



# CEPA

---

Center for Economic Policy Analysis

**Political-Economic Regime and the Wage Curve:  
Evidence from Chile, 1957-1996**

Janine Berg (CEPA) and  
Dante Contreras (Universidad de Chile)

CEPA Working Paper 2002-10

August 2002

David Gordon Award Recipient 2001-2002

Center for Economic Policy Analysis  
New School University  
80 Fifth Avenue, Fifth Floor, New York, NY 10011-8002  
Tel. 212.229.5901 • Fax 212.229.5903  
[www.newschool.edu/cepa](http://www.newschool.edu/cepa)

# Political-Economic Regime and the Wage Curve: Evidence from Chile, 1957-1996

Janine Berg

Department of Economics, New School for Social Research, New York, NY  
&

Dante Contreras

Departamento de Economía, Universidad de Chile, Santiago, Chile

## Abstract

This paper tests whether a wage curve—a negative relationship between unemployment and pay—existed in Santiago, Chile during 1957-1996. The analysis is divided into two periods corresponding to the distinct economic models in place in the country. For 1957-1973, during the period of inward-led development, we reject the existence of a wage curve. The second period, 1974-1996, corresponds to an external opening of the economy and the deregulation of publicly controlled industries and labor relations. For this period, we find a wage curve of  $-0.08$ , which is similar to the United States and other western, capitalist economies.

Disaggregating the analysis for different groups of workers, we find that since the economic reforms, women's pay falls three times more than men's when unemployment doubles. Also, non-university educated and public sector workers have suffered greater pay decreases from unemployment. Workers in the informal sector do not experience a drop in pay, contradicting the notion that the informal sector acts as a buffer for unemployed formal-sector workers.

**Keywords:** wage curve, unemployment, inequality, Chile

**JEL Classification:** J30, J60

**Correspondence:** Janine Berg, Center for Economic Policy Analysis, New School for Social Research, 80 Fifth Avenue, Fifth Floor, New York, NY 10011, USA

Email: [bergj01@newschool.edu](mailto:bergj01@newschool.edu)

## **Introduction**

Between 1957 and 1996, the Chilean economy changed its economic model from an economy that was closed and state-led (1957-1973) to a private-sector led, open economy (1974-1996). The reforms included trade and financial liberalization, privatization as well as labor market reforms that attempted to bring about greater flexibility in the labor market and depoliticize labor relations. The economic regime shift that occurred in Chile offers an interesting case for testing the existence of a “wage curve” during two distinct economic periods in the country. Specifically we ask three questions from this study: (1) How have wage elasticities changed over time within Chile? (2) What does this tell us about labor market flexibility in Chile compared with other countries? and (3) Which groups of workers suffer greater pay losses as a result of unemployment in the country?

The wage curve is an empirically documented relationship between the level of unemployment and the level of pay for a given area. Holding other variables constant, the wage curve tells us “that if a region has a rise in unemployment in a particular year, those who live there will have a fall in their wages in that year”(Blanchflower and Oswald, 1995, p.153). The wage curve can be interpreted as a measure of labor market flexibility since unemployment constrains the ability of workers to negotiate higher wages, causing a decrease in pay for the individual workers. By estimating a wage curve for Chile over the forty year time period, we can test how differences in the degree of labor market flexibility inherent in the given economic model, made wage earners more or less sensitive to the level of unemployment in the economy.

Through this analysis we can then determine how the wage curve, in its capacity as an indicator of labor market flexibility, compares with other countries and also, how different groups within Chile are affected by unemployment. In particular, we test how unemployment affects the

wages of skilled (defined as university educated) compared within unskilled workers (non-university educated) given the strong increase in wage inequality between these two groups since the 1973 reforms. We also disaggregate the analysis by gender, formal versus informal sector workers and private versus public to estimate the differences in wage elasticities between the different groups. This information may be useful for designing government policies to help vulnerable groups during times of high unemployment.

We begin with a brief review of the political-economic changes that occurred in Chile over the forty year period paying special attention to the labor market reforms instituted under the military government. The analysis is followed by a brief discussion of the patterns of wage growth, unemployment and inequality during 1957-1996. We then discuss the different analytical perspectives invoked to explain the trends and the contribution of the wage curve to our understanding. Finally we analyze the different model specifications and provide the results of our estimations both for different sample periods and disaggregated groups of workers.

## **The Chilean Context**

### *The Shift in Economic Model: From Inward to Outward-Led Growth*

The forty years under study (1957-1996), can be divided into two periods—1957-1973 and 1974-1996—that represent two vastly different economic models. Between 1957-1973, the country followed a state-led industrialization model centered upon the development of national industries to curtail Chile's dependence on the external world. After 1973, the import-substituting industrialization model (ISI) was abandoned and Chile became one of the most open, market-oriented economies in the world. Previously state-run industries were privatized,

essentially handing the development reins to private hands. Reforms were undertaken with the intention of freeing private sector activity, particularly with respect to its employment of labor.

The end of the ISI model in 1973 marked the culmination of forty years of inward-led development. Spearheaded by the country's national development agency, CORFO, the country built and ran industries in such varied sectors as pharmaceuticals, sugar processing, electricity and paper. State involvement in the planning of the economy escalated during the 1960s under the Christian Democratic government of Eduardo Frei Montalva (1964-1970), which initiated an agrarian reform program and outlined the government's proposal to buy back the country's copper mines from their foreign owners. By the late 1960s, the state accounted for over 40 percent of total GDP and upwards of 70 percent of gross domestic investment in fixed capital (Stallings, 1978). The emphasis on the state as owner and manager of the country's industries and resources culminated with the 1970 election of the socialist government of Salvador Allende. The Allende government implemented an ambitious program of nationalizing certain industries through a buy-back program from the private sector.

During the forty years of inward-led development, government involvement also included setting price controls on key consumer products as well as wage setting. The President had the power to set both the minimum wage and the minimum salary, which had a strong influence on wages, particularly in small firms.<sup>1</sup> During Frei's presidency, real wages increased by 8.3 percent, while during the first two years of Allende, real wage increases were 15.5 percent. The labor movement also gained strength under the leadership of the National Worker's

---

<sup>1</sup> Prior to 1974, there existed two minimum wages, salario mínimo for blue-collar workers and sueldo vital for white-collar workers.

Confederation (CUT). Union membership increased throughout the period and by the late 1960s, 70 percent of eligible manufacturing workers belonged to a union.<sup>2</sup>

All changed with the military coup of September 11, 1973. Besides the political shift from left to right and the 17-year suspension of democracy, the military regime replaced the inward-led growth model with an ambitious policy of pro-market reform and export-led growth. Tariffs, which averaged over 100 percent in the early 1970s, were reduced to 33 percent by 1976 and 10 percent by 1979. Price controls on nearly 3,000 products were eliminated. Industrial firms and banks nationalized under the Allende regime were returned to their original owners, while other state-run industries and the banking sector were privatized.

The new government took a radical approach towards the labor market with the intent of de-politicizing employer-worker relations. Upon assuming power, the government suspended all existing arrangements regarding salaries, benefits and other remuneration, the adjustment of pensions to inflation, the requirement of just cause in firing, union activities and collective bargaining (Meller, 1992). The minimum wage was maintained, though throughout the 1980s it was adjusted below inflation so that by 1990 it was at 73 percent of its real 1980 level. In 1979, a new labor code was adopted that allowed unionization but restricted unions to the firm level. Closed shops were prohibited meaning there could be more than one union per firm. The new labor code also authorized the use of temporary workers and subcontracted work. The labor market reform policies were successful in liberalizing the contracting and firing of labor. A 1984 study of business leaders' perspectives on the impact of the market reforms ranked the "introduction of new labor legislation" as the most favorable reform (Corbo and Sánchez, 1984).

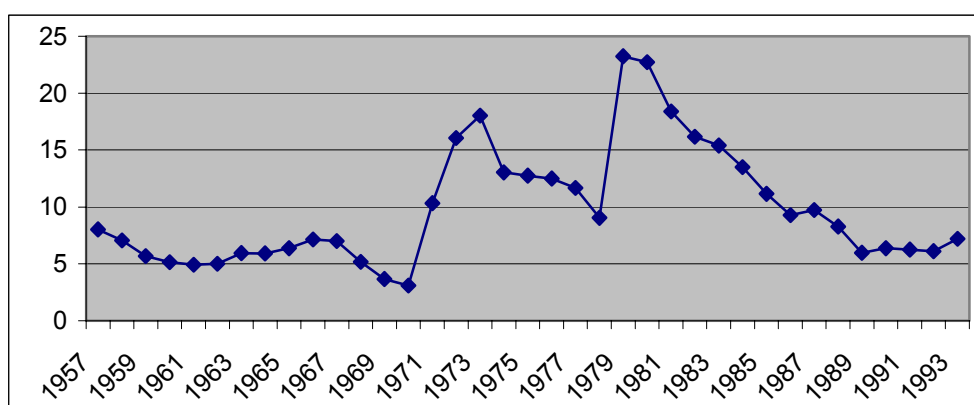
---

<sup>2</sup>Unions were restricted to firms with more than 25 workers. The unionization rate for all workers, including those who worked in firms with less than 25 employees and in other economic sectors was 30 percent (Stallings, 1978).

Since the return to democracy in 1990, the democratically elected governments have maintained the economic model put in place under the military regime. In 1991, tariffs were reduced to 11 percent from their 1989 level of 15 percent while a number of bilateral and multilateral trade agreements have come into effect. Meanwhile, the government has continued its privatization policy, resulting in further privatizations in the basic services sector. However, the government increased spending on social services and managed to increase the minimum wage, such that by 1997, it had recovered its level of 1980 (OIT, 2000). Worker rights have also been strengthened by requiring that employers specify cause of dismissal, as well as allowing national level unions (though not industry-level collective bargaining) and greater protection for union leaders.

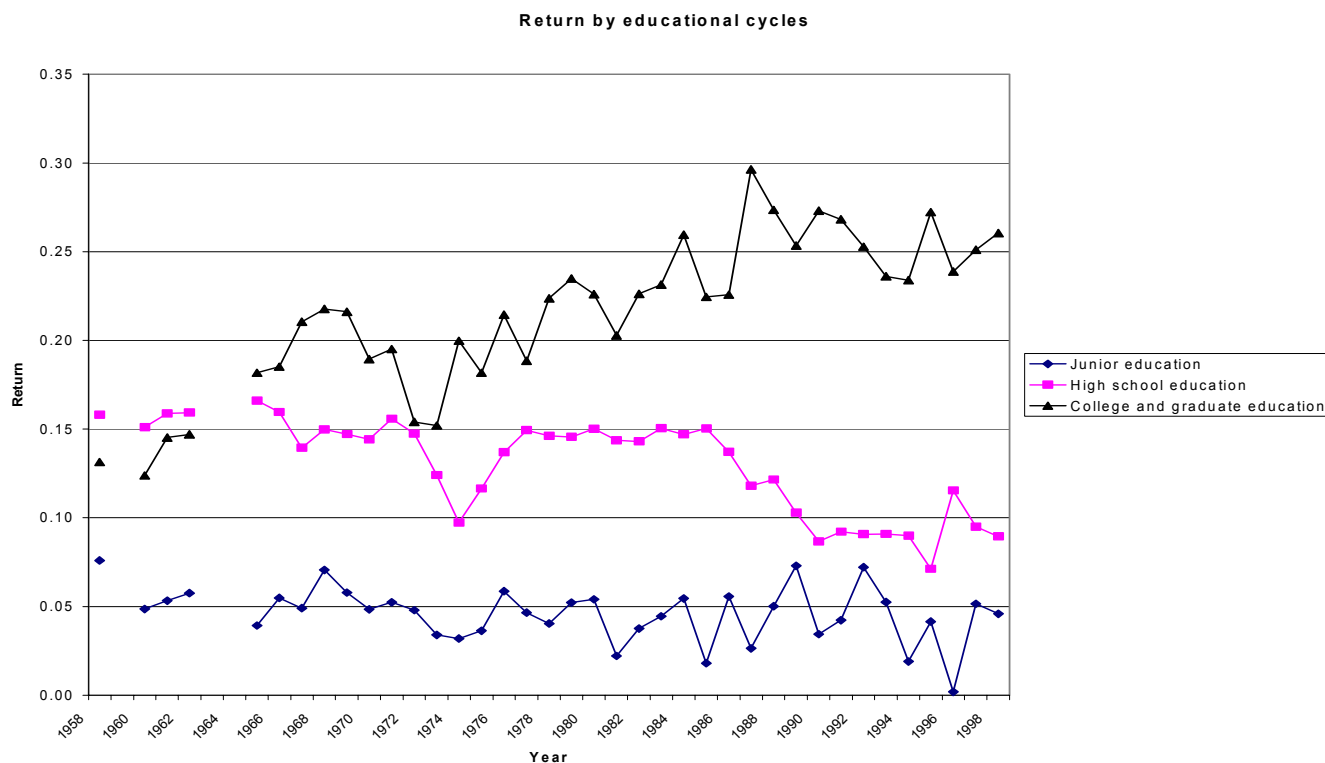
*Unemployment and Wage Growth over the Forty Year Period.* High unemployment and slow wage growth are problems that have plagued the Chilean economy throughout the 1957-1996 period. Real wages fell after the 1975 and 1982 recessions and did not recover their 1970 level until 1992. Unemployment has been high. Its average for the 40-year period is 10 percent, reaching a height of 23 percent during the 1982 crisis. (See Chart 1).

Chart 1: *Unemployment Rate, Greater Santiago, June 1957- June 1996*



Source: Employment Survey, University of Chile.

*Income Inequality.* Another important labor market characteristic has been the increase in inequality since the 1973 reforms, with wage gains favoring university-educated workers. For example, the earnings ratio of workers with completed university education compared with incomplete secondary education nearly doubled from 3.85 in 1957-1963 to 6.72 in 1987-1990 (Larrañaga, 1999). Greater relative demand for skilled workers, defined as workers with university studies, is typically given as an explanation of widening wage dispersion (Robbins, 1994; Bravo and Marinovic, 1997). The following chart shows the increase in returns to schooling for university-educated compared with other workers during the forty years.





## **Analytical Perspectives on Wages and Unemployment and the Wage Curve**

Neoclassical labor market analysis attributes high wages as the cause of unemployment since the labor market is kept from clearing. In Chile, wage policies such as the minimum wage or mandatory wage indexation have been blamed for introducing “rigidities” into the labor market (see for example, Edwards and Edwards, 1991). Following this interpretation, the wage indexation policy of the 1970s kept wages from being low enough to bring about a fall in the rate of unemployment, while between 1985 and 1990, wage growth was moderate, allowing the addition of new jobs.

Keynesian analysis on the other hand, argues that low wages hurt aggregate demand which then leads to less output and unemployment, creating a viscous cycle that can only be broken thorough external injections into aggregate demand such as foreign investment, export growth or government spending. External injections can jump-start aggregate demand through the wage and employment increases that accompany the increases in output. Higher real wages therefore do not cause unemployment, but keep it from occurring.

The wages versus unemployment debate is an old debate that shows no sign of abating. Even in early 2001, with unemployment hovering close to 10 percent in Chile, many economists and politicians have cited the minimum wage increases of the 1990s as principal cause of the current high rate of unemployment. We do not intend to resolve this debate through our wage curve analysis. Yet we do endeavor to show how unemployment has affected the level of pay of individual workers controlling for economic cycles. What is interesting about the wage curve is that it looks at how macroeconomic upturns and downturns, manifested through the level of unemployment in the economy, affects a particular worker’s wages. A worker may not have been working in the factory that was shut down, but its closure may have an effect on that

worker's wages. If and how it affects the employed worker's pay will depend on the employer-worker relationship as manifested institutionally through the country's labor laws.

The wage curve finding of a negative relationship between level of unemployment and level of pay contradicts the Harris-Todaro model. Harris and Todaro (1970) argued that the large urban informal sectors that had developed in many African cities were the result of a queuing of workers for higher-paid formal sector jobs, particularly those in the public sector. Under the Harris-Todaro hypothesis, there would be a negative relationship between level of unemployment and level of pay in the *informal* sector—since unemployed workers would queue in this sector—and a positive relationship between the two variables in the *formal* sector, since high wages keep the labor market from clearing.

## **Data and Model**

To estimate the wage curve for Chile, we use data from the University of Chile's employment survey for the 1957-1996 period. Regrettably the data is only for the Greater Santiago area, which means that we are actually estimating a wage curve for Santiago. However, one-third of the country's 15 million population lives in the Greater Santiago area, so the results can be thought of as representative of the country with the understanding that many important primary activities such as agriculture and mining are relatively excluded. The sample also over-represents the importance of manufacturing in the country's economy, since most manufacturing activities are located in the metropolitan region. Because a comparative regional wage curve could not be estimated, it was necessary to have a sufficiently long time horizon. The 37-time period gave us a long enough sample.<sup>3</sup>

---

<sup>3</sup> We were forced to drop 1959, 1963 and 1964 from our sample because these years did not contain information on years of schooling and their inclusion would therefore lead to measurement bias.

Although the data set is quite extensive, it does not include some information that would be useful in obtaining better estimates of the determinants of wages. In a paper by Contreras et. al (1999) the authors showed that inclusion of additional variables to measure school quality and parent's educational level, made possible through an expansion of the University of Chile survey in 1998, reduced the returns to schooling from 13 to 8 percent in that year.<sup>4</sup> Data limitations mean that the wage curve estimates may be biased upwards. However, this does not affect comparisons of wage curves by different groups, since all estimated wage curves suffer from this same data set limitation.

The following model is estimated on the yearly pooled cross-section sample for June of each of year:

$$\ln w_{it} = f(x_{it}, U_t) \quad (1)$$

where  $x$  is a vector of individual or workplace characteristic variables for individual  $i$  at time  $t$ , and  $U$  is the June unemployment rate for Greater Santiago for each year of the sample. Hourly wage data was calculated by dividing monthly income by the number of hours worked per week times 4.2.<sup>5</sup> The nominal wage data were then divided by a corrected inflation index based on Cortázar and Marshall (1980) and Yáñez (1978) to convert from nominal to real wages.

The individual explanatory variables included are a female dummy; experience and its square;<sup>6</sup> dummies for some primary education, completed primary, some secondary, completed secondary, university studies and technical and professional school studies; 9 industry

---

<sup>4</sup> The 1998 data set contained questions that attempted to quantify school "quality." For example, the interviewees were asked whether they had repeated a grade in school, how their grades compared with their peers, and whether they attended a private or public school at each educational level (primary, secondary and university). Since the modification to the survey was not made until 1998, we were unable to benefit from it.

<sup>5</sup> There has been some criticism that Blanchflower and Oswald's wage curve estimates are sensitive to the specification of the dependent variable, i.e., whether wages are hourly, monthly or annual earnings (Card (1995), Kennedy and Borland (2000)). We ran the regression using hourly and monthly earnings and found that this did not affect the unemployment estimate. Moreover, previous studies on the returns to schooling in Chile (Contreras, Bravo and Medrano (1999), Bravo and Marinovic (1998)) converted monthly earnings to hourly wages.

dummies; 6 occupation dummies including self-employed worker; a private sector dummy and a part-time dummy, defined as working less than 30 hours per week. The explanatory variables chosen are similar to the variables used in previous studies estimating the returns to schooling (Bravo and Marinovic, 1997; Contreras et. al, 1999). Table 1 in the appendix gives descriptive information for the variables.

## Results

Our model gives us a coefficient on logged unemployment of -.29, that is significant at the one percent level. All of the other explanatory variables in the model are significant except for the industry dummies for agriculture, construction, manufacturing and transport & communication. (See Table 2 in appendix).

It is likely that the estimated unemployment coefficient is biased upwards because we have not controlled for other factors that can affect aggregate real wage movements such as changes in the national product. We can control for these yearly fixed effects by adding year dummies to our estimated model, although the addition of dummies means we must use disaggregated unemployment rates. Equation (2) uses yearly unemployment rates broken down by industry<sup>7</sup> to control for yearly fixed effects:

$$\ln W_{ist} = \alpha + \beta \ln U_{st} + \gamma X_{ist} + D_s + D_t + \epsilon_{ist} \quad (2)$$

Controlling for yearly fixed effects drastically changes our estimation results. Under equation (2), the wage curve for the whole period as well as before 1974 is positive and significant. However, there does exist a negative and significant unemployment relationship for the 1974-1996 period, when the economy was market rather than state-driven. (See Table 1). This means

---

<sup>6</sup>Experience is calculated as age minus years of schooling minus 6.

that unemployment has had a negative effect on workers' wages since the 1973 economic reforms, an effect that did not exist during ISI. Indeed, workers' wages were positively related to the level of unemployment during ISI. Our finding of a wage curve elasticity of -.08 for the 1974-1996 period is similar to wage curve estimates for the United States and the United Kingdom (Blanchard and Oswald, 1994).<sup>8</sup>

Table 1. *Comparison of Unemployment Coefficients, equations (1) and (2), different time periods*

	<b>Eq. (1a) Aggregate U</b>	<b>Eq. (1b) Sectoral U</b>	<b>Eq. (2) Sectoral U</b>
<b>Whole Period</b>	-.292 (-82.5)**	-.216 (-74.7)**	.034(5.4)**
<b>1957-1973</b>	.012 (1.3)	-.022(-3.4)**	.034(2.9)**
<b>1974-1996</b>	-.248 (-44.4)**	-.231(-44.7)**	-.078(6.8)**

Note: The full regression results for equations 1a and 2 are given in the appendix.

A possible criticism against the model specified in equation (2) is that it includes an explanatory variable, sectoral unemployment, which is defined at a more aggregate level than the dependent variable. Moulton (1986) explains how this may lead to standard errors on the aggregate variable that are biased downwards. In the case of the wage curve relation, this could occur when the earnings of workers during the same year share some common component of variation that is not entirely attributable either to measured characteristics or to the rate of unemployment, causing the error term to be positively correlated between workers in the same year (Kennedy and Borland, 2000).

A solution to this problem is to estimate a "cell means" regression, which averages the earnings and characteristics of the individuals according to groups classified by

---

<sup>7</sup> Agriculture, mining and unclassified industry are dropped from the sample because they are not sufficiently represented.

<sup>8</sup>It is possible that the results are spuriously correlated over time. However, because our data is a panel data set, where there is much greater variation across individuals rather than across time, this was not a problem for our results.

economic sector at time  $t$ . The result is a model with variables defined by industry and year averages:

$$\ln W_{st} = \alpha + \beta \ln U_{st} + \gamma X_{st} + D_s + D_t + \varepsilon_{st} \quad (3)$$

where  $\ln W_{st}$  is the average log wage for all individuals in sector  $s$  at time  $t$ ,  $X_{st}$  are similar averages over all the individuals' characteristics in sector  $s$  at time  $t$ ,  $D_s$  is a dummy for economic sector,  $D_t$  is a time dummy and  $\varepsilon_{st}$  is the error term. In total, we have 256 groups or cells, which include on average 572 individuals. The model is regressed using generalized least squares and gives the following results (See Table 2).

Table 2. *Unemployment Coefficient from Cell-Mean Regression for different time periods*

	Without year dummies	With year dummies
<b>Whole Period</b>	-.215 (-10.9)**	.031 (2.2)*
<b>1957-1973</b>	-.023 (-.07)	.034 (1.4)
<b>1974-1996</b>	-.22 (-7.0)**	-.076 (3.2)**

Note: Table 4 in the appendix gives the full regression results for the cell-mean estimation with year dummies.

Our results from model (3) are similar to model (2) with the exception that the standard errors are much larger under the cell-mean estimation (model 3), lowering our t-statistics. This is precisely what we would expect from the cell mean estimation since the micro-level estimation underestimates standard errors, overstating the precision of the wage curve elasticity (Card, 1995). Comparing model (2) with model (3) with year dummies, we see that both give similar unemployment coefficients, but that for 1957-1973 the unemployment coefficient in model (3) is insignificant. All of the other models give significant t-statistics.

A final check on our estimation is to test for endogeneity. The wage curve assumes that wages are a function of unemployment allowing its treatment as a predetermined, independent variable. Neoclassical labor market analysis treats unemployment as a function of wages and

thus considers wages endogenous. It is therefore important to correct for endogeneity, if present. Durbin-Wu-Hausman endogeneity tests were unable to reject the hypothesis that OLS was a consistent estimator for the two subsample periods, though it did reject the null hypothesis for the sample as a whole. Using lagged unemployment as an instrument, we ran two-stage least squares regressions on each of the sample periods. For the period as a whole the unemployment coefficient increased from .034 to .09; for 1957-1973, the unemployment coefficient was no longer significant; while for 1974-1996, the unemployment coefficient increased from -.08 to -.13. The results are consistent with our previous analyses. During the “market-led” period, unemployment affected wages. More flexible labor laws, especially concerning worker dismissal, meant that workers feared job loss during unemployment and more readily accepted lower wages. In the “state-driven” period, workers were less fearful of unemployment because of the protections inherent in the political-economic system; unemployment therefore did not have the dampening affect on wages in this earlier period, but rather may have been the result of the above-market wages.

Based on our findings, we can conclude that over the forty year period there did not exist a “wage curve” in Chile, but rather a positive relationship between the level of unemployment and the level of pay in the economy. However, since the 1973 economic and labor reforms there does exist a wage curve in Chile of -.08, meaning that a doubling of unemployment leads to a drop in pay of 8 percent. The Chilean wage curve finding for the 1974-1996 period is similar to the findings for the United States and the United Kingdom (Blanchard and Oswald, 1994), Australia (Kennedy and Borland, 2000), and Germany (Baltagi and Blein, 1998). Treating the wage curve as an indicator of labor market flexibility, we conclude that during the past quarter century, the Chilean labor market is as flexible as other western, capitalist economies. This goes

against the contention of Heckman and Pagés (2001), based on an analysis of comparative severance pay systems, that the Chilean labor market is unduly rigid.

The failure to find a wage curve for the 1957-1973 period confirms our initial hypothesis that workers' wages did not become sensitive to the level of unemployment in the economy until the economy shifted from a state-led to a market-driven economy with more flexible labor relations. After 1973, the bargaining power of the workers was reduced and they became less able and less willing to negotiate higher pay in the face of unemployment.

### **Disaggregation by Groups of Workers**

An interesting extension of the wage curve, and one of our primary motivations for undertaking this analysis, is to learn how the level of unemployment has affected the wages of different groups of workers. If unemployment affects groups of workers differently then public policies concerning employment and wages must consider the vulnerability of the different groups. We estimate model (2) using disaggregated samples of certain groups. The fixed effects model is used rather than the cell-mean regression model because some cells have insufficient representation of the group being estimated. For the disaggregated analysis, the unemployment rate used in the regression extends beyond the estimated group. For example, our disaggregated analysis by gender measures the effect of overall sectoral unemployment (of both men and women) on women's level of pay or men's level of pay, depending on the group being estimated.

*Disaggregation by Gender.* Separating the analysis by gender reveals that unemployment shifted from having a highly positive (0.11) effect on women's wages between 1957-1973 to a highly negative and significant effect of unemployment on pay (-0.14) between 1974-1996. Men, on the other hand, had an insignificant wage curve in the first period and a significant, but much smaller wage curve (-0.04) in the second period (See Table 3). The dramatic difference



between the estimated wage curves for men and women during these two periods raises two separate but related questions: (1) why did women's unemployment-pay relationship shift from positive to negative over the two periods and (2) why is the wage curve much stronger for women than men in the second period?

One possible explanation is that women were more hurt by the economic reforms than men. There is some evidence to support this hypothesis. First, women were over-represented in labor-intensive industries such as textiles, apparel and footwear that suffered severe output and employment losses after the reforms were put in place. For example, employment in textiles fell from 48,650 in 1970 to 25,550 in 1996 (PADI, 2000). The employment losses that arose from the shocks associated with the reforms meant that women came to constitute 75 percent of participation in the government's sub-minimum wage emergency work program, PEM, instituted after the 1975 recession (OIT, 1998).

Comparing women's participation by industry in the first and second periods, 27 percent were employed in manufacturing in the first period, while in the second period, only 20 percent of women worked in manufacturing. Manufacturing is the economic sector with the greatest unionization rate; a shift from manufacturing to service employment typically means a decline in unionization and lessened bargaining power. At the same time, temporary employment in manufacturing is more common for women than men. In 1998, for example, 73 percent of women had permanent contracts compared with 82 percent of men (Casen, 1998). The 1979 labor code allowed temporary work and prohibited temporary workers from forming unions.

For the period as a whole, women made-up 36 percent of the economically active population (EAP). The low EAP rate may have encouraged employers to view women's wages as complementary to household income while at the same time treating men's wages as a family

wage. This undoubtedly is a cause of the -0.28 coefficient on the female variable in our estimation of model (3). It is also likely that it has led employers to push more of the burden of controlling labor costs on women.

Finally, women have a higher unemployment rate than men—11.7 percent for women in 1998 compared with 9.1 percent for men. As many jobs are segregated by sex, the historically higher level of women's unemployment means that women face a constantly greater threat of unemployment than men that hurts their bargaining position.

Table 3. *Unemployment coefficients for disaggregated groups of individuals, 1957-1996*

	1957-1973			1974-1996		
	Coefficient	T-statistic	Obs.	Coefficient	T-statistic	Obs.
<i>Gender</i>						
Female	0.11	5.0	20,200	-0.14	-7.9	32,355
Male	0.00	-0.1	36,477	-0.04	-2.5	57,469
<i>Education</i>						
University	-0.02	-0.5	4,256	-0.08	-2.4	13,207
No University	0.03	2.6	52,421	-0.11	-8.2	76,617
<i>Institution</i>						
Public	0.03	1.3	9,750	-0.11	-3.6	13,293
Private	0.04	2.6	46,927	-0.08	-6.2	76,531
<i>Sector</i>						
Formal	0.05	3.6	45,360	-0.08	-6.6	71,947
Informal	0.01	0.4	11,317	-0.03	-0.8	17,877

Note: All regressions include industry and year fixed effects. Chow tests were performed on each of the pairs of regressions, all were significantly different. We were unable to estimate effects by industry because we could not control for yearly fixed effects.

Comparing our findings with those of other countries, in the United States and the United Kingdom, women did not have a greater wage curve than men (Blanchflower and Oswald, 1994), but in Australia, women have a wage curve of -0.13 compared with -0.06 for men, and an aggregate wage curve of -0.08 (Kennedy and Borland, 2000). Further research into segregation of womens' work by occupation and industry over time is needed to more fully understand the large gender wage curve discrepancy in Chile.

*University versus Non-University Educated Workers.* As mentioned previously we are interested in learning whether unemployment affected skilled (defined as workers with university studies) versus unskilled (or non-university educated) workers to a lesser degree and if so, whether unemployment contributed to rising income inequality between these two groups during the 1974-1996 period. This is a relevant question given that the rise in wage inequality after 1973 is typically attributed to a scarcity of university-educated workers in the country. For instance, Bravo and Marinovic (1997) estimate that observable explanatory variables, particularly the level of schooling, explain 72 percent of the increase in inequality during the 1974-1987 period.

We find a statistically different and smaller wage curve for university educated (-0.08) compared with non-university educated workers (-.11), meaning that the level of pay of university-educated workers fell less from unemployment than did the level of pay of non-university-educated workers. Blanchflower and Oswald (1994), in their analyses of the United States, Canada and the United Kingdom, also find that the wage elasticity is greater for less educated workers. All three countries have experienced rising income inequality between skilled and unskilled workers. Kennedy and Borland (2000), studying Australia, test the sensitivity of education as well, but find that the wage curve is not sensitive to the level of educational attainment. Interestingly, Australia has not experienced the same growth in income inequality between skilled and unskilled workers as has Chile, the United States, Canada or the U.K. (Blau and Khan, 1996).

Usually in comparisons of wage inequality among workers, unemployed workers are not considered to have an effect on the pay on those working. By confirming that unemployment affects pay, we can extend the causes of income inequality to other variables besides just own-worker characteristics. For example, the hypothesis that deindustrialization in the 1970s and

early 1980s in Chile worsened wage inequality in the country can now be given some support, since deindustrialization caused the level of unemployment to increase, which had a greater affect on decreasing the wages of the unskilled (non-university educated) thereby contributing to income inequality. A university education, therefore, has a double positive effect: it increases your level of pay relative to years of schooling and it protects your wages from falling as much during periods of high unemployment.

*Public versus private sector.* Generally public sector wages are thought to have greater wage rigidity than private sector wages since the public sector is typically more centralized in the way it decides pay. Our wage curve results do not confirm this prediction, a result most likely due to the public sector labor market policies of the reform period. Disaggregation by public and private sector reveals a positive wage curve relationship for both groups in the first period, though the relationship is insignificant for public sector workers. In the second period, both groups have significant negative wage curves yet the wage elasticity is greater for public sector ( $-0.11$ ) as compared with private sector workers ( $-0.08$ ). In the post-1973 period, public sector workers received the brunt of adjustment to the new economic model. Nearly 100,000 central government jobs were cut between 1973 and 1976 as a result of privatization and the government's policy of cutting the deficit as a means to control inflation (Edwards and Edwards, 1991). A further lowering of overall public sector pay stemmed from the adoption of two workfare programs (PEM and POJH) that provided sub-minimum wage pay to displaced workers in exchange for street cleaning and other similar activities. By 1983, 10 percent of the labor force was employed in the workfare programs; the classification of these workers as public sector worker served to lower the average pay of public sector workers during a period of high unemployment. Finally, although Chilean law bans public sector workers from negotiating

collectively, in practice there has been collective public sector negotiation with the government over wage increases. This practice was suspended during the military government, serving to keep public sector worker wages down throughout the 17-year military regime.

*Formal versus Informal Sector.* We ran the regression solely on self-employed workers to test how unemployment affected the level of wages of informal sector workers.<sup>9</sup> If the informal sector acts as a buffer during times of high unemployment, then we would expect the unemployment elasticity to be more negative for self-employed workers rather than salaried workers, since workers joining the informal sector after a job loss in another sector cause the level of pay for all informal sector workers to fall because of increased competition. Instead, we found a small and insignificant wage curve for informal sector workers in the two periods. This finding confirms the study by Mizala and Romaguera (1996) that concluded that the informal sector in Chile does not act as a buffer during economic recessions. One possible reason for the failure of the sector to act as a buffer is that “easy entrance” is not as easy as one may think.<sup>10</sup>

Our finding of a positive unemployment-pay relationship in the Chilean informal sector means that we can reject the Harris-Todaro model for Chile since there does not exist either a negative unemployment-pay relationship in the informal sector or a positive unemployment-pay relationship in the formal sector, as the Harris-Todaro model predicts.

## Conclusion

---

<sup>9</sup> The category of self-employed workers also includes technical and professional workers, who according to ILO definition, are not informal sector workers. Our data shows that only 2.9 percent of self-employed workers in the first period and 3.4 percent in the second period are technical and professional workers. Re-estimating the analysis excluding these workers did not change our results. We also ran the model on the occupational code for street vendors (there were 2,717 in the sample), this gave us an insignificant wage curve, yet the model was not very robust.

<sup>10</sup>For example, a study on the informal transport sector in Santiago (De la Fuente, et. al., 1990) found the following behavior among highly competitive taxi drivers towards new entrants: “taxi drivers will resort to efficient forms of

Our analysis showed that since the 1973 reforms, a doubling of unemployment leads, on average, to an 8 percent reduction in an individual worker's level of pay. Prior to 1974, during the period of import-substituting industrialization and state-led growth, a positive relationship existed between unemployment and pay. Our finding of a shift in the unemployment-pay relationship from positive to negative over the two periods is consistent with the economic and labor reforms undertaken in the country. Since the reforms the degree of flexibility compares with that of other western, capitalist economies.

Unfortunately some groups of workers have felt the brunt of the adjustment more than others. In particular, women's wages fall three times as much as men's wages when the economy-wide level of unemployment doubles. The unequal burden of adjustment may be associated with the destruction of sex-segregated industries such as apparel and textiles following trade liberalization and the flexibilization of employment contracts that allowed for non-unionized temporary work. Public policies such as employment programs for female heads of households and job training could be designed to strengthen women's attachment to the labor market. Also, labor market reforms concerning temporary work may be needed.

Unemployment also has a more negative effect on non-university educated workers and public sector workers. Increases in the number of workers with university studies over time may help to relieve this burden over time. Public sector workers were most likely hurt by the reforms and the creation of government work relief programs after the 1975 and 1982 recessions. Finally, informal sector workers do not appear to have a wage curve, contradicting the Harris-Todaro model and the notion that the informal sector acts as a buffer during difficult times.

---

social control and pressure such as 'popping' the tires of the new drivers, bumping them, robbing accessories, etc." (p. 40).

## References

- Blanchflower, David and Andrew Oswald (1994) *The Wage Curve*, Cambridge, MA: MIT Press.
- Blanchflower, David and Andrew Oswald (1995) "An Introduction to the Wage Curve," *Journal of Economic Perspectives* 9(3):153-167.
- Blau, Francine and Lawrence Kahn (1996) "Wage Inequality: International Comparison of its sources," paper presented at the AEI conference on Understanding Economic Inequality, March 18.
- Bravo, David and Alejandra Marinovic (1997) "Wage Inequality in Chile: 40 Years of Evidence," mimeo, Universidad de Chile.
- Card, David (1995) "The Wage Curve: A Review," *Journal of Economic Literature* 33:785-799.
- CASEN (1998) *Encuesta de Hogares*.
- Contreras, Dante, David Bravo and Patricia Medrano (1999) "Measurement error, unobservables and skill bias in estimating the return to education in Chile," mimeo, Universidad de Chile.
- Corbo, Vittorio and José Miguel Sánchez (1984) "Impact on Firms of the Liberalization and Stabilization Policies in Chile: Some Case Studies," PUC-Chile, Documento de Trabajo 91, May.
- Cortázar, Rene y J. Marshall (1980), "Índice de Precios al Consumidor en Chile, 1970-1978," Colección Estudios CIEPLAN 4 (Noviembre) : 159-201.
- De la Puente, Patricio, et. al (1990) "La informalidad en el transporte urbano de Santiago," documento de trabajo no. 9, Facultad de Ciencias Sociales, Universidad de Chile, marzo.
- Edwards, Sebastian and Alejandra Cox Edwards (1991) *Monetarism and Liberalization: The Chilean Experiment*, Chicago: University of Chicago Press.
- Harris, John and Michael Todaro (1970) "Migration, Unemployment and Development: A Two Sector Analysis," *American Economic Review* 60:126-142.
- Heckman, James and Carmen Pagés (2001) "Regulation and Deregulation: Lessons from Latin American Labor Markets," *Economía*.
- Kennedy, Steven and Jeff Borland (2000) "A Wage Curve for Australia?," *Oxford Economic Papers* 52 (4): 774-803.
- Larrañaga J., Osvaldo (1999) "Distribución de ingresos y crecimiento económico en Chile," Serie Reformas Económicas 35, Santiago: CEPAL.

- Meller, Patricio (1992) "Labor Reforms," in Oscar Muñoz, ed., *Economic Reforms in Chile*, Occasional Paper, Washington, D.C: Inter-American Development Bank.
- Mizala, Alejandra and Pilar Romaguera (1996) "Flexibilidad del mercado del trabajo: El impacto del ajuste y los requisitos del crecimiento económico," *Colección Estudios CIEPLAN* 43: 15-48.
- Moulton, Brian (1986) "Random Group Effects and the Precision of Regression Estimates," *Journal of Econometrics* 32: 385-397.
- OIT (2000) *Panorama Laboral 1999*, Santiago: OIT.
- Robbins, Donald (1994) "Worsening Relative Wage Dispersion in Chile during Trade Liberalization, and its Causes: Is Supply at Fault?" Development Discussion Paper no. 484, Cambridge, MA: Harvard Institute of International Development.
- Stallings, Barbara (1978) *Class Conflict and Economic Development in Chile, 1958-1973*, Stanford: Stanford University Press.
- Yáñez, José (1978), "Una Corrección del Índice de Precios al Consumidor durante el período 1971-1973," *Comentarios Sobre la Situación Económica*, Universidad de Chile.



Table 1. Descriptive Statistics of Explanatory Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
lhwage	149971	6.329693	.9693176	1.637097	11.28099
lunemp	149971	2.15805	.4826135	1.131402	3.144152
female	149971	.3563089	.4789096	0	1
exp	149971	20.6207	13.78827	0	84
exp2	149971	615.3285	733.1435	0	7056
agric	149971	.0100419	.0997054	0	1
mining	149971	.0046209	.0678201	0	1
manuf	149971	.2624441	.4399642	0	1
constr	149971	.0691067	.2536363	0	1
trade	149971	.1750072	.3799745	0	1
govfin	149971	.110208	.3131499	0	1
perserv	149971	.1668389	.3728332	0	1
socserv	149971	.1252375	.3309892	0	1
trcobs	149971	.0739276	.2616539	0	1
employer	149971	.0267718	.1614165	0	1
ownacct	149971	.1968447	.3976153	0	1
employee	149971	.3575558	.4792819	0	1
worker	149971	.3097332	.4623851	0	1
maid	149971	.0935781	.2912418	0	1
FFAA	149971	.0155163	.1235948	0	1
private	149971	.8390355	.3674994	0	1
noschool	149971	.0256983	.1582342	0	1
priminc	149971	.3505544	.4771452	0	1
primcom	149971	.0768549	.2663619	0	1
secinc	149971	.150249	.3573166	0	1
seccom	149971	.1830554	.3867132	0	1
univ	149971	.122357	.3276988	0	1
techsch	149971	.0912243	.2879288	0	1
partime	149971	.0770149	.266616	0	1

Notes: Control variables are male, no schooling, unclassified industry, employee, public sector, full-time worker.

Part-time is defined as working less than 30 hours week. University and technical/professional school studies are post-secondary studies, but does not necessarily mean that the degree was completed.

Table 2. Results from Regression on Equation 1 -- No Yearly Controls

	(1)	(2)	(3)
	<u>1957-1996</u>	<u>1957-1973</u>	<u>1974-1996</u>
lunemp	-0.292 (82.54) **	0.012 (1.34)	-0.248 (44.43) **
female	-0.280 (67.30) **	-0.350 (54.13) **	-0.232 (43.82) **
exp	0.037 (90.62) **	0.039 (61.72) **	0.036 (67.42) **
exp2	-0.001 (68.86) **	-0.001 (49.68) **	0.000 (49.26) **
priminc	0.227 (20.34) **	0.232 (16.74) **	0.183 (10.37) **
primcom	0.396 (31.56) **	0.436 (24.32) **	0.329 (17.55) **
secinc	0.529 (44.17) **	0.623 (39.28) **	0.440 (23.92) **
seccom	0.825 (68.18) **	1.007 (59.71) **	0.766 (41.54) **
univ	1.569 (121.88) **	1.567 (86.94) **	1.579 (81.89) **
techsch	0.935 (72.26) **	0.970 (54.93) **	0.908 (46.63) **
agric	0.023 (0.60)	0.178 (3.47) **	-0.093 (1.77)
mining	0.308 (7.38) **	0.331 (5.53) **	0.307 (5.37) **
manuf	-0.033 (0.97)	0.087 (1.93)	-0.113 (2.34) *
constr	-0.006 (0.17)	0.130 (2.84) **	-0.085 (1.75)
trade	-0.141 (4.19) **	0.018 (0.40)	-0.235 (4.86) **
govfin	0.079 (2.33) *	0.190 (4.18) **	0.013 (0.26)
perserv	-0.242 (7.10) **	-0.140 (3.06) **	-0.300 (6.14) **
socserv	-0.075 (2.23) *	0.077 (1.71)	-0.158 (3.26) **
trcobs	-0.031 (0.92)	0.113 (2.47) *	-0.112 (2.31) *
employer	0.744 (67.08) **	0.620 (35.00) **	0.811 (58.51) **
ownacct	-0.257 (45.41) **	-0.234 (26.33) **	-0.238 (33.13) **
worker	-0.446 (85.33) **	-0.392 (46.58) **	-0.425 (63.71) **
maid	-0.787 (79.49) **	-0.956 (64.65) **	-0.592 (45.32) **
FFAA	-0.085 (5.70) **	-0.262 (10.36) **	0.080 (4.38) **
private	0.072 (12.14) **	-0.030 (3.22) **	0.186 (24.04) **
partime	0.442	0.527	0.391

	(66.77)**	(49.65)**	(47.35)**	
Constant	6.217	5.654	6.078	
	(169.65)**	(110.92)**	(111.67)**	
Observations		149971	58602	91369
R-squared	0.54	0.61	0.52	

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

Control variables are male; no schooling; unclassified sector; employee; public sector and full time.

Table 3. Results from Regression on Equation Two -- Fixed Effects Model

	(1)	(2)	(3)
	<u>1957-1996</u>	<u>1957-1973</u>	<u>1974-1996</u>
lsecun	0.034 (5.38) **	0.034 (2.92) **	-0.078 (6.81) **
female	-0.281 (69.52) **	-0.352 (55.48) **	-0.237 (45.83) **
exp	0.038 (94.19) **	0.040 (63.44) **	0.036 (69.42) **
exp2	-0.001 (71.21) **	-0.001 (51.57) **	0.000 (50.82) **
priminc	0.220 (20.23) **	0.202 (15.00) **	0.169 (9.79) **
primcom	0.424 (34.42) **	0.396 (22.64) **	0.324 (17.59) **
secinc	0.547 (46.48) **	0.579 (37.39) **	0.431 (23.83) **
seccom	0.855 (71.24) **	0.945 (57.16) **	0.754 (41.50) **
univ	1.605 (125.46) **	1.510 (84.73) **	1.569 (82.56) **
techsch	0.954 (74.58) **	0.896 (51.72) **	0.897 (46.84) **
manuf	-0.016 (2.13) *	-0.028 (2.47) *	0.024 (2.48) *
constr	-0.018 (1.70)	-0.033 (1.71)	0.093 (5.97) **
trade	-0.113 (15.00) **	-0.088 (6.94) **	-0.132 (14.09) **
govfin	0.132 (14.79) **	0.128 (6.27) **	0.112 (10.71) **
perserv	-0.208 (23.20) **	-0.239 (16.04) **	-0.185 (16.20) **
socserv	-0.040 (4.71) **	-0.034 (2.57) *	-0.073 (6.59) **
employer	0.748 (68.09) **	0.644 (36.37) **	0.814 (59.33) **
ownacct	-0.245 (44.57) **	-0.226 (25.94) **	-0.232 (33.32) **
worker	-0.424 (82.58) **	-0.391 (47.37) **	-0.415 (63.60) **
maid	-0.773 (80.63) **	-0.961 (66.90) **	-0.589 (46.38) **
FFAA	-0.085 (5.89) **	-0.259 (10.50) **	0.055 (3.11) **
private	0.090 (15.13) **	-0.026 (2.77) **	0.183 (23.88) **
partime	0.441 (68.37) **	0.505 (48.15) **	0.402 (50.01) **
D58	-0.016 (0.98)	-0.005 (0.27)	
D60	0.028 (1.66)	0.033 (1.91)	

D61	0.190 (11.97) **	0.199 (12.74) **	
D62	0.244 (15.88) **	0.252 (17.05) **	
D65	0.181 (12.19) **	0.177 (12.11) **	
D66	0.327 (22.16) **	0.321 (22.59) **	
D67	0.453 (31.09) **	0.446 (31.82) **	
D68	0.441 (29.80) **	0.438 (30.71) **	
D69	0.431 (28.50) **	0.422 (28.64) **	
D70	0.310 (20.80) **	0.302 (20.97) **	
D71	0.448 (30.85) **	0.440 (31.14) **	
D72	0.438 (28.60) **	0.425 (25.89) **	
D73	0.042 (2.83) **	0.026 (1.65)	
D74	-0.067 (4.15) **		
D75	-0.303 (18.18) **	-0.186 (11.90) **	
D76	-0.223 (13.18) **	-0.103 (6.44) **	
D77	-0.102 (6.32) **	-0.010 (0.64)	
D78	-0.004 (0.26)	0.082 (5.59) **	
D79	0.096 (6.07) **	0.179 (12.29) **	
D80	0.074 (4.61) **	0.152 (10.16) **	
D81	0.222 (14.32) **	0.276 (18.79) **	
D82	0.223 (12.15) **	0.383 (20.80) **	
D83	-0.104 (5.57) **	0.069 (3.69) **	
D84	-0.168 (9.40) **	-0.017 (1.01)	
D85	-0.299 (17.30) **	-0.162 (9.78) **	
D86	-0.359 (20.96) **	-0.231 (14.21) **	
D87	-0.319 (19.13) **	-0.210 (13.43) **	
D88	-0.260 (16.12) **	-0.171 (11.37) **	
D89	-0.106 (6.64) **	-0.035 (2.32) *	
D90	-0.059 (3.70) **	0.012 (0.78)	
D91	-0.062	-0.007	

	(3.95)**		(0.45)	
D92	0.055		0.074	
	(3.57)**		(4.79)**	
D93	0.142		0.169	
	(9.22)**		(11.12)**	
D94	0.210		0.224	
	(13.64)**		(14.19)**	
D95	0.282		0.307	
	(18.21)**		(19.96)**	
D96	0.308		0.351	
	(19.72)**		(23.34)**	
Constant	5.365	5.506	5.484	
	(270.01)**	(190.77)**	(172.89)**	
Observations		146501	56677	89824
R-squared	0.57	0.63	0.55	

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

Control variables are male; no schooling; transport, communication & basic services; employee; public sector and full time; D57 for the first two samples; D74 for the 1974-1996 sample.

Table 4. Results from Regression on Equation Three -- Cell-Mean Estimation

	(1)	(2)	(3)
	<u>1957-1996</u>	<u>1957-1973</u>	<u>1974-1996</u>
lsecun	0.031 (2.20) *	0.034 (1.44)	-0.076 (3.20) **
female	-0.276 (68.72) **	-0.351 (55.52) **	-0.235 (45.66) **
exp	0.037 (93.62) **	0.040 (63.49) **	0.036 (69.11) **
exp2	-0.001 (71.37) **	-0.001 (51.62) **	0.000 (50.72) **
priminc	0.196 (18.14) **	0.197 (14.61) **	0.164 (9.50) **
primcom	0.375 (30.60) **	0.388 (22.23) **	0.314 (17.06) **
secinc	0.502 (42.87) **	0.570 (36.88) **	0.421 (23.30) **
seccom	0.821 (68.76) **	0.941 (57.06) **	0.745 (41.06) **
univ	1.576 (124.00) **	1.507 (84.82) **	1.559 (82.17) **
techsch	0.918 (72.18) **	0.891 (51.56) **	0.888 (46.44) **
manuf	-0.024 (1.53)	-0.035 (1.62)	0.025 (1.34)
constr	-0.025 (1.14)	-0.038 (1.10)	0.090 (3.07) **
trade	-0.119 (7.62) **	-0.094 (4.06) **	-0.131 (7.44) **
govfin	0.134 (7.40) **	0.122 (3.24) **	0.113 (6.04) **
perserv	-0.203 (12.31) **	-0.254 (9.94) **	-0.179 (9.54) **
socserv	-0.038 (2.29) *	-0.031 (1.29)	-0.070 (3.50) **
employer	0.753 (69.07) **	0.643 (36.40) **	0.816 (59.55) **
ownacct	-0.244 (44.70) **	-0.228 (26.24) **	-0.232 (33.33) **
worker	-0.425 (83.18) **	-0.392 (47.66) **	-0.415 (63.66) **
maid	-0.777 (81.44) **	-0.957 (66.65) **	-0.594 (46.83) **
FFAA	-0.074 (5.13) **	-0.269 (10.74) **	0.061 (3.42) **
private	0.103 (17.10) **	-0.026 (2.77) **	0.185 (23.84) **
partime	0.435 (67.87) **	0.503 (48.08) **	0.401 (49.87) **
D58	-0.018 (0.45)	-0.006 (0.17)	
D60	0.027 (0.68)	0.027 (0.77)	
D61	0.190	0.194	

	(5.08) **	(5.96) **	
D62	0.246	0.248	
	(6.66) **	(7.87) **	
D65	0.163	0.161	
	(4.44) **	(5.03) **	
D66	0.308	0.302	
	(8.42) **	(9.69) **	
D67	0.441	0.436	
	(12.09) **	(14.06) **	
D68	0.420	0.416	
	(11.46) **	(13.30) **	
D69	0.409	0.400	
	(11.07) **	(12.53) **	
D70	0.295	0.287	
	(8.04) **	(9.17) **	
D71	0.427	0.421	
	(11.73) **	(13.50) **	
D72	0.412	0.404	
	(10.94) **	(11.44) **	
D73	0.005	-0.009	
	(0.13)	(0.26)	
D74	-0.109		
	(2.88) **		
D75	-0.341	-0.186	
	(8.62) **	(5.69) **	
D76	-0.251	-0.095	
	(6.28) **	(2.86) **	
D77	-0.138	-0.003	
	(3.54) **	(0.11)	
D78	-0.039	0.093	
	(1.01)	(2.92) **	
D79	0.061	0.184	
	(1.58)	(5.86) **	
D80	0.040	0.156	
	(1.05)	(4.95) **	
D81	0.186	0.278	
	(4.98) **	(8.91) **	
D82	0.186	0.383	
	(4.36) **	(10.07) **	
D83	-0.133	0.074	
	(3.07) **	(1.91)	
D84	-0.208	-0.019	
	(4.97) **	(0.52)	
D85	-0.330	-0.159	
	(8.12) **	(4.62) **	
D86	-0.390	-0.223	
	(9.62) **	(6.53) **	
D87	-0.349	-0.201	
	(8.79) **	(6.09) **	
D88	-0.300	-0.167	
	(7.73) **	(5.22) **	
D89	-0.132	-0.023	
	(3.46) **	(0.75)	
D90	-0.088	0.020	
	(2.32) *	(0.64)	
D91	-0.090	0.005	
	(2.39) *	(0.15)	



D92	0.028 (0.77)		0.081 (2.49) *
D93	0.117 (3.18) **		0.181 (5.64) **
D94	0.185 (5.04) **		0.235 (7.13) **
D95	0.257 (6.98) **		0.317 (9.85) **
D96	0.285 (7.65) **		0.363 (11.57) **
Constant	5.431 (146.34) **	5.535 (113.37) **	5.483 (100.07) **
Observations	146501	56677	89824
No. of cells	256	95	161

Absolute value of z-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

Control variables are male; no schooling; transport, communication & basic services; employee; public sector and full time; D57 for the first two samples; D74 for the 1974-1996 sample.