

LABOR MARKET FLEXIBILITY AND UNEMPLOYMENT IN CHILE AND URUGUAY

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ABSTRACT

This study compares evidence on wage rigidity in Chile and Uruguay to determine whether differences in labor market flexibility could have had an impact on the very different patterns of unemployment observed in the two countries. Phillips curve estimates show that wages in Uruguay were highly flexible at the aggregate level during the period when the military government was in power, but became more rigid with the return of democracy and collective bargaining. Rising minimum wages and indexation arrangements are plausible explanations of some of the high unemployment in Chile in the late 1970s and early 1980s. At the micro level, we find much more relative wage adjustment across industries in Chile than Uruguay and that labor in Chile is drawn toward sectors with rising relative wages.

SÍNTESIS

Este estudio compara evidencias con respecto a la rigidez salarial en Chile y Uruguay para determinar si las diferencias en la flexibilidad del mercado laboral podrían tener un impacto sobre los muy distintos esquemas de desempleo observados en ambos países. Las estimaciones a partir de la curva de Phillips muestran que los salarios en Uruguay fueron altamente flexibles a nivel agregado durante el período en que el gobierno militar detentó el poder, pero que se hacen más rígidos con el retorno de la democracia y la negociación colectiva. Los salarios mínimos crecientes y los mecanismos de indexación constituyen explicaciones plausibles de una parte del elevado desempleo en Chile a fines de la década del 70 y comienzos de la década del 80. Al nivel micro, encontramos un mayor ajuste relativo de los salarios en las industrias en Chile y Uruguay y que el trabajo en Chile se desplaza a sectores con salarios relativos crecientes.

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1. INTRODUCTION

The economic and political systems of Chile and Uruguay followed very similar paths from the late 1960s through the mid-1970s -- leftist threats and high inflation were followed by military takeovers and high unemployment. By the late 1970s, both countries had seemingly returned to sustainable growth with low inflation. Then came the 1982 worldwide recession and a reversal of most of the progress that had been made. By the middle of the 1980s, the economic paths of the two countries began to diverge. In Chile unemployment fell to 5 percent in 1992, whereas unemployment has remained in the 8 to 9 percent range in Uruguay so far in the 1990s.

The purpose of this paper is to examine why unemployment has remained persistently high in Uruguay. At the peak of the business cycle in 1981, unemployment was 7 percent, whereas unemployment stood at 9 percent in 1991 at a comparable level of aggregate economic activity. The average unemployment rate in Uruguay increased from 8 percent in 1965-1975 to 10.5 percent in 1976-1991.

Many experts have attributed increased unemployment in Uruguay to labor market inflexibility. For instance, Williamson (1990; 400) notes, "Deregulation has been notable by its absence in the labor market, where firing is almost impossible, payroll taxes are heavy, and trade unions remain strong. ... Uruguay seems to be another country where policy reforms have not been rewarded by a return to sustained growth. One possible explanation is that the process of liberalization remains incomplete, especially in the labor market."

The Chilean experience will be used frequently as a benchmark for three reasons. First, the measurement of labor market flexibility must be done on a comparative rather than on an absolute basis. Theories are not sufficiently well developed to identify thresholds for any parameter at which a labor market

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becomes either flexible or inflexible. International comparisons are an attractive approach because they allow labor market institutions and policies to vary. Second, both countries are small open economies that followed similar paths through the mid-1980s. Third, Chile adopted a number of policies to liberalize its labor market in the late 1970s and early 1980s, including changes in labor laws, rules for layoffs and dismissals, payroll taxes, and retirement benefits.

A labor market is termed inflexible if wages or employment fail to adjust when there is an economic shock. Empirically, this study will examine the flexibility of wages in Uruguay at the aggregate and sectoral level.¹ Aggregate indicators of wage flexibility include econometric estimates of Phillips curves, along with an assessment of how minimum wage and anti-inflation policies have affected wage setting. Changes in the interindustry wage distribution signal wage flexibility at the micro level.

Before going into this analysis of labor market flexibility, this study briefly summarizes the recent economic history of each country, with emphasis naturally on labor market outcomes and policies. We also will touch briefly on whether changes in the characteristics of jobs and workers or changes in the unemployment insurance system in Uruguay have led to increased unemployment.

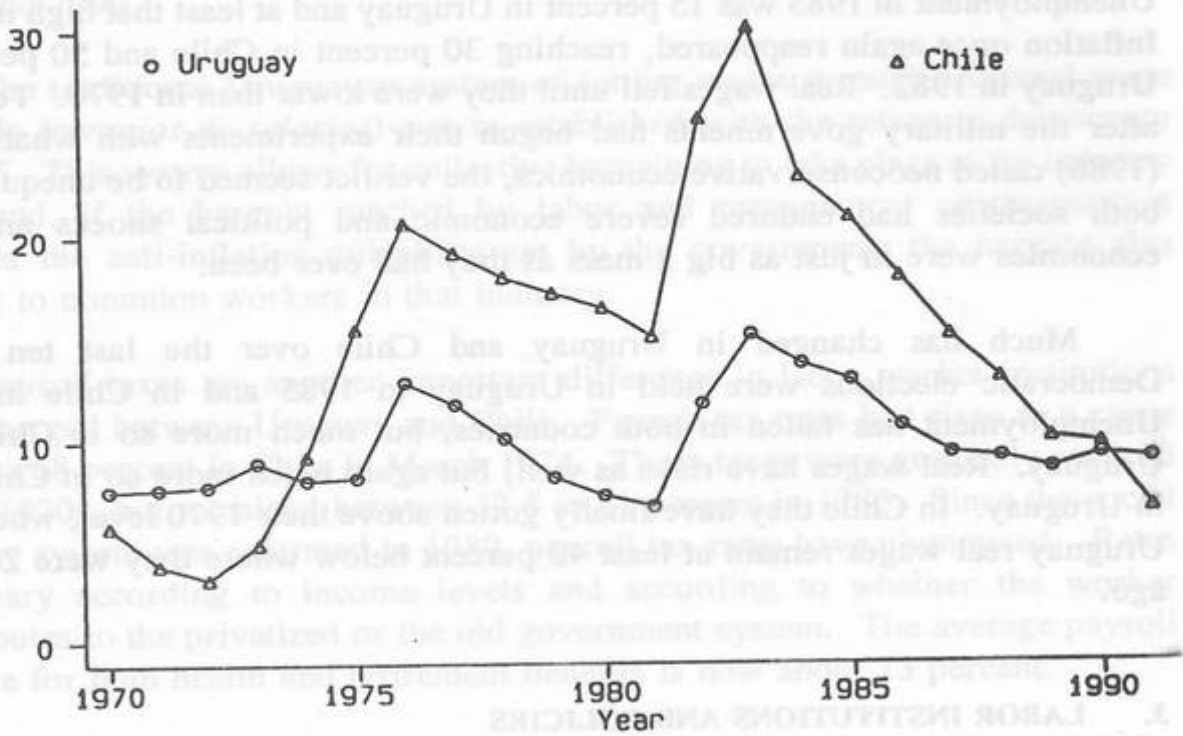
2. LABOR MARKET PERFORMANCE IN CHILE AND URUGUAY

There have been major shocks to labor markets and labor institutions in both Chile and Uruguay over the last 20 years. The history of unemployment and real wages since 1970 for both countries is summarized in Figures 1 and 2. In the early 1970s, both countries experienced high inflation and, except for the first year of the Allende government in Chile, falling real wages. In 1973 military governments assumed power in both countries. Market-oriented economic policies were put in place opening and liberalizing the economies, although at a different pace and depth. In reaction to anti-inflation policies, unemployment increased in both countries through 1976. Real wages had been falling for some time in Uruguay before the military government and their decrease continued through the rest of the decade. Real wages fell through 1976 in Chile, but then recovered somewhat.

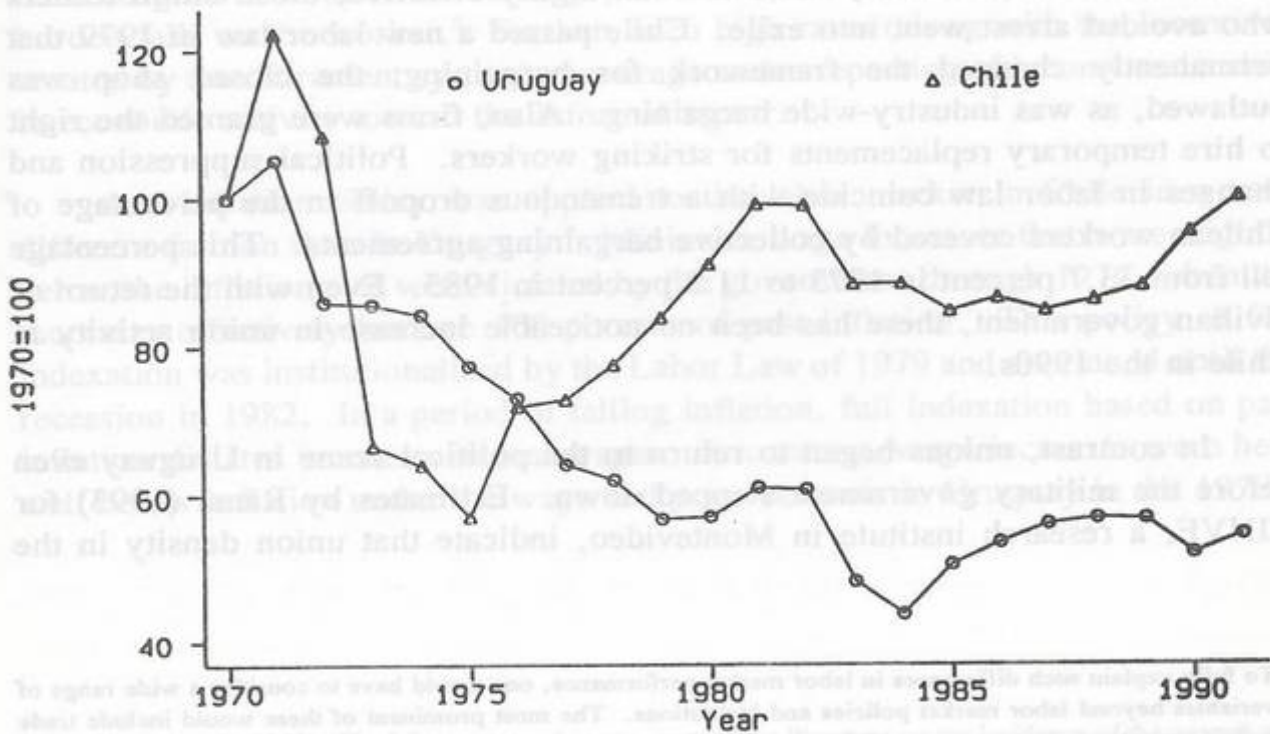
The late 1970s were a period of rapid economic growth in both countries; unemployment declined through 1981. Inflation rates also dropped in both countries, falling as low as 19 percent in Uruguay and 10 percent in Chile in 1982. As the year 1982 began, it seemed that both countries had turned the corner toward sustained economic growth with low inflation.

¹ Employment flexibility is not directly examined here because quarterly data are unavailable in Uruguay before 1983.

**FIGURE 1
UNEMPLOYMENT, 1970-1991**



**FIGURE 2
REAL WAGES, 1970-1991**



Then both countries suffered severe setbacks in the worldwide 1982 recession. Per capita output fell by more than 15 percent in 1982 and 1983. Unemployment in 1983 was 15 percent in Uruguay and at least that high in Chile. Inflation once again reappeared, reaching 30 percent in Chile and 50 percent in Uruguay in 1983. Real wages fell until they were lower than in 1970. Ten years after the military governments had begun their experiments with what Ramos (1986) called neoconservative economics, the verdict seemed to be unequivocal—both societies had endured severe economic and political shocks and their economies were in just as big a mess as they had ever been.

Much has changed in Uruguay and Chile over the last ten years. Democratic elections were held in Uruguay in 1985 and in Chile in 1989. Unemployment has fallen in both countries, but much more so in Chile than Uruguay. Real wages have risen as well, but again much more so in Chile than in Uruguay. In Chile they have finally gotten above their 1970 level, whereas in Uruguay real wages remain at least 40 percent below where they were 20 years ago.

3. LABOR INSTITUTIONS AND POLICIES

Differences in labor market institutions and policies may help explain the superior labor market performance in Chile.² An immediate consequence of the military takeover in each country was a ban on collective bargaining. The threat of incarceration (or worse) made the ban highly effective; those union leaders who avoided arrest went into exile. Chile passed a new labor law in 1979 that permanently changed the framework for bargaining; the closed shop was outlawed, as was industry-wide bargaining. Also, firms were granted the right to hire temporary replacements for striking workers. Political suppression and changes in labor law coincide with a tremendous dropoff in the percentage of Chilean workers covered by collective bargaining agreements. This percentage fell from 33.7 percent in 1973 to 11.2 percent in 1985. Even with the return of civilian government, there has been no noticeable increase in union activity in Chile in the 1990s.

In contrast, unions began to return to the political scene in Uruguay even before the military government stepped down. Estimates by Rama (1993) for CINVE, a research institute in Montevideo, indicate that union density in the

² To fully explain such differences in labor market performance, one would have to consider a wide range of variables beyond labor market policies and institutions. The most prominent of these would include trade policy, privatization, monetary and fiscal policy, investment in human capital, and demographic trends.

private sector went from zero before 1985 to 54 percent in 1985-1987 and 47 percent in 1990. Union density in the public sector was 58 percent in both 1985-1987 and 1990.

The traditional Uruguayan system of setting wages through trilateral wage councils (*consejos de salarios*) was re-established with the return to democracy in 1985. This system allows for collective bargaining to take place at the industry level and, if the bargain reached by labor and management representatives matches the anti-inflation guidelines set by the government, the bargain also applies to nonunion workers in that industry.

Payroll taxes are another important difference in labor market institutions that emerged between Uruguay and Chile. Payroll tax rates had risen to a range of 59 to 68 percent in Chile in March 1974. These taxes were gradually reduced in the 1970s, but remained between 32.5 to 41 percent in 1980. Since the social security system was reformed in 1980, payroll tax rates have plummeted. Rates now vary according to income levels and according to whether the worker contributes to the privatized or the old government system. The average payroll tax rate for both health and retirement benefits is now about 23 percent.

Payroll tax rates in Uruguay have gradually risen since the late 1960s. Today the combined employer and employee tax rates in the private sector for old age and retirement benefits is 29.5 percent; the combined rates for health benefits are another 8 percent. High and growing payroll tax rates are likely to lead to reduced growth in after-tax earnings, as evidence indicates that most of the tax burden falls on the worker.³ Further, such high rates (along with the incentives created by the retirement system) encourage under-reporting of income and a shift in economic activity toward the informal sector.

Anti-inflation policy was applied to the labor market in Chile in a very different fashion than in Uruguay.⁴ Minimum wage increases that were slightly below the inflation rate were dictated by the government through 1976, when the increases effectively became 100 percent of past inflation. This policy of full indexation was institutionalized by the Labor Law of 1979 and continued until the recession in 1982. In a period of falling inflation, full indexation based on past inflation dictates increases in real wages. In contrast, wage increases were held well below inflation under the wage and price controls in Uruguay in the 1970s.

³ See Hamermesh (1993), Ch. 5 for an extensive summary of the literature on the incidence of the payroll tax.

⁴ The following discussion draws from Edwards and Edwards (1991), Ch. 6 and Riveros (1990).

4. SIMPLE MICRO EXPLANATIONS

Increased unemployment in Uruguay is concentrated among young, single workers. Unemployment rates increased from 1981 to 1991 by 13 percentage points among teenagers and by 7 points for those in the 20 to 24 age bracket. In all older age brackets, unemployment rates did not change or actually fell. Unemployment rates of single persons rose by five percentage points over this period, but fell slightly for married members of the labor force. Unemployment is higher for women, but the increase in unemployment did not vary by gender.

The labor market in Uruguay has changed considerably in the last decade. Workers have become more educated; more women are working; the manufacturing sector has lost ground to the service sector. Because unemployment rates traditionally vary by worker and job characteristics such as age, gender, marital status, education, location, industry, and occupation, changes in labor market characteristics conceivably could lead to higher unemployment rates for the entire country. For instance, if the share of women in the labor force has risen and women tend to have higher unemployment rates than men, this would lead to an increase in the overall unemployment rate, holding GDP constant.

To test this hypothesis, Allen and Labadie (1994) estimated linear probability models for 1981.2 and 1991 on the Montevideo household survey over all persons aged 14 and above who were in the labor force. These years were chosen because aggregate economic conditions were quite similar. The coefficients of these models indicate the relative likelihood that persons with different characteristics will be unemployed. Unemployment can increase because either (1) the odds of becoming unemployed have risen for selected groups or (2) the labor market shares of groups with traditionally high unemployment rates such as youth, women, singles or manual workers have risen. The latter hypothesis can be directly tested by estimating how much the unemployment rate would have risen between 1981.2 and 1991 if the market share changes had taken place without any change in the relative odds of being unemployed.⁵ This is done by using the 1981.2 coefficients to predict unemployment in 1991 based on 1991 market shares.

Among experienced workers for whom complete information on all variables was available in the household survey, unemployment increased by 0.85 percentage points between 1981.2 and 1991. If nothing had changed except market shares, unemployment would have increased by only 0.06 points. Even though women, especially married women, became a larger share of the labor

⁵ This is known by labor economists as a Blinder-Oaxaca decomposition. This method is discussed in a detailed, but accessible manner by Berndt (1991).

force, the male-female differential in unemployment probabilities was not large enough to offset other changes, such as aging of the labor force.⁶

Allen and Labadie (1994) also showed that the increase in the unemployment rate that took place in the early 1980s is attributable entirely to increases in the duration of unemployment instead of an increase in the percentage of employed persons who become unemployed (also known as the inflow rate). In 1981.2 the estimated average duration of unemployment was between three and four months. Durations increased steadily in the next two years, reaching a peak of nine months in 1983.2. The average duration of a spell of unemployment declined gradually after 1983, but remained higher in 1991.2 (4.5 months) than in 1981.2. The inflow rate changed very little relative to the movements in duration throughout this period.

Increased durations of unemployment in OECD countries are often associated with increases in unemployment benefits. Three major changes were made in the Uruguayan Unemployment Insurance (UI) system in 1981. Special UI funds for specific sectors were scrapped and replaced by a share of revenues from the Value Added Tax. Benefit eligibility was tightened by moving from a requirement of one month's contributions out of the last six to one where a worker must contribute six out of 12 months. Real benefits were reduced by shifting from a formula based on the last month's salary to one based on the average salary over the last six months, which can make quite a difference in a country with annual inflation rates frequently above 50 percent.

As a consequence of these adjustments, the mean real benefit has fallen by 30 percent from 1981 to 1991. The share of unemployed persons collecting benefits declined over this period from 15 to 12 percent for men and from 10 to 5 percent for women.

Even though increased durations of unemployment "explain" why unemployment rates in Uruguay have risen, it is quite clear that this cannot be blamed on the UI system. Instead, the real problem with the UI system in Uruguay seems to be the relatively small percentage of unemployed persons receiving benefits. Increased unemployment that is concentrated among young, single workers and is accompanied by rising durations, rather than rising incidence, is consistent with theoretical frameworks stressing the role of wage

⁶ Detailed results of this analysis are reported in Allen and Labadie (1994). A variety of alternative approaches were also examined. When the linear probability model estimated over the 1991 data was used to predict the change in unemployment caused by changing composition in the labor force, the projection was a *decrease* in unemployment of 0.18 percentage points. The identifiers of previous jobs were dropped from the model so that first-time job seekers could be included in the sample. The predicted increase in unemployment remained below ten percent of the observed change. All of these results are available from the authors upon request.

rigidity. If wages are not free to adjust, unskilled workers will find themselves priced out of the market.

5. AGGREGATE WAGE RIGIDITY

Economic arguments linking labor market flexibility to full employment usually focus on wage adjustment from a macroeconomic perspective. In the standard textbook treatment, there will be persistent unemployment if wages get to a level where the supply of labor exceeds the demand and wages are not permitted to fall. Countries can get into this situation in two ways. One possibility is to start from a market clearing position and then arbitrarily raise wages through some non-market mechanism. The other is to have a drop in labor demand (or increase in labor supply) that is unaccompanied by a fall in wages. Wage flexibility restores full employment by creating incentives for employers to create new positions and for some workers to leave the labor force.

Economy-wide wage rigidity can be generated by a number of factors. In some societies the minimum wage is sufficiently high that it poses a binding constraint for a large share of the labor force. In countries experiencing very high inflation, the decision to index wages to prices eliminates downward flexibility in real wages. Collective bargaining often precludes reductions in real wages because those who still have jobs prefer to maintain their incomes, whereas union members who have lost their jobs also lose their voice in the bargaining process. This is particularly likely in labor markets where most workers are covered by collective bargaining and the bargaining structure is decentralized.⁷ In such a regime, the union has an incentive to look after only the workers in a particular industry, firm, or establishment; those who are displaced by wage rigidity have no union to represent them. Finally, some profit-maximizing firms will be reluctant to make wage cuts if they fear that productivity will suffer as a consequence.

The standard approach for measuring the degree of wage rigidity from a macroeconomic perspective is to estimate the tradeoff between wages and unemployment. The Phillips curve shows how much the growth rate of nominal wages falls when unemployment rises, holding inflationary expectations constant. Estimates for Uruguay and Chile using the same specification over annual data are reported in Table 1. In each case the rate of increase in wages is regressed on the unemployment rate, the inflation rate over each of the last three years, a time trend, and a constant. The estimates for Uruguay for 1969-1991 show that a one percentage point increase in unemployment is associated with a reduction in wage growth of 1.6 percent.

⁷ Layard *et al.*, (1991, Ch. 9).

TABLE 1

PHILLIPS CURVE ESTIMATES FOR CHILE AND URUGUAY

	Uruguay 1969-1991	Chile 1970-1991
Constant	0.295 (0.107)	0.261 (0.078)
Unemployment	-1.625 (0.754)	-0.485 (0.400)
Annual inflation 1 year before	0.704 (0.122)	1.343 (0.131)
Annual inflation 2 years before	-0.071 (0.110)	-0.785 (0.201)
Annual inflation 3 years before	-0.208 (0.102)	0.336 (0.125)
Time trend	0.010 (0.003)	-0.009 (0.005)
R ²	0.868	0.956
Root MSE	0.075	0.114

Sources: *Yearbook of Labour Statistics*, various issues; Riveros (1990); data base at Centro de Estudios de la Realidad Económica y Social (CERES).

Cassoni (1993) examines the Phillips curve for Uruguay in more detail. A summary of her key estimates appears in Table 2. The dependent variable is the rate of change in log wages across all private sector occupations in columns 1 and 2, across all occupations in manufacturing in columns 3 and 4, and across all blue collar occupations in column 5. The aggregate unemployment rate appears on the right-hand side of all five models. Lagged values of the real product wage (wages deflated by the wholesale price index) are included to control for periods in which firms are most likely to resist further wage increases.

Cassoni's baseline estimate for 1970 to 1991 shows that a decrease of 1.0 percent in nominal wage growth in the private sector occurs when unemployment increases by one point. The tradeoff was greater (1.6 percent) when unions were banned than in the years when collective bargaining was allowed (0.8 percent). The same general results hold for the manufacturing sector in both annual and quarterly data. The results are particularly strong for blue collar workers in manufacturing, for whom wages fall by 1.1 percentage points with a one point increase in unemployment in the period without unions, but by only 0.2 points in the years when unions were active.

TABLE 2

SUMMARY OF PHILLIPS CURVE ESTIMATES FROM CASSONI (1993)

Sector	Private sector	Private sector	Manufacturing	Manufacturing	Manufacturing
Sample	1970-1991	1970-1991	1970-1991	1983:2-1991:4	1983:2-1991:4
Occupations	All	All	All	All	Blue collar
Unemployment	-1.032 (0.454)	-1.556 (0.516)	-1.204 (0.497)	-0.893 (0.285)	-1.117 (0.406)
Unemployment before 1974 and after 1983		0.792 (0.233)	0.590 (0.306)	0.242 (0.127)	0.884 (0.178)
Inflation	0.652 (0.088)	0.658 (0.101)	0.757 (0.130)	0.649 (0.134)	0.664 (0.136)
Inflation lagged 1 year	0.326 (0.101)	0.325 (0.106)	0.197 (0.141)	0.230 (0.111)	0.298 (0.105)
Real product wage lagged 1 year	-0.425 (0.106)	-0.318 (0.104)	-0.265 (0.110)	-0.176 (0.053)	-0.381 (0.094)
R ²	0.951	0.936	0.884	0.825	0.895

To put these findings in context, consider the Phillips curve tradeoff for the United States, considered to have the most flexible labor market of all OECD countries. In the U.S. a one percentage point increase in unemployment is associated with a 1 percent slowdown in wage growth in manufacturing.⁸ Viewed from this perspective, manufacturing wages in Uruguay were at least as flexible as those in the U.S. before 1985. However, now they seem to be considerably less flexible.

Another relevant comparison is between Uruguay and Chile, where a one point increase in unemployment is associated with 0.5 percent decrease in wage growth.⁹ One likely reason for this difference was that wages in Chile were more fully indexed. The impact of any indexation scheme on real wage levels depends on the frequency of adjustments and on whether inflation is increasing or decreasing. When inflation rates are falling, indexation schemes can cause real wages to rise and many observers believe that this is precisely what happened in Chile after 1976. Others question how effective these mandates were in an environment with no unions, no protective labor legislation, and high unemployment. Riveros (1990) argues that economic expansion played a much larger role behind growing real wages in Chile from 1976 to 1979. However, there seems to be widespread agreement that the indexation arrangements

⁸ Allen (1992).

⁹ The unemployment coefficient for Chile was somewhat sensitive to the choice of right-hand variables. In specifications not reported in Table 1, the coefficient ranged between -0.2 and -0.9.

mandated by the Labor Law of 1979 made wages considerably more rigid. Unemployment increased much more in the 1982 recession in Chile than in Uruguay and this is no doubt at least partially caused by differences in indexation arrangements.

Finally, the minimum wage in some labor markets is sufficiently high to be an important cause of unemployment (e.g., Puerto Rico where the U.S. minimum prevails in a Caribbean economy)¹⁰. The real minimum wage fell by over 50 percent in Uruguay in the 1970s and 1980s, so it is difficult to claim that it has been a cause of higher unemployment in that country. (However, in sectors where agreements reached by the wage councils bind wages offered by nonunion employers, wage floors could still contribute to unemployment.) Because of the design of the indexation policy, the minimum wage in Chile actually rose from 1974 through 1982 (except for a sharp drop in 1977), which most likely contributed to some of the increase in unemployment observed in that period.

The main conclusion to be drawn from this macro evidence on wage adjustment is that wage rigidity is not a plausible explanation of high unemployment in the early 1980s in Uruguay, but that it could very well be contributing to the relatively high unemployment rates being observed today. Evidence on the Phillips curve shows that before 1985 wages fell more in Uruguay than in countries that supposedly had more flexible labor markets. With the return of collective bargaining, unemployment now has a much smaller impact on wage growth. Rising minimum wages and full indexation are plausible explanations of high unemployment in Chile in the late 1970s and early 1980s.

6. INTER-INDUSTRY WAGE DIFFERENTIALS

By focusing solely on aggregate data, one cannot address the question of how relative wages have adjusted. In a dynamic economy where some sectors are growing rapidly and others are growing slowly or shrinking, some mechanism is needed to reallocate labor across sectors. Price changes send appropriate signals to both employers and workers to make these reallocation decisions. The issue we examine in this section of the report is how do wages vary across industries in Chile and Uruguay.

Our study examines three measures of the change in relative wages across industries: (1) the dispersion of wage levels across industries; (2) the year-to-year variance in wage growth across industries; and (3) the variance in wage growth across industries over periods of 10 years or more. Increased dispersion of wage

¹⁰ Castillo-Freeman and Freeman (1993) examine the impact of the U.S. minimum wage on the labor market in Puerto Rico.

levels creates greater incentives for intensive search and training activity on the part of workers and employers. Studies in the U.S. have shown that these differentials (1) narrow during expansions and widen during contractions and (2) have been widening over the last 20 years.¹¹ The variance in wage growth is a purer measure of changes in relative wages because it takes into account changes in the shape of the distribution along with changes in the position of industries within the distribution. Year-to-year changes show reactions to short-term shocks to macro and trade variables, whereas changes over a decade or more reflect the flexibility of the price mechanism in response to differential rates of productivity growth and changes in worker or job characteristics.

The standard deviation of the log of each industry's mean wage is used to measure the level of wage dispersion.¹² Casacuberta and Cassoni (1993) report that in Uruguay the latter measure increased from 0.18 in 1968 to 0.22 in 1978 and 0.27 in 1988 for all manufacturing workers. For five major sectors, this measure increased from 0.22 in 1975 to 0.33 in 1990. The major shocks occurred in 1980, when it increased from 0.23 to 0.26, and in 1985, when it increased from 0.26 to 0.30.

In Chile there is more dispersion in 1968 (0.26) than in Uruguay, but dispersion rose to above 0.3 in 1970-1973 — a puzzling finding given the emphasis on income redistribution under the Allende government. Wages became more compressed in 1974-1975, but then became much more dispersed over the next 12 years, peaking at 0.4 in 1987. Wage dispersion has fallen to 0.3 in 1991, putting it at roughly the same level as in Uruguay today.

The conclusion that we draw from this analysis is that although there have been greater fluctuations in wage dispersion in Chile than in Uruguay, both countries have exhibited the same basic trend toward increased dispersion in wage levels over the last 20 years. Furthermore, wage dispersion across industries is now about the same in each country.

The standard deviation of $\ln(w_{jt} / w_{j,t-1})$, where w_{jt} is the wage in industry j in year t , is used to measure short run changes in relative wages across industries.¹³ Converting these to log changes, the average value of this measure in Uruguay is 0.043 for 1968-1981 and 0.047 for 1984-1990. The largest values are observed in 1969 (0.139) and 1972 (0.112).

¹¹ See Allen (1994) for a more detailed examination of these issues.

¹² The coefficient of variation also was examined, but these results are not reported because the trends and year-to-year movements are identical to those reported here.

¹³ Manufacturing wage indexes for Uruguay for 1968-1981 and 1984-1990 and for Chile for 1969-1991 are published in the *Yearbook of Labour Statistics*.

On a year-to-year basis, relative wages adjust much more in Chile, where the mean value of the standard deviation of log wage change across manufacturing industries is 0.116. Changes above 0.1 take place in every year from 1969 through 1977; they also occur in 1980, 1983, 1986-1988, and 1991. In this dimension the Chilean wage structure is much more flexible than the Uruguayan.

Over longer periods, we also find the Chilean wage structure to be more flexible. Data for 2-digit manufacturing industries are available for Uruguay for 1968-1981 and 1984-1990. The standard deviation of the change in log wages for 1968-1981 is 0.183 in Uruguay and 0.293 in Chile; for 1984-1990, it is 0.138 for Uruguay and 0.195 for Chile. The same pattern holds for simple correlations in wages across industries: 0.762 for blue collar workers in manufacturing in Uruguay for 1968-1988 and 0.503 for Chile for 1968-1991.¹⁴

There are no controls for the characteristics of individual workers in these results; further, most conclusions are restricted to the manufacturing sector. To address these issues, we estimated interindustry wage differentials over micro data. For Uruguay, we pooled the surveys for Montevideo and the interior and estimated a single model for men and women; the coefficients of the industry dummies are reported in Table 3. The results, show modest shifts in interindustry wage differentials (relative to manufacturing) over a fairly short period. In Uruguay, relative wages rose for public utilities and construction and fell for services. The correlation between the wage differentials for 1984 and 1990 is a very high 0.952, an estimate only slightly smaller than that obtained by Casacuberta and Cassoni for aggregated data by one-digit industry (0.993) for the same period.

TABLE 3

ESTIMATES OF INTERINDUSTRY WAGE DIFFERENTIALS RELATIVE TO MANUFACTURING, URUGUAY, 1984 AND 1990

	1984	1990
Agriculture, mining	0.172	0.244
Public utilities	0.056	0.100
Construction	-0.120	-0.058
Wholesale and retail trade	-0.107	-0.095
Transportation	-0.003	-0.034
Banking	0.252	0.267
Services	-0.050	-0.118

Source: public use tapes of monthly household survey, Montevideo and urban areas in the interior.

¹⁴ Further evidence on inter-industry wage differentials in Uruguay is reported in Abuhadba (1991).

Comparable estimates for Chile were kindly provided by Professor Luis Riveros of the Universidad de Chile and are reported in Table 4. In Chile wages rose sharply in agriculture and mining and in the service sector relative to manufacturing from 1980 to 1991. They fell in wholesale and retail trade. The correlation between the industry coefficients is much smaller in Chile (0.419) than in Uruguay.

TABLE 4

ESTIMATES OF INTERINDUSTRY WAGE DIFFERENTIALS RELATIVE TO
MANUFACTURING, CHILE, MARCH 1980 AND MARCH 1991

	March 1980	March 1991
Agriculture, mining	-0.114 (0.022)	0.001 (0.020)
Construction	0.054 (0.030)	0.047 (0.028)
Wholesale and retail trade	-0.141 (0.027)	-0.185 (0.023)
Transportation, communication	-0.023 (0.029)	-0.011 (0.026)
Services	-0.213 (0.021)	0.001 (0.019)

Source: Universidad de Chile data.

Further evidence of the flexibility of the Chilean wage structure appears in Table 5, which compares interindustry wage differentials and employment shares for public and private sector workers in Santiago for 1976, 1981, and 1990. Wages rose dramatically for personal and household service workers in Santiago over this period, as well as for workers in government and finance and in transportation, communication, and utilities for 1981-1990. There is also clear evidence of a surge in wages for construction workers during the building boom in the late 1970s and early 1980s. The wage movements in construction and in the transportation, communication, and utilities sector are accompanied by larger employment shares.

In summary, we have examined the flexibility of relative wages by industry in a variety of ways for both Chile and Uruguay. Our results show that in this dimension of behavior the wage structure is much more flexible in Chile than in Uruguay. In the two largest surges in employment shares observed in the Santiago household data (construction in the early 1980s and transportation,

communication, and utilities in the late 1980s), relative wages seem to be performing their allocative function in textbook fashion. This does not seem to be happening in Uruguay, where only one sector (services) had a rising employment share but it was accompanied by falling relative wages.

TABLE 5

EMPLOYMENT SHARES AND ESTIMATES OF INTERINDUSTRY WAGE DIFFERENTIALS RELATIVE TO MANUFACTURING, SANTIAGO, JUNE 1976, 1981, AND MARCH 1990

Year	ES 1976	ES 1981	ES 1990	WD 1976	WD 1981	WD 1990
Agriculture	1.4	0.7	0.8	0.110 (0.100)	-0.331 (0.142)	0.183 (0.134)
Mining	0.5	0.3	0.7	0.377 (0.159)	0.407 (0.199)	0.646 (0.138)
Manufacturing	28.3	26.4	26.3	0	0	0
Construction	6.1	11.5	6.5	0.050 (0.054)	0.147 (0.042)	0.079 (0.051)
Trade	11.5	13.8	12.8	-0.079 (0.041)	-0.074 (0.039)	-0.050 (0.039)
Government and Finance	13.0	11.8	12.0	0.129 (0.040)	0.053 (0.042)	0.372 (0.040)
Personal and household services	15.3	13.9	15.4	-0.651 (0.041)	-0.420 (0.042)	-0.251 (0.040)
Social Services	15.7	15.4	16.9	0.044 (0.040)	-0.096 (0.041)	-0.041 (0.038)
Transportation, communication	8.0	6.2	8.6	0.025 (0.048)	-0.059 (0.053)	0.178 (0.045)

Source: Universidad de Chile data.

ES = employment share.

WD = wage regression coefficient (standard error).

7. CONCLUSIONS

This study has compared macro and micro evidence on wage rigidity in Chile and Uruguay to determine whether differences in labor market flexibility can account for the very different patterns in unemployment observed in the two countries. Chile has taken a number of steps to liberalize its labor market,

whereas the return of collective bargaining in Uruguay seems to have made its labor market more rigid.

These policy differences are reflected in the key empirical results in this paper. Since the return of collective bargaining in 1985, wages became much less responsive to unemployment in Uruguay than they were formerly. There is now more nominal wage rigidity in Uruguay than in other countries with flexible wages, such as the U.S. Further, interindustry wage differentials are much more fluid in Chile than in Uruguay and labor in Chile is drawn toward industries with rising relative wages. Although these results do not imply that Chilean labor markets are operating in some sort of ideal, Walrasian manner, they clearly seem to be more flexible than their Uruguayan counterpart.

The evidence for Uruguay is consistent with the predictions of a two sector model of labor markets. Despite the liberalization of trade and financial markets and years of falling real wages, compensation in the primary sector (manufacturing, transportation and financial services) apparently remained above a market-clearing level through 1985. Wages in that sector became more downwardly rigid with the return of collective bargaining. Today unskilled workers, many of them young and single, are not employable at those wages and must seek out opportunities in service industries, leading to a larger employment share and lower relative wages in services. If this explanation is correct, some combination of internal productivity or wage adjustments will be necessary before Uruguay returns to full employment.

REFERENCES

- ABUHADBA, MARIO (1991): "Models of Wage Determination and the Industry Wage Structure in Uruguay," *Revista de Análisis Económico*, Vol. 6, 93-111.
- ALLEN, STEVEN G. (1992): "Changes in the Cyclical Sensitivity of Wages in the United States, 1891-1987," *American Economic Review* Vol. 82, 122-140.
- ____ (1994): "Updated Notes on the Interindustry Wage Structure," NBER Working Paper No. 4664.
- ALLEN, STEVEN G. and GASTON LABADIE (1994): "Labor Market Flexibility and Economic Performance in Uruguay and Chile," final report to the Tinker Foundation.
- BERNDT, ERNST R. (1991): *The Practice of Econometrics* Reading, Mass.: Addison-Wesley.
- CASACUBERTA, CARLOS and ADRIANA CASSONI (1993): "Intersectoral and Inter-Industry Wage Differentials, 1968-1990," manuscript.
- CASSONI, ADRIANA (1993): "The Wage Adjustment Process in Uruguay, 1968-1991," manuscript.
- CASTILLO-FREEMAN, ALIDA and RICHARD B. FREEMAN (1992): "When the Minimum Wage Really Bites: The Effect of the U.S. Level Minimum on Puerto Rico," in Borjas, George J., and Freeman, Richard B. (eds.), *Immigration and the Work Force* Chicago: University of Chicago Press.
- EDWARDS, SEBASTIAN and ALEJANDRA COX EDWARDS, (1991): *Monetarism and Liberalization: The Chilean Experiment* Chicago: University of Chicago Press.
- HAMERMESH, DANIEL S. (1993): *Labor Demand* Princeton: Princeton University Press.
- INTERNATIONAL LABOUR OFFICE, *Yearbook of Labour Statistics*, various issues.
- LAYARD, RICHARD, STEPHEN NICKELL and RICHARD JACKMAN (1991): *Unemployment* Oxford: Oxford University Press.
- RAMA, MARTIN (1993): "The Labor Market and Trade Reform in Manufacturing," manuscript, World Bank and CINVE.
- RAMOS, JOSEPH (1986): *Neoconservative Economics in the Southern Cone of Latin America, 1973-1983* Baltimore Johns Hopkins University Press.
- RIVEROS, LUIS A. (1990): "Labor Markets in an Era of Adjustment: The Chilean Case," manuscript, Universidad de Chile.

WILLIAMSON, JOHN (ed.) (1990): *Latin American Adjustment: How Much Has Happened?* Washington: Institute for International Economics.

ALLEN, STEVEN G. and GASTON FRANKLIN (1991): "Labor Market Flexibility and Economic Performance in Uruguay and Chile," final report to the Inter-American Development Bank on the impact of labor market reforms in Latin America, mimeo, IDB, Washington, D.C.

CASTILLO-FREYMAN, ALDO and RICHARD S. FRENKEL (1991): "Wages and Minimum Wage Policy: The Effect of the U.S. Labor Minimum on Puerto Rico," in Roger George L. and Francis Richard B. (eds.), *Integration and the Work Force* (Chicago: University of Chicago Press).

EDWARDS, HELEEN and ALDANORA COX EDWARDS (1991): *Monetarism and Inflation: The Chilean Experiment* (Chicago: University of Chicago Press).

HANSEN, DANIEL (1991): *Latin America's Economic Crisis* (Princeton: Princeton University Press).

INTERNATIONAL LABOUR OFFICE (1991): *Yearbook of Labour Statistics*, various issues.

LAYARD, RICHARD, STEPHEN NICKELL and RICHARD JACKMAN (1991): *Unemployment in the United Kingdom* (Oxford: Clarendon Press).

RAMA, MARTIN (1991): "The Labor Market and Trade Reform in Manufacturing," mimeo, World Bank and ILO.

RAMOS, JOSEPH (1991): *Macroeconomic Economics in the Southern Cone of Latin America, 1973-1991* (Baltimore: Johns Hopkins University Press).

RIVEROS, LUIS A. (1990): "Labor Markets in an Era of Adjustment: The Chilean Case," mimeo, Universidad de Chile.