a large proportion of individuals outside the labor force (*i.e.* inactives) who claim that they would like to work for a salary even though they are not actively involved in job search. These "seeking inactives" are on the fringe of labor force and inactive; since they are not essentially different from those counted as being in the labor force, there are reasons for proposing that they should be counted in the open unemployment statistics.

It has been shown, however, (Riveros, 1985) that the trends described by a "corrected" unemployment rates that includes in the unemployment figure "seeking inactives" desiring to work full time, does not show a large shift of "inactives" to an "active search" status. As a matter of fact, the participation rate in Greater Santiago has been falling, while the corrected unemployment rate since 1974 has a very similar trends to that of the open unemployment rate (Cf. Riveros, 1985). If the hypothesis were true, one would see a fairly constant corrected unemployment rate over time (owing to the elimination of the movements of "seeking inactives" in and out of the labor force). The hypothesis is thus not consistent with the statistical information and falls as an explanation of the unemployment problem.

Finally, a third hypothesis about labor supply trends maintained that the increase in unemployment reflected the sharp expansion in the population aged 12 years and older during the 1970s which in turn resulted from the high birth rates seen in Chile during the 1960s. Such a purely demographic effect could, of course, have an important effect on the growth of labor supply without modifying participation patterns. As a matter of fact, the average annual growth rate of the work force during the 1960s was 1.6 percent, and rose to 1.9 percent in the 1970s. Between 1970 and 1975, however, the population aged 12 and older grew more rapidly than at any other time in the whole period 1960-1980, reaching a 2.57 percent, while the rate of growth of the labor force was as low as 1.45 percent (Castañeda, 1983). In contrast, between 1975 and 1980 the labor force grew at an annual average of 2.32 percent, a substantially higher rate than the average of the 1960s. Thus, this higher, demographically based increase in the labor force, could help to explain the observed increase in the rate of unemployment.

A simple exercise will serve to test the effect of the rapid growth of the working age population on the Chilean labor force. In Table 2, the figures in column (5) re-

present a hypothetical labor force series calculated under the assumption of labor force growth at the lower average rate of the 1960s instead of the observed higher rate of 2.32 percent a year between 1975 and 1980. The hypothetical unemployment rate shown in column (6) has been calculated on the basis of the actual employment register. As the figures show, the faster growth of the younger population cohorts would account, on average, for about 3 percentage points of the increase in unemployment. Thus, it does appear that population pressures had some effect on labor market outcomes. Clearly, however, this is an inadequate explanation for the overall increase in unemployment in the 1970s.

TABLE 2  
SIMULATED UNEMPLOYMENT RATES UNDER A  
HYPOTHETICAL LARGER LABOR FORCE GROWTH

	Pop. 12 & older (1)	Labor Force (2)	Employment (3) <sup>a</sup>	U rate (4)	Low growth L.F. <sup>b</sup> (5) <sup>c</sup>	U <sup>a</sup> (6) <sup>c</sup>
1974	7161.1	3066.8	2784.7	9.2	-	-
1975	7339.1	3152.9	2663.2	15.5	3116.8	14.5
1976	7515.0	3216.4	2553.5	20.6	3167.6	19.4
1977	7691.5	3259.7	2631.4	19.2	3219.3	18.3
1978	7866.7	3370.1	2763.1	18.0	3271.8	15.5
1979	8057.1	3480.7	2882.4	17.2	3325.1	13.3
1980	8207.4	3539.8	2967.6	16.5	3379.3	12.2
1981	8369.7	3669.3	3121.9	15.1	3434.4	9.1

a: These employment figures exclude the members of the Emergency Employment Programs that appears as "employed" in the statistical surveys.<sup>6</sup>

b: It is assumed for this calculation that the labor force grew from 1975 onwards at an average annual rate of 1.6 percent, the average labor force growth of the 1960s.

c: Figures correspond to the unemployment rate calculated through the labor force level in (5) and the employment figures in (3).

To sum up, explanations based on the supply side of the labor market account for only a relatively small portion of the higher unemployment problem. Moreover, as the discussion above shows, these explanations embody a basically static approach to the problem. In fact, even a much larger increase in the labor supply than actually occurred would be insufficient to account for observed unemployment levels which reflects rigidities and systematic adjustment problems in the labor market.

### 3.2. Unemployment and Trends in Labor Demand

There has also been considerable discussion about how far depressed labor demand can account for higher unemployment. The debate has centered on the sharp drop in the number of job places after 1974, the creation of a large unemployment stock and the slow subsequent recovery of labor demand. In fact, Table 5 shows that between 1970 and 1976 aggregate employment fell by about 8 percent and that the observed employment level in 1980 represented a recovery of just 7.3 percent compared to its 1976 level. Meanwhile the labor force grew by 20.7 percent in the same period.

Between 1976 and 1981, a period of rapid economic growth, employment grew at an average rate of 4.1 percent while the labor force grew at an average of 2.7 percent. Hence, the net growth of labor demand, calculated by subtracting the growth of the labor supply, was about 1.4 percent, implying that there was relatively little room for reducing the 1976 unemployment stock of about 690,000 persons (Riveros, 1985). In fact, the number of unemployed has fallen by about 40,000 a year, suggesting that it would take more than ten years to reach a figure close to the historical unemployment rate. This state of affairs has led some economists to conclude that Chile's unemployment problem stems basically from demand shortfalls.

Meller (1984) and Sanfuentes (1983) attributed the persistence of heavy unemployment to the lack of sustained growth and the cutback in investment since 1974<sup>7</sup>. At the same time, Tokman (1974) suggested that trade liberalization had "de-industrialized" the country and that this had caused low employment growth from 1976 onwards. Both Meller (1984) and Riveros (1983), however, concluded that trade liberalization does not provide a satisfactory explanation for the persistence of high unemployment. Sjastad and Cortés (1981) have tried to demonstrate that most of the unemployment problem stemmed from the reduction of public sector activity, mainly between 1973 and 1976. But, Marshall and Romaguera (1981), Tokman (1984) and Meller (1984) have argued that the explanations of persistent high unemployment in terms of former state underemployment are quantitatively unimportant.

The debate about demand factors was centered largely on whether or not employment growth was high enough. The key question for discussion, however, should in fact be: why was the rate of job creation not still higher, given the economic regime of productive specialization that the country was pursuing? It is important to note that during 1976-1981 the labor-output elasticity was about 0.5, compared to about 0.4 during the 1960s. This, in turn suggests that employment grew at its historic rate and that the problem was basically the failure to absorb the additional stock of unemployment created in 1973-1976.

Nevertheless, even if it is agreed that slow growth of labor demand was the main reason for higher unemployment, this factor would not be enough to explain the persistence of high jobless rates. The central problem for discussion must be the inability of the labor market to adjust; this, in turn, has probably, much to do with sectoral reallocation of workers and labor market rigidities.

Three other important facts need to be kept in mind when analyzing the failure of the Chilean labor market to adjust. First, there was a serious downturn in aggregate investment, which fell from an average level of 20.2 percent of GDP during the 1960s, to 15.4 percent in the 1970s; even when GDP was recovering strongly, the ratio of aggregate investment to GDP was only 16.2 percent.

Second, as shown by the aggregate statistics, labor productivity rose markedly after 1974 in almost all productive sectors. This result must be partially due to the increasing adoption of labor-saving technologies during this period<sup>8</sup>; it could also reflect the important institutional transformations of the labor market that took place after 1973 (see below, section 4).

Third, as shown by the employment figures classified by tradable and non-tradable goods, the drop in employment between 1974 and 1976 was proportionately higher in the tradable sector, where the shock was prolonged at least until 1978. The recovery since 1978 has also been relatively slow in this sector, at 0.8 percent per year, compared to growth in the non-tradable employment at 6 percent annually. This redistribution of total employment in favor of non-tradables reflects unstable export prices, the

sharp drop in the real exchange rate after 1976 and new growth opportunities in the financial and service sectors stemming from the deregulation and liberalization policy. As suggested by Meller (1984) the fact that growth was concentrated in non-tradable activities was a major cause for the investment shortfall and poor employment generation<sup>9</sup>.

#### 4. Labor Market Institutions and Trends in Real Wages

Several institutional developments relevant to labor markets took place during the period when the ISS was being implemented. Apparent lack of faith in optimum market solutions, produced extensive intervention designed to promote full employment and better wages, especially during 1970-1973. Interestingly, intervention in the labor market remained extensive in subsequent years despite the general policy of deregulation.

Chilean labor laws traditionally regulated market activities by means of strict rules governing collective bargaining and the operation of individual labor contracts. The law left ample leeway for state intervention in the bargaining process, particularly in the conciliation stage, and workers had wide latitude for strike actions. At the same time workers' bargaining power was greatly enhanced: entrepreneurs were frequently compelled to negotiate with unions representing the entire industry. Meanwhile, striking workers had to be paid their normal wage for the days when they were on strike.

The law also encouraged the development of a strong union movement fostering the establishment of unions even in agriculture. By the same token, it made membership in the relevant work place union mandatory, it allowed unions to exercise collective conflicts the right to introduce collective bargaining issues any time, and there were almost no limits on the matters that could be subject to the bargaining process. Furthermore, the legislation ruled out the managements' right to declare a lock-out and established an almost total ban on dismissals stemming from labor disputes.

In the case of individual labor contracts, the law regulated their specific working conditions, the timing and length of holidays, and minimum wages; it also provided for large compensatory payments whenever a worker was fired without adequate justification. Finally, it also regulated the type of unions that specific categories of workers could join.

Almost all of this regulatory structure was eliminated immediately after September 1973. Collective bargaining was banned, not to return until a new and very different legal framework which was enacted in 1979; meanwhile, union activity was virtually outlawed, union leadership was hand-picked by the government itself, all prohibitions on firing workers were abolished and even wholesale firings required only a simple government authorization. Finally, so as to reduce labor costs, the social security system was transformed; private organizations could now be created to administer workers' social security contributions as simple savings and loans institutions. In short, the whole institutional structure of the labor market, which had been built up through a long historical process, was abruptly transformed after 1973 so as to reflect more closely the new government's conservative economic policy.

The wholesale institutional transformation of the Chilean labor market outlined above must be a significant factor in any explanation of observed unemployment trends in the later 1970s. Chilean entrepreneurs believed that the key reform of the post 1973 years was the one allowing them to make whatever manning change they thought necessary. At the same time, given the precedents of extensive government intervention,

and owing to the absence throughout the 1973-1979 period of any definition by the government of the future institutional makeup of the labor market, uncertainty restrained entrepreneurs from hiring as many workers as they otherwise might have done. This in turn seems to have given rise to a notable trend towards the adoption of labor-saving technologies.<sup>10</sup>

Finally, to grasp the extent to which all those institutional changes affected the typical Chilean firm during the 1970s, it is important to note that the new institutional framework for the labor market was put in place at the same time that a huge increase in productive efficiency was being demanded. From 1976 onwards, productive units found themselves in a very different market environment. They were faced with extremely competitive product markets, from which government price-fixing and other forms of intervention had been eliminated. Furthermore, markets were opened to international competition simultaneously with the progressive privatization of many formerly state-run services and production units. Finally, financial opportunities to get credit, to improve technology and to raise efficiency standards were enhanced. In other words, the new institutional composition of the Chilean labor market was broadly consistent with the need for employment adjustments that in turn stemmed from the structural reforms that were being carried out.

The strong emphasis placed by the authorities on labor cost reductions is evident in the transformation of the social security system and the establishment of a subsidy that employers were entitled to collect whenever they hired additional workers. The underlying assumptions were that labor demand was highly wage elastic and that labor costs were the limiting factor on employment growth. Surprisingly, and in apparent contradiction to this principle, the authorities made no change in the minimum wage regulation and introduced wage indexation, both policy decisions that are only explicable in terms of political considerations.

The extent to which minimum wage regulations made it harder to reach equilibrium in the Chilean labor market is not clear from the available evidence. As Table 3 shows, it is very difficult to find a simple relationship between minimum wages and average wages on a yearly basis. However, preliminary evidence obtained from a more refined statistical study testing the causal structure from minimum wages to average wages (and viceversa) indicates that there would prevail a strong two-way causality (Paldam & Riveiros, 1986). Similarly, Corbo (1980) found that minimum wages had a significant impact on manufacturing employment during the 1960s, and Castañeda (1982) argued that a sizeable proportion of unskilled workers would be paid less than the minimum wage in an unregulated labor market. Edwards (1986) came to a similar conclusion. This important issue still needs additional applied research, meanwhile, the distorting effects of minimum wages on the overall wage structure, as well as the differential impact on individual industries remains a matter of controversy.

Indexation and minimum wage regulations have generally been assigned a strongly distorting role and have been used to provide explain of the persistence of high unemployment. It is important, to realize, however, that after 1973 Chile's labor market was characterized by high unemployment and widespread deregulation, in which little control was exerted over employers' actions. Once the law on job security was changed, it became easier for firms to fire workers; they could thus circumvent the indexation policy by resorting to increased turnover whenever market conditions made it attractive to do so. It would therefore be tendentious to assume on a priori grounds (or based in the observation of simple correlations) that indexation and minimum wage regulation together comprised the only cause of persistently high open unemployment: other

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dynamic labor market mechanisms can offer better explanations. For instance, Riveiros and Arrau (1985) and Eyzaguirre (1980) have suggested that quantity adjustments (i.e., changing manning levels rather than wage rates) can better describe the behavior of the labor market. Solimano (1984) has also carried out this type of analysis in a macroeconomic set up.

TABLE 3  
CHILE: MINIMUM AND AVERAGE REAL WAGES  
(1973 = 100)

	Minimum Wages <sup>a</sup>		Average Wages <sup>b</sup>	
	(1) <sup>c</sup>	(2) <sup>d</sup>	(3) <sup>c</sup>	(4) <sup>d</sup>
1970	93.3	139.9	74.2	127.2
1971	122.7	170.4	102.6	142.5
1972	111.4	126.2	99.4	11.4
1973	100.0		100.0	
1974	101.1		74.6	134.5
1975	96.2		77.8	130.6
1976	106.2		81.8	179.9
1977	111.3		89.7	178.2
1978	131.4		101.5	134.7
1979	127.3		91.7	185.2
1980	127.5		96.1	201.5
				212.8

a: From 1970 to 1972, SMI corresponds to the minimum wage for manufacturing blue collar workers and SV to the minimum salary for white collar workers, and SV to the minimum salary for white collar workers. From 1973 onwards a common minimum level, called "minimum income" was established. The figures represent yearly averages.

b: This corresponds to the Chilean Wages and Salaries Index.

c: Deflated through the CPI corrected by Cortázar and Marshall.

d: Deflated through the implicit GDP deflator.

SOURCES: Banco Central (1983), Cortázar and Marshall (1980) and Moran *et al.* (1983).

As shown in Table 3, average real wages were falling between 1971 and 1973. According to the Cortázar deflator (Col. (3)), between 1973 and 1976 a real recovery in wages took place, though with some downward as well as upward shifts in consecutive years. According to the GDP deflator (Col. (4)), the downturn in wages occurred between 1971 and 1974; following the increase in 1975-1976, it had slow growth trend. In both cases, however, the remarkable phenomenon is the existence of a trend increase in real wages despite heavy unemployment a phenomenon that Corbo (1983) and others have characterized as "puzzling". It is important, to note, however, that the wage level prevailing in 1970 was not reached again until after 1980 and that the increase in wages occurred at the same time that the unemployment rate was falling.

Wage indexation could of course provide a simple explanation for the increase in real wages. For the explanation to be acceptable, however, it is necessary to assert that regulations governing wage adjustments were actually binding. Cortázar (1983) has carried out an econometric exercise to prove that this was the case. Nevertheless, as noted earlier, it is far from clear to demonstrate that the institutional environment



and the unemployment situation characterizing the Chilean labor market after 1973 were propitious for the actual enforcement of indexation.

The rising trend exhibited by real wages was combined with high unemployment and significant GDP growth. This procyclical behavior of real wages leads one to wonder about the adequacy of a disequilibrium labor market theory to explain the observed combination of circumstances. However, the acceptance of this approach would require a strong belief in the existence downward wage rigidities, which are difficult to identify from the available stylized facts about the Chilean labor market. On the other hand, one could also resort to an opposite (Walrasian) approach (in which an excess of supply in the labor market would result from an excess of demand in goods markets). However, such an explanation is inconsistent with the significant reduction of inflation in Chile.

Thus, the debate about the actual aggregate behavior of real wages and its relationship to an explanation of unemployment trends offers more question than answers. Not much research has been done in terms of analyzing sectoral shifts in production and the process of sectoral reallocation of labor, so as to provide the microeconomic evidence needed to understand those aggregate trends. This subject will be discussed further in the next section.

Finally, three important points should be kept in mind in any explanation of the rising trend in real wages. First, real wages may have fallen further in 1973-1974 than was necessary for labor market equilibrium. Second, throughout the decade real wages never recovered the their 1970-1972 levels, a fact that suggests that there is not much of a paradox to explain (Harberger, 1983). Finally, it is also important to remember that the Chilean wage index is not exempt from serious statistical errors, particularly in terms of sectoral coverage and the size of the firms in the sample.

## 5. Sectoral Shifts and Increased Friction in the Chilean Labor Market

The Chilean structural reforms of the 1970s caused large relative shifts in sectoral activity levels owing to the explicit and implicit targets of the policy. Thus, it is possible to distinguish, in a period dominated by structural changes, a set of industries undergoing relative contraction and a set of industries undergoing relative expansion. In turn, these shifts exerted heavy pressures for the reallocation of workers between different sectors. For instance, financial and banking services expanded much more, in terms of value of output and labor productivity, than the rest of the nontradables. By the same token, import-substituting industry experienced a significant contraction relative to other industries that produced tradables. It could thus be reasonably hypothesized that, because such disruptions could not be accommodated in the short run, the process of sectoral redistribution of economic activity was accompanied by a greatly extended transition period of frictional unemployment.

The implications of prolonged inter-industrial labor reallocation in periods of structural economic transformations, have received a certain amount of attention in the literature. Lilien (1982) used the slow adjustment of labor to shifts of employment demand in both contracting and expanding industries to explain unusual structural shifts in unemployment. Similarly, Beach and Kalinsky (1984) have attributed rising equilibrium unemployment to the changing composition of the labor force in terms of workers' characteristics. More particularly, Gray *et al.* (1982) have found, in the case of the U.S., that workers displaced from declining industries do not have the same skill levels as those being hired in expanding industries. It has been asserted that these

frictional phenomena can be expected to lengthen the average duration of unemployment (OECD, 1977).

In the Chilean case, it is also important to test the hypothesis that the mismatch of qualifications between those freed by declining industries and those required by expanding ones may have produced a rise in structural unemployment. In fact, a reduction in inter-sectoral labor mobility has been detected in Chilean labor statistics for the 1970s (Handl, 1985), as has a longer average duration of unemployment (Riversos and Díaz, 1984). These findings have made it possible to suggest (Riversos, 1986) that the existence on industry-specific human capital may make the reallocation process far from smooth, a hypothesis that could in turn help to explain the persistence of relatively high unemployment.

Thus, particular labor force characteristics can produce sectoral dislocations which in turn inhibit short run labor mobility among industries. On this hypothesis, friction will then stem from both demand and supply factors. On the demand side, entrepreneurs in growth industries will be reluctant to hiring workers fired from other sectors, because of the threat of output losses during the period in which they needed to be trained in a period of expansion based on major structural changes. Over the short term, they will prefer to obtain greater productivity from their existing work force, by paying higher wages for what they perceive as specific abilities. On the supply side, job searchers from declining industries will be reluctant to accept the lower wage that necessarily reflect their lack of the specific skills required in expanding industries. At the same time, workers still employed in contracting industries will perceive the opportunity of finding a job elsewhere and will initiate active searches even while keeping their present jobs. The observed economy-wide outcome will therefore be heavy unemployment and high wage differentials between expanding and declining industries.

Interindustry wage differentials can be analyzed by comparing different cross-sectional estimations of an adjusted wage equation *a la* Mincer. To make valid inter-industry comparisons of adjusted wages similar workers with similar general qualifications need to be chosen. At the same time, and given that specific human capital is positively correlated with general human capital (*e.g.* schooling and experience), the increase in friction owing to skill specificities will also entail an increase in the rate of return to general human capital.

A test of wage differentials requires a definition of declining and contracting industries to estimate inter-industry wage differentials, and the estimation should be carried out for workers with similar general qualifications, in order to keep probable changes in labor force composition out of the analysis. An analysis of the fluctuations of the rate of return to schooling over time and across sectors will be also necessary in order to establish whether any wage differential found do in fact reflect friction rather than market inefficiency. Some relevant findings, based on aggregate data for Chile are outlined below.

### 5.2. A Test of Labor Market Friction During the 1970s

For the purpose of this analysis, a wage equation was estimated for the years 1970, 1975, 1978 and 1980 with information provided by the Labor Force Surveys of the University of Chile<sup>11</sup>. This subsection presents the results of the analysis for tradables and non-tradables industries<sup>12</sup>. The OLSQ results for the wage equations are shown in Table A1 in the appendix.

Sectoral changes in production and labor productivity are shown in Table 4. The figures clearly show the larger expansion of output and labor productivity of non-tradeables during the decade. The table also shows that adjusted wages in both sectors have the same trend as that of the aggregate wage Index (Table 3); this suggests that aggregation of wages across expanding and declining industries cannot explain the rising trend of wages despite heavy unemployment.

TABLE 4  
CHILE: OUTPUT (Q), LABOR PRODUCTIVITY (q) AND ADJUSTED  
WAGES FOR SKILLED (WS) AND UNSKILLED (WU) WORKERS  
(Indexes 1970 = 100)

	TRADEABLES				NON-TRADEABLES			
	Q	q	WU	WS	Q	q	WU	WS
1970	100	100	100	100	100	100	100	100
1975	77.8	81.7	66.4	58.9	94.6	93.7	60.5	49.7
1978	97.8	102.1	86.7	91.4	115.2	105.3	61.4	70.5
1980	112.0	109.9	93.0	86.9	138.8	114.9	66.1	72.6

SOURCES: Central Bank: *Indicadores Económicos y Sociales* and Table A1.

In order to compare similar workers in terms of their general qualifications, two groups are distinguished: skilled workers (high schooling and high market experience) and unskilled workers (low schooling and low market experience)<sup>13</sup>. Table 5 shows estimated wages for both groups and each of the years of analysis. In the second part of this Table, the calculated inter-industry wage differentials are presented along with their corresponding standard deviations. Finally, the third part of Table 5 shows the changes in wage differentials as well as their corresponding standard deviations.

The results show a trend of widening wage differentials throughout the 1970s. The wage advantage of the tradeables industry in 1970 was transformed in a wage disadvantage vis-à-vis non-tradeables in later years. The inter-industry wage differential in 1975 became statistically equal to zero as both sectors were experiencing significant recession. However, the changes in wage differentials for 1978 and 1980 with respect to 1970 show a widening trend that confirms the hypothesis of friction.

At the same time, the econometric results shown in Table A1 demonstrate that the rate of return to schooling is very similar in both sectors, as might be expected in an efficient labor market. The rate of return seems to have been increasing throughout the 1970s, which suggests that employers consider education a good substitute for specific human capital and valued it highly.

This analysis prompts the conclusion that friction is an important problem in the Chilean labor market as evidenced by widening inter-industry wage differentials<sup>14</sup>. This explanation does not deny the probably important role played by wage rigidities in the market; in fact, it can help to explain them. At the same time, and since the analysis has been carried out with different type of workers, the results described here do not imply that the market is inefficient in adjusting wages across sectors<sup>15</sup>.

TABLE 5  
ESTIMATED WAGE DIFFERENTIALS FOR SKILLED AND UNSKILLED  
WORKERS IN THE TRADEABLE AND NON-TRADEABLE INDUSTRIES

	Skilled Workers	Un Skilled Workers
1. Adjusted Wages <sup>a</sup>		
Non-tradeables		
1970	83.9	27.5
1975	49.4	18.3
1978	76.7	22.2
1980	72.9	25.6
Tradeables		
1970	94.6	29.8
1975	47.0	18.0
1978	66.7	18.3
1980	68.7	19.7
2. Wage Differential <sup>b</sup>		
1970	-10.7*	-2.3
1975	(3.79)	(1.17)
1978	2.4	0.3
1980	(1.94)	(0.72)
	10.0*	3.9*
	(3.21)	(1.26)
	4.2*	5.9*
	(1.91)	(1.72)
3. Changes in Wage Differentials <sup>c</sup>		
1970-1975	-13.1*	-2.6
	(5.98)	(1.67)
1970-1978	-20.7*	-6.2*
	(5.69)	(1.72)
1970-1980	-14.9*	-8.2*
	(5.21)	(2.01)

a: Figures correspond to 1980 pesos per hour

b: The figures correspond to the difference between the adjusted wage level for non-tradeables minus the one for tradeables. The corresponding standard deviations are shown in brackets.

c: The figure are the difference between the computed wage differentials calculated for 1970 and the other years. The corresponding standard deviations are shown in brackets.

\*: Significantly different from zero with a 95 percent confidence interval.

## 6. Concluding Remarks

In this paper we have discussed the main stylized facts surrounding the Chilean labor market performance during the period of structural economic reforms of the 1970s. The discussion about the demand and supply factors intended to explain the heavy unemployment has allowed to conclude that the problem relates to the lack of adjustment in the labor market, not solely to whether or not the supply or demand grew/fell more. It has also pointed out that the "institutional" aspects of the Chilean



labor market have probably a very important role in explaining and interpreting the observed trends after 1973.

It has been suggested that the existent of heavy transitional unemployment, owing to the deep sectoral reposition of the economic activity in Chile, might be notably linked with the observed persistence of high unemployment rates. This hypothesis of increased frictional unemployment, has been studied through the analysis of wage differentials among sectors for similar workers. The results described here suggest that unemployment has been caused, to a probably important extent, by a series of disruptions in different industries; that these disruptions could not be accommodated smoothly in the short run; and that the market has been responding but only slowly.

The main policy implication to be drawn from the evidence discussed in this paper relates to the importance of using microeconomic tools, particularly training and re-training of the labor force, to smooth the process of reallocating workers among industries. It seems probable, that the use of such tools might have accommodated the significant productive shifts that occurred in the Chilean economy during the 1970s, with a much lower incidence of frictional unemployment than in fact turned out to be the case.

TABLE A1  
OLSQ ESTIMATORS OF THE WAGE EQUATION:

	$\ln w_i = a_0 + a_1 S_i + a_2 X_i + a_3 X_i^2$						
	$a_0$	$S_i$	$X_i$	$X_i^2$	$R^2$	$n$	
Tradables							
1970	2.26 (1.21)	0.13 (0.006)	0.048 (0.03)	-0.0006 (0.0002)	0.49	765	
1975	1.97 (1.03)	0.11 (0.006)	0.036 (0.004)	-0.0004 (0.0001)	0.40	646	
1978	1.64 (1.02)	0.14 (0.009)	0.060 (0.081)	-0.0008 (0.0004)	0.49	690	
1980	1.77 (0.98)	0.15 (0.007)	0.043 (0.007)	-0.0005 (0.0002)	0.48	571	
Non-Tradables							
1970	2.25 (1.12)	0.12 (0.005)	0.047 (0.04)	-0.0005 (0.0001)	0.42	1,372	
1975	1.94 (1.19)	0.11 (0.006)	0.042 (0.06)	-0.0005 (0.0001)	0.39	1,264	
1978	1.88 (1.07)	0.14 (0.010)	0.053 (0.05)	-0.0007 (0.0002)	0.47	1,292	
1980	2.03 (1.11)	0.13 (0.009)	0.047 (0.04)	-0.0006 (0.0002)	0.37	1,163	

Numbers between brackets are the corresponding standard deviations.  $\ln w$  = Logarithm of the wage rate (1980 pesos per hour);  $S$  = years of schooling;  $X$  = years of experience (Age-years of schooling -6).

## NOTES

- 1 Greater Santiago corresponds to a geographic area covering the capital of the country and accounting for about 40 percent of the total population. Figures were obtained from the Employment Survey conducted by the University of Chile.
- 2 Corbo (1982) has stated to this respect that the basic mistake of this policy definition was that internal inflation was also significantly explained by the real wage path and not just by the dollar price of tradables.
- 3 This percentage does not include external debt service. If this is also included, the decrease in total public expenditure reached 26.3 percent.
- 4 The ratio of deficit to total expenditure fell between 1974 and 1975 from 32.4 percent to 9.5 percent.
- 5 See, to this respect, the work of Cortázar and Marshall (1980) where they show that those "errors" derived from the manipulation of the quantity factors adjustment used to construct the index, hid part of the real inflation".
- 6 The Emergency Employment Program is a system created in 1975 which provides financial support to unemployed individuals by requiring them to take part time jobs on certain public works. Most of the persons enrolled in these Programs who answered employment questionnaires said that the were "employed" because the question asked is: "what did you do last week?".
- 7 They are, of course, unemployed from the economic point of view and efforts have been carried out in order to properly incorporate these individuals to the unemployment figures. See, to this respect the paper by Riveros (1985).
- 8 In fact, the ratio of total investment to GDP reached a yearly average of 20.2 percent between 1961 and 1970, and one of 15.4 percent between 1971 and 1980. During the period 1977-1981 this ratio reached just 16.2 percent.
- 9 Interestingly, despite the falla in the aggregate investment ratio, machinery and equipment purchases accounted for a higher percentage of GDP between 1977 and 1981 than during the 1960s (7.2 compared to 6.7 percent).
- 10 It is important to note that this comparison is strongly influenced by the agricultural sector, whose total employment is in long run decline. Nevertheless, a comparison of manufacturing employment with that in nontradables leads to similar conclusions.
- 11 See footnote (8).
- 12 These Surveys have been carried out for each year since 1959, and their samples and questionnaire make them perfectly adequate to perform comparative studies over time.
- 13 There are two additional comparisons in that other research (Riveros, 1986): between financial services and other services, and between construction and the rest of the non-tradables.
- 14 This classification is, of course, arbitrary and is meant only to give an idea of the sensitivity of the results to changes in the independent variables of the model.
- 15 In the other two comparisons performed in Riveros (1986), widening wage differentials could not be attributed solely to friction, since there was also evidence of market inefficiency.
- 16 This analysis does not provide any evidence for or against the theories of labor market segmentation in terms of informal-formal dichotomies. The employment data have simply been broken down in terms of industrial groups.

At the same time, research is needed to extract lessons from the observed behavior of the labor market under the stabilization programs, a topic that would require a more careful analysis of quarterly wage and unemployment data.

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## THE TERMS OF TRADE DEBATE: A CRITICAL REVIEW

JULIO COLE BOWLES

Departamento de Economía  
Universidad Francisco Marroquín  
Guatemala

### Abstract:

*The notion of a secular decline in the terms of trade of primary producing countries is a persistent theme in the public discussion of the problems of developing areas, and has been advanced most forcefully in the writings of Raúl Prebisch. Acceptance of such views is implicit in most critiques of the international economic order. However, upon reviewing the literature and available evidence, it is argued that such views are untenable, based as they are upon a faulty interpretation of the welfare implications of movements in the commodity or net barter terms of trade, an uncritical appraisal of the statistical biases involved in terms of trade estimates, and an overly selective survey of actual historical price trends.*

### 1. Disatisfaction with the International Order-An Overview

A persistent theme in the public discussion of the problems of developing countries and their role in the international economy is the notion of a secular decline in the terms of trade of these countries, identified by and large as producers of primary raw materials, *vis-à-vis* the manufactured exports of developed, industrialized economies. The notion is often couched in geographical terms, of a conflict between the highly industrialized North and an impoverished, mostly rural and agrarian South, though as with most rhetorical simplifications the call for a "North South dialogue" poses problems such as the need to place advanced though geographically Southern countries (e.g., Australia) within the "Northern" camp.

The identification of primary producing countries and underdeveloped areas is also problematic, as witnessed by the cases of New Zealand, Denmark, and even the United States (the world's largest agricultural exporter). There is no denying, however, that most of the less developed countries (LDC's) are primary producers, and the alleged tendency is viewed as one of the major obstacles to economic development.