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RETURNS TO EDUCATION IN GREATER BUENOS AIRES 1986-1993:  
FROM HYPERINFLATION TO STABILIZATION.

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## RESUMEN

### **Retornos a la Educación en el Gran Buenos Aires: Desde la Hiperinflación hasta la Estabilización y más allá.**

Carola Pessino

Este trabajo estima los retornos a la educación en el Gran Buenos Aires desde 1986 hasta 1993. Se hace uso de la ecuación de salarios de Mincer para hombres entre 25 y 54 años de edad que estaban trabajando durante el período de la Encuesta. Los datos provienen de cintas de la Encuesta Permanente de Hogares, que constan de aproximadamente 15,000 individuos y las submuestras de alrededor de 2000 hombres.

Durante el período analizado se distinguen claramente dos subperíodos. El primero, de alta inflación culminando con la hiperinflación de mediados de 1989, y el segundo que comienza en 1990 con la estabilización inflacionaria y el comienzo de un proceso de ajuste estructural, basado en el Plan de Convertibilidad, privatizaciones masivas y apertura gradual de la economía.

Se analiza el efecto de estos cambios macroeconómicos y estructurales sobre los retornos a los distintos tipos de inversión en capital humano. Para el primer subperíodo, se extienden los resultados de Pessino (1993) quien encontró un incremento en la tasa de retorno a la educación, especialmente a los niveles inferiores, un incremento al retorno a la inversión en capital humano específico y a los trabajadores por cuenta propia con respecto a los asalariados. Dichos cambios son compatibles con la hipótesis que la educación no sólo sirve para incrementos en productividad, sino también para manejarse mejor contra la inflación en términos de contratos salariales indexados. El análisis del período 1986-1990 confirma la hipótesis que estos retornos subieron con la hiperinflación y retornaron luego a sus antiguos niveles cuando la inflación fue moderada. Para el segundo subperíodo, donde se produce el cambio de régimen, la hipótesis es que dicho cambio produjo ventajas para el cambio tecnológico sesgado hacia técnicas capital físico intensivas, lo que propicia un aumento en la demanda de trabajo calificado sobre

la de trabajo no calificado. Entonces, se espera un incremento en la tasa de retorno a la educación, especialmente para niveles avanzados de educación, un incremento en la tasa de retorno a la inversión general, y una caída en la tasa de retorno a la inversión en capital humano específico (debido a la obsolescencia producida por el cambio de régimen). El análisis empírico confirma estas hipótesis.

Por último, el cambio en la tasa de retorno a la educación implica un cambio en la distribución personal del ingreso. Si dicha tasa de retorno aumenta, se espera un empeoramiento en la distribución del ingreso. En este trabajo, se muestra que la hiperinflación produjo un empeoramiento que se revierte cuando se lleva a cabo la estabilización en 1990. A partir de 1991-1992 cuando se empieza a observar los incrementos nuevamente en la tasa de retorno a la educación la distribución del ingreso comienza nuevamente a empeorar, pero nunca llegando a los niveles de 1989. Sin embargo, el período hiperinflacionario sí significa una situación de menor bienestar, ya que implica no sólo mayor varianza, sino menor ingreso promedio, pero en cambio, en el período 1992-1993 si bien la varianza de ingresos aumenta, también lo hace el promedio, siendo el cambio en el bienestar ambiguo.

## 1. Introduction<sup>1</sup>

Countries that underwent severe process of structural adjustment have focused their policies on macroeconomic considerations on questions such as how to cut high inflation, how to reduce government expenditure and how to pay international debt. The missing consideration has been in the majority of countries, the effects of stabilization and perhaps structural change on the structure of wages and income distribution. In fact, after the initial adjustment has taken place, the microeconomic considerations begin to enter into the agenda of the policy makers. The lack of consideration of the microeconomic issues can interfere with the successful completion of the adjustment. Moreover, the reinsertion of the country in the international community requires a motivated and well trained labor force. This requirement, however, has been severely harmed by the process of adjustment.

During the past two decades, several Latin American countries underwent severe inflationary experiences and periods of real exchange rate under and overvaluations. Notably, most of these countries underwent repeated efforts of stabilization but only a subset of them succeeded. While there is increasing interest in the Social Sciences about the reasons why some adjustment programs succeeded and others failed, there are very few studies analyzing the **consequences** of those programs on the well-being of the poor and on income distribution in general. Moreover, the impact of structural adjustment is usually analyzed comparing to the socioeconomic situation just before the crisis. Few studies have analyzed the impact of macroeconomic instability previous to the adjustment program. If a program succeeds in bringing about macroeconomic stability, part of the gains of the adjustment might be severely understated when adopting a short-term or partial equilibrium perspective.

There are several methodological problems in analyzing either the consequences of macroeconomic shocks or stabilization programs on income distribution. First, it involves evaluating a

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<sup>1</sup> I gratefully acknowledge the generous support of the Ford Foundation, GRANT # 935-0416. Part of this work was done while the author was teaching at Duke University as Assistant Professor and later at CEMA, Argentina. Luis Andrés provided efficient assistanship. INDEC kindly provided the data used for this research.

counterfactual situation within an economywide framework with complicated concurrent and lagged interactions. It is extremely difficult to identify whether a particular outcome is a consequence of a shock, policy change or lagged effect. Second, without household surveys the analyst is forced to rely on approximate indicators of income by socioeconomic groups.

Pessino (1993) analyzed the effect of hyperinflation on wage profiles; using two cross-sections of microdata before and after the hyperinflation of 1989. It was found that returns to education increased significantly, as well as returns to tenure and self-employment.

In this paper, the results of Pessino (1993) are confronted to a longer period where microdata is available: 1986-1993. There are two well differentiated sub-periods; first, from 1986 until 1990 where big inflation ends with the hyperinflation of 1989, and 1990 until 1993 where the benefits of stabilization together with massive privatizations and structural reform is implemented. The first subperiod, without any major structural reform on the real side of the economy is an example of a temporary, but long lasting, monetary shock, that as studied in Pessino (1993) was expected to cause an increase in the return to different variants of human capital investments. The advantage of considering several time periods to analyze the effects of hyperinflation on wage profiles is that they allow the researcher to confirm or reject the findings of looking at just two data points. The drawback is caused by the same reason that produced the advantage; when looking at several time periods, the rest of the macroeconomic or institutional variables might be changing at the same time. The question is if the observed increases in rates of return to education, tenure, self-employment and their disaggregation over sectors and occupations continue to hold in a systematic manner when one considers the evolution of inflation over time. It is expected that as soon as stability in terms of inflation returns, the returns to human capital will go back to previous levels.

The second subperiod analyzed begins in 1990 and continues, with the latest available data in 1993. It is characterized by decreasing inflation, and mainly structural change brought about by the

Convertibility Plan of 1991, the ensuing privatizations of state-owned enterprises, opening of the economy, and an overall more free-market oriented policies. The observed results, have been, not only low inflation, but high GDP growth of more than 5% each year, massive entrances of foreign capital resulting in a lower real exchange rate. The implicit increase in dollar wages brought about by the low real exchange rate, was aggravated, when considering the relative price of capital goods versus labor, since wages continued to be taxed at a high rate, while investments in physical capital become cheaper through basically zero tariffs to the imports of intermediate capital goods. When one considers labor in the aggregate, this increase in its relative price<sup>2</sup>, should imply a decrease in labor relative to physical capital demand. However, when one considers the heterogeneity of labor in terms of skills or human capital, a higher demand for physical capital usually entails a higher demand for "skilled" labor relative to "unskilled" labor. If the relative supply of skilled versus unskilled labor does not change or increases less than the increase in demand, relative wages (of skilled vs. unskilled labor) will tend to increase, and hence, to increase the rate of return to education.

The paper is organized as follows. Section 2 provides a simple analytical framework based on the Mincerian wage equation and its shifting under non-stationary conditions. Section 3 extends the results of the two cross-sections of 1987 and 1989 in Pessino (1993) to the whole period 1986-1993. It confirms the findings that the hyperinflation event was the main cause in the shifting of wage profiles since after 1990, with the beginning of a period of very low inflation, the profiles return to 1986 levels. After 1990, the rate of return to education increases continuously, especially regarding the "college premium"; confirming that structural change brought about a higher demand for human capital, in particular for college educated individuals. Section 3 analyzes the impact of these changes in returns to human capital investment on income distribution, showing that it also returned to previous levels after

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<sup>2</sup> According to data from the Secretaría de Programación Económica, this relative price increased in 40% from 1990 until 1993.

the hyperinflation event and begins to deteriorate at the end of the period considered. Section 4 concludes the analysis.

## 2. Simple Analytical Framework

As suggested by human capital theory, the natural logarithm of wages or earnings is in its most basic form a function of schooling and experience in the labor market (Mincer (1974)):

$$(1) \quad \ln w_i = \ln w_0 + \beta_1 s_i + \beta_2 X_i + \beta_3 X_i^2 + u_i$$

where  $\ln w_i$  is the natural log of earnings or wages for the  $i$ th individual,  $s_i$  is a measure of schooling or educational attainment,  $X_i$  indexes the human capital stock of general experience, and  $u_i$  is a random disturbance term (usually assumed to be normally distributed with mean zero and constant variance) reflecting unobserved (to the econometrician) ability traits and the inherent randomness of earnings statistics.

There are at least two interpretations of estimated coefficients of equation (1); the first uses the accounting identity of equality between lifetime costs of investment (foregone earnings) to its return, the second interpretation is as a hedonic wage function where heterogeneous workers get matched to firms with different attributes. Under the first interpretation of equation (1),  $\ln w_0$  is the level of the logarithm of earnings in the absence of schooling and  $\beta_1$  is the average rate of return to schooling. The coefficients  $\beta_2$  and  $\beta_3$  measure the assumed quadratic returns to experience. Human capital theory suggests that  $\beta_2 > 0$  and  $\beta_3 < 0$ .

When different types of workers are not perfect substitutes in the production function, the parameters of equation (1) are no longer time invariant in the face of aggregate shocks. Differences in



the activities of different type of workers and in the demand for those activities influence the shape of that profile. Since, under the present scenario, the cross-sections analyzed are enough close that the mean level of the independent variables did not change, all the shift in the profile is attributed to changes in slope coefficients. Pessino (1993) explained, using wage contracting theory, why it was expected that during the high inflation periods, returns to formal education, specific experience and self-employment increased. It was based on the ability of more educated workers, especially those that completed primary and secondary schooling to deal with real wage indexation.

To study the effects of the post-inflationary period, with the beginning of a structural adjustment program, that implied a change towards more efficiency, technological change, and also lower relative price of physical capital investments, that produces an increase in the relative demand of skilled labor versus unskilled labor, we have to study how this change in relative demand affected relative wages.

Relative wages in the economy are derived from changes in both derived demand for labor and supply for each type of skill. Assuming imperfect substitution among labor types, an increase in demand or supply will change the relative wage. Following Welch (1970), Freeman (1979), and assuming a CES production function, we have that:

$$(2) \quad \hat{W} = 1/\sigma(\hat{d} - \hat{s})$$

where  $W$  is the ratio of wages for more skilled or more educated labor with respect to less educated or less skilled,  $d$  and  $s$  are relative demand and supply respectively for skilled labor  $\sigma$  is the elasticity of substitution for these two types of labor and a hat over a variable indicates rate of change.

So, if there is an increase in demand for highly educated individuals relative to supply, we should expect an increase in their relative wage as long as the elasticity of substitution is not infinity. This relative wage increase will be manifested essentially through an increase in the rate of return to education when one makes the assumption that high skilled people corresponds to highly educated and viceversa.

### 3. Wage Profiles 1986-1993

In this Section, Pessino (1993) results are confronted to a longer period where microdata is available: 1986-1993. The advantage of considering several time periods to analyze the effects of hyperinflation on wage profiles is that they allow the researcher to confirm or reject the findings of looking at just two data points. The drawback is caused by the same reason that produced the advantage; when looking at several time periods, the rest of the macroeconomic or institutional variables might be changing at the same time. During the first part of the period that we can call the pre-hyperinflation period, 1986-1988, we have inflation rates averaging about 188%. During 1989-1990, the hyperinflation period with an average inflation of 2700%, and since 1991, a decreasing rate of inflation averaging 70% and reaching the lowest level of 11% in 1993. The question is if the observed increases in rates of return to education, tenure, self-employment and their disaggregation over sectors and occupations continue to hold in a systematic manner when one considers the evolution of inflation over time.

The drawback of this experiment is that "other macroeconomic variables" changed during this period. In particular, the index of the real exchange rate that had an average level of 83 (1985=100) during 1986-1988, stayed constant on average during the hyperinflation period, but then dropped in more than 60% during 1991-1993 with an average index of 32.

The evolution of GDP per capita also shows substantial variations over this period. While it does not have a clear trend, during 1986-1988 it shows a declining trend, during 1989-1990 slightly declining, and increasing from 1991 until 1993.

While, we do not have available longer time-series cross-sections of data to present a regression analysis and identify the separate effect of each macroeconomic shock on the variables considered we do have reasonable models to predict the effects of each shock on the structure and inequality of wages.

We will proceed in the following manner. First, we will present the estimated wage equations

and the division by sectors and occupations for the years 1986-1993. Second, we will study if the effects of hyperinflation on the structure of wages show a consistent pattern; that is the effects encountered in 1989 are really an outlier from otherwise smooth series on the rate of return to different human capital arguments. Third, we will analyze the effects of structural change beginning in 1990 on the structure and inequality of wages.

Table 1 presents the definition of the variables used in the analysis while Tables 2A to 2F present the means of the variables in the 1986-1993 samples<sup>3</sup>. While most of the "quantity" variables, such as experience, tenure, sector/occupational category and years of education among working males aged 25-54 should remain fairly constant in the 8 years of this sample, we notice during this period a change in the level of some of these variables. The mean level of educational variables had an increase (average years of education increased from 8.8 years in 1986 to 9.5 years in 1993). Argentina, in spite of having an infamous decade, continue to increase its quantity of this type of human capital. The attachment to the same employer proxied by the Tenure variables, shows a decrease during the period: while on average approximately 10% of this sample of men had on average than 20 years of tenure, only 8% of the same defined group remains with the same employer for more than 20 years. Finally, with respect to "price" variables, we have an "average" wage rate in real terms (not shown in the tables, but calculated from the "wage" variable deflated by the Consumer Price Index) that declined from 1986 until 1990 in 39%, but from 1990 until 1993 increased in 43%.

Tables 3A to 3F record parameter estimates for Greater Buenos Aires for a variety of specifications of the wage function for the years 1986, 1988, and 1990 to 1993<sup>4</sup>. Columns (1) and (2) of these tables present estimates of the parameters for the schooling model (Mincer model); while the rest of the columns present elaborations of the basic Mincer specification.

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<sup>3</sup> Table 4 in Pessino (1993) presents the mean of the selected variables for 1989.

<sup>4</sup> Similar Tables for 1987 and 1989 can be found in Pessino (1993).

I first consider estimates of the simple schooling model in Tables 3. This specification uses the natural log of the hourly wage as the dependent variable. The independent variables are years of schooling (YEARSE) and as measures of general experience I use two specifications: potential experience (age minus schooling minus six) and its square for column (1) and age and its square for column (2). The estimate of the rate of return to schooling in 1993 is 10.4%. The returns to general experience are 3.2 percent at schooling completion declining very sharply after 10 years of schooling. All the coefficients are statistically significant at the 1% level.

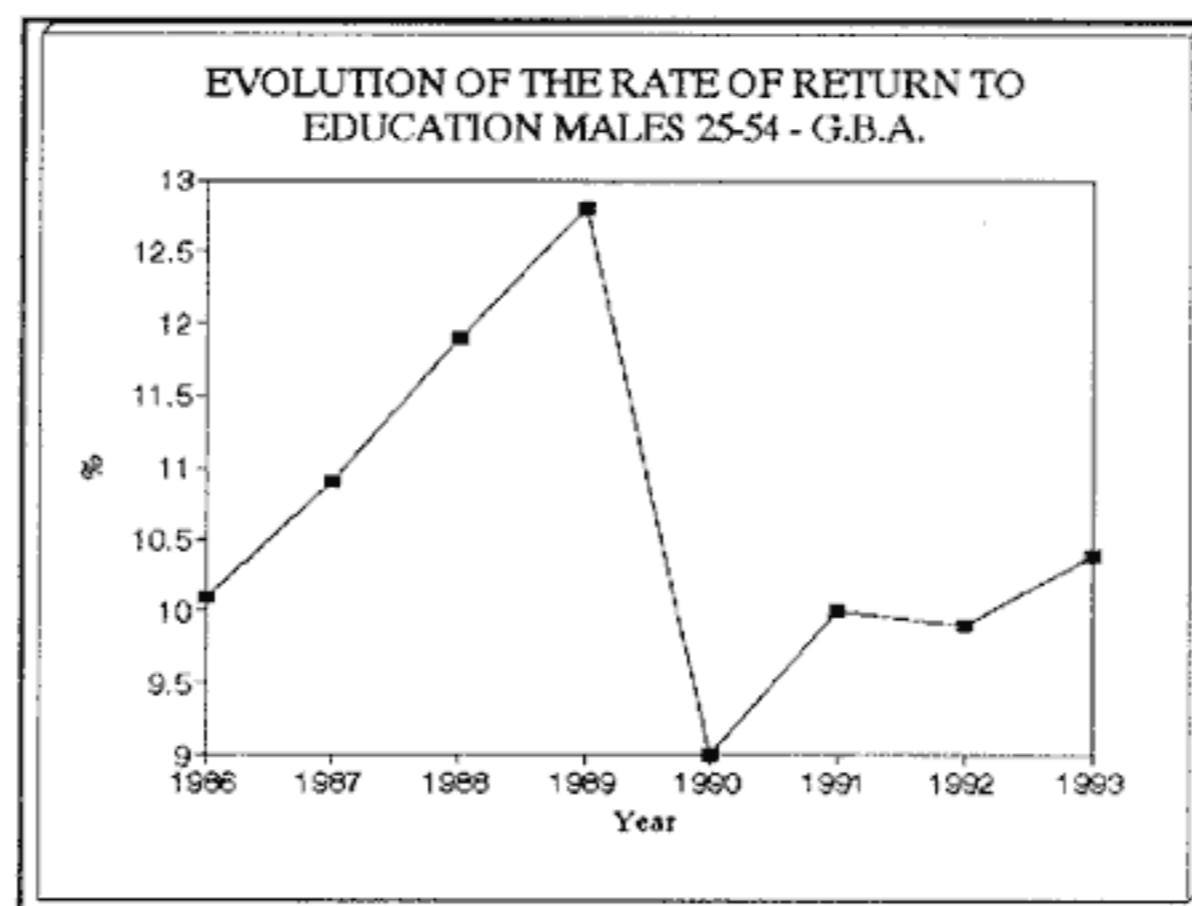
While most studies on wage profiles in LDC's analyze and try to rationalize the differences in slope coefficients with other countries (especially with DC's) by the use of a single cross-section, one of the objectives of this study is to show that such an approach can lead to misleading interpretations of the estimated returns. Moreover, the most important macroeconomic event between 1987 and 1989 was the hyperinflation episode, so that an economic interpretation can be placed on the shift of this wage profile.

The wage equations for the entire set of cross-sections 1986-1993 show consistency across the years in terms, among other things, of measures of goodness of fit:  $R^2$  range from 0.23 to 0.33 for the estimation shown in column (1) of the Tables, while the F-statistics for the significance of the joint regressors are all higher than 119. Second, and more important, we can extract from these estimations the time-series behavior of our parameters of interest. In particular, we are interested in the evolution of the average and marginal rates of return to education, experience, tenure and self-employment. Was the increase in the rates of return to education, tenure and self-employment a random event occurred in September 1989, just after the hyperinflation, or rather was a consistent with theory effect that inflation increases the return to all those categories? Figures 1,2, 3, 4, and 5 show, respectively, the evolution of the above aforementioned variables.

Figure 1 shows the evolution of the coefficient of YEARSE from Tables 3 and similar for the rest of the cross-sections; they strongly confirm the fact encountered in Pessino (1993) about the rise of the

rate of return to education just after the hyperinflation event; in fact during the pre-hyperinflation period, a period of high inflation in itself, this rate of return increased continuously in almost 3 percentage points. In September 1990, when inflation came finally under control we see the lowest level of the return at 9%. After 1990, we see an increase in the rate of return just reaching in 1993 the levels it had in 1986-87, but overall we see on average lower returns for the post-hyperinflation period than on the pre-hyperinflation.

Figure 1



Notice first that during the period 1986-1989 the rate of return to education increased by almost 3 percentage points, from 10 per cent to almost 13 per cent. After inflation ceased the advantages more educated workers had of improving their relative position ceased. After 1990, there was a gradual increase in the rate of return from a low of 9 per cent to more than 10 per cent in 1993. In this subperiod we expected an increase in the rate of return to education; however the increase is modest. Notice that a modest increase in the average rate of return can occur with a decrease in the rate of return to workers with low educational levels and an increase in the return to highly educated workers.

Moreover, there is sufficient worldwide evidence that education enters nonlinearly in the wage

equation. Columns (3) and (4) of Table 3 present estimates of equation (1), using dummies for highest schooling (complete or incomplete) level attained. The return to primary education (EDUP) is a return over primary school dropouts given the near absence of illiterates in the labor force in Greater Buenos Aires. Notice that marginal returns to education increase till secondary school and then decrease for complete and incomplete university level. This result contrasts with findings by Psacharopoulos (1985) who reports declining rates of return for completed schooling levels. Then, Figure 1 consist of the rate of return to one more year of education, on average, without considering the potential different rates of return to primary, secondary and university years of schooling. While, there is evidence of a slight increase in rates of return to schooling, a different and more accurate perspective can be gained studying the returns to schooling to primary, secondary and tertiary education since, we would expect a larger increase in return for the more educated population. Figure 2 plots the returns to education by educational category.

There was a significant increase in the marginal rate of return to tertiary education; that is the college premium; and a decrease in the returns to primary and secondary education, causing a small increase in the overall rate in the 1990-93 period. This increase in returns for individuals with tertiary studies reveals the increase in their relative demand with presumably low elasticity of substitution (see equation (2)). This increment in the rate of return to Higher Education occurred in spite of the increase in supply of highly educated individuals during the period. The 80s, with their stagnation drove more people to school as can be appreciated in Table 2. Notice that since 1990, the return to one more year of tertiary studies (over just secondary schooling) increased in 4 percentage points, reaching 20% in 1993. This is a very high marginal rate of return when compared historically and with a cross-section of countries. See Psacharopoulos (1981, 1985), signaling the relative scarcity and difficulty of substitution of college graduates. It should be emphasized that my rate of return calculations assume that the only cost of tertiary studies is foregone earnings and that earnings are net of taxes (i.e, I am calculating the

private as against the social rate of return to education), and finally that the typical student spends five years in obtaining the degree.

Figure 2

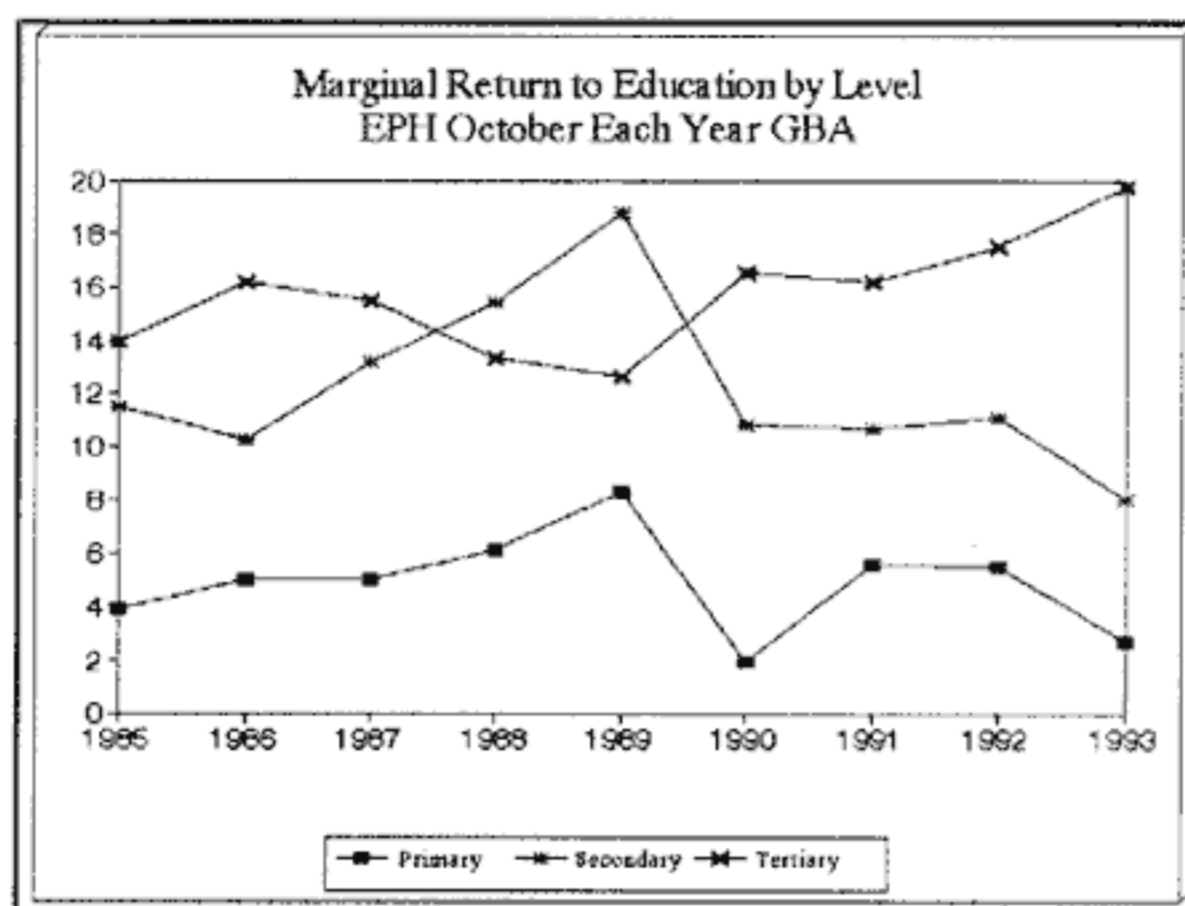
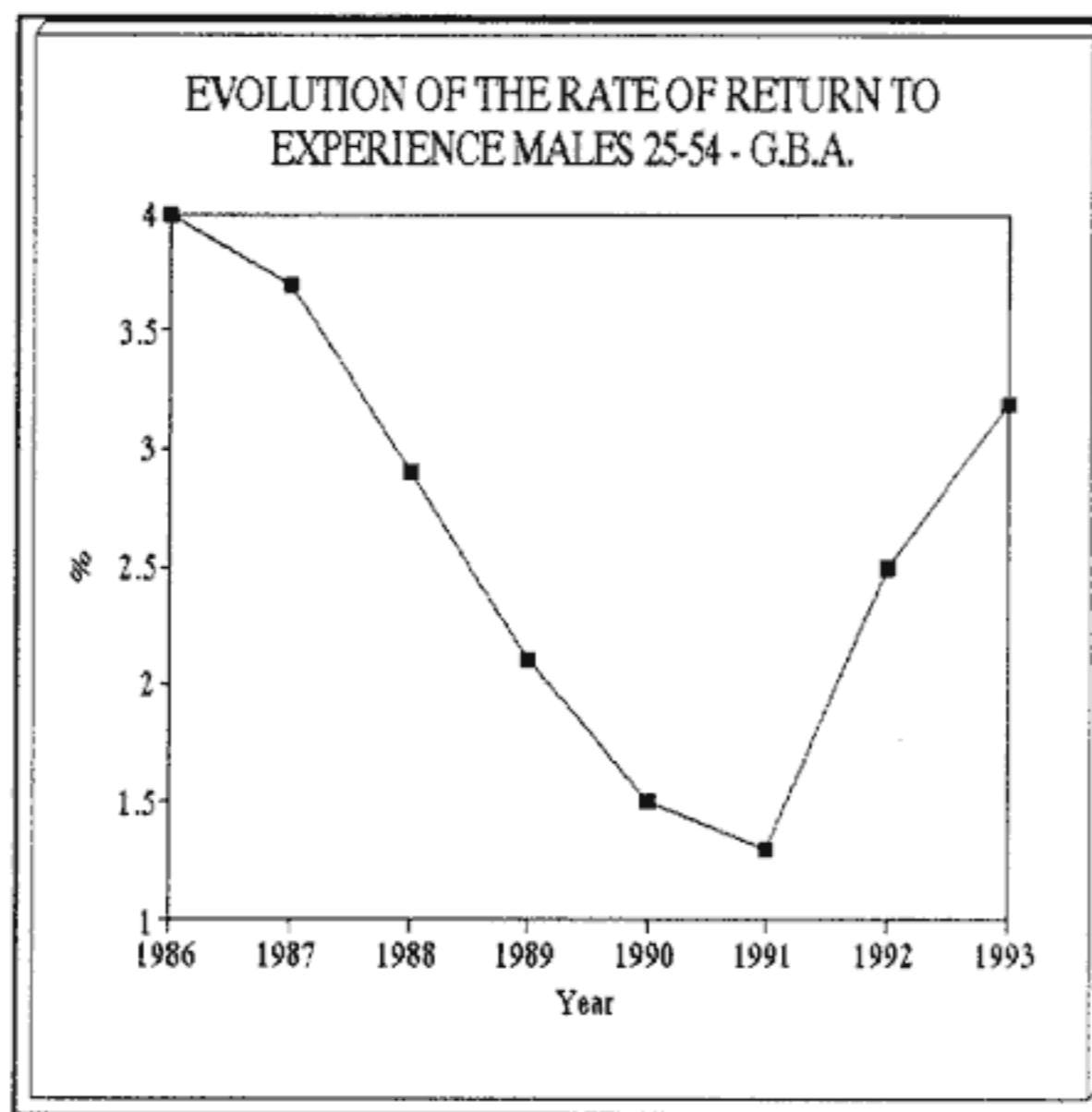


Figure 3 shows the evolution of the rate of return to experience<sup>5</sup> for the first year after schooling completion. Pessino (1993) encountered a fall in this rate of return after hyperinflation; in fact, as seen in Figure 2, it fell continuously from 1986 to 1991 when it began a period of recovery until 1993, reaching the level it had in 1988. While the contracting theory does not provide a good account for the fall in this return, it might be found in the joint occurrence of inflation and output shocks. The experience coefficient measures approximately the rate of return to on-the-job training. The volatile rate of inflation together with the negative output shock implied low expected returns for the firms in investing in people, and this might have produced the poor relationship between wage rates and experience in the job market during this period. Notice that given that general labor market experience is not a key determinant in wage contracts (as it is specific labor market experience) and does not by itself signal any special ability or skill of the worker, it is not surprising that this return followed the opposite pattern to the returns to tenure and formal education during the first part of the period. However, in the last

<sup>5</sup> This rate of return is calculated as just the coefficient of EXPER in column (1) of Tables 3, we did not make the exact computation of this measure given the relatively low value and significance of EXPERSQ.

subperiod, we see an increase in the rate of return to experience that mimics the one occurred to education. It is during this period when structural change is introduced and output begins to recover, and in fact, returns grow with a one year lag (beginning in 1991 and output recovering in 1990) as we should expect given the time it takes to acquire on-the-job training.

Figure 3



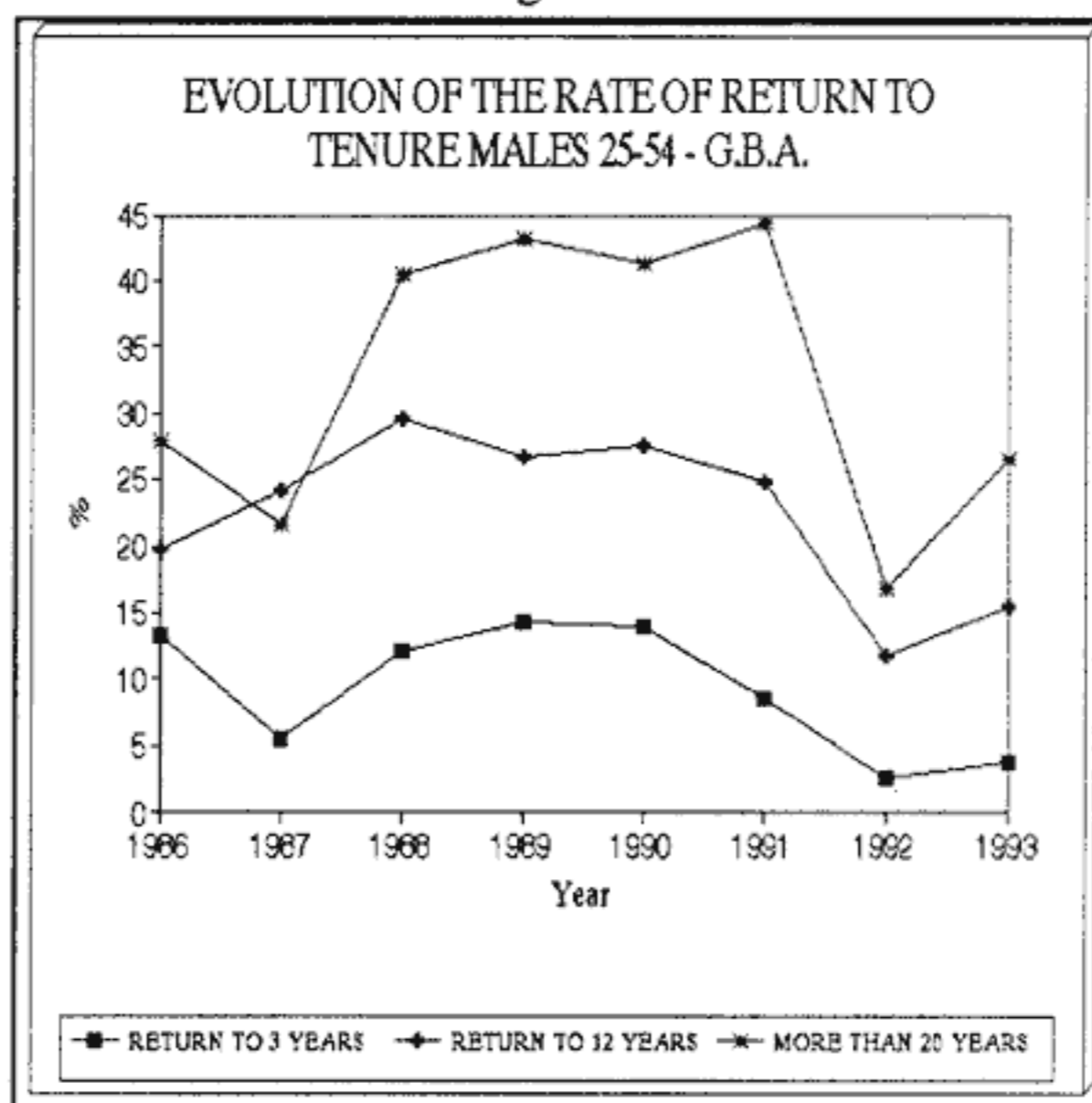
The basic Mincerian equation (1) is now extended to include a measure of specific human capital. Figure 4 shows the evolution of the rate of return to tenure in three categories: the return to three years (ten1), to twelve years (ten2) and to more than 20 years (ten3)<sup>6</sup>. In general, all categories tend to move together, except for the middle category that shows some disparities at the beginning of the period. Previously, we found what we expected, namely, higher returns to tenure just after the hyperinflationary event. Its evolution during the period, however, does not show, as in the case of educational returns,

<sup>6</sup> These returns are the coefficients of the respective variables in Column (5) of Tables 3.



a clear peak in 1989; we instead see a clear increase beginning in 1987 with values that remain fairly high between 1988 and 1991; its lowest value in 1992 and showing a sharp increment in 1993. So, while the contracting theory points to the increase in this return during high inflation; the other macroeconomic events might have collaborated to producing a less clear pattern than expected after that. Presumably, the change in regime after 1990, produced an obsolescence in specific human capital since not only a change in skills demand occurred but also firms began to restructure and redefine their production processes disposing of specific skills useful for the previous regime. Notice, that only in 1993, two years after the change in regime, returns to specific human capital begin to recover.

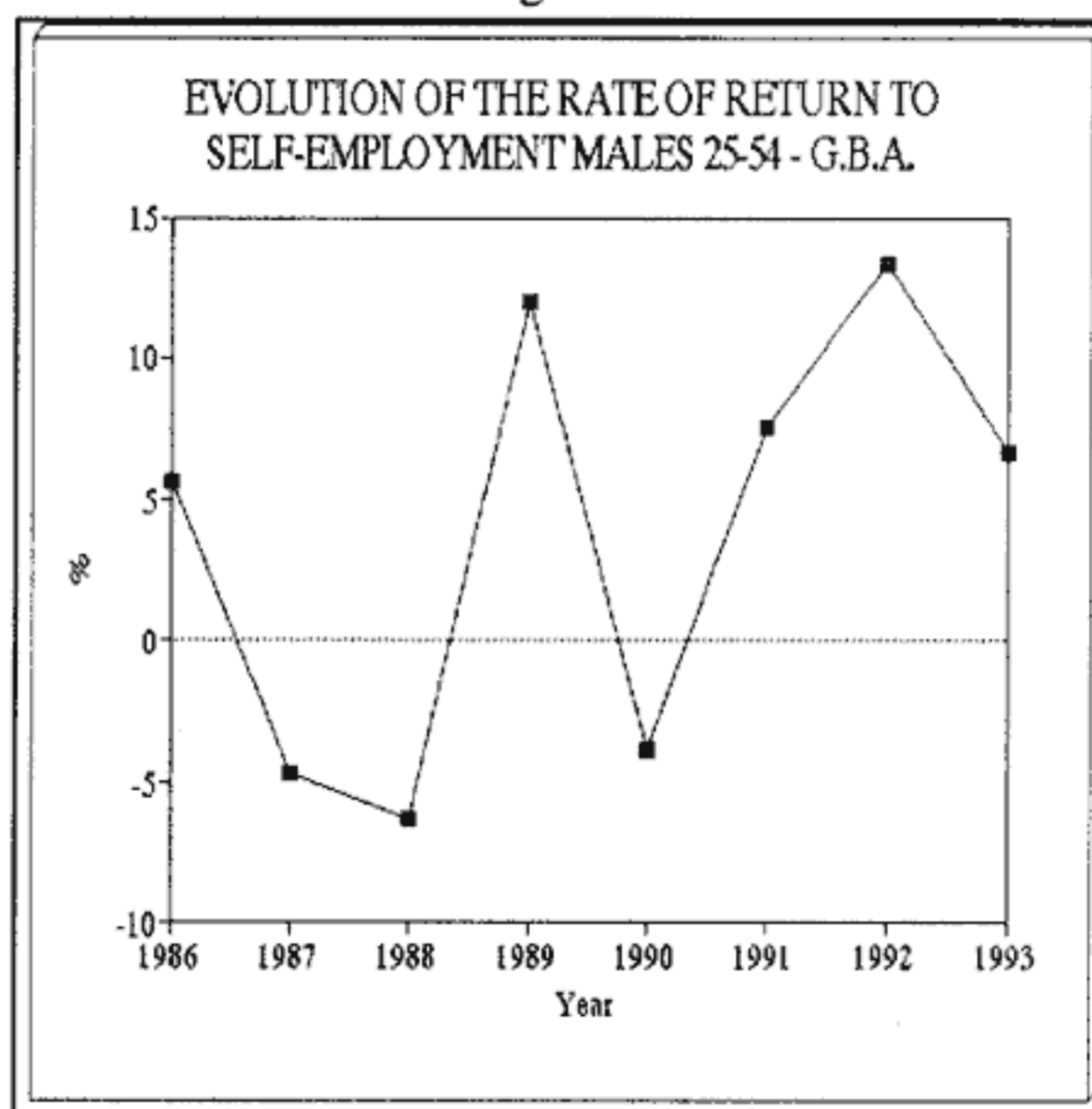
Figure 4



In specifications (6) and (7) of Tables 3, I added dummies for self-employment and employer. Since Pessino (1993) used inflation as an identifier, she argued that in 1989 the self-employed could better protect themselves against inflation because they did not depend on nominal wage contracts. Figure 5 shows the evolution of the rate of return to self-employment. It is clear from this Figure, that indeed 1989 marked a pronounced peak in these series; however, after hyperinflation ceased, returns begin to grow again and even surpass the hyperinflation level. In particular, the pre hyperinflationary period does

not show an increasing trend in this variable, as would be expected with higher inflation. However, the macroeconomic shock that might have affected significantly these returns is not only inflation, but the behavior of the real exchange rate as well. Notice that a low real exchange rate means a relatively higher demand (and hence wages) in the non-tradeable sector of the economy, favoring the self-employed who are more prominent in this sector and also have a high share of professionals. The real exchange rate had a level that was 60% higher in the period 1986-1990 against the period 1991-3. So we see that in the pre-hyperinflation stage, the declining returns to self-employment accompany the increasing real exchange rate. However, the hyperinflation peak appears, since the level of  $e$  is fairly constant until that period. The return decreases after the peak, but from 1990 continues to increase again accompanying the declining real exchange rate.

Figure 5

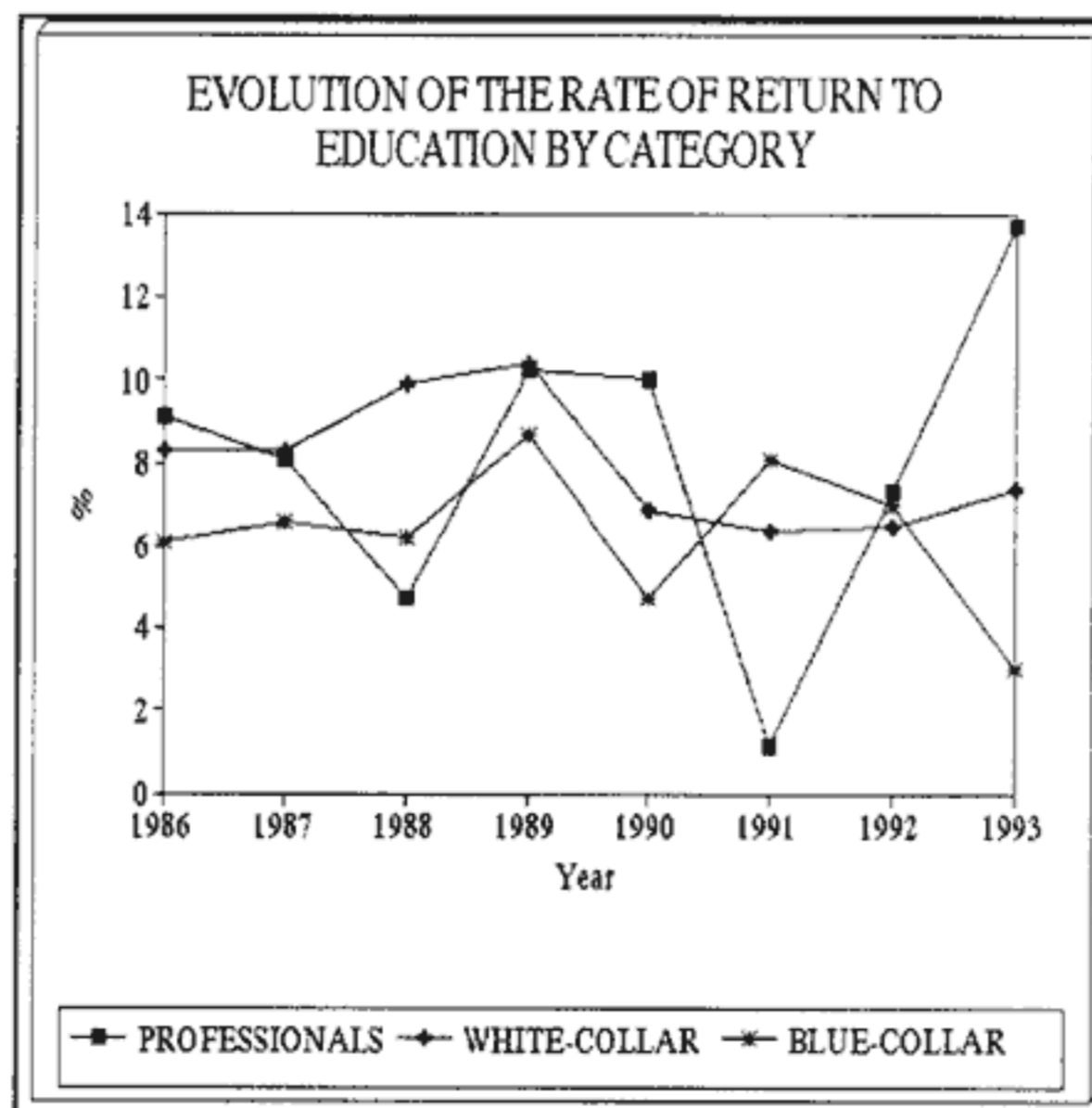


In conclusion, there was a substantial change in the age earnings profile for male workers before and after the hyperinflation and later after the Convertibility Plan. Age-earnings profiles shift in response to macro shocks and they should be incorporated into the analysis for studies in LDC's.

The preceding results refer to wage-employed and self-employed persons in an array of

occupations and sectors of the economy. Their occupations can range from highly skilled professionals to low skilled blue collar workers. The "self-employed" can range from street vendors who use small amounts of physical capital to an entrepreneur producing goods with varying amounts of equipment. With respect to the sectoral distribution of workers, the determination of wages will clearly be different between the public and the private sector and within the private sector, where the construction industry fluctuates more than manufacture and services. In the following, I compare wage profiles for different occupational and sectoral categories. with a double purpose. First, I want to see if the results obtained in the previous section are a consequence of aggregating heterogeneous groups of workers. Second, and more important, this disaggregation can serve to determine whether the contracting theory and the effects of the change in regime are consistent by analyzing the differential shift in wage profiles of different occupations or sectors. Beginning with the occupational categories, I divided workers into professionals, white-collar (high-skilled as defined in the Survey), and blue-collar (semi-skilled and unskilled). Tables 4A to 4F report these estimates for the periods 1986,1988, and 1990 to 1993 and Figure 6 shows the

Figure 6



appreciation of the peso and the human-capital intensive growth in output had led to the latter evolution in rates of return to education.

Still, Figures 7 and 8 show the evolution of rates of return to education by Sector growing with and peaking with hyperinflation until 1989, confirming previous findings.

Figure 7

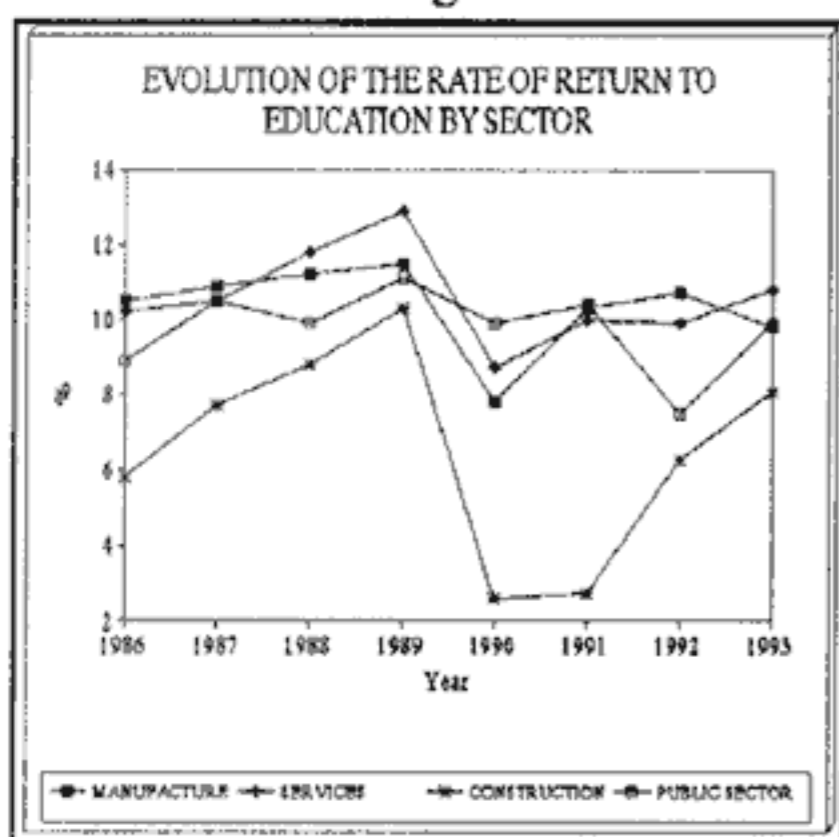
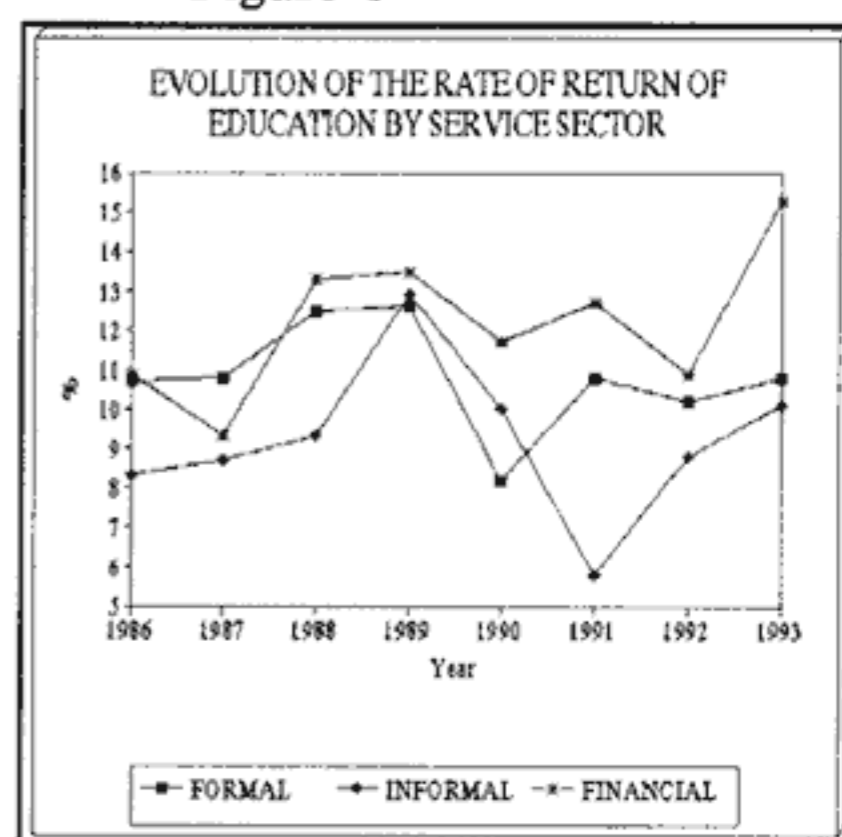


Figure 8



#### 4. Income Distribution after the Hyperinflation

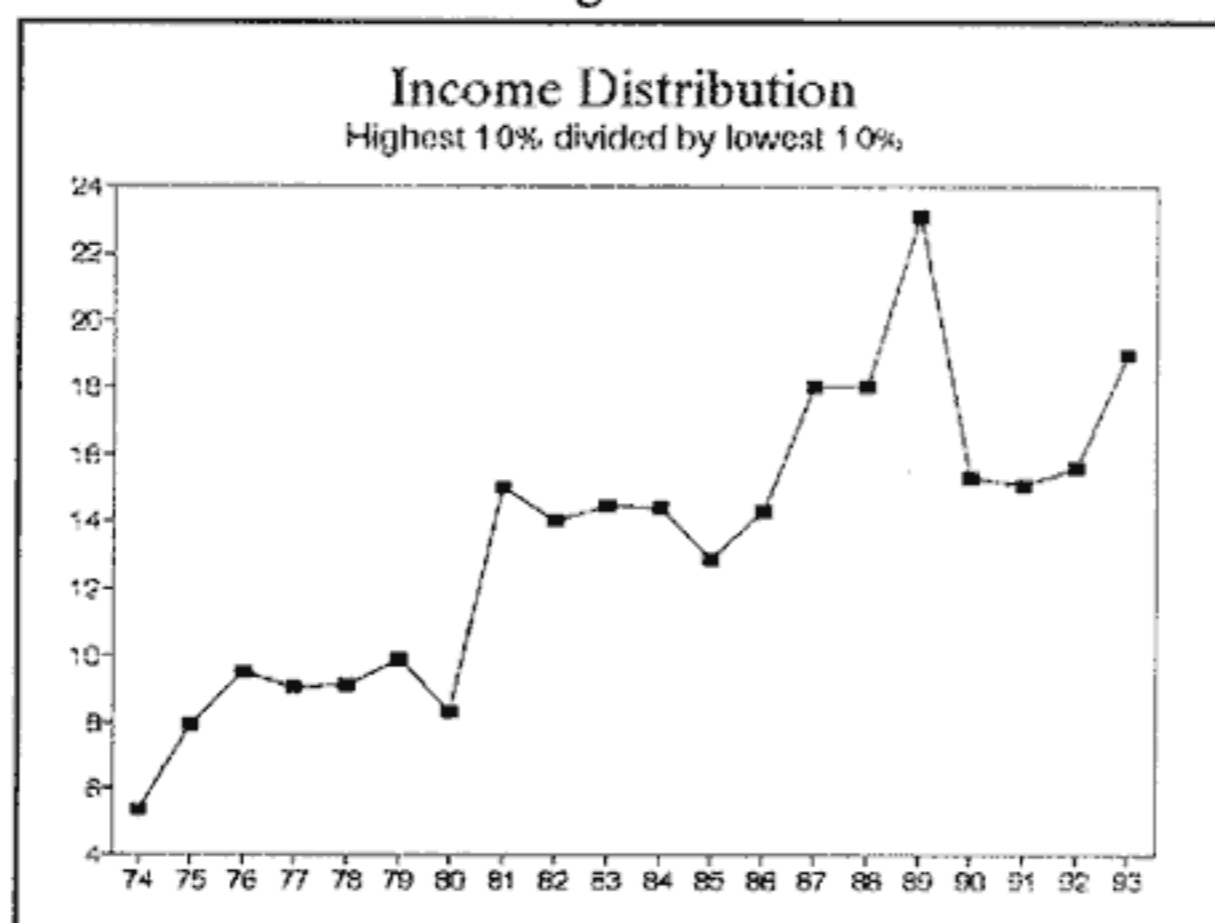
The evidence gathered in this research demonstrates that hyperinflation had a big impact on wage profiles, in the aggregate, by sector or occupational category. In particular, rates of return to education, tenure and self-employment peaked. At the same time, it showed that later developments such as aggregate output increments and real exchange overvaluation interacted with lower rates of inflation to produce after the hyperinflation peak and immediate fall, a recovery in some of these rates of return.

We also showed that income distribution worsened immediately after hyperinflation, a fact produced in part by the increase in the rates of return to human capital investments. Has income distribution, worsened or improved after the peak of hyperinflation? Figure 9 shows the evolution of the highest 10% of the distribution of income divided by the lowest 10%. Evidently, 1989 was an outlier

evolution of the rate of return to education by occupational category. We confirm here the fact that this rate increased after the hyperinflation of 1989 for all categories. However, as we can observe, this rate shows some volatility across periods and category. The professional category seems to be fluctuating more than the others, a fact explained by the low relative sample size of this group : in 1991 there was a big drop in its rate of return, that later recovered more than fully to reach around 14% in 1993. Notice that during this latter period we also observe a constancy in the rate of return to white-collar workers and a drop in the return to education to blue-collar workers. Remember that after 1990, we observed an increase in GDP coupled with a higher demand for physical capital that is expected to increase the demand for human capital given its usually assumed complementarity with physical capital. In Argentina, this latter phenomenon has been accompanied by a decrease in the importance of manufactured goods and an increase in the share of services in total GDP. So, there was a change in labor demand that was not uniform across sectors of the economy. Depending on the demographic and educational characteristics of the labor force in each sector, we expect differential effects on earnings for them. Usually, the high-human capital sectors are part of the Services Sector, the intermediately intensive human capital sectors are mainly composed of manufacturing establishments, and the low human capital sectors are mainly personal and domestic services. Together with the aggregate output-capital intensive increase, we have during this period the decrease in the real exchange rate producing excess demand in the Services Sector. So we should observe, after 1990, an increase in the rate of return education for the category professionals and by sector, for those that are human capital intensive. Tables 5A to 5F show the estimates of the wage equations by Sector and Figures 7 and 8 show rates of return to education by Sector. In Figure 7 we observe an increase in the rate for Services and Construction. In Figure 8, the rate of return to education in the Services Sector is further decomposed, in the Formal, Informal and Financial Sector. We see that the Financial Sector, being one of the most human capital intensive sectors, experienced by 1993 the highest increase in return corroborating the hypothesis that both the real

caused by hyperinflation that undershoot in 1990 to a level similar to 1986. However, after 1990, income distribution begins to worsen again to surpass the level it had in 1987. This might be evidence of the interaction of higher demand for human capital and for non-traded goods of the economy caused by the output increase (cum capital accumulation) and the overvaluation of the peso.

Figure 9



The evidence presented confirms that high inflation during 1986-1989 contributed to the worsening of income distribution in Argentina (see Figure 9): during that period we see almost continuous deterioration in that measure of income distribution<sup>7</sup>, in 1990 income distribution greatly improves. The figure for 1990 corresponds to September, when inflation was already under control, but output was still stagnant and the overvaluation of the peso was timidly beginning to manifest.

However, results on measures of worsening or improving income distribution should be interpreted with care. They do not necessarily mean that people in the economy are worse off or better off. As Shorrocks (1983) and Barros and Mendonca (1994) showed, welfare depends not only on measures of variance of earnings but on the mean level of earnings as well. In this respect, welfare was at its lowest during the hyperinflation peak (with the highest variance and lowest earnings), improved

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<sup>7</sup> Using the evolution of Gini coefficients or plotting Lorenz Curves for the period, this conclusion remains unaltered

until 1992 (with higher average earnings and lower variance) and it is unclear its direction for 1993 when real wages are higher but income inequality increased.

## **5. Conclusions and Directions for Future Research**

The study of the impact of macroeconomic shocks on income distribution is of crucial importance in the developed and especially in the less developed world. Most economic literature has concentrated in either one of these fields and have disregard the other partly because of the inherent difficulties in building macroeconomic (general equilibrium) models with heterogenous individuals and of incorporating macroeconomic shocks in typical labor market models (which are usually partial equilibrium models). The huge variation in aggregate time series in Argentina over short periods of time provides the researcher with sufficiently sharp natural experiments so as to identify these effects.

With respect to effects of macro shocks on the structure of wages, I first extend the results of Pessino (1993) to analyze the effects of the hyperinflation episode of mid 1989. Theoretical research on the effects of inflation on the structure of wages is almost non existent in current economic literature. However, there is a consensus that inflation has real effects more because of the existence of nominal wage contracts than of informational type of stories confusing monetary with real shocks. Smith (1989) provides a theory of nominal contracts concluding that low-productive workers will have fully indexed contracts as against high-productive workers. Under his assumptions, this will induce optimal self-selection of workers in the labor force. This theory can be contrasted with one that incorporates the notion that education increases the value of a worker to deal with disequilibria (Schultz (1975)). Contracting and human capital theory also provide hypothesis for the effects of inflation on returns to experience, seniority and whether the worker is wage-employed or self-employed. The average rate of return to education increases after the hyperinflation episode, especially for the less educated groups in the population; providing partial support for Smith's hypothesis. The return to seniority raises

significantly between periods providing support for the hypothesis that the firm will lose an amount proportional to the tenure of the individual if the wage is not indexed. Finally, self-employed workers tend to be better protected against inflation since they do not rely on wage contracts.

These results were confirmed using longer time series of cross-sections, from 1986 until 1993, where the period 1987 to 1989 can be analyzed in a broader context. The drawback of this new analysis is that it loses the flavor of the natural experiment: other macroeconomic fluctuations will also impinge on income inequality.

The second clearly distinguished period starts in 1990 with hyperinflation ending and a process of structural reform starting based on the Convertibility Plan, and massive privatizations and trade liberalization. This change of regime that makes advantageous technological change, especially biased towards capital-intensive techniques, implied theoretically an increase in the relative demand of skilled vs. unskilled labor. Thus, the main hypothesis is that returns to education for the more educated portion of the labor force should have increased, returns to on-the-job training likewise should also increase and returns to tenure first decrease through obsolescence of human capital and later (if ever until 1993) begin to increase again. Most of these results were corroborated with the analysis of returns to human capital from 1990 until 1993.

These results have several implications at different levels. First, for studies analyzing policy issues, such as whether to subsidize different levels of education, in the context of a single cross-section, care should be taken of the specific macroeconomic context at the time. Wage profiles shift in a significant way with macroeconomic shocks. Unless there is sufficient stability in the economy, these profiles should be interpreted with caution.

Second, while the non-neutrality of inflation has been usually studied in general in terms of increases in output and employment, inflation is non-neutral in a less orthodox way: it changes the structure and inequality of wages.



Third, the change towards a free-market economy involves much more than a change in the rules of the game and cannot be attained instantaneously, since human capital was either scarce or trained optimally for the old regime. However, as soon as the regime changes, returns to various forms of human capital investment change in the expected way, signaling the individuals and firms to invest more.

Fourth, this study shows that Argentina's prospects for the future rely on smoother time series. The changes found in wage profiles, and the ensuing changing in decisions that they entail increase enormously the well known welfare costs of macroeconomic fluctuations. Individuals change fundamental decisions on schooling, on-the-job training whether general or specific, and occupational choice with shifts in expected returns.

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TABLE 1

## DEFINITIONS OF VARIABLES

**Dependent Variable in  
Wage Equations**

Lwage                      Log real hourly wage rate (Australas Sept 1989 prices)

**Education**

Edupi                      = 1 if no schooling or incomplete primary school  
                                    Between 0 and 6 years of schooling

Edup                        = 1 if completed primary school  
                                    7 years of schooling

Edusi                      = 1 if did not complete secondary school  
                                    Between 8 and 11 years of schooling

Edus                        = 1 if completed secondary school  
                                    12 years of schooling

Eduui                      = 1 if did not complete university (college)  
                                    Between 13 and 16 years of schooling

Eduu                        = 1 if completed university  
                                    17 or more years of schooling

Yearse                      = Years of education (computed at average of  
                                    educational category)

**Experience/Age**

Age                         age in years

Agesq                      age squared

Exper                      Years of potential work experience (Age -  
                                    average of corresponding educational level - 6)

Exper2                     Exper squared

**Tenure**

Ten0                        = 1 if experience in main occupation is less  
                                    than a year

Ten1                        = 1 if experience in main occupation is between  
                                    1 and 5 years

Ten2                        = 1 if experience in main occupation is between  
                                    5 and 20 years

Ten3                        = 1 if experience in main occupation is more  
                                    than 20 years

**Employment**

Employee                 = 1 if employee in main occupation

Selfemp                   = 1 if self-employed or family worker in main  
                                    occupation

Employer                 = 1 if employer in main occupation

TABLE 2-A

SUMMARY STATISTICS FOR SELECTED VARIABLES  
Men age 25-54

	October 1987		October 1986	
	Mean	Std. dev.	Mean	Std. dev.
<b>Education</b>				
Edup	.328	.469	.337	.473
Edusi	.211	.408	.216	.411
Edus	.128	.334	.148	.356
Eduui	.074	.261	.059	.235
Eduu	.109	.311	.076	.265
Yearse	9.18	4.19	8.79	3.96
<b>Experience/Age</b>				
Age	38.70	8.18	38.53	8.35
Agesq	1564.85	645.33	1554.34	657.20
Exper	23.46	9.59	23.67	9.63
Exper2	642.15	471.72	652.96	482.86
<b>Tenure</b>				
Ten1	.297	.457	.298	.457
Ten2	.418	.493	.420	.494
Ten3	.106	.308	.098	.297
<b>Employment</b>				
Selfemp	.232	.422	.248	.432
Employer	.062	.242	.061	.240
Professional	.106	.307	.072	.303
White-collar	.652	.476	.688	.469
Blue-collar	.241	.428	.230	.416
<b>Sector</b>				
Manufacture	.293	.455	.335	.458
Services	.537	.499	.502	.500
Construction	.089	.285	.114	.320
Public Sector	.077	.267	.044	.205
Other	.003	.055	.005	.049
<b>Wages</b>				
Lwage	6.62	0.71	6.75	0.66
Wage	1007.51	1033.91	1100.30	1109.65
Sample Size	1948		1927	

TABLE 2-B

SUMMARY STATISTICS FOR SELECTED VARIABLES  
Men age 25-54

	October 1987		October 1988	
	Mean	Std. dev.	Mean	Std. dev.
<b>Education</b>				
Edup	.328	.469	.356	.479
Edusi	.211	.408	.206	.404
Edus	.128	.334	.150	.357
Eduui	.074	.261	.060	.237
Eduu	.109	.311	.086	.280
Yearse	9.18	4.19	8.96	3.99
<b>Experience/Age</b>				
Age	38.70	8.18	38.68	8.34
Agesq	1564.85	645.33	1566.01	658.21
Exper	23.46	9.59	23.67	9.56
Exper2	642.15	471.72	651.82	474.01
<b>Tenure</b>				
Ten1	.297	.457	.292	.455
Ten2	.418	.493	.425	.494
Ten3	.106	.308	.097	.297
<b>Employment</b>				
Selfemp	.232	.422	.236	.425
Employer	.062	.242	.055	.229
Professional	.106	.307	.102	.303
White-collar	.652	.476	.674	.469
Blue-collar	.241	.428	.223	.416
<b>Sector</b>				
Manufacture	.293	.455	.299	.458
Services	.537	.499	.511	.500
Construction	.089	.285	.116	.320
Public Sector	.077	.267	.072	.258
Other	.003	.055	.002	.049
<b>Wages</b>				
Lwage	6.62	0.71	6.38	0.73
Wage	1007.51	1033.91	796.91	838.54
Sample Size	1948		2041	

TABLE 2-C

SUMMARY STATISTICS FOR SELECTED VARIABLES  
Men age 25-54

	October 1987		October 1990	
	Mean	Std. dev.	Mean	Std. dev.
<b>Education</b>				
Edup	.328	.469	.355	.479
Edusi	.211	.408	.197	.398
Edus	.128	.334	.173	.379
Eduui	.074	.261	.064	.245
Eduu	.109	.311	.095	.293
Yearse	9.18	4.19	9.29	3.97
<b>Experience/Age</b>				
Age	38.70	8.18	38.29	8.11
Agesq	1564.85	645.33	1531.86	635.16
Exper	23.46	9.59	22.96	9.36
Exper2	642.15	471.72	614.57	450.45
<b>Tenure</b>				
Ten1	.297	.457	.291	.454
Ten2	.418	.493	.425	.494
Ten3	.106	.308	.083	.276
<b>Employment</b>				
Selfemp	.232	.422	.220	.415
Employer	.062	.242	.046	.209
Professional	.106	.307	.100	.301
White-collar	.652	.476	.622	.485
Blue-collar	.241	.428	.268	.443
<b>Sector</b>				
Manufacture	.293	.455	.300	.459
Services	.537	.499	.512	.500
Construction	.089	.285	.091	.288
Public Sector	.077	.267	.093	.291
Other	.003	.055	.003	.057
<b>Wages</b>				
Lwage	6.62	0.71	6.26	0.66
Wage	1007.51	1033.91	675.15	699.89
Sample Size	1948		1226	

TABLE 2-D

SUMMARY STATISTICS FOR SELECTED VARIABLES  
Men age 25-54

	October 1987		October 1991	
	Mean	Std. dev.	Mean	Std. dev.
<b>Education</b>				
Edup	.328	.469	.358	.479
Edusi	.211	.408	.198	.399
Edus	.128	.334	.171	.377
Eduui	.074	.261	.051	.220
Eduu	.109	.311	.104	.305
Yearse	9.18	4.19	9.29	3.96
<b>Experience/Age</b>				
Age	38.70	8.18	38.38	8.07
Agesq	1564.85	645.33	1537.85	632.32
Exper	23.46	9.59	23.04	9.48
Exper2	642.15	471.72	620.73	460.46
<b>Tenure</b>				
Ten1	.297	.457	.295	.456
Ten2	.418	.493	.419	.494
Ten3	.106	.308	.086	.281
<b>Employment</b>				
Selfemp	.232	.422	.204	.403
Employer	.062	.242	.053	.225
Professional	.106	.307	.095	.294
White-collar	.652	.476	.669	.471
Blue-collar	.241	.428	.220	.415
<b>Sector</b>				
Manufacture	.293	.455	.305	.461
Services	.537	.499	.495	.500
Construction	.089	.285	.118	.323
Public Sector	.077	.267	.075	.264
Other	.003	.055	.003	.056
<b>Wages</b>				
Lwage	6.62	0.71	6.40	0.73
Wage	1007.51	1033.91	826.32	1242.08
Sample Size	1948		1290	

TABLE 2-E

SUMMARY STATISTICS FOR SELECTED VARIABLES  
Men age 25-54

	October 1987		October 1992	
	Mean	Std. dev.	Mean	Std. dev.
<b>Education</b>				
Edup	.328	.469	.334	.472
Edusi	.211	.408	.208	.406
Edus	.128	.334	.178	.383
Eduui	.074	.261	.066	.249
Eduu	.109	.311	.108	.311
Yearse	9.18	4.19	9.55	3.96
<b>Experience/Age</b>				
Age	38.70	8.18	38.67	8.18
Agesq	1564.85	645.33	1562.16	641.27
Exper	23.46	9.59	23.07	9.46
Exper2	642.15	471.72	621.61	449.19
<b>Tenure</b>				
Ten1	.297	.457	.278	.448
Ten2	.418	.493	.424	.494
Ten3	.106	.308	.074	.261
<b>Employment</b>				
Selfemp	.232	.422	.212	.409
Employer	.062	.242	.071	.258
Professional	.106	.307	.101	.301
White-collar	.652	.476	.750	.433
Blue-collar	.241	.428	.144	.352
<b>Sector</b>				
Manufacture	.293	.455	.292	.455
Services	.537	.499	.539	.499
Construction	.089	.285	.090	.286
Public Sector	.077	.267	.068	.253
Other	.003	.055	.007	.081
<b>Wages</b>				
Lwage	6.62	0.71	6.57	0.68
Wage	1007.51	1033.91	940.48	991.98
Sample Size	1948		1358	



TABLE 2-F

SUMMARY STATISTICS FOR SELECTED VARIABLES  
Men age 25-54

	October 1987		October 1993	
	Mean	Std. dev.	Mean	Std. dev.
<b>Education</b>				
Edup	.328	.469	.311	.463
Edusi	.211	.408	.211	.408
Edus	.128	.334	.176	.381
Eduui	.074	.261	.076	.264
Eduu	.109	.311	.106	.308
Yearse	9.18	4.19	9.52	4.05
<b>Experience/Age</b>				
Age	38.70	8.18	38.80	8.29
Agesq	1564.85	645.33	1573.81	655.09
Exper	23.46	9.59	23.22	9.56
Exper2	642.15	471.72	630.31	466.27
<b>Tenure</b>				
Ten1	.297	.457	.306	.461
Ten2	.418	.493	.374	.484
Ten3	.106	.308	.082	.275
<b>Employment</b>				
Selfemp	.232	.422	.242	.429
Employer	.062	.242	.067	.249
Professional	.106	.307	.097	.296
White-collar	.652	.476	.753	.432
Blue-collar	.241	.428	.150	.358
<b>Sector</b>				
Manufacture	.293	.455	.281	.450
Services	.537	.499	.482	.500
Construction	.089	.285	.116	.320
Public Sector	.077	.267	.078	.268
Other	.003	.055	.006	.076
<b>Wages</b>				
Lwage	6.62	0.71	6.60	0.70
Wage	1007.51	1033.91	972.04	984.19
Sample Size	1948		1548	

TABLE 3-A

Wage Equations for men age 25-54 from the Greater Buenos Aires  
Oct 1986 Permanent Household Survey

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	5.288 (55.265)	4.386 (14.465)	5.628 (62.989)	4.830 (15.889)	5.592 (60.959)	5.697 (64.508)	5.660 (62.394)
<u>Education</u>							
Yearse	0.101 (25.648)	0.088 (25.776)					
Edup			0.200 (4.805)	0.201 (4.993)	0.171 (4.116)	0.191 (4.662)	0.163 (3.972)
Edusi			0.482 (10.285)	0.453 (10.274)	0.438 (9.313)	0.449 (9.680)	0.407 (8.735)
Edus			0.738 (14.311)	0.667 (13.892)	0.682 (13.057)	0.686 (13.403)	0.632 (12.182)
Eduui			1.051 (15.342)	0.922 (14.274)	0.990 (14.400)	0.984 (14.491)	0.926 (13.588)
Eduu			1.455 (22.759)	1.281 (21.832)	1.385 (21.442)	1.389 (21.897)	1.324 (20.661)
<u>Experience</u>							
Exper	0.040 (5.802)		0.050 (7.281)		0.047 (6.782)	0.044 (6.380)	0.041 (5.969)
Expersq	-0.00056 (-4.168)		-0.00080 (-5.844)		-0.00079 (-5.790)	-0.0007 (-5.076)	-0.0007 (-5.107)
Age		0.072 (4.533)		0.069 (4.322)			
Agesq		-0.0008 (-3.794)		-0.00073 (-3.638)			
<u>Tenure</u>							
Ten1					0.132 (3.389)		0.133 (3.469)
Ten2					0.198 (5.319)		0.179 (4.885)
Ten3					0.279 (5.016)		0.281 (5.129)
<u>Employment</u>							
Selfemp						0.054 (1.744)	0.056 (1.847)
Employer						0.436 (7.778)	0.424 (7.598)
Adj R <sup>2</sup>	0.29	0.29	0.31	0.30	0.32	0.33	0.34
MSE	0.31	0.31	0.30	0.31	0.30	0.29	0.29
F-Stat	237.67	236.82	110.29	106.24	82.29	95.47	75.67
D. of F	3,1721	3,1721	7,1717	7,1717	10,1714	9,1715	12,1712

Note.- t-statistics in parentheses

TABLE 3-B

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1988 Permanent Household Survey

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	4.812 (49.958)	3.869 (12.628)	5.215 (57.474)	4.412 (14.395)	5.219 (56.172)	5.250 (58.024)	5.257 (56.773)
<u>Education</u>							
Yearse	0.119 (30.907)	0.103 (30.758)					
Edup			0.244 (5.785)	0.210 (5.093)	0.209 (4.999)	0.233 (5.537)	0.196 (4.727)
Edusi			0.534 (11.115)	0.463 (10.170)	0.483 (10.150)	0.519 (10.819)	0.469 (9.877)
Edus			0.920 (17.591)	0.802 (16.422)	0.836 (15.959)	0.897 (17.120)	0.813 (15.518)
Eduui			1.305 (19.211)	1.132 (17.660)	1.233 (18.368)	1.269 (18.638)	1.197 (17.820)
Eduu			1.638 (26.350)	1.414 (24.909)	1.535 (24.705)	1.595 (25.516)	1.492 (23.906)
<u>Experience</u>							
Exper	0.029 (4.207)		0.040 (5.740)		0.032 (4.624)	0.039 (5.566)	0.031 (4.497)
Expersq	-0.00028 (-2.017)		-0.00051 (-3.677)		-0.00046 (-3.321)	-0.00051 (-3.629)	-0.00046 (-3.327)
Age		0.068 (4.273)		0.063 (3.983)			
Agesq		-0.0007 (-3.306)		-0.0006 (-3.035)			
<u>Tenure</u>							
Ten1					0.122 (3.202)		0.123 (3.229)
Ten2					0.296 (8.159)		0.297 (8.231)
Ten3					0.405 (7.394)		0.415 (7.613)
<u>Employment</u>							
Selfemp						-0.039 (-1.248)	-0.063 (-2.067)
Employer						0.274 (4.686)	0.408 (4.722)
Adj R2	0.33	0.33	0.34	0.34	0.37	0.35	0.38
MSE	0.36	0.36	0.35	0.35	0.34	0.35	0.33
F-Stat	332.29	336.63	153.31	152.92	121.21	123.49	104.73
D. of F	3,2033	3,2033	7,2029	7,2029	10,2026	9,2027	12,2024

Note.- t-statistics in parentheses

TABLE 3-C

Wage Equations for men age 25-54 from the Greater Buenos Aires  
Oct 1990 Permanent Household Survey

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	5.123 (43.493)	4.021 (10.426)	5.475 (49.785)	4.543 (11.923)	5.446 (48.931)	5.501 (50.071)	5.473 (49.181)
<u>Education</u>							
Yearse	0.090 (18.445)	0.079 (18.697)					
Edu <sub>p</sub>			0.077 (1.329)	0.057 (1.036)	0.062 (1.085)	0.072 (1.241)	0.057 (1.002)
Edu <sub>si</sub>			0.267 (5.176)	0.226 (3.724)	0.243 (3.866)	0.258 (4.046)	0.235 (3.740)
Edu <sub>s</sub>			0.538 (7.907)	0.462 (7.364)	0.478 (7.102)	0.521 (7.656)	0.463 (6.870)
Edu <sub>ui</sub>			0.847 (9.875)	0.736 (9.112)	0.775 (9.144)	0.811 (9.408)	0.742 (8.705)
Edu <sub>u</sub>			1.260 (15.898)	1.105 (15.390)	1.167 (14.794)	1.236 (15.565)	1.145 (14.487)
<u>Experience</u>							
Exper	0.015 (1.732)		0.030 (3.525)		0.023 (2.769)	0.028 (3.342)	0.022 (2.613)
Expersq	-0.00006 (-0.338)		-0.00041 (-2.326)		-0.00036 (-2.121)	-0.0004 (-2.181)	-0.0003 (-1.999)
Age		0.068 (3.388)		0.065 (3.259)			
Agesq		-0.0007 (-2.808)		-0.0007 (-2.727)			
<u>Tenure</u>							
Ten1					0.140 (2.994)		0.136 (2.916)
Ten2					0.276 (6.247)		0.269 (6.114)
Ten3					0.414 (5.914)		0.414 (5.951)
<u>Employment</u>							
Selfemp						-0.037 (-0.921)	-0.039 (-0.999)
Employer						0.264 (3.284)	0.248 (3.146)
Adj R <sup>2</sup>	0.23	0.23	0.26	0.26	0.29	0.26	0.29
MSE	0.34	0.34	0.33	0.33	0.31	0.32	0.31
F-Stat	119.70	123.45	61.49	61.95	50.18	49.64	43.15
D. of F	3,1218	3,1218	7,1214	7,1214	10,1211	9,1212	12,1209

Note.- t-statistics in parentheses

TABLE 3-D

Wage Equations for men age 25-54 from the Greater Buenos Aires  
Oct 1991 Permanent Household Survey

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	5.202 (40.818)	4.301 (10.422)	5.555 (46.363)	4.764 (11.514)	5.600 (45.655)	5.566 (47.390)	5.612 (46.551)
<u>Education</u>							
Yearse	0.100 (18.777)	0.088 (19.587)					
Edup			0.223 (3.567)	0.206 (3.466)	0.174 (2.811)	0.219 (3.573)	0.173 (2.833)
Edusi			0.432 (6.177)	0.391 (6.000)	0.355 (5.082)	0.413 (6.003)	0.341 (4.957)
Edus			0.699 (9.397)	0.624 (9.251)	0.606 (8.112)	0.679 (9.305)	0.592 (8.051)
Eduui			0.987 (9.810)	0.877 (9.353)	0.863 (8.575)	0.927 (9.358)	0.815 (8.217)
Eduu			1.392 (16.406)	1.248 (16.582)	1.247 (14.439)	1.363 (16.366)	1.228 (14.464)
<u>Experience</u>							
Exper	0.013 (1.441)		0.024 (2.571)		0.018 (1.930)	0.021 (2.300)	0.016 (1.761)
Expersq	-0.00003 (-0.180)		-0.00029 (-1.511)		-0.00029 (-1.540)	-0.0002 (-1.336)	-0.0003 (-1.432)
Age		0.057 (2.624)		0.054 (2.499)			
Agesq		-0.0006 (-2.106)		-0.0006 (-2.031)			
<u>Tenure</u>							
Ten1					0.084 (1.667)		0.079 (1.597)
Ten2					0.249 (5.215)		0.211 (4.473)
Ten3					0.444 (5.847)		0.427 (5.722)
<u>Employment</u>							
Sel femp						0.082 (1.907)	0.076 (1.780)
Employer						0.264 (3.284)	0.528 (6.875)
Adj R <sup>2</sup>	0.23	0.23	0.24	0.24	0.27	0.27	0.29
MSE	0.40	0.40	0.40	0.40	0.38	0.38	0.37
F-Stat	130.00	132.15	59.08	59.50	47.74	54.05	45.22
D. of F	3,1285	3,1285	7,1281	7,1281	10,1278	9,1279	12,1276

Note.— t-statistics in parentheses

TABLE 3-E

Wage Equations for men age 25-54 from the Greater Buenos Aires  
Oct 1992 Permanent Household Survey

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	5.165 (45.399)	3.956 (10.490)	5.533 (51.580)	4.431 (11.746)	5.537 (50.816)	5.587 (52.733)	5.589 (51.893)
<u>Education</u>							
Yearse	0.099 (21.026)	0.089 (22.007)					
Edup			0.220 (3.838)	0.221 (3.961)	0.213 (3.730)	0.198 (3.505)	0.192 (3.400)
Edusi			0.394 (6.266)	0.377 (6.303)	0.384 (6.108)	0.362 (5.833)	0.352 (5.675)
Edus			0.671 (10.099)	0.623 (10.096)	0.655 (9.854)	0.626 (9.526)	0.611 (9.291)
Eduui			0.955 (11.367)	0.863 (10.981)	0.930 (11.071)	0.886 (10.654)	0.864 (10.378)
Eduu			1.394 (18.477)	1.272 (18.595)	1.371 (18.063)	1.328 (17.698)	1.306 (17.311)
<u>Experience</u>							
Exper	0.025 (3.077)		0.035 (4.211)		0.031 (3.724)	0.030 (3.630)	0.026 (3.186)
Expersq	-0.00033 (-1.931)		-0.00055 (-3.185)		-0.00051 (-2.920)	-0.0005 (-2.822)	-0.0004 (-2.589)
Age		0.080 (4.039)		0.076 (3.869)			
Agesq		-0.0009 (-3.549)		-0.00085 (-3.410)			
<u>Tenure</u>							
Ten1					0.024 (0.538)		0.026 (0.580)
Ten2					0.117 (2.799)		0.109 (2.648)
Ten3					0.168 (2.429)		0.167 (2.445)
<u>Employment</u>							
Selfemp						0.133 (3.457)	0.134 (3.486)
Employer						0.396 (6.406)	0.388 (6.292)
Adj R <sup>2</sup>	0.26	0.27	0.28	0.28	0.28	0.30	0.31
MSE	0.34	0.34	0.34	0.34	0.33	0.33	0.32
F-Stat	162.34	166.59	75.90	76.23	54.76	66.29	50.98
D. of F	3,1354	3,1354	7,1350	7,1350	10,1347	9,1348	12,1345

Note.— t-statistics in parentheses

TABLE 3-F

Wage Equations for men age 25-54 from the Greater Buenos Aires  
Oct 1993 Permanent Household Survey

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	5.094 (48.116)	4.333 (12.294)	5.514 (55.732)	4.945 (14.159)	5.541 (54.636)	5.534 (56.935)	5.563 (55.775)
<u>Education</u>							
Yearse	0.104 (23.807)	0.088 (23.454)					
Edup			0.108 (2.078)	0.094 (1.860)	0.105 (2.033)	0.090 (1.756)	0.088 (1.733)
Edusi			0.401 (6.974)	0.357 (6.592)	0.383 (6.687)	0.367 (6.499)	0.352 (6.246)
Edus			0.601 (9.903)	0.511 (9.081)	0.573 (9.481)	0.559 (9.337)	0.535 (8.971)
Eduui			0.952 (12.882)	0.814 (11.722)	0.914 (12.398)	0.863 (11.744)	0.830 (11.336)
Eduu			1.447 (20.850)	1.256 (19.927)	1.398 (20.114)	1.385 (20.207)	1.343 (19.556)
<u>Experience</u>							
Exper	0.032 (4.156)		0.045 (5.892)		0.039 (5.085)	0.043 (5.689)	0.037 (4.940)
Expersq	-0.0003 (-2.238)		-0.00065 (-4.176)		-0.00059 (-3.797)	-0.0006 (-4.063)	-0.0006 (-3.716)
Age		0.060 (3.240)		0.052 (2.895)			
Agesq		-0.0006 (-2.421)		-0.0005 (-2.129)			
<u>Tenure</u>							
Ten1					0.038 (0.947)		0.029 (0.737)
Ten2					0.155 (3.940)		0.136 (3.512)
Ten3					0.265 (4.237)		0.248 (4.022)
<u>Employment</u>							
Sel femp						0.074 (2.152)	0.067 (1.939)
Employer						0.467 (7.769)	0.451 (7.542)
Adj R <sup>2</sup>	0.27	0.28	0.31	0.30	0.32	0.33	0.34
MSE	0.36	0.36	0.34	0.34	0.34	0.33	0.32
F-Stat	196.61	197.65	99.04	96.44	73.29	86.80	68.06
D. of F	3,1544	3,1544	7,1540	7,1540	10,1537	9,1538	12,1535

Note.- t-statistics in parentheses

TABLE 4-A

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1987 and 1986 Permanent Household Survey  
BY OCCUPATIONAL CATEGORY

	Professionals		White-Collar		Blue-Collar	
	87	86	87	86	87	86
(1a)						
Yearse	0.081 (4.265)	0.091 (3.626)	0.083 (16.179)	0.083 (16.458)	0.066 (7.740)	0.061 (6.644)
Ten1	-0.096 (-0.525)	-0.054 (-0.235)	0.100 (2.094)	0.096 (2.098)	-0.014 (-0.226)	0.118 (1.645)
Ten2	0.207 (1.171)	0.266 (1.189)	0.227 (5.009)	0.113 (2.581)	0.149 (2.397)	0.167 (2.386)
Ten3	-0.140 (-0.618)	0.258 (0.960)	0.215 (3.363)	0.131 (2.021)	0.132 (1.252)	0.492 (4.315)
(1b)						
Yearse	0.080 (4.139)	0.094 (3.648)	0.083 (16.189)	0.083 (16.463)	0.065 (7.598)	0.059 (6.301)
Ten1	-0.095 (-0.519)	-0.053 (-0.231)	0.099 (2.071)	0.096 (2.103)	-0.015 (-0.246)	0.116 (1.615)
Ten2	0.191 (1.068)	0.282 (1.245)	0.228 (5.031)	0.111 (2.526)	0.148 (2.383)	0.170 (2.423)
Ten3	-0.148 (-0.649)	0.258 (0.954)	0.214 (3.342)	0.131 (2.025)	0.131 (1.246)	0.500 (4.360)
Selfemp	0.092 (0.701)	-0.087 (-0.558)	-0.061 (-1.718)	0.069 (2.002)	0.013 (0.276)	0.046 (0.727)
N	177	100	1190	1122	456	381
(2a)						
Yearse	0.078 (4.602)	0.082 (3.891)	0.084 (16.664)	0.085 (16.790)	0.066 (7.853)	0.072 (7.646)
Ten1	-0.121 (-0.722)	-0.027 (-0.116)	0.091 (1.867)	0.113 (2.434)	-0.020 (-0.325)	0.128 (1.735)
Ten2	0.174 (1.058)	0.339 (1.548)	0.235 (5.108)	0.144 (3.235)	0.159 (2.558)	0.161 (2.223)
Ten3	-0.181 (-0.851)	0.291 (1.095)	0.244 (3.785)	0.153 (2.354)	0.137 (1.305)	0.442 (3.704)
(2b)						
Yearse	0.079 (4.682)	0.079 (3.708)	0.084 (16.603)	0.084 (16.661)	0.065 (7.627)	0.068 (6.923)
Ten1	-0.122 (-0.725)	-0.034 (-0.146)	0.091 (1.879)	0.115 (2.469)	-0.023 (-0.366)	0.121 (1.651)
Ten2	0.148 (0.896)	0.294 (1.315)	0.234 (5.084)	0.137 (3.105)	0.157 (2.522)	0.168 (2.331)
Ten3	-0.189 (-0.887)	0.290 (1.094)	0.244 (3.792)	0.151 (2.334)	0.136 (1.294)	0.465 (3.897)
Patself	0.135 (1.323)	0.120 (0.965)	0.032 (0.932)	0.112 (3.340)	0.026 (0.465)	0.128 (2.032)
N	206	125	1270	1188	469	396

Notes. - t-statistics in parentheses

All specifications included Exper and Exper2.

Specifications (1a) and (1b) did not include observations on employers, while the rest did include them.



TABLE 4-B

Wage Equations for men age 25-54 from the Greater Buenos Aires  
 October 1987 and 1988 Permanent Household Survey  
 BY OCCUPATIONAL CATEGORY

	Professionals		White-Collar		Blue-Collar	
	87	88	87	88	87	88
(1a)						
Yearse	0.081 (4.265)	0.047 (2.651)	0.083 (16.179)	0.099 (18.670)	0.066 (7.740)	0.062 (7.375)
Ten1	-0.096 (-0.525)	0.051 (0.319)	0.100 (2.094)	0.115 (2.472)	-0.014 (-0.226)	0.074 (1.107)
Ten2	0.207 (1.171)	0.205 (1.321)	0.227 (5.009)	0.237 (5.444)	0.149 (2.397)	0.301 (4.478)
Ten3	-0.140 (-0.618)	0.355 (1.736)	0.215 (3.363)	0.291 (4.471)	0.132 (1.252)	0.636 (5.454)
(1b)						
Yearse	0.080 (4.139)	0.049 (2.740)	0.083 (16.189)	0.099 (18.718)	0.065 (7.598)	0.062 (7.396)
Ten1	-0.095 (-0.519)	0.058 (0.366)	0.099 (2.071)	0.117 (2.509)	-0.015 (-0.246)	0.073 (1.087)
Ten2	0.191 (1.068)	0.223 (1.423)	0.228 (5.031)	0.242 (5.527)	0.148 (2.383)	0.302 (4.493)
Ten3	-0.148 (-0.649)	0.382 (1.843)	0.214 (3.342)	0.298 (4.558)	0.131 (1.246)	0.634 (5.433)
Sel femp	0.092 (0.701)	-0.101 (-0.873)	-0.061 (-1.718)	-0.045 (3.048)	0.013 (0.276)	-0.044 (-0.707)
N	177	176	1190	1311	456	435
(2a)						
Yearse	0.078 (4.602)	0.048 (2.830)	0.084 (16.664)	0.099 (18.981)	0.066 (7.853)	0.064 (7.692)
Ten1	-0.121 (-0.722)	-0.084 (-0.545)	0.091 (1.867)	0.137 (2.961)	-0.020 (-0.325)	0.093 (0.389)
Ten2	0.174 (1.058)	0.083 (0.559)	0.235 (5.108)	0.253 (5.810)	0.159 (2.558)	0.334 (4.990)
Ten3	-0.181 (-0.851)	0.212 (1.089)	0.244 (3.785)	0.291 (4.505)	0.137 (1.305)	0.595 (5.251)
(2b)						
Yearse	0.079 (4.682)	0.047 (2.728)	0.084 (16.603)	0.098 (18.857)	0.065 (7.627)	0.065 (7.695)
Ten1	-0.122 (-0.725)	-0.090 (-0.586)	0.091 (1.879)	0.137 (2.956)	-0.023 (-0.366)	0.092 (1.374)
Ten2	0.148 (0.896)	0.073 (0.484)	0.234 (5.084)	0.252 (5.784)	0.157 (2.522)	0.335 (4.999)
Ten3	-0.189 (-0.887)	0.206 (1.057)	0.244 (3.792)	0.290 (4.487)	0.136 (1.294)	0.595 (5.247)
Patself	0.135 (1.323)	0.083 (0.884)	0.032 (0.932)	0.003 (0.093)	0.026 (0.465)	-0.028 (-0.472)
N	206	206	1270	1375	469	453

Notes. - t-statistics in parentheses

All specifications included Exper and Exper2.

Specifications (1a) and (1b) did not include observations on employers, while the rest did include them.

TABLE 4-C

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1987 and 1990 Permanent Household Survey  
BY OCCUPATIONAL CATEGORY

	Professionals		White-Collar		Blue-Collar	
	87	90	87	90	87	90
(1a)						
Yearse	0.081 (4.265)	0.100 (3.227)	0.083 (16.179)	0.069 (10.406)	0.066 (7.740)	0.047 (5.194)
Ten1	-0.096 (-0.525)	0.150 (0.613)	0.100 (2.094)	0.147 (2.478)	-0.014 (-0.226)	0.110 (1.561)
Ten2	0.207 (1.171)	0.249 (1.050)	0.227 (5.009)	0.233 (4.236)	0.149 (2.397)	0.363 (5.206)
Ten3	-0.140 (-0.618)	0.234 (0.787)	0.215 (3.363)	0.380 (4.189)	0.132 (1.252)	0.476 (4.101)
(1b)						
Yearse	0.080 (4.139)	0.107 (3.416)	0.083 (16.189)	0.070 (10.450)	0.065 (7.598)	0.045 (4.974)
Ten1	-0.095 (-0.519)	0.209 (0.840)	0.099 (2.071)	0.147 (2.478)	-0.015 (-0.246)	0.110 (1.575)
Ten2	0.191 (1.068)	0.281 (1.183)	0.228 (5.031)	0.235 (4.278)	0.148 (2.383)	0.368 (5.291)
Ten3	-0.148 (-0.649)	0.263 (0.884)	0.214 (3.342)	0.384 (4.236)	0.131 (1.246)	0.487 (4.197)
Selfemp	0.092 (0.701)	-0.265 (-1.321)	-0.061 (-1.718)	-0.051 (-1.069)	0.013 (0.276)	0.101 (1.619)
N	177	105	1190	734	456	316
(2a)						
Yearse	0.078 (4.602)	0.082 (2.797)	0.084 (16.664)	0.071 (10.594)	0.066 (7.853)	0.050 (5.477)
Ten1	-0.121 (-0.722)	0.147 (0.563)	0.091 (1.867)	0.145 (2.434)	-0.020 (-0.325)	0.110 (1.560)
Ten2	0.174 (1.058)	0.277 (1.102)	0.235 (5.108)	0.231 (4.181)	0.159 (2.558)	0.362 (5.165)
Ten3	-0.181 (-0.851)	0.386 (1.230)	0.244 (3.785)	0.356 (3.934)	0.137 (1.305)	0.477 (4.093)
(2b)						
Yearse	0.079 (4.682)	0.085 (2.863)	0.084 (16.603)	0.071 (10.573)	0.065 (7.627)	0.047 (5.117)
Ten1	-0.122 (-0.725)	0.181 (0.681)	0.091 (1.879)	0.145 (2.434)	-0.023 (-0.366)	0.111 (1.577)
Ten2	0.148 (0.896)	0.309 (1.210)	0.234 (5.084)	0.232 (4.181)	0.157 (2.522)	0.368 (5.264)
Ten3	-0.189 (-0.887)	0.386 (1.226)	0.244 (3.792)	0.357 (3.934)	0.136 (1.294)	0.489 (4.210)
Patself	0.135 (1.323)	-0.115 (-0.709)	0.032 (0.932)	-0.007 (-0.151)	0.026 (0.465)	0.120 (1.975)
N	206	123	1270	760	469	327

Notes. - t-statistics in parentheses

All specifications included Exper and Exper2.

Specifications (1a) and (1b) did not include observations on employers, while the rest did include them.

TABLE 4-D

Wage Equations for men age 25-54 from the Greater Buenos Aires  
 October 1987 and 1991 Permanent Household Survey  
 BY OCCUPATIONAL CATEGORY

	Professionals		White-Collar		Blue-Collar	
	87	91	87	91	87	91
(1a)						
Yearse	0.081 (4.265)	0.011 (0.262)	0.083 (16.179)	0.064 (9.095)	0.066 (7.740)	0.081 (7.282)
Ten1	-0.096 (-0.525)	0.862 (2.609)	0.100 (2.094)	0.111 (1.923)	-0.014 (-0.226)	-0.085 (-1.021)
Ten2	0.207 (1.171)	0.786 (2.508)	0.227 (5.009)	0.200 (3.729)	0.149 (2.397)	0.088 (1.023)
Ten3	-0.140 (-0.618)	0.648 (1.794)	0.215 (3.363)	0.431 (4.864)	0.132 (1.252)	0.105 (0.658)
(1b)						
Yearse	0.080 (4.139)	0.016 (0.358)	0.083 (16.189)	0.064 (9.065)	0.065 (7.598)	0.076 (6.555)
Ten1	-0.095 (-0.519)	0.862 (2.602)	0.099 (2.071)	0.102 (1.771)	-0.015 (-0.246)	-0.074 (-0.877)
Ten2	0.191 (1.068)	0.797 (2.529)	0.228 (5.031)	0.186 (3.460)	0.148 (2.383)	0.097 (1.127)
Ten3	-0.148 (-0.649)	0.663 (1.822)	0.214 (3.342)	0.427 (4.822)	0.131 (1.246)	0.137 (0.846)
Selfemp	0.092 (0.701)	-0.124 (-0.499)	-0.061 (-1.718)	0.109 (2.301)	0.013 (0.276)	0.105 (1.321)
N	177	111	1190	819	456	270
(2a)						
Yearse	0.078 (4.602)	0.004 (0.121)	0.084 (16.664)	0.068 (9.502)	0.066 (7.853)	0.074 (6.699)
Ten1	-0.121 (-0.722)	0.879 (2.941)	0.091 (1.867)	0.110 (1.871)	-0.020 (-0.325)	-0.071 (-0.828)
Ten2	0.174 (1.058)	0.819 (2.920)	0.235 (5.108)	0.223 (4.095)	0.159 (2.558)	0.165 (1.900)
Ten3	-0.181 (-0.851)	0.725 (2.192)	0.244 (3.785)	0.428 (4.788)	0.137 (1.305)	0.142 (0.882)
(2b)						
Yearse	0.079 (4.682)	0.004 (0.117)	0.084 (16.603)	0.066 (9.395)	0.065 (7.627)	0.066 (5.895)
Ten1	-0.122 (-0.725)	0.878 (2.924)	0.091 (1.879)	0.094 (1.614)	-0.023 (-0.366)	-0.051 (-0.597)
Ten2	0.148 (0.896)	0.816 (2.869)	0.234 (5.084)	0.192 (3.526)	0.157 (2.522)	0.171 (1.985)
Ten3	-0.189 (-0.887)	0.723 (2.171)	0.244 (3.792)	0.417 (4.709)	0.136 (1.294)	0.184 (1.152)
Patself	0.135 (1.323)	0.016 (0.086)	0.032 (0.932)	0.190 (4.193)	0.026 (0.465)	0.210 (2.837)
N	206	123	1270	862	469	284

Notes. - t-statistics in parentheses

All specifications included Exper and Exper2.

Specifications (1a) and (1b) did not include observations on employers, while the rest did include them.

TABLE 4-E

Wage Equations for men age 25-54 from the Greater Buenos Aires  
 October 1987 and 1992 Permanent Household Survey  
 BY OCCUPATIONAL CATEGORY

	Professionals		White-Collar		Blue-Collar	
	87	92	87	92	87	92
(1a)						
Yearse	0.081 (4.265)	0.073 (1.996)	0.083 (16.179)	0.065 (10.859)	0.066 (7.740)	0.070 (5.293)
Ten1	-0.096 (-0.525)	-0.047 (-0.220)	0.100 (2.094)	-0.007 (-0.134)	-0.014 (-0.226)	0.042 (0.424)
Ten2	0.207 (1.171)	-0.023 (-0.109)	0.227 (5.009)	0.081 (1.772)	0.149 (2.397)	0.142 (1.524)
Ten3	-0.140 (-0.618)	-0.226 (-0.738)	0.215 (3.363)	0.166 (2.210)	0.132 (1.252)	0.074 (0.323)
(1b)						
Yearse	0.080 (4.139)	0.072 (1.982)	0.083 (16.189)	0.064 (10.858)	0.065 (7.598)	0.064 (4.718)
Ten1	-0.095 (-0.519)	-0.006 (-0.028)	0.099 (2.071)	0.002 (0.036)	-0.015 (-0.246)	0.035 (0.359)
Ten2	0.191 (1.068)	-0.002 (-0.010)	0.228 (5.031)	0.088 (1.922)	0.148 (2.383)	0.130 (1.413)
Ten3	-0.148 (-0.649)	-0.221 (-0.728)	0.214 (3.342)	0.167 (2.235)	0.131 (1.246)	0.088 (0.389)
Sel femp	0.092 (0.701)	0.297 (1.625)	-0.061 (-1.718)	0.111 (2.698)	0.013 (0.276)	0.208 (2.303)
N	177	102	1190	957	456	196
(2a)						
Yearse	0.078 (4.602)	0.066 (2.818)	0.084 (16.664)	0.069 (11.792)	0.066 (7.853)	0.070 (5.293)
Ten1	-0.121 (-0.722)	0.035 (0.179)	0.091 (1.867)	0.002 (0.031)	-0.020 (-0.325)	0.042 (0.424)
Ten2	0.174 (1.058)	0.083 (0.437)	0.235 (5.108)	0.094 (2.076)	0.159 (2.558)	0.142 (1.524)
Ten3	-0.181 (-0.851)	-0.073 (-0.264)	0.244 (3.785)	0.168 (2.275)	0.137 (1.305)	0.074 (0.323)
(2b)						
Yearse	0.079 (4.682)	0.079 (3.308)	0.084 (16.603)	0.067 (11.590)	0.065 (7.627)	0.064 (4.718)
Ten1	-0.122 (-0.725)	0.051 (0.266)	0.091 (1.879)	0.011 (0.227)	-0.023 (-0.366)	0.035 (0.359)
Ten2	0.148 (0.896)	0.081 (0.435)	0.234 (5.084)	0.100 (2.226)	0.157 (2.522)	0.130 (1.413)
Ten3	-0.189 (-0.887)	-0.050 (-0.183)	0.244 (3.792)	0.169 (2.315)	0.136 (1.294)	0.088 (0.389)
Patself	0.135 (1.323)	0.266 (2.073)	0.032 (0.932)	0.152 (3.954)	0.026 (0.465)	0.208 (2.303)
N	206	137	1270	1019	469	196

Notes. - t-statistics in parentheses

All specifications included Exper and Exper2.

Specifications (1a) and (1b) did not include observations on employers, while the rest did include them.

TABLE 4-F

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1987 and 1993 Permanent Household Survey  
BY OCCUPATIONAL CATEGORY

	Professionals		White-Collar		Blue-Collar	
	87	93	87	93	87	93
(1a)						
Yearse	0.081 (4.265)	0.137 (5.796)	0.083 (16.179)	0.074 (13.672)	0.066 (7.740)	0.030 (2.441)
Ten1	-0.096 (-0.525)	-0.232 (-1.457)	0.100 (2.094)	0.024 (0.526)	-0.014 (-0.226)	0.012 (0.137)
Ten2	0.207 (1.171)	-0.148 (-0.980)	0.227 (5.009)	0.105 (2.328)	0.149 (2.397)	0.238 (2.640)
Ten3	-0.140 (-0.618)	-0.128 (-0.603)	0.215 (3.363)	0.225 (3.054)	0.132 (1.252)	0.244 (1.645)
(1b)						
Yearse	0.080 (4.139)	0.139 (5.748)	0.083 (16.189)	0.074 (13.596)	0.065 (7.598)	0.028 (2.235)
Ten1	-0.095 (-0.519)	-0.220 (-1.362)	0.099 (2.071)	0.022 (0.477)	-0.015 (-0.246)	0.012 (0.132)
Ten2	0.191 (1.068)	-0.126 (-0.790)	0.228 (5.031)	0.099 (2.213)	0.148 (2.383)	0.233 (2.575)
Ten3	-0.148 (-0.649)	-0.105 (-0.483)	0.214 (3.342)	0.216 (2.950)	0.131 (1.246)	0.246 (1.658)
Selfemp	0.092 (0.701)	-0.062 (-0.456)	-0.061 (-1.718)	0.118 (3.048)	0.013 (0.276)	0.042 (0.528)
N	177	119	1190	1093	456	233
(2a)						
Yearse	0.078 (4.602)	0.117 (5.618)	0.084 (16.664)	0.077 (14.570)	0.066 (7.853)	0.030 (2.441)
Ten1	-0.121 (-0.722)	0.026 (0.160)	0.091 (1.867)	0.017 (0.374)	-0.020 (-0.325)	0.012 (0.137)
Ten2	0.174 (1.058)	-0.014 (-0.089)	0.235 (5.108)	0.120 (2.723)	0.159 (2.558)	0.238 (2.640)
Ten3	-0.181 (-0.851)	0.096 (0.453)	0.244 (3.785)	0.215 (3.027)	0.137 (1.305)	0.244 (1.645)
(2b)						
Yearse	0.079 (4.682)	0.119 (5.781)	0.084 (16.603)	0.075 (14.297)	0.065 (7.627)	0.029 (2.235)
Ten1	-0.122 (-0.725)	-0.001 (-0.008)	0.091 (1.879)	0.012 (0.262)	-0.023 (-0.366)	0.012 (0.132)
Ten2	0.148 (0.896)	-0.069 (-0.449)	0.234 (5.084)	0.110 (2.500)	0.157 (2.522)	0.233 (2.575)
Ten3	-0.189 (-0.887)	0.051 (0.243)	0.244 (3.792)	0.199 (2.823)	0.136 (1.294)	0.246 (1.658)
Patself	0.135 (1.323)	0.191 (1.792)	0.032 (0.932)	0.169 (4.717)	0.026 (0.465)	0.042 (0.528)
N	206	150	1270	1165	469	233

Notes. - t-statistics in parentheses

All specifications included Exper and Exper2.

Specifications (1a) and (1b) did not include observations on employers, while the rest did include them.

TABLE 5-A

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1987 and 1986 Permanent Household Survey  
BY SECTOR

	Manufacture		Services		Construction		Public Sector		Services Formal		Services Informal		Financial	
	87	86	87	86	87	86	87	86	87	86	87	86	87	86
(1a)														
Yearse	0.109 (14.763)	0.105 (15.898)	0.105 (20.015)	0.102 (16.440)	0.077 (5.992)	0.058 (5.132)	0.105 (7.490)	0.089 (4.976)	0.108 (17.643)	0.107 (14.896)	0.087 (7.951)	0.083 (6.286)	0.093 (6.363)	0.109 (7.444)
Ten1	0.052 (0.723)	0.143 (2.250)	0.061 (1.130)	0.139 (2.293)	0.026 (0.219)	0.090 (0.938)	-0.166 (-0.793)	0.082 (0.401)	0.121 (1.927)	0.159 (2.172)	-0.102 (-0.962)	0.071 (0.637)	0.122 (0.866)	0.039 (0.214)
Ten2	0.262 (3.695)	0.227 (3.710)	0.262 (5.046)	0.225 (3.793)	0.271 (2.512)	0.159 (1.885)	-0.161 (-0.816)	-0.023 (-0.126)	0.343 (5.685)	0.198 (2.739)	0.076 (0.744)	0.253 (2.391)	0.367 (2.746)	0.132 (0.718)
Ten3	0.232 (2.237)	0.296 (3.307)	0.198 (2.664)	0.250 (2.759)	0.327 (1.456)	0.216 (1.521)	0.023 (0.102)	0.033 (0.144)	0.258 (2.925)	0.299 (2.733)	0.046 (0.334)	0.127 (0.784)	0.368 (1.906)	0.234 (0.938)
(1b)														
Yearse	0.110 (14.765)	0.102 (15.311)	0.104 (19.753)	0.098 (15.825)	0.078 (6.013)	0.057 (4.963)			0.105 (7.057)	0.103 (14.246)	0.087 (7.942)	0.080 (6.054)	0.090 (5.774)	0.109 (6.662)
Ten1	0.054 (0.751)	0.145 (2.281)	0.060 (1.110)	0.145 (2.404)	0.012 (0.098)	0.064 (0.655)			0.124 (1.978)	0.162 (2.226)	-0.100 (-0.939)	0.086 (0.782)	0.124 (0.877)	0.039 (0.212)
Ten2	0.265 (3.734)	0.222 (3.654)	0.258 (4.967)	0.228 (3.882)	0.250 (2.203)	0.120 (1.331)			0.341 (5.676)	0.209 (2.911)	0.079 (0.769)	0.237 (2.258)	0.358 (2.642)	0.132 (0.715)
Ten3	0.238 (2.293)	0.281 (3.152)	0.202 (2.722)	0.287 (3.176)	0.295 (1.282)	0.154 (1.022)			0.272 (3.097)	0.334 (3.056)	0.048 (0.350)	0.167 (1.033)	0.371 (1.916)	0.233 (0.932)
Patself	-0.054 (-0.769)	0.153 (2.431)	0.076 (2.034)	0.177 (4.205)	0.059 (0.622)	0.098 (1.256)			0.130 (2.877)	0.158 (3.145)	-0.018 (-0.256)	0.207 (2.624)	0.048 (0.437)	-0.001 (-0.013)
N	571	577	1046	864	173	197	150	76	757	602	289	262	175	130

Notes. - t-statistics in parentheses  
All specifications included Exper and Exper2.

TABLE 5-B

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1987 and 1988 Permanent Household Survey  
BY SECTOR

	Manufacture		Services		Construction		Public Sector		Services Formal		Services informal		Finacial	
	87	88	87	88	87	88	87	88	87	88	87	88	87	88
(1a)														
Yearse	0.109 (14.763)	0.112 (16.218)	0.105 (20.015)	0.118 (20.695)	0.077 (5.992)	0.088 (7.528)	0.105 (7.490)	0.099 (8.240)	0.108 (17.643)	0.125 (19.125)	0.087 (7.951)	0.093 (8.006)	0.093 (6.363)	0.133 (7.419)
Ten1	0.052 (0.723)	0.166 (2.540)	0.061 (1.130)	0.113 (1.957)	0.026 (0.219)	-0.125 (-1.244)	-0.166 (-0.793)	0.606 (3.334)	0.121 (1.927)	0.152 (2.253)	-0.102 (-0.962)	0.053 (0.495)	0.122 (0.866)	0.023 (0.131)
Ten2	0.262 (3.695)	0.288 (4.496)	0.262 (5.046)	0.288 (5.252)	0.271 (2.512)	0.252 (2.860)	-0.161 (-0.816)	0.717 (4.147)	0.343 (5.685)	0.264 (4.156)	0.076 (0.744)	0.356 (3.441)	0.367 (2.746)	-0.120 (-0.712)
Ten3	0.232 (2.237)	0.381 (3.991)	0.198 (2.664)	0.299 (3.618)	0.327 (1.456)	0.524 (3.222)	0.023 (0.102)	0.901 (4.304)	0.258 (2.925)	0.234 (2.446)	0.046 (0.334)	0.429 (2.751)	0.368 (1.906)	0.195 (0.877)
(1b)														
Yearse	0.110 (14.765)	0.113 (16.161)	0.104 (19.753)	0.118 (20.402)	0.078 (6.013)	0.088 (7.475)			0.105 (7.057)	0.125 (18.885)	0.087 (7.942)	0.092 (7.725)	0.090 (5.774)	0.127 (6.870)
Ten1	0.054 (0.751)	0.165 (2.527)	0.060 (1.110)	0.112 (1.939)	0.012 (0.098)	-0.150 (-1.446)			0.124 (1.978)	0.150 (2.225)	-0.100 (-0.939)	0.054 (0.503)	0.124 (0.877)	0.031 (0.179)
Ten2	0.265 (3.734)	0.290 (4.535)	0.258 (4.967)	0.285 (5.208)	0.250 (2.203)	0.214 (2.213)			0.341 (5.676)	0.262 (4.129)	0.079 (0.769)	0.353 (3.383)	0.358 (2.642)	-0.104 (-0.618)
Ten3	0.238 (2.293)	0.386 (4.040)	0.202 (2.722)	0.297 (3.591)	0.295 (1.282)	0.472 (2.747)			0.272 (3.097)	0.235 (2.454)	0.048 (0.350)	0.421 (2.658)	0.371 (1.916)	0.208 (0.938)
Patself	-0.054 (-0.769)	-0.061 (-1.034)	0.076 (2.034)	0.035 (0.843)	0.059 (0.622)	0.077 (0.947)			0.130 (2.877)	0.039 (0.824)	-0.018 (-0.256)	0.028 (0.347)	0.048 (0.437)	0.183 (1.436)
N	571	610	1046	1039	173	237	150	145	757	778	289	261	175	153

Notes. - t-statistics in parentheses  
All specifications included Exper and Exper2.

TABLE 5-C

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1987 and 1990 Permanent Household Survey  
BY SECTOR

	Manufacture		Services		Construction		Public Sector		Services Formal		Services Informal		Financial	
	87	90	87	90	87	90	87	90	87	90	87	90	87	90
(1a)														
Yearse	0.109 (14.763)	0.078 (8.503)	0.105 (20.015)	0.087 (12.053)	0.077 (5.992)	0.026 (1.625)	0.105 (7.490)	0.099 (6.258)	0.108 (17.643)	0.082 (9.507)	0.087 (7.951)	0.100 (7.493)	0.093 (6.363)	0.117 (5.454)
Ten1	0.052 (0.723)	0.183 (2.215)	0.061 (1.130)	0.192 (2.822)	0.026 (0.219)	-0.282 (-1.827)	-0.166 (-0.793)	-0.039 (-0.206)	0.121 (1.927)	0.182 (2.178)	-0.102 (-0.962)	0.218 (1.996)	0.122 (0.866)	0.037 (0.160)
Ten2	0.262 (3.695)	0.349 (4.351)	0.262 (5.046)	0.339 (5.162)	0.271 (2.512)	0.108 (0.923)	-0.161 (-0.816)	0.028 (0.156)	0.343 (5.685)	0.367 (4.578)	0.076 (0.744)	0.256 (2.359)	0.367 (2.746)	0.219 (1.020)
Ten3	0.232 (2.237)	0.449 (3.407)	0.198 (2.664)	0.472 (4.494)	0.327 (1.456)	0.197 (0.886)	0.023 (0.102)	0.221 (1.066)	0.258 (2.925)	0.469 (3.754)	0.046 (0.334)	0.424 (2.210)	0.368 (1.906)	0.341 (1.099)
(1b)														
Yearse	0.110 (14.765)	0.077 (8.295)	0.104 (19.753)	0.086 (11.722)	0.078 (6.013)	0.029 (1.752)			0.105 (17.057)	0.079 (9.048)	0.087 (7.942)	0.101 (7.489)	0.090 (5.774)	0.098 (3.892)
Ten1	0.054 (0.751)	0.182 (2.199)	0.060 (1.110)	0.189 (2.777)	0.012 (0.098)	-0.284 (-1.836)			0.124 (1.978)	0.170 (2.030)	-0.100 (-0.939)	0.213 (1.939)	0.124 (0.877)	0.036 (0.159)
Ten2	0.265 (3.734)	0.349 (4.349)	0.258 (4.967)	0.338 (5.147)	0.250 (2.203)	0.149 (1.192)			0.341 (5.676)	0.367 (4.588)	0.079 (0.769)	0.260 (2.381)	0.358 (2.642)	0.262 (1.217)
Ten	0.238 (2.293)	0.445 (3.335)	0.202 (2.722)	0.477 (4.540)	0.295 (1.282)	0.244 (1.073)			0.272 (3.097)	0.480 (3.848)	0.048 (0.350)	0.426 (2.214)	0.371 (1.916)	0.419 (1.340)
Patself	-0.054 (-0.769)	0.022 (0.253)	0.076 (2.034)	0.067 (1.315)	0.059 (0.622)	-0.113 (-0.943)			0.130 (2.877)	0.115 (1.874)	-0.018 (-0.256)	-0.041 (-0.468)	0.048 (0.437)	0.250 (1.468)
N	571	366	1046	625	173	112	150	114	757	466	289	159	175	92

Notes. - t-statistics in parentheses  
All specifications included Exper and Exper2.



TABLE 5-D

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1987 and 1991 Permanent Household Survey  
BY SECTOR

	Manufacture		Services		Construction		Public Sector		Services Formal		Services Informal		Financial	
	87	91	87	91	87	91	87	91	87	91	87	91	87	91
(1a)														
Yearse	0.109 (14.763)	0.103 (10.834)	0.105 (20.015)	0.100 (11.954)	0.077 (5.992)	0.027 (1.781)	0.105 (7.490)	0.104 (5.195)	0.108 (17.643)	0.108 (11.678)	0.087 (7.951)	0.058 (2.692)	0.093 (6.363)	0.128 (6.881)
Ten1	0.052 (0.723)	0.118 (1.469)	0.061 (1.130)	0.099 (1.304)	0.026 (0.219)	0.081 (0.619)	-0.166 (-0.793)	-0.296 (-0.792)	0.121 (1.927)	0.044 (0.509)	-0.102 (-0.962)	0.247 (1.536)	0.122 (0.866)	0.131 (0.770)
Ten2	0.262 (3.695)	0.302 (3.906)	0.262 (5.046)	0.258 (3.505)	0.271 (2.512)	0.315 (2.809)	-0.161 (-0.816)	-0.216 (-0.597)	0.343 (5.685)	0.252 (2.965)	0.076 (0.744)	0.257 (1.733)	0.367 (2.746)	0.342 (2.079)
Ten3	0.232 (2.237)	0.407 (3.209)	0.198 (2.664)	0.475 (3.929)	0.327 (1.456)	0.394 (1.884)	0.023 (0.102)	0.045 (0.116)	0.258 (2.925)	0.425 (3.195)	0.046 (0.334)	0.708 (2.372)	0.368 (1.906)	0.294 (1.047)
(1b)														
Yearse	0.110 (14.765)	0.102 (10.622)	0.104 (19.753)	0.096 (11.432)	0.078 (6.013)	0.027 (1.770)	0.105 (17.057)	0.104 (11.172)	0.105 (17.057)	0.104 (11.172)	0.087 (7.942)	0.050 (2.249)	0.090 (5.774)	0.120 (5.839)
Ten1	0.054 (0.751)	0.108 (1.351)	0.060 (1.110)	0.096 (1.276)	0.012 (0.098)	0.070 (0.528)	0.124 (1.978)	0.031 (0.364)	0.124 (1.978)	0.031 (0.364)	-0.100 (-0.939)	0.273 (1.698)	0.124 (0.877)	0.110 (0.639)
Ten2	0.265 (3.734)	0.288 (3.718)	0.258 (4.967)	0.240 (3.272)	0.250 (2.203)	0.277 (2.141)	0.341 (5.676)	0.235 (2.775)	0.341 (5.676)	0.235 (2.775)	0.079 (0.769)	0.222 (1.484)	0.358 (2.642)	0.332 (2.006)
Ten	0.238 (2.293)	0.396 (3.123)	0.202 (2.722)	0.481 (4.002)	0.295 (1.282)	0.354 (1.601)	0.272 (3.097)	0.439 (3.327)	0.272 (3.097)	0.439 (3.327)	0.048 (0.350)	0.664 (2.226)	0.371 (1.916)	0.281 (0.995)
Patself	-0.054 (-0.769)	0.145 (1.702)	0.076 (2.034)	0.170 (2.935)	0.059 (0.622)	0.065 (0.591)	0.130 (2.877)	0.193 (2.920)	0.130 (2.877)	0.193 (2.920)	-0.018 (-0.256)	0.211 (1.654)	0.048 (0.437)	0.122 (0.865)
N	571	394	1046	625	173	152	150	97	757	483	289	155	175	115

Notes. - t-statistics in parentheses  
All specifications included Exper and Exper2.

TABLE 5-E

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1987 and 1992 Permanent Household Survey  
BY SECTOR

	Manufacture		Services		Construction		Public Sector		Services Formal		Services Informal		Estb. Finac. y SS.	
	87	92	87	92	87	92	87	92	87	92	87	92	87	92
(1a)														
Yearse	0.109 (14.763)	0.107 (12.731)	0.105 (20.015)	0.099 (14.075)	0.077 (5.992)	0.063 (4.055)	0.105 (7.490)	0.075 (4.713)	0.108 (17.643)	0.102 (12.238)	0.087 (7.951)	0.088 (6.385)	0.093 (6.363)	0.109 (6.245)
Ten1	0.052 (0.723)	0.110 (1.468)	0.061 (1.130)	-0.026 (-0.407)	0.026 (0.219)	0.061 (0.413)	-0.166 (-0.793)	0.156 (0.730)	0.121 (1.927)	-0.030 (-0.398)	-0.102 (-0.962)	-0.014 (-0.116)	0.122 (0.866)	0.090 (0.561)
Ten2	0.262 (3.695)	0.176 (2.530)	0.262 (5.046)	0.115 (1.895)	0.271 (2.512)	0.207 (1.639)	-0.161 (-0.816)	-0.065 (-0.338)	0.343 (5.685)	0.114 (1.618)	0.076 (0.744)	0.118 (0.992)	0.367 (2.746)	0.232 (1.585)
Ten3	0.232 (2.237)	0.320 (2.879)	0.198 (2.664)	0.105 (0.907)	0.327 (1.456)	0.070 (0.404)	0.023 (0.102)	0.253 (1.029)	0.258 (2.925)	0.073 (0.540)	0.046 (0.334)	0.201 (0.865)	0.368 (1.906)	0.311 (1.081)
(1b)														
Yearse	0.110 (14.765)	0.102 (12.033)	0.104 (19.753)	0.095 (13.703)	0.078 (6.013)	0.062 (3.947)			0.105 (17.057)	0.097 (11.824)	0.087 (7.942)	0.087 (6.253)	0.090 (5.774)	0.095 (5.257)
Ten1	0.054 (0.751)	0.113 (1.521)	0.060 (1.110)	-0.009 (-0.137)	0.012 (0.098)	0.070 (0.474)			0.124 (1.978)	-0.008 (-0.110)	-0.100 (-0.939)	-0.009 (-0.071)	0.124 (0.877)	0.113 (0.718)
Ten2	0.265 (3.734)	0.185 (2.688)	0.258 (4.967)	0.118 (1.976)	0.250 (2.203)	0.230 (1.733)			0.341 (5.676)	0.114 (1.658)	0.079 (0.769)	0.122 (1.019)	0.358 (2.642)	0.219 (1.535)
Ten3	0.238 (2.293)	0.323 (2.936)	0.202 (2.722)	0.133 (1.167)	0.295 (1.282)	0.116 (0.608)			0.272 (3.097)	0.136 (1.034)	0.048 (0.350)	0.190 (0.813)	0.371 (1.916)	0.361 (1.282)
Patself	-0.054 (-0.769)	0.230 (3.145)	0.076 (2.034)	0.238 (4.852)	0.059 (0.622)	-0.061 (-0.578)			0.130 (2.877)	0.309 (5.348)	-0.018 (-0.256)	0.067 (0.701)	0.048 (0.437)	0.341 (2.537)
N	571	397	1046	732	173	122	150	93	757	543	289	189	175	120

Notes. - t-statistics in parentheses  
All specifications included Exper and Exper2.

TABLE 5-F

Wage Equations for men age 25-54 from the Greater Buenos Aires  
October 1987 and 1993 Permanent Household Survey  
BY SECTOR

	Manufacture		Services		Construction		Public Sector		Services Formal		Services Informal		Finacial	
	87	93	87	93	87	93	87	93	87	93	87	93	87	93
(1a)														
Yearse	0.109 (14.763)	0.098 (12.602)	0.105 (20.015)	0.108 (16.284)	0.077 (5.992)	0.081 (5.311)	0.105 (7.490)	0.099 (7.111)	0.108 (17.643)	0.108 (15.093)	0.087 (7.951)	0.101 (5.387)	0.093 (6.363)	0.153 (7.897)
Ten1	0.052 (0.723)	0.069 (1.007)	0.061 (1.130)	0.024 (0.391)	0.026 (0.219)	0.107 (0.846)	-0.166 (-0.793)	-0.064 (-0.401)	0.121 (1.927)	0.028 (0.422)	-0.102 (-0.962)	0.028 (0.172)	0.122 (0.866)	-0.094 (-0.522)
Ten2	0.262 (3.695)	0.186 (2.642)	0.262 (5.046)	0.186 (3.099)	0.271 (2.512)	0.204 (1.728)	-0.161 (-0.816)	0.004 (0.028)	0.343 (5.685)	0.199 (3.058)	0.076 (0.744)	0.160 (1.008)	0.367 (2.746)	0.227 (1.226)
Ten3	0.232 (2.237)	0.214 (2.099)	0.198 (2.664)	0.428 (3.825)	0.327 (1.456)	0.044 (0.220)	0.023 (0.102)	0.175 (0.908)	0.258 (2.925)	0.448 (3.703)	0.046 (0.334)	0.351 (1.200)	0.368 (1.906)	0.577 (2.237)
(1b)														
Yearse	0.110 (14.765)	0.096 (12.097)	0.104 (19.753)	0.105 (15.868)	0.078 (6.013)	0.080 (5.154)		0.099 (6.939)	0.105 (17.057)	0.105 (14.774)	0.087 (7.942)	0.097 (5.099)	0.090 (5.774)	0.147 (7.222)
Ten1	0.054 (0.751)	0.069 (1.003)	0.060 (1.110)	0.024 (0.383)	0.012 (0.098)	0.084 (0.643)		-0.064 (-0.398)	0.124 (1.978)	0.024 (0.363)	-0.100 (-0.939)	0.044 (0.265)	0.124 (0.877)	-0.118 (-0.654)
Ten2	0.265 (3.734)	0.188 (2.679)	0.258 (4.967)	0.174 (2.912)	0.250 (2.203)	0.177 (1.434)		0.005 (0.036)	0.341 (5.676)	0.181 (2.790)	0.079 (0.769)	0.176 (1.115)	0.358 (2.642)	0.203 (1.087)
Ten3	0.238 (2.293)	0.211 (2.075)	0.202 (2.722)	0.412 (3.712)	0.295 (1.282)	0.004 (0.022)		0.173 (0.891)	0.272 (3.097)	0.428 (3.563)	0.048 (0.350)	0.356 (1.222)	0.371 (1.916)	0.550 (2.121)
Patself	-0.054 (-0.769)	0.083 (1.187)	0.076 (2.034)	0.170 (3.544)	0.059 (0.622)	0.079 (0.760)		-0.070 (-0.126)	0.130 (2.877)	0.166 (3.196)	-0.018 (-0.256)	0.175 (1.375)	0.048 (0.437)	0.148 (1.095)
N	571	435	1046	636	173	179	150	120	757	611	289	135	175	119

Notes. - t-statistics in parentheses  
All specifications included Exper and Exper2.