

## RISING UNEMPLOYMENT IN ARGENTINA: 1974-1993

Carola Pessino  
CEMA

Leonardo Giacchino  
Duke University

Very preliminary  
Comments welcome

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

This paper presents evidence on the evolution of unemployment in Argentina for the period 1974-1993. Argentina has been traditionally a country with relatively low unemployment rates; although the fear of increasing rates of joblessness has been in the mind of government and politicians for very long.

As in the US and most European countries, the unemployment rate (U) has risen steadily during the period, being below 5% before 1985 on average, rising to 7% until 1992 and surpassing 10% in the last three household surveys taken in 1993 and 1994. Table I compares the rate to other countries showing that except for Japan with the lowest rates of unemployment, Argentina presents very low rates, that just start to rise significantly after 1984.<sup>2</sup>

TABLE I  
Unemployment rates in eight countries

	1974-78	1978-83	1984-88	1989-93
Argentina	2.7	3.2	4.8	6.9
Canada	7.1	9.0	9.5	
France	4.3	7.2	10.1	
Germany	3.2	4.8	6.6	
Japan	1.9	2.3	2.7	
Spain	4.6	13.3	20.3	
United Kingdom	5.1	9.0	10.5	
United States	6.9	7.9	6.6	

Source: For Argentina the data refers to the unemployment rate in September of each year as reported in the Permanent Household Survey for Greater Buenos Aires. For the rest of the countries the source is OECD, *Economic Outlook*, several issues.

Figure 1 presents the evolution of the unemployment rate during the period: it follows an increasing trend as just noticed, with several peaks each successively greater than the previous one. The first peak, with an unemployment rate of 4% in 1976, coincided with a recession as seen in Figure 2 that shows GDP per capita for Argentina during the same period. In the second peak, in 1981, U increases to more than 5% coinciding with a recession that began in 1980 and continued until 1982.<sup>3</sup> The third peak in 1985 where U reached again 5% coincided with another drop in GDP per capita as did the fourth peak in 1989, with unemployment surpassing 7%.

The last peak, in 1993 with unemployment at around 10%, however, is the first in this period of time that does not accompany a recession. To the contrary, it accompanies the highest increase in GDP per capita of the whole period.

<sup>1</sup> We thank Luis Andrés for valuable assistance in gathering and processing data. We are also grateful to members of The Permanent Household Survey from INDEC in providing data and helpful comments. All remaining errors are ours.

<sup>2</sup> Although we use the term Argentina throughout the paper, the data is from Capital Federal and Greater Buenos Aires area, where the most complete set of data is available. The excuse for using the term Argentina lies in the fact that this area comprises 48% of the total population of the country, produces more than 60% of National GDP and the available labor force statistics for the whole country match the evolution for Buenos Aires.

<sup>3</sup> It is difficult to take simply about "recessions" during the 80s in Argentina. As can be seen from Figure 2, the GDP per capita decrease since 1980, just began to recover since 1991.

FIGURE 1

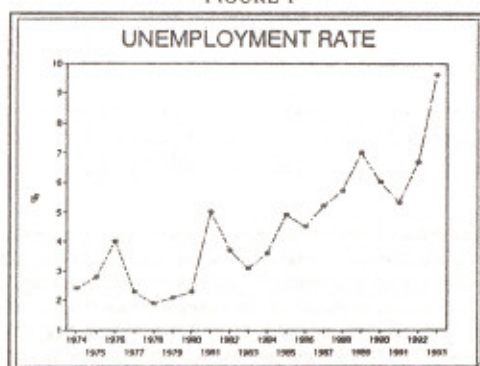


FIGURE 2



This article studies the determinants of both secular and cyclical increase in unemployment in Argentina since 1974. The first objective is to document the "stylized facts" about unemployment during this period. Much of the work of this paper has been to gather almost in an economic history fashion data that was scattered, almost never used seriously, hidden by government officials and never interpreted before. The second objective is to establish the importance of available theories of unemployment on the light of the Argentine evidence. It does not provide complete answers to the reasons for the increase in unemployment but it does identify avenues for further research.

The data we use come from multiple sources. First, we have microdata tapes from the Permanent Household Survey from 1985 until 1993 (October each year) for the Greater Buenos Aires area (GBA). The data contains information on labor force status, wages, income and sociodemographic characteristics of individuals and their families. These data is elaborated by the National Institute of Statistics in Argentina (INDEC) and it is data that has never been used as time series cross-sections as in this article. The drawback is that we do not yet count with the full cross-sections of data since 1974, but we were able to count with some tabulations that permitted us to conduct part of the study for the whole period 74-93. Second, we complement this household data with vacancy data obtained from INDEC based on newspapers advertisements on jobs wanted. Lastly, we use data from an industrial survey, also elaborated by INDEC, showing employment shares and their variability in manufacturing.

The literature on the determinants of unemployment is not well unified for the purposes of empirical implementation. On the one hand, there are macroeconomic theories that study the cyclical behavior of unemployment, within the framework of Phillips curve type of models (Lucas (1973), Barro (1978)), models with staggered contracts that prevent real wages to adjust immediately following a shock, and models with real shocks.

There is an intermediate view that relates unemployment, not only to cyclical shifts, but to changes in sectoral demand (Lillien (1982)). The microeconomic literature emphasizes labor supply aspects of unemployment, being in the form of changes in labor force participation of individuals or search models that emphasize how changes in wages and/or income affect optimal decisions by individuals to remain voluntarily unemployed.

In this paper, we do not take a position on the theory of unemployment to apply to uncover the reasons for its increase. We rather begin with a simple definition of unemployment changes as function of the different labor market flows (see Marston 1976). In this reduced form model we are trying to encompass the different partial models available on the literature:

$$(1) \quad \Delta U = f(P_{ee}, P_{eu}, P_{eu}, P_{eu}, P_{eu}, P_{eu})$$

where  $P_{ij}$  = flow from state  $i$  into state  $j$ , and where  $e$  indexes employment,  $u$  unemployment, and  $n$ , out of the labor force. If markets function perfectly, without delays, wage rigidities or other imperfections, we will have no change in unemployment. To generate changes in unemployment all the unemployment models assume that these flows will change (at least temporarily) if there is an increase in supply of labor that is not immediately accompanied by an increase in demand or fall in wages. This dependence will depend on the model considered but are usually due to institutional factors in the labor market that prevent real or nominal wages to adjust at all time periods to excess demand or supply.

The necessitated increase in wages to close the gap between supply and demand of labor takes time and maybe is never fully achieved giving the presence of unions, rigid labor legislation, minimum wages, or private decisions of firms that pay above market-clearing wages to motivate the labor force. These last considerations give rise to what Stiglitz (1986) and Yellen (1984) call "efficiency-wage" models of unemployment.

Hence, the change in the unemployment rate is the result of adjustments to changes in demand and/or supply of employment in the economy. The total flow into unemployment is  $P_u = P_{eu} + P_{eu}$ . That is, this transition increases either if the inactive population decides to enter the labor force and does not find employment and/or if the current employed population is fired or quits its employer.

The measured unemployment rate at a point in time however, measures the proportion of the labor force becoming unemployed per period times the average duration of an unemployment spell. In this sense, one can find that the proportion becoming unemployed has not changed but that the same people remain unemployed more time.

While to build a theoretical model one needs to simplify and concentrate on the key assumptions that lead to a hypothesis, when doing empirical work one keeps in mind all the possible determinants, and hence theories that could have contributed to the observed changes in unemployment. There are only a handful of studies that used this approach, maybe because of prior information that led researchers to use one model in favor of others or because of the inherent difficulty in building a complete model. At the end of the paper, we suggest possible avenues to build a general equilibrium model that takes into account how different types of shocks affect the derived demand for labor, labor supply of individuals, and hence if some imperfections exist, also unemployment will be affected.

The paper will proceed as follows. Section 2 analyzes the evolution of unemployment due to increases in the rate of entry into unemployment and to longer spells of unemployment. Sections 3, 4 and 5 study labor supply explanations of the increase in the unemployment rate. Although there are no good models that link changed labor force participation to unemployment, we can describe the facts from the data. Section 3 examines compositional or demographical shifts in labor force participation and unemployment, showing what unemployment would have been without demographical changes in labor force participation rates. Section 4 studies the changes in the rate, flows and duration of unemployment by age-sex, industry, occupation, education and marital status. Section 5 presents initial evidence to discriminate between added vs additional worker effects to explain the increase in participation and unemployment of women during the period. Section 6 elaborates on the possible changes in demand that contributed to unemployment during the period, dealing with Lillien (1982) and Abraham and Katz (1986) type of models and their empirical implementation for Argentina. Section 7 deals with institutional changes in the labor market occurring in Argentina during the period. Section 8 concludes reporting the main findings and an agenda for further research.

## 2. Evolution of incidence and duration of unemployment

Rising unemployment is usually due to both increased rates of entry into unemployment and longer spells. In both, the United States and European countries, the secular increase in unemployment has been due more to increased entry flows; however much of the increase in unemployment is accounted for by an increase in the frequency of very long spells. (See Clark and Summers (1979) and Murphy and Topel (1987) among others.)

Argentina presents much the same evidence. Table 2 shows the decomposition of the unemployment rate into its entry or flow into unemployment component (F) in column (2) and the mean duration of completed spells in the steady state in column (3). In fact, column (3), was estimated dividing column (1) by column (2). It is difficult in Argentina to choose a base year for comparison, since it had all types of shocks during the last two decades. In particular, the hyperinflationary period of 1988-1990 (peaking in 1989) was almost an island in between the longer period 1985-1993<sup>4</sup>. In fact, Table 2, reveals that 1987 and 1991 are quite similar in terms of unemployment, flows and durations. Consequently, we begin with a comparison of 1993 with 1987. The unemployment rate grew in 4.7 percentage points, that is 92 %, while the inflow into unemployment grew less than that, 47%, the remaining being the increase in the mean duration of unemployment, that increased from an average of 3.5 weeks to 4.5 weeks (29%). That is one third of the increase in unemployment is attributed to increases in the mean duration, while two thirds to an increase in the flow into unemployment.<sup>5</sup>

TABLE 2  
UNEMPLOYMENT, FLOW AND DURATION

	(1) Unemployment rate % U	(2) Inflow per month % F	(3) Average completed duration of all spells Steady State (mos.) d	(4) Average uncompleted duration of current spells (mos.) ud	(5) % of Workers taking up present job in last year
1985	4.7	1.3	3.5	3.6	20.1
1986	4.4	1.5	2.9	2.1	21.0
1987	5.1	1.5	3.5	2.8	20.0
1988	5.6	1.7	3.3	2.5	22.3
1989	7.1	1.6	4.4	3.7	23.3
1990	6.0	1.5	4.0	3.8	25.1
1991	5.3	1.5	3.6	3.3	26.2
1992	6.6	2.0	3.3	2.9	27.2
1993	9.8	2.2	4.5	4.0	25.7

Note: Unemployment rate (U) for age-group 15 to 64. The number of unemployed who have durations of less than one month have been calculated on the basis of a uniform distribution of durations of less than one month. This resulting number has been taken as the monthly inflow. This excludes roughly one half of those whose completed unemployment duration is less than two months. Average duration of unemployment is exaggerated in the same proportion as inflow is understated.  
col. (3) = col. (1)/col. (2), all the data taken from EPH for Greater Buenos Aires, October of each year.

In spite of these findings, we cannot ascertain that most of current unemployment in Argentina is accounted for many spells of short duration. As has been noted in the literature (Akerlof and Main (1980), Clark and Summers (1979) among others), the average duration of completed spells (Column (3) calculated here as column(1)/column(2) assuming we are in the steady state) is not a good statistic to analyze how longer spells account for the increment in unemployment. In other words, column (3) measures the average duration of all spells beginning in a given time period, while the measured rate of unemployment takes into account every spell of unemployment that is in progress at a point in time. This statistic, the average duration of current spells is approximately twice the number shown in column (4), assuming that on average uncompleted durations are half of the true completed durations of current spells. On the basis of column (4), the average completed duration of a spell

<sup>4</sup> See Pessino (1993, 1994a) for evidence that hyperinflation altered quite sensibly wage profiles, especially rates of return to education, but that after hyperinflation ended the profiles moved back to original.

<sup>5</sup> Comparing the unemployment rates taking the average of 1985-1987 to the average of 1991-1993 we have an increase in the unemployment rate of 53%, of which one third is attributed to an increment in mean duration and one third to the increase in entry into unemployment.

in progress was 5.6 weeks in 1987 and 8 weeks in 1993 (43% increase). On the basis of this data, one can conclude that the rise of unemployment in Argentina is accounted for increasingly longer spells. Given that uncompleted duration of current spells is the data directly available from the surveys, Table 3 reports its distribution function for the period 1985-1993. One can roughly calculate using these numbers, the increase in the contribution of longer spells to average unemployment. While in 1987, 11% of spells longer than six months accounted for roughly 20% of unemployment, in 1993, longer than six months spells accounted for more than 40% of unemployment.

TABLE 3  
DISTRIBUTION OF INCOMPLETE DURATION OF CURRENT SPELLS  
In months

	ud < 2	2 < ud < 6	6 < ud < 12	ud > 12	Total
1985	61.9	15.8	18.9	3.4	100
1986	75.9	17.6	5.7	0.8	100
1987	63.6	25.6	8.8	2.0	100
1988	63.2	28.8	7.6	0.3	100
1989	46.0	38.3	10.7	5.0	100
1990	50.6	27.3	18.4	3.8	100
1991	55.7	28.4	13.6	2.3	100
1992	61.4	26.8	9.8	2.0	100
1993	44.9	32.9	17.8	4.5	100

On the basis of this Table, we can also calculate the contribution to average total months unemployed in each year by persons reporting the indicated number of months. Taking our base year 1987, people with uncompleted duration of less than 6 months contributed 1.68 months to the average of 2.8 months, the rest, 1.09 months being the contribution to incomplete duration of current spells, of spells of more than six months. In 1993, the contribution of shorter spells is similarly of 1.7 months, while the largest increase is for spells lasting more than six months, contributing 2.3 months to the average of 4 months incomplete duration of unemployment. In sum, the increase in uncompleted durations from 1987 until 1993 is due mainly to persons who were unemployed six months or more.

### 3. Compositional shifts in the unemployment rate

Another explanation for changes in the natural rate of unemployment is simply that the composition of the labor force has shifted towards groups with higher long-run unemployment rates. If factors explaining voluntary turnover rates among employed workers, movements in and out of the labor force, and how long it takes for the unemployed to find acceptable jobs, we will have that the natural rate of unemployment is influenced by the demographic composition of the labor force.

Table 4 shows the composition of unemployment rates by age-sex for the period October 1974 to October 1993.

We are specially interested in finding if the large increase in unemployment rates for 1993 can be explained in part by demographical shifts, especially the large increase experienced by female labor force during the period.

This Table shows that the unemployment rate for women has been consistently higher than that for men, except for 1985 and 1992 when the rate of men is slightly higher than that of women. With respect to the age composition of unemployment we can see that teenagers (aged 15-19) have also consistently higher unemployment rates than those aged 20-34 and these in turn consistently lower rates than those aged 35-49. The rate for older workers (aged 50-64) show relatively lower rates of unemployment than teenagers but without a consistent pattern with the middle groups. In terms of relative rates of unemployment over time, we see that comparing with 1974, the unemployment rate for males grew five times going from 1.6% to 7.9%, while that for females grew a bit more than three times. Moreover, although there is a consistent higher rate of unemployment for females, this gap has tended to narrow over the years. However, as Figure 3 shows, there was a convergence of sex unemployment rates from 1974 until 1981 when the unemployment rate for women reached 5.3% and that for men 4.9%. From 1982 to 1992, we have a period of similar rates of unemployment until 1993 when female rates seem to increase much more than those of men.

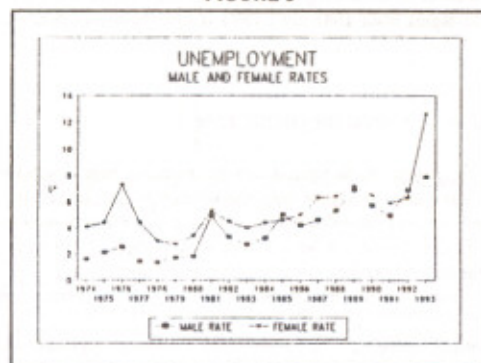
TABLE 4  
OCTOBER UNEMPLOYMENT RATES\*

Year	ALL					WOMEN					MEN				
	(1)	(2)	(3)	(4)	(T)	(1)	(2)	(3)	(4)	(T)	(1)	(2)	(3)	(4)	(T)
1974	8.1	2.3	1.6	1.3	2.4	12.5	3.6	3.2	1.9	4.1	5.2	1.5	0.9	1.1	1.6
1975	11.9	2.7	1.4	0.9	2.8	15.5	3.6	1.7	1.2	4.4	9.5	2.2	1.3	0.8	2.1
1976	11.7	4.6	2.1	2.0	4.0	14.9	8.1	4.4	2.5	7.3	8.9	2.5	1.1	1.8	2.5
1977	9.1	2.1	1.5	1.1	2.3	11.4	3.7	4.6	1.2	4.4	7.4	1.2	0.2	1.1	1.4
1978	6.6	1.7	1.2	0.9	1.9	8.1	1.8	3.1	1.4	3.0	5.4	1.6	0.3	0.7	1.3
1979	3.7	2.2	1.0	2.4	2.1	1.7	3.3	1.9	3.7	2.7	5.1	1.5	0.6	2.0	1.7
1980	6.8	2.5	1.5	1.2	2.3	5.5	4.1	2.1	1.6	3.4	7.6	1.5	1.2	1.1	1.8
1981	14.2	5.1	3.5	3.9	5.0	16.9	4.2	4.3	4.1	5.3	12.3	5.6	3.5	3.9	4.9
1982	10.7	3.9	3.0	2.5	3.7	9.6	5.1	3.7	2.6	4.5	11.4	3.1	2.7	2.4	3.3
1983	12.2	3.8	1.4	1.6	3.1	16.5	4.4	0.9	2.9	4.0	9.6	3.4	1.6	1.1	2.7
1984	13.5	3.6	2.4	1.6	3.6	17.9	4.0	2.2	2.1	4.4	10.8	3.3	2.5	1.4	3.2
1985	17.9	4.8	2.6	3.9	4.9	15.6	5.2	2.8	1.6	4.6	19.2	4.6	2.4	4.8	5.0
1986	13.6	4.3	3.1	3.5	4.5	14.3	5.5	3.6	2.9	5.0	13.2	3.6	2.9	3.8	4.2
1987	15.2	5.4	3.3	3.6	5.2	17.1	7.0	4.1	3.3	6.3	14.1	4.3	2.9	3.7	4.6
1988	17.5	6.3	3.6	3.3	5.7	20.9	7.4	3.8	3.0	6.4	15.4	5.6	3.5	3.4	5.3
1989	21.5	8.3	4.3	4.4	7.0	27.7	8.2	3.7	4.0	7.2	17.4	8.4	4.7	4.0	6.9
1990	19.7	6.3	4.1	3.7	6.0	26.5	6.7	4.0	2.8	6.5	16.1	6.1	4.2	4.8	5.7
1991	17.1	5.5	3.7	3.2	5.3	17.5	6.7	3.9	2.8	5.9	16.9	4.7	3.5	3.3	4.9
1992	16.3	6.7	4.4	6.7	6.7	14.3	7.2	4.2	5.8	6.3	17.3	6.4	4.4	7.1	6.9
1993	29.0	9.9	7.8	5.9	9.6	40.6	12.6	10.5	5.4	12.6	21.9	8.1	6.1	6.2	7.9

Age Groups:  
(1) 15 to 19  
(2) 20 to 34  
(3) 35 to 49  
(4) 50 to 64  
(T) Total

\* Source: all data taken from EPR for Greater Buenos Aires.

FIGURE 3



To decompose total unemployment rate into changes in labor force weights and changes attributable to the unemployment rates for the different groups at fixed weights, we use the usual decomposition (This same methodology was applied for different classifications of workers in the US by Johnson and Layard (1986) and Summers (1986)):

1) In a time series-cross section group of data, choose a base year where you fix the weights  $\pi_i$  for aggregate unemployment:

$$(2) \quad U_t = \sum_i \pi_i u_{it}$$

where  $u_{it}$  = is the unemployment rate of group  $i$  in year  $t$ .

$\pi_i$  = is the share in the labor force of group  $i$  in year  $t$

2) Use the weights  $\pi_i = \pi_{ij}$  for base year  $j$  to construct a "net of compositional shifts" measure of unemployment, using the  $u_{it}$  for each period.

Table 5 reports the results on the adjusted unemployment rate for the eight age-sex groups constructed in

the above fashion. Two base years were used, 1974 and 1985, to avoid having results that depend on the particular year chosen and because as noted earlier there was a shift in relative unemployment rates during the first part of the 80s. Given that the decomposed data is available only for the groups aged 15-64 (younger than 15 and older than 64 are not included), the overall unemployment rate differs slightly from that in Figure 1. Using fixed labor force weights for 1974, the unemployment rate would have been even higher, instead of 9.8% in 1993, 10.1%. Using the fixed weights of 1985 (see Table 6), the adjusted rate for 1993 is 9.5%, only slightly lower than the unadjusted unemployment rate. Similar results hold if one compares the unemployment rate for 1993 with base year in 1992, taking into account that there was a substantial increase in the labor force participation of women. Overall, the rate of unemployment increased in 4.9 percentage points from 1985 until 1993, of which one fifth of a percentage point can be attributed to changes in the composition of the labor force, most of the change, 3.7 percentage points to an increase in the unemployment rate for each group, and the rest to interactions between these two measures. The change in the unemployment rate due to changes in the composition of the labor force is very small. Female labor force weights increased from 32.7 in 1974, to 34.1 in 1985 and 38.5 in 1993. However, the increase has been greater in age categories that had lower unemployment rates while categories with higher unemployment rates changed slightly their participation (teenage women had a share of 3.6% in 1974, 2.5% in 1985 and 2.9% in 1993).

TABLE 5  
ADJUSTED UNEMPLOYMENT RATES (October)

	15to64	Base '74	Base '85
1974	2.4	2.4	2.3
1975	2.7	2.8	2.5
1976	3.8	4.0	3.7
1977	2.2	2.3	2.2
1978	1.8	1.8	1.7
1979	2.0	2.0	2.0
1980	2.3	2.3	2.2
1981	5.1	5.2	5.0
1982	3.7	4.0	3.8
1983	3.1	3.4	3.1
1984	3.5	3.8	3.4
1985	4.7	5.1	4.8
1986	4.4	4.6	4.4
1987	5.1	5.3	5.0
1988	5.6	5.9	5.5
1989	7.1	7.5	7.0
1990	6.0	6.5	6.1
1991	5.3	5.5	5.2
1992	6.6	6.8	6.6
1993	9.8	10.1	9.5

TABLE 6  
WEIGHTS (October)

Age Group	1974	1985	1987	1992	1993
<u>Women</u>					
15 to 19	3.58	2.52	2.74	2.80	2.86
20 to 34	16.88	14.18	15.05	14.10	15.06
35 to 49	7.82	11.61	12.14	13.73	13.57
50 to 64	4.38	5.75	6.17	6.43	7.02
15 to 64	32.67	34.07	36.10	37.07	38.52
<u>Men</u>					
15 to 19	5.44	4.38	4.78	5.37	4.65
20 to 34	24.60	24.29	23.44	23.23	23.17
35 to 49	23.32	22.27	21.79	21.79	21.29
50 to 64	13.97	14.99	13.89	12.54	12.37
15 to 64	67.33	65.93	63.90	62.93	61.48

Summarizing, the increase in the rate of unemployment in Argentina is explained by the overall increase in group unemployment rates, especially in the last two years.

#### 4. Heterogeneity in incidence and duration

Our previous results show that most of the increase in unemployment in Argentina is due to a higher overall duration of unemployment (even though the incidence of short spells had also increased substantially since 1987). We also showed that changes in labor force shares of different demographic groups, especially the higher share of women in the labor force and the lower share of teenagers, did not contribute to increments in the unemployment rate. However, we have not yet shown how both durations and flows differ among these groups and how they differ among other decompositions of the labor force. In particular, we are interested in differences in durations and flows by age-sex, sector, occupational category, educational attainment and marital status.

Table 7 presents unemployment rates, durations and flows for various subgroups of the population in 1987 and 1993.

We will first refer to the data in 1987 to see how it compares to stylized facts on unemployment for other countries that have been widely studied as the US and Great Britain, since we do not count with any other unemployment study in Argentina.

First of all, young people are much more likely to be unemployed than older people. In particular, teenage unemployment rates are more than four times higher than unemployment rates for both prime age males and prime age females (35-49 years of age). This data is comparable to the US in terms of higher teenage unemployment; however such a difference with prime-age persons is shared mainly with countries like Italy and Spain with regulated labor markets as Argentina (see Layard, Nickell and Jackman (1991), Table 2). Younger people have higher rates of unemployment mainly because of higher inflow rates and not so much due to higher durations of unemployment. Note that in general, column (2) of the table showing the inflow into unemployment tend to vary directly with numbers in column (4) that show the percentage of the respective group having less than one year of tenure on the job.

With respect to overall sex differences, in 1987 unemployment rates for female workers were 50% higher than the corresponding rates for males, being the main difference the higher incidence of unemployment for females (with the same duration as males). Females have much lower labor force attachment than males in Argentina. This fact is shared also by the US and Britain; however the higher flow tends to be compensated with lower durations making both rates of unemployment strikingly similar.

Unemployment rates by Sector show also the usual pattern: higher rates in Construction mainly because of higher turnover and not so different unemployment rates for Service and Manufacturing Sectors. Note that differences in industrial unemployment rates are less clear than other concepts since unemployed people are attributed to the industry in which they were last unemployed, and many eventually find employment elsewhere.

Occupational rates of unemployment show in 1987 also the usual pattern, being highest for the less skilled workers since they have a higher incidence of unemployment than other groups. The striking feature of this breakdown is that the unemployment rate of blue-collar workers is nearly nine times higher than the rate of unemployment of professionals, fact that it is not shared by the US or Great Britain (in 1987 professionals had unemployment rates four times higher than those for blue-collar workers).

Closely related to differences in occupational unemployment rates are differences in unemployment rates by educational attainment. Since education (unlike occupation) is a relatively stable personal characteristic, these rates are in many ways more meaningful. We confirm the fact that education is inversely related to the probability of unemployment and that differences are more important in terms of inflows rather than durations of unemployment.

Unemployment rates by marital status show also the usual pattern of being higher for single people, intermediate for widowed or divorced and lower for married people. For women we see differences in that the unemployment rate for married women is higher than that for widowers or divorced; this reflecting the more volatile attachment of married women to the labor force.

Now we will analyze if there was a changing pattern between 1987 and 1993 in the structure of



unemployment, and ask the question: whose unemployment rate was hit the hardest?\*

TABLE 7  
UNEMPLOYMENT AND FLOWS BY INDUSTRY, OCCUPATION AGE AND SEX, 1987 AND 1993

	1987					1993				
	(1) U	(2) F	(3) d	(4) udc	(5) % Hired last year	(6) U	(7) F	(8) d	(9) udc	(10) % Hired last year
<b>Age and sex</b>										
<b>Male</b>										
15-19	14.3	3.5	4.5	2.9	43.7	21.8	4.6	4.8	4.0	50.7
20-34	4.2	1.1	3.8	2.5	23.8	8.1	2.0	4.0	3.7	33.1
35-49	2.9	1.0	2.8	2.4	13.0	6.1	1.8	3.4	3.3	18.7
50-64	3.8	1.2	3.2	2.7	6.3	6.2	1.0	6.2	5.3	12.8
15-64	4.4	1.3	3.5	2.6	17.8	8.0	1.9	4.2	3.9	25.4
<b>Female</b>										
15-19	17.3	5.3	3.3	2.7	52.1	40.3	9.5	4.3	3.8	40.2
20-34	7.3	1.8	4.0	3.1	29.2	12.6	2.2	5.8	4.4	34.3
35-49	4.2	1.5	2.8	2.2	18.0	10.5	2.5	4.3	3.9	20.2
50-64	3.0	0.6	4.8	4.5	10.9	5.4	1.2	4.5	5.1	15.5
15-64	6.3	1.8	3.5	2.9	24.0	12.6	2.6	4.8	4.2	26.3
All	5.1	1.5	3.5	2.8	20.0	9.8	2.2	4.5	4.0	25.7
<b>Industry</b>										
Manufacturing	5.5	2.1	2.6	2.0	22.2	9.0	2.2	4.1	3.8	25.1
Services	4.5	1.3	3.4	3.0	24.6	8.6	1.9	4.5	4.0	28.0
Construction	11.0	4.0	2.7	2.2	28.3	16.7	5.2	3.2	2.8	27.6
Public Sector	1.1	0.2	6.6	4.0	16.7	2.1	0.6	3.4	4.0	18.2
<b>Informality</b>										
Self-employed	4.6	1.7	2.8	2.2	19.0	7.8	2.6	3.1	3.0	19.3
Wage-employed	4.9	1.5	3.2	2.8	25.1	8.9	1.9	4.7	4.1	28.8
<b>Occupation</b>										
Professional	0.8	0.3	2.7	1.8	13.0	1.1	0.3	4.3	5.7	15.3
White-Collar	3.8	1.3	2.9	2.6	19.9	8.0	1.9	4.2	4.0	23.6
Blue-Collar	7.1	2.2	3.2	2.6	31.0	12.1	3.1	4.0	3.3	35.9
<b>Education</b>										
Primary I	7.6	2.3	3.3	2.8	23.8	9.3	3.1	3.0	2.2	27.0
Primary C	6.4	2.4	2.6	2.1	23.2	11.6	2.9	3.9	3.7	25.4
Secondary I	6.3	1.9	3.2	2.8	26.1	12.2	2.7	4.5	3.9	29.7
Secondary C	4.0	0.7	5.8	4.2	21.5	8.2	1.4	5.7	5.0	25.3
Tertiary I	3.4	0.8	4.5	4.0	26.1	9.4	1.2	7.8	5.3	27.0
Tertiary C	2.2	0.6	3.4	3.1	15.9	3.6	0.8	4.6	4.2	17.8
<b>Marital status</b>										
<b>Male</b>										
Single	8.6	2.2	3.8	2.7	28.4	14.3	3.3	4.3	4.0	38.0
Married	2.8	0.9	3.3	2.6	13.9	5.6	1.4	4.0	3.8	20.3
Widowed/Divorced	4.4	2.2	2.0	1.0	12.7	3.1	0.6	5.7	4.6	19.1
<b>Female</b>										
Single	8.4	2.0	4.2	3.1	30.3	18.4	3.2	5.8	4.6	33.8
Married	5.3	1.8	2.9	2.7	20.9	9.5	2.2	4.2	3.8	22.7
Widowed/Divorced	4.0	1.0	4.0	2.9	18.4	9.6	2.6	3.6	3.7	21.4

Source: Own elaboration using microdata tapes from the Permanent Household Survey for the Greater Buenos Aires area. See Table 2 for methodology

\* Note that we choose 1987, with results similar if we had chosen 1991. As seen in Figure 1, 1987 is the trough of a cycle of unemployment ending in 1991. Similarly, if we had chosen 1985 as the base year of comparison, this year shares some characteristics of the high unemployment years, showing as a peak in Figure 1, although being in terms of unemployment rates lower than the level of unemployment in 1991.

In terms of age-sex differences, we see that the male rate increased in 81% while the female rate in 100%; this difference being more pronounced both for teenage women and prime-age women (mainly married women). In fact, unemployment rate for prime-age male increased almost in the same proportion as that of prime-age women (more than 100%). In fact the higher increase in female unemployment is more due to the relatively higher increase in teenage unemployment for females and this in turn is explained by a much higher incidence of unemployment. It seems that unemployment rates for women in family contexts (teenage and prime age women) respond strongly to fluctuations in family income, a fact that we will explore later. It is also striking that male teenage unemployment does not increase nearly as much as teenage women unemployment; a fact that might be due to teenagers entering school when the labor market is loose. Although in Argentina, women share the same rates of education as males, it is also true that a large share of them can be employed as domestics and do not go to school as males in given families.

The change in unemployment rates by sector shows that they tend to increase in different proportions; Construction unemployment rates do not double<sup>7</sup>. In fact, there is a switch in terms of sectoral unemployment rates: the service sector including construction now has an overall lower unemployment rate than manufacturing. In this sector, higher durations of unemployment seem to be the main cause of the differential increase in unemployment.<sup>8</sup>

By occupations, we see that white-collar workers were the hardest hit and professionals the less hit comparing to other groups. Again, most of the differences are due to increases in the average duration of unemployment. Note that while durations moved directly with the skill level in 1987, they moved in opposite directions in 1993. This fact is not comparable with the usually known unemployment stylized facts; in fact, in Argentina we have in this period higher rates of unemployment coupled with a high increase in real GDP and low relative price in the manufacturing sector. This shock of "competitiveness" has increased the relative wage of more skilled workers (see Pessino (1993, 1994a)) and might help explain their increased intensity of search. On the other hand, it might also be due to obsolescence in human capital occurring through restructuring of sectors to deal more efficiently with competition.

The change in unemployment by educational attainment seems to go in the direction of our last statement. First, the data in 1993 does not show the uniform pattern of lower rates of unemployment for each successive educational group. In fact the uniformity breaks for those that did not complete their secondary or tertiary degree: their rate of unemployment increases proportionately more than for those that completed their degrees. It is noticeable that unemployment rates for those with incomplete tertiary degrees almost tripled and that for those with less than primary school (overrepresented by blue-collar workers) the unemployment rate increased less than for the rest of the groups, having in 1993 lower duration but higher incidence of unemployment than in 1987. Second, except for those with tertiary complete, the increase in unemployment during these years is inversely related to education: unemployment for those with lower education (primary incomplete) increases in 22%, and then, increases in 81%, 94%, 105%, and 176% for those with primary complete, secondary incomplete, secondary complete and tertiary incomplete, respectively.

By marital status, married males had the largest increase among males in unemployment rates. For females, the highest increase is for the single or widowed/divorced category due to the fact of higher increase in the inflow into unemployment. Though married women showed the lowest increase in unemployment among females, they show in this group the highest increase in average duration of spells.

In conclusion, we have that the increase in recent unemployment is due to proportional increases in the unemployment rates for prime-age males and females; higher rates for teenage women than teenage men, and is not

---

<sup>7</sup> The fact that Construction unemployment rates grow less than unemployment in the rest of the Sectors might be due to its starting (in 1987) from a much higher level. It might also be due to the fact that business cycles in Argentina are quite different from those that most researchers are familiar in the US with lower rates of growth of GNP coupled with higher unemployment rates and countercyclical labor force participation rates. In Argentina, a small open economy, cycles in unemployment do not always correspond to cycles in GNP growth; there are other macroeconomic shocks that make the story of sectoral shifts appealing. We explore this issue later when we consider aggregate versus sectoral shifts, in terms of not only changing labor demand by firms (as in Lillien (1982) story, but also changing labor supply decisions.

<sup>8</sup> This fact will also be later addressed, not only in terms of sectoral shifts affecting demand and supply of labor; but in terms of institutional changes in the labor market since 1992: the introduction of unemployment insurance.

as usually biased towards the less skilled or less educated but it hit those with incomplete degrees the hardest<sup>1</sup>. What is an important feature of this data is that unemployment did not increase in proportion to the lack of skills or education. The widely held view that increases in unemployment are simply due to a lack of skills does not seem to hold for our data.

Finally, the increase in the labor force participation of women, especially in 1993, increased significantly the overall rate of unemployment. To see their contribution to total unemployment in these years we multiplied their labor force share by their unemployment rate. Women contributed 2.1 percentage points to the 5.1 unemployment rate in 1987 and 4.9 percentage points to the 9.8 unemployment rate for 1993. That is in 1987, female share of unemployment was 42%, while in 1993 increased to 50%.

To understand if quit/layoffs contributed more to unemployment than entry into the labor force, we study also the reason for unemployment during the period 1985-1993. Lamentably, our data does not have the usual breakdown in reasons for unemployment. Basically, we can distinguish between unemployment for new entrants into the labor force and the rest: quits, layoffs and reentrants (See Table 8)

TABLE 8

Year	Unemployment Rate	New Entrants	With previous occupation
85	4.7	0.6	4.1
86	4.4	0.3	4.1
87	5.1	0.6	4.5
88	5.6	0.7	4.9
89	7.1	1.0	6.1
90	6.0	0.9	5.1
91	5.3	0.9	4.4
92	6.6	0.7	6.0
93	9.8	1.4	8.4

Note that until 1988 most of the increase in unemployment is explained by the increase in unemployment for those with previous occupation. Since 1989, we have a sharp increase in unemployment for both reasons. This is in fact due to the increase in labor force participation and unemployment of women (of the 12.6% unemployment for women in 1993, 2.5 percentage points corresponded to new entrants, while in 1987 with 6.3% female unemployment rate, 1.1 percentage points corresponded to new entrants). Of course, the increase in new entrant unemployment is mostly concentrated also on the ages 15-19 and 20-34.

## 5. Added worker vs. discouraged worker effects

The flow from outside the labor force to unemployment or employment ( $P_m$  or  $P_{re}$ ) has mainly to do with participation decisions of different demographic groups. In particular, with higher participation of the young, women and the old, usually showing more erratic labor supply behavior than prime age males, we might observe higher rates of unemployment. Also, in a small open economy like Argentina, a model with single-factor shocks might be misleading to interpret the data, as we have mentioned before. Some shocks or combinations of different shocks might produce differential effects on variables that affect groups' participation and labor supply.

This changed participation rates of the labor force can arise either by a prevalence of income effects (the "added worker effect") or the substitution effect (the "discouraged worker effect"). If we observe a higher participation of those demographic groups, in a macroeconomic setting, we should observe the first one if there is a decrease in the real income of the household while we should observe a prevalence of higher participation rates through the "discouraged worker effect" if there is now a higher expected real wage (than some previous period where these workers become discouraged) for this demographic group. The only way we can observe both at the

<sup>1</sup> We need to explore if this is due to the fact that the samples include everybody (including students) in the ages 15-64. However they were included in both samples. Their differential increase might be induced by specificity in human capital. Those with less specific human capital will tend to be laid off first in a recession.

same time is then if (a) income and substitution effects differ significantly among households, and/or (b) the size of the change in real income of primary workers and the change in real wages for secondary workers have moved differently for different type of households.

As an initial rough estimation for participation and unemployment rates we follow the methodology used by Pencavel (1986), Killingsworth and Heckman (1986), Clark and Summers (1981) and others. We postulate that participation rates are functions of the "cycle" and time for each demographic group. The time trend is included to reflect the impact of slowly changing social factors and other gradually moving variables omitted from the equation. We first introduce the "cycle" measure used by the above authors, namely, the prime-age male rate of unemployment,  $U^p$ . If we encounter that the labor force participation of a group moves in the same direction as that of  $U^p$  will be evidence of "added worker" effects, if it moves inversely, that is a "discouraged worker", the higher rate of unemployment of males drives or discourages workers out of the labor force.

Table 9 presents the results on the regressions of labor force participation on trend and  $U^p$ :

$$(3) \quad L_{it} = \alpha_i + \beta_i U_t^p + \gamma t + \epsilon_{it}$$

where,  $L_{it}$  is the labor force participation of group  $i$  in year  $t$ , expressed as a percentage of total population in group  $j$ ,  $U_t^p$  is the unemployment rate of males aged 35-49 years in year  $t$ . The superscript "p" on  $U$  designates this as the "prime-aged" reference group. The responsiveness of the participation rate to the business cycle is measured by  $\beta$  while  $t$  reflects the linear time trend. The equation error is represented by  $\epsilon$  and the index  $j$  runs over eight sex-age groups. The consequences of estimating those equations by Maximum Likelihood with an AR(1) specification are shown in Table 9.<sup>10</sup>

TABLE 9

Regression of LFP on  $U$  and Trend, 1974-1993. Maximum Likelihood method with correction for serial correlation. 38 observations<sup>11</sup>.

	$\alpha$	$\beta$	$\gamma$	$\rho$
<b>Females</b>				
15 to 19	34.641* (1.010)	0.8727* (0.404)	-0.3737* (0.069)	0.3191* (0.156)
20 to 34	46.344* (0.781)	0.5192 (0.358)	0.2059* (0.058)	0.1998 (0.161)
35 to 49	32.988* (1.257)	0.8576* (0.368)	0.4536* (0.073)	0.5115* (0.141)
50 to 64	18.039* (1.420)	0.1556 (0.436)	0.3919* (0.084)	0.4869* (0.144)
<b>Males</b>				
15 to 19	49.882* (1.468)	-0.1706 (0.445)	-0.1789* (0.086)	0.4935* (0.143)
20 to 34	93.649* (0.322)	0.3862* (0.164)	-0.0793* (0.026)	0.0750 (0.164)
35 to 49	97.118* (0.367)	0.1764 (0.114)	-0.0317 (0.022)	0.4807* (0.144)
50 to 64	76.836* (1.352)	-0.1331 (0.380)	0.0757 (0.077)	0.5320* (0.139)

Standard errors in parenthesis. \* Significant at 5% level.

According to these estimates, over the past 19 years there has been a declining trend in the participation rate for teenage males of about 3 and a half tenths of one percent per year and a decline in the participation rate

<sup>10</sup> We control for serial correlation since the DW statistic showed serial correlation. We tested for other types of serial correlation but they were rejected by our data.

<sup>11</sup> We use May and October data for each year, so the interpretation of the trend is the change in the participation for one semester. Data for May 1986 is missing, we decided to skip that observation since there are no reasons to believe that there was a bias in its non-availability.

for 20-34 aged males in one and a half tenth of one percent. The estimates of  $\beta$  for males present negative values for teenage and older men and positive values for groups 20-34 and 35-49. Only the positive value for the group 20-34 is statistically significant at the 5% level. This means that the behavior of this group is countercyclical, the higher the unemployment rate for prime age-male, the higher the participation rate for this group.<sup>12</sup> We can gain more insight by looking at participation rate by females during the period. Except for teenagers, all the other age categories present a strong positive trend during this period. Prime-aged women aged 35-49 increase their labor force participation each year in nine tenths of 1% a year followed by older women in eight tenths of one percent, and lastly those aged 20-34 increasing participation in four tenths of one percent a year. Teenage labor force participation by women decreases in seven and a half tenths of one percent per year. Table 9 also suggests that female participation rates are countercyclical, at least if one measures the cycle by the unemployment rate of prime aged-males<sup>13</sup>. However, results are more than twice the standard error only for teenagers and prime-aged women<sup>14</sup>. Contrasting these results with US literature (see Pencavel (1986) and Killingsworth and Heckman (1986)), we find that our results differ mainly in that they found evidence of no cyclical effects for men but procyclical labor force of women. That is, it seems that in the US and Britain, there was in the analyzed period a prevalence of "discouraged women workers" during a recession, and in Argentina a prevalence of "added women workers". Or in other words, the income effect (of lower expected income for males) tends to predominate in Argentina, making women to enter the labor force, especially married women (most of 35-49 are married), and teenage women that still leave in their parents household. We are not really surprised by the difference in participation changes by women among Argentina and more developed countries such as US and Britain. This is because, first, women have on average lower participation rates in Argentina than in those countries, so there is a larger pool that can enter the labor market on the face of higher unemployment rates for males. Second, and most importantly, Argentina does not yet have a widely available capital market where families can turn and borrow in the face of a recession. It is not surprising that they turn to the women of the household to support the family if the husband encountered unemployment. In fact, Lundberg (1985) found that using employment transition probabilities from household data there is a small but significant added worker effect for the US and attributes this finding mainly to the existence of credit constraints for some households.

Further evidence on the existence of an added worker effect in Argentina will be carried out in future work, but we can show in Table 10, the unemployment rate of married men by the employment status of the wife. We expect to find that women employed tend to have on average male unemployment rates higher than those that do not participate or are unemployed.

This Table reveals that wives that are employed tend to have husbands with higher unemployment rates than wives that are not employed. Another interesting feature of this Table is that years coinciding with a through in unemployment, such as the case with the year 1987 and 1991, unemployment rates for males tend to be similar for both males with working and non-working wives. When the unemployment rate is growing or is in a peak, unemployment rates for males with working wives tend to increase more than those without working wives (1985, 1989 and 1993). Murphy and Topel (1987) interpreted a similar Table for the US in a different way.

---

<sup>12</sup> Note that the for men aged 35-44 we can have spurious correlation between LFP and  $U^p$ , and given the correlation between  $U^p$  and the unemployment for males aged 20-34, that result should be interpreted with care.

<sup>13</sup> We will later confront this results with a more elaborated setting for the Argentine case, where not always cycle as measured by changes in industrial production is accompanied by inverse changes in prime-aged unemployment rates. Preliminary results show that labor force participation of women older than 34 are procyclical in terms of industrial production indexes, while continue to being countercyclical in terms of male unemployment rates.

<sup>14</sup> We also analyze the sensitivity of the results to the exclusion of observations in 1993 that showed a high increase in both LFP and unemployment of women, especially teenagers and prime-aged. As expected, the estimates of  $\beta$  loose significance but do not switch signs. This evidently shows that the latter period is influencing the results and that it was a period of strong countercyclicity in womens' labor force participation.

TABLE 10  
UNEMPLOYMENT RATE OF MARRIED MEN BY WIFE EMPLOYMENT STATUS

	Male unemployment with Employed Wife	Male Unemployment with Non-Working Wife	Married Women Unemployment Rate
1985	3.5	2.7	3.2
1986	3.1	2.8	3.7
1987	2.8	2.9	5.3
1988	3.3	2.4	5.8
1989	5.5	4.1	4.7
1990	5.1	3.3	3.1
1991	3.5	3.9	4.1
1992	4.8	3.0	4.9
1993	6.5	4.0	9.5

They mention that with greater levels of female participation, increasing numbers of unemployed men are in households with working wives. The presence of an employed spouse may lead to longer-spell durations, since the wife's income may moderate the liquidity effects of long stretches of unemployment. Computing similar tabulations for the US as those in Table 10, they found no evidence that wives participation decisions increase unemployment of husbands (the first two columns show very similar unemployment rates for husbands). Notice that these numbers show  $Pr(\text{Male Unemployment}/\text{Working status of Wife})^{15}$ , while a more correct interpretation would be  $Pr(\text{Working Status of Wife}/\text{Working Status of Husband})$  and see if the difference between  $P(\text{Wife is Employed}/\text{Husband is Unemployed})$  differs from  $P(\text{Wife is Employed}/\text{Husband is Employed})$  over time and if the difference peaks with unemployment. This is shown in Table 11. We see that in most years the difference between columns (1) and (3) is positive (or if one compares in terms of overall labor force participation should compare (1) + (2) with (3) + (4)). The exception being the years 1986 and 1987, that were years of relatively low male unemployment.

In year 1991 we expected to have also a small difference between these probabilities but we have a large drop in the absolute number of husbands unemployed (from 68800 to 42700) and the relatively lower number unemployed might have deep reasons to be unemployed, such as general disadvantages or sickness that make the wife the sole provider of the home. These data show signs of a strong added worker effect for married women.

TABLE 11

	Husband Unemployed		Husband Employed		Husband Out Of Labor Force	
	P(W Employed) (1)	P(W Unemployed) (2)	P(W Employed) (3)	P(W Unemployed) (4)	P(W Employed) (5)	P(W Unemployed) (6)
1985	37.6	6.4	32.6	0.9	21.3	0.8
1986	34.2	1.2	34.3	1.3	26.0	0.5
1987	31.7	2.3	33.2	1.8	28.9	1.6
1988	38.1	6.0	36.2	2.3	23.5	0.5
1989	40.7	5.2	36.2	1.7	24.6	0.9
1990	51.1	1.5	37.8	1.1	33.4	0.0
1991	54.1	0.0	36.8	1.3	21.9	3.3
1992	41.8	3.8	38.0	1.9	34.4	0.9
1993	45.5	5.4	39.1	4.1	33.9	0.0

It seems that wives respond to higher unemployment by husbands by increasing their labor force

<sup>15</sup> The correct expression for column (1) of Table is "Unemployment Rate of Husband given that Wife is employed" that equals the  $Pr(\text{Husband is Unemployed}/\text{Wife is Employed})$  times a correction factor that is the inverse of labor force participation of husbands with employed wives. The  $Pr(\text{Wife is Employed}/\text{Husband is Unemployed}) = Pr(\text{Husband is Unemployed}/\text{Wife is Employed}) \cdot Pr(\text{Wife is Employed})/Pr(\text{Husband is Unemployed})$

participation (both employment and unemployment) and this trend tends to increase even more the overall unemployment rate. In other words, if there is an exogenous increase in overall unemployment caused for example by sectoral variability in the demand for labor, the effect will be magnified by the accompanying rising unemployment of women that "added" to the labor force to help overcome this fluctuation in family income (See the years with peak unemployment such as 1985, 1989 and 1993).

Argentina had during this period cycles of high inflation that tended to be followed by stabilization plans that tended to open the economy both to international capital movements and trade in goods, with the result of not only lower inflation rates but also lower real exchange rates. The real exchange rate, being the relative price of traded goods with respect to non-traded goods causes sectoral reallocations of resources and people<sup>1</sup>. In particular, low real exchange rates correspond to a relative rise in wages where women work more intensively, that is the service sector. At the same time, the change in this important relative price while creating sectoral reallocation of workers, might in itself increase unemployment. As a result of these forces, periods of stabilization with "opening of the economy" (what might be called a competitive shock through also lower real exchange rates) might be producing first, mainly, an increase in male unemployment, which through the added worker effect is followed by an increase in women labor force and unemployment. To put matters worse, the increase in women's relative wage causes a substitution effect (a discouraged worker effect in reverse) that also works to increase labor force participation of women. This analysis is premature since it does not explain why real wages did not adjust to prevent increasing unemployment.

In next section we elaborate on whether sectoral reallocations or sectoral shocks have an effect on unemployment in Argentina.

## 6. Sectoral Shifts vs. Aggregate Demand Explanations

We will assume in this section that all unemployment is demand driven. We consider both aggregate shifts in demand (of the Phillips curve type) and compositional changes in demand as has been the emphasis in the literature since Lillien (1982). Demand changes will cause  $P_w$  to change either in an aggregate or sectoral way, with some firms contributing to an increase in  $P_w$  (through layoffs) and other firms contributing to an increase in  $P_w$  or  $P_w$  (through hires).

The aggregate demand effect has to do with the "island model" of Lucas and Barro, that produces confusions between real and monetary shocks and causing shifts in cyclical unemployment (The Phillips Curve), while the sectoral shift change in demand can produce both shifts in cyclical or in itself the natural rate of unemployment.

The usual model produced by Lillien assumptions is first the definition of the increase in unemployment that is mainly defined in terms of flows into and out of unemployment from the employment state:

$$(4) \quad \Delta U_t = P_{ent,t} - P_{w,t}$$

Given the assumption of sectoral shifts that cause some firms to hire workers and others to layoff workers,  $P_{ent}$  will be a function essentially of  $\sigma$ , the dispersion of employment growth across sectors.  $P_w$  is set under the assumption of a fixed voluntary duration of unemployment, a fixed probability of last period unemployment and taking into account the variation in duration of unemployment as a function of unanticipated monetary growth as Barro (1977). It then turns out that the unemployment in its reduced form will be:

$$(5) \quad U_t = a + \sum_j b_j DMR_{t,j} + c \sigma_t + dU_{t-1} + e_t$$

This equation captures the idea of structural or sectoral shifts: shifts of product demand or labor

---

<sup>1</sup> A lower real exchange rate also means that imported goods are cheaper, in particular Argentina imports among other goods, capital goods. This implies a lower price of capital goods with respect to the higher price of labor, implying a substitution effect towards capital and against labor. The term "labor" should be qualified in the sense of skills or human capital to capture the full effects of this substitution. Pessino (1994b) in a companion paper shows that since 1991 there has been a substitution of new human capital for the old, which cannot all be attributed to the lower real exchange rate, since the country initiated in this period a process of privatization, deregulation, and also opening of the economy that is tending to change the structure of production.

productivity lead some firms to expand employment while other firms layoff workers. Unemployment results because it takes time for workers displaced from shrinking firms to find jobs in expanding firms.

The fact that we have included only the transitions  $P_{ee}$  and  $P_{eu}$  is a simplification of the Lillien model, since it very roughly accounts for transitions in and out the labor force by including a time-trend in the above equation, not very well justified and for our purposes he just concentrated on the factors spelled in equation (5).

This equation was estimated for Argentina using similar measures of DMR, as those used by Barro and Lillien. For Argentina, the equation of DMR fits much better than those for other countries, which it is not surprising given the strong relationship between budget deficits either financed with money or interest bearing debt.

The measure for  $\sigma$ , used in the paper is taken from an independent industrial survey showing manual workers occupied by sector. It does not cover all the possible sectors of employment, nor it does cover all the categories of workers. Moreover, there is not available data for this measure after 1990. Figure 4 plots the biannual time series of unemployment and  $\sigma$  from the first semester of 1974 until the second semester of 1990 and Table 12 summarizes the results obtained using the data for Argentina:

FIGURE 4

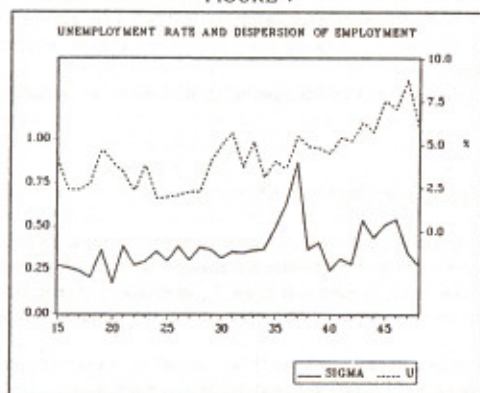


TABLE 12  
UNEMPLOYMENT EQUATIONS

VARIABLE	(1)	(2)	(3)	(4)	(5)
CONSTANT	0.744 (0.97)	1.217 (2.37)	0.779 (0.90)	1.460 (1.87)	0.029 (0.04)
$\sigma$	1.418 (0.84)	...	1.693 (0.88)	0.463 (0.25)	3.594 (2.20)
$\sigma(-1)$	...	...	-0.461 (-.23)	0.151 (0.08)	...
DMR	1.043 (0.59)	0.996 (0.57)	0.776 (0.39)	1.539 (0.77)	0.248 (0.13)
DMR(-1)	1.173 (0.68)	1.063 (0.62)	1.305 (0.67)	1.457 (0.73)	0.749 (0.39)
DMR(-2)	...	...	-0.708 (-.36)	0.101 (0.05)	...
U(-1)	0.318 (1.76)	0.270 (1.58)	0.355 (1.65)	...	0.696 (5.57)
TREND	0.094 (2.68)	0.109 (3.53)	0.088 (2.01)	0.146 (5.37)	...
ADJ. R <sup>2</sup>	0.608	0.612	0.558	0.527	0.521
S.E.	1.083	1.077	1.145	1.183	1.196
D-W	2.075	2.060	2.128	1.428	2.360

t-statistics in parenthesis.



The results show that the Phillips curve story is not surprisingly, not relevant for Argentina during this period. The sectoral shift hypothesis is consistent if one excludes the time-trend from the regressions. In such case, column (5), we get that a 1 point increase in the dispersion increases unemployment in 3.6 percentage points. The average value of  $\sigma$  during this period is 0.3658 with a minimum of 0.167 and a maximum of 0.8667. These values imply a range in the steady-state unemployment rate of 8.3 percentage points. If one takes the more conservative measures of equation (1) that includes the trend but where the effect of the dispersion measure is not statistically significant, will imply 1.5 percentage points. Either measure implies that policies designed to facilitate the adjustment of the labor force between industries might have a large payoff. The results are not very robust to the inclusion of the time trend, nor are they robust to several criticisms that have been put forward in the literature.

One of the most cited objections to the use of  $\sigma$  in the unemployment equation was put forward by Abraham and Katz (1984) who claimed that aggregate shocks produce variations in  $\sigma$  and, therefore, it cannot be claimed that the Lillien equation is separately identifying sectoral vs. aggregate shifts. If some sectors are more cyclically sensitive than others we might expect dispersion in growth rates to result from movements of aggregate demand. Abraham and Katz (1984) pointed out that if the sectoral shift-structural unemployment model is correct, vacancies as well as unemployment should be increasing functions of  $\sigma$ , when the level of aggregate demand is controlled for.

Table 13 shows the results of the estimation of the unemployment and vacancies equation incorporating the Abraham and Katz criticism. We use the same proxy for vacancies, namely, the help-wanted index for Greater Buenos Aires area that is published by INDEC on a monthly basis. The use of this index as a proxy for vacancies is known to have biases given that some occupations and sectors tend to advertise more than others, so the index loses some of its relevance for proxying vacancies.

TABLE 13  
UNEMPLOYMENT AND VACANCIES EQUATIONS

VARIABLE	U	VAC
CONSTANT	0.029 (0.04)	52.145 (2.14)
$\sigma$	3.594 (2.20)	-32.930 (-0.69)
DMR	0.248 (0.13)	-43.985 (-0.75)
DMR(-1)	0.749 (0.39)	64.785 (1.14)
U(-1)	0.696 (5.57)	...
VAC(-1)	...	0.597 (3.70)
Adj. R <sup>2</sup>	0.521	0.297
S.E.	1.196	35.132
D-W	2.360	1.812

t-statistics in parenthesis

Column (1) reproduces column (5) of last Table and column (2) shows the results of the estimation of the vacancy equation. Although the dispersion measure has a negative effect and therefore convalidating the view that movements in  $\sigma$  might be capturing both aggregate and sectoral shifts, it is not statistically significant<sup>17</sup>.

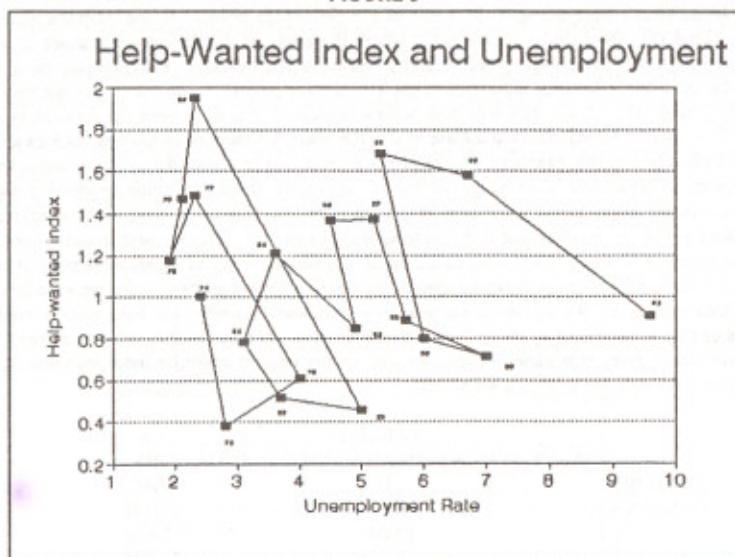
If the aggregate shock in demand is predominating, we will expect that as  $\sigma$  correlates positively with U it will correlate negatively with V. Consequently, under the aggregate demand shock scenario, we will expect a negative relationship between U and V. This relationship is known in the literature as the Beveridge curve or U-V curve.

Notice that an improvement in the matching process in the economy can lead to a shift inward of the Beveridge curve and a worsening to a shift outward. Therefore, the relevant question to ask is if unemployment

<sup>17</sup> We tried other specifications, with trend, lagged values of  $\sigma$  and logarithmic specifications and the results were not altered. We also adjusted the vacancies index by the employed population of Greater Buenos Aires that just cause a change in constants and trend when included.

has increased for a given level of vacancies. To investigate this point, Figure 5 presents the Beveridge curve for Argentina, where we plot as usual the unemployment rate in an annual basis against the help-wanted index.

FIGURE 5



As Figure 5 shows, the curve while showing a negative relationship for some periods, it also shifted out in the beginning of the 80s and again at the beginning of the 90s. We estimated this relationship (using the full biannual data since 1974 until 1993) obtaining the following results:

$$\hat{U}_c = 3.09 + 0.09 U_{t-1} - 0.017 V_t + 0.15 t \quad R^2 = 0.82$$

(0.14)      (0.004)      (0.02)      Standard errors in parenthesis

This confirms the fact that unemployment has trended upward for a given level of vacancies, in three tenths of a percentage point per year during the period and that controlling for trend, there is a negative and statistically significant relationship between unemployment and vacancies.

The reason for the shift in the curve can be due to several factors such as the unemployed being less willing to take available jobs, institutional and legal factors in the labor market such as employment protecting legislation that made employers more choosy on whom to appoint or a structural mismatch between the pattern of vacancies and unemployment by industry or occupation. It can also be due to the properties of the time series for vacancies not capturing the real change in vacancies over time. With respect to the first two reasons we provide some initial analysis in next section.

The structural mismatch analysis is in some sense compatible with the Lillien model of mismatch under the occurrence of a sectoral shock. The variance of relative unemployment rates can be used as a measure of mismatch as in Layard et al (1991). The index is  $\text{var}(u_i/u)$ , where  $u_i$  is the  $i$ -group unemployment rate and  $u$  is the mean unemployment rate. One can show if the  $\text{var}(u_i/u)$  changed significantly over time as a proxy of mismatch. The calculation of this index for 1987 and 1993 was done for three different classifications: by occupation, by industry and by education; the data used is in Tables 7 and 8.

The mismatch index by occupation had little variation from 1987 (33%) to 1993 (29%). However, the change was large when the classification is by education, 14% in 1987 and 8% in 1993, or by industry, 62% in 1987 and 38% in 1993; we see that the increase in unemployment from 1987 to 1993 in 87% occurred at the same

time that this mismatch index declined.

The literature on sectoral shocks and mismatch are very attractive and "intuitive" to explain changes in unemployment. However, they still lack some consistency in explaining different types of shocks. As an example, while some authors refer to aggregate demand shocks as referring to mistaken perceptions (Lillien, etc.), others refer to aggregate shocks in terms of real business cycles. On the other hand, the movements embodied in changes in  $\sigma$  are different types of shocks that can affect differentially labor markets. Do they refer to productivity shocks, inflationary shocks, aggregate output or mistaken perceptions? We leave these important questions for future work.

## 7. Institutional changes in the labor market

The shifting of the U-V curve over time and the longer durations of unemployment experienced in Argentina take us to the question of why available vacancies are not filled more quickly? Have the unemployed become less willing to take jobs or are employers more cautious on hiring than they are on layoffs?

First of all, employment protection legislation is important in Argentina, since it is not only difficult to justify layoffs, but if they are, there are mandatory severance payments that accompany those layoffs. The legislation moderated the severance payments and augmented the reasons for layoff for cause, but the change was not very significant. There are still discussing in Congress changes to this legislation. Likewise, collective bargaining agreements between Firms and Unions continue to rule the setting of wages for most workers, with just a bit more flexibility than in the past. Therefore, no doubt, that there are rigidities in Argentina's labor market, but it has not changed significantly during the period. Notwithstanding this, given these rigidities, any kind of shock that alters the labor market, will have different consequences on the aggregate rate of unemployment. As an example, if sectoral shocks require reallocation of workers across sectors and/or wage movements between them, the process will be much slower, causing a longer duration of unemployment, than if the legislation were flexible enough to permit these reacommodations rapidly.

The most important change in labor legislation during the period was the introduction of unemployment compensation. Argentina did not have until 1992 unemployment compensation. However, there were stringent rules for layoff, with virtually all layoffs resulting in severance payments that were quite substantial. Since 1991, a new employment law have relaxed and diminished the layoffs without cause, and at the same time, the government instituted unemployment insurance that began formally to operate in March 1992.

A broad outline of the unemployment compensation system is as follows. Virtually all workers are covered except those that lost their job in Construction, Agriculture or Domestic Service. When such workers become unemployed, their eligibility for and amount of unemployment insurance benefits are based upon their previous labor market experience and reason for unemployment. To be eligible for benefits, it is required that the individual become unemployed since 1992. Only laid off workers without cause with the receipt of the last six months of salary available are covered. Persons that participated in voluntary retirement programs are not eligible and the minimum labor market experience to apply is one year in the last job. Benefits are related to an individual's previous earning level. It has a minimum of 120 pesos and a maximum of 400 pesos, covering 80% of previous earnings in that range. The duration of the compensation is for four months for those having between 12 and 24 months of previous tenure, for eight months for those having between 24 and 36 months of previous tenure and for one year for those having more than 36 months of tenure in the previous job. It also provides dependents' allowances for unemployed workers. The benefit paid out by the UI system are financed by a 1.5% payroll tax on employers.

Given that the average wage rate for October 1993 was of 840 pesos (for individuals working more than thirty hours a week) with at least 30% of this sample earning less than 400 pesos, it would not be surprising to find that the coverage of the system will tend to be wide over time.

The number of people covered have been increasing over time since April 1992 with 3495 unemployed covered at that time, 18298 covered in September 1992, 20988 covered in January 1993, and reaching 99301 in September 1993. Overall for the whole country covered a bit less than 10% of the unemployed. Of the 99301 covered unemployed, 47.6% corresponded to Greater Buenos Aires area, with unemployment of nearly 500,000 people, so that for GBA we also have 10% of the unemployed covered under the system. While Argentina has still a low coverage of the unemployed population, maybe because for lack of information and restrictions applying to some groups, part of the increase in unemployment rates during 1993 can correspond to higher duration of

unemployment among this 10% of the unemployed.<sup>18</sup>

## 8. Conclusions and further research

This paper has presented basic facts on the evolution of and different explanations for the increase in unemployment in Argentina in the period 1974-1993.

Among the uncovered facts in this paper we encountered:

(i) The rise in unemployment is more due to the rise in rates for all age-sex groups rather than a fact of changing compositional shifts.

(ii) The increased labor force participation of women in Argentina does not by itself explain the increase in unemployment

(iii) The overall unemployment rate is better explained by the secular increase in both prime-age male and prime-age women unemployment rates.

(iv) Longer spells, of more than six months account for most of the increase in unemployment during the period. However, the increase in unemployment was due to both higher incidence and duration, in an accounting sense.

(v) Increased unemployment tends to occur in different ways than that experienced in other countries, in particular the growth in unemployment from 1985 until 1993 hit more the better educated and highly skilled (excluding respectively, those with tertiary incomplete and professionals).

(vi) There is partial evidence that sectoral shifts can explain a portion of increased unemployment in Argentina. If we add to this, the relatively regulated labor market in Argentina, we should expect longer durations of unemployment stemming from sectoral reallocation.

(vii) However, cycles in Argentina cannot be understood using the single-factor models of cycles. The derived demand for labor is quite sensible to fluctuations in the real exchange rate, price of other factors of production such as capital, technological change. In particular, the "stop and go" cycles that occurred in Argentina during the period analyzed provoked sharp changes in variables that affect both demand and supply of labor.

What theories tend to contribute to the explanation of higher unemployment in Argentina? Although we have presented in some cases only partial evidence, we can build a model that incorporates these issues:

(a) Labor demand in Argentina is influenced not just by monetary shocks, or what is termed aggregate shocks without referencing its origin: price of capital, real interest rates, real exchange rates and so on. See Phelps (1992) for a discussion on some of these issues.

(b) There is strong evidence that the "added worker effect" predominated in Argentina during the latter episode of increased unemployment, especially for married women, and this tended to magnify the "bad" cycles. Labor supply, then, is and can also be influenced by the different shocks that affect the economy.

---

<sup>18</sup> An example can help, if in 1992, there was no coverage, with an unemployment rate of 6.6%, being approximately 3.3 months the average duration of unemployment and the flow rate of unemployment per month of 2%, if duration doubles for 10% of the unemployed, we will have an unemployment rate of 7.2%, so that without increasing the incidence of unemployment, we can account for at least 0.6 points of the increase in unemployment due to the increase in the average duration for the groups that are covered. If the coverage increase to 80% of the unemployed as in several countries, this calculation would yield 10.6%, that is an increase in the unemployment rate in 4% points or more than 50% with respect to the case of no unemployment insurance.

(c) For the shocks to have effects on unemployment, one needs to study the imperfection in real wages adjustment to changed demand or supply. For example, a lower real exchange rate makes the traded sector less competitive internationally tending to increase the dollar value of wages. If there are no exogenous changes in labor productivity, firms will try to increase it by either purchasing imported capital goods or through direct incentives mechanisms. The use of this latter incentives might produce involuntary unemployment, even with the existence of an informal sector (efficiency wage models with these type of effects have been considered by, among others, by Bulow and Summers (1986)). This unemployment created through pressures of increasing competitiveness coexists today with additional effects such as the lower price of capital goods that can produce a higher demand for human capital (usually complimentary with physical capital) causing layoffs of less-skilled workers if their relative wage is not fully flexible.<sup>19</sup>

While the possible reasons of increasing unemployment in Argentina are yet to be discovered, this paper described its experience of unemployment during 1974-1993, on the light of some widely available models. We think, given the preliminary results obtained, that to understand the unemployment growth in this country, one has to account for a variety of shocks that affect both demand and supply of labor in a general equilibrium framework. To account for rigidities and imperfections in arriving at a market clearing wage, it is necessary to introduce distortions such as those caused by government regulations and unions and optimal behavior of firms that might pay wages above marginal productivity to incentivate workers. Trying to uncover the ultimate reason of these rigidities will be very important for policy purposes. If it is found that real wages do not respond fully to a lower demand for labor because of an overly regulated labor market, the answer will be in correcting the legislation. However, if it is the optimal behavior of firms that pay a high relative wage to a shrunk labor force, the relaxation of regulations in the labor market are necessary but not enough to offset in part this unemployment.

Concerning the latter increase in unemployment, with the introduction of unemployment insurance in 1992, a long cycle with low real exchange rates, rising relative wages in the services sector and higher unemployment rates for prime-aged males due in part to the restructuring of the Argentine economy, have all tended to increase the unemployment rate in 1993. If one adds to this (b), we have that the trend towards higher unemployment will not be dampened in the short run.

---

<sup>19</sup> Notice that fact (v) showed that, unemployment growth in the last seven years did not hit more the less skilled or the better educated, but it did hit more those with incomplete degrees (see Table 7). One possible hypothesis to test is whether the layoff policy of firms was geared towards not to the less skilled, but to the less productive and less capable of profit from training.

## References

- Abraham, Katharine G.; and Katz, Lawrence F. (1984): "Cyclical Unemployment: Sectoral Shifts or Aggregate Disturbances", Journal of Political Economy 94 (3), pp. 507-523.
- Akerlof, G.A.; and Main, B.G.M. (1980): "Unemployment Spells and Unemployment Experience", American Economic Review 70, pp. 885-893.
- Barro, Robert J. (1977): "Unanticipated Money Growth and Unemployment in the United States", American Economic Review 67 (2), pp. 101-115.
- Barro, Robert J. (1978): "Unanticipated Money, Output and the Price Level in the United States", Journal of Political Economy 86, pp. 548-580.
- Bulow, Jeremy I.; and Summers, Lawrence H. (1986): "A Theory of Dual Labor Markets with Application to Industrial Policy, Discrimination, and Keynesian Unemployment", Journal of Labor Economics 4 (3), pp. 376-414.
- Clark, K.B.; and Summers, L.H. (1979): "Labor Market Dynamics and Unemployment: A Reconsideration", Brookings Papers on Economic Activity 1, pp. 13-72.
- Clark, K.B.; and Summers, L.H. (1981): "Demographic Differences in Cyclical Employment Variation", Journal of Human Resources 16, pp. 61-79.
- Johnson, G.E.; and Layard, P.R.G. (1986): "The Natural Rate of Unemployment: Explanation and Policy", in "Handbook of Labor Economics, Volume II", edited by O. Ashenfelter and R. Layard, Elsevier Science Publishers.
- Killingsworth, Mark R.; and Heckman, James J. (1986): "Labor Supply of Men: A Survey", in "Handbook of Labor Economics, Volume I", edited by O. Ashenfelter and R. Layard, Elsevier Science Publishers.
- Layard, Richard; Nickell, Stephen; and Jackman, Richard (1991): "Unemployment, Macroeconomic Performance and the Labour Market", Oxford University Press.
- Lillien, David M. (1982): "Sectoral Shifts and Cyclical Unemployment", Journal of Political Economy 90 (4), pp. 777-793.
- Lucas, Robert E. (1973): "Some International Evidence on Output-Inflation Trade-Offs", American Economic Review 63 (3), pp. 326-334.
- Lundberg, Shelly (1985): "The Added Worker Effect", Journal of Labor Economics 3 (1), pp. 11-37.
- Marston, S.T. (1976): "Employment Stability and High Unemployment Rates", Brookings Papers on Economic Activity 1, pp. 169-210.
- Murphy, Kevin; and Topel, Robert H. (1987): "The Evolution of Unemployment in the United States: 1968-1985", in: "NBER Macroeconomics Annual 1987", edited by Stanley Fischer, MIT Press.
- Pencavel, John (1986): "Labor Supply of Men: A Survey", in "Handbook of Labor Economics, Volume I", edited by O. Ashenfelter and R. Layard, Elsevier Science Publishers.
- Pessino, Carola (1993): "From Aggregate Shocks to Labor Market Adjustments: Shifting of Wage Profiles under Hyperinflation in Argentina", Serie Documentosa de Trabajo # 95, CEMA, Buenos Aires, Argentina.
- Pessino, Carola (1994a): "The Effects of Macroeconomics Shocks on Income Distribution: Lessons for Structural Adjustment", unpublished manuscript.

Pessino, Carola (1994b): "Changes in supply and demand for human capital in Argentina: 1987-1993", unpublished manuscript.

Phelps, Edmund S. (1992): "A Review of Unemployment", Journal of Economic Literature 30, pp. 1476-1490.

Stiglitz, J. E. (1986): "Theories of Wage Rigidities", in "Keynes' Economic Legacy", edited by J.L. Butkiewicz, K.J. Koford and J.B. Miller, Praeger, pp. 124-166.

Summers, Lawrence H. (1986): "Why is the Unemployment Rate so Very High Near Full Employment", Brookings Papers on Economic Activity 2, pp. 339-383.

Yellen, Janet L. (1984): "Efficiency Wage Models of Unemployment", American Economic Review 74 (2), pp. 200-205.