

# Unemployment in Mexico

## Its Characteristics and Determinants

*Ana Revenga*

*Michelle Riboud*

Although Mexico's unemployment rates, measured over a week, are low (3 to 6 percent), 15 to 20 percent of the population experiences at least one spell of unemployment over a year. Unemployment is concentrated among the young: Half the workers under 20 experience a spell of unemployment over a year, but only a tenth of workers over 30.

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## Summary findings

The restructuring of Mexico's economy has had surprisingly little effect on Mexican unemployment, which is low even in the worst years. Revenga and Riboud ask: Is the official definition of unemployment adequate? Is unemployment properly measured? And who bears its burden? Is the welfare cost of unemployment widespread or are certain population groups especially vulnerable to it, repeatedly hit by it, and therefore deserving of special attention? Is most unemployment associated with normal turnover (movements from one job to another) or with certain individuals being out of work a long time?

Revenga and Riboud address these questions using panel data from the quarterly urban labor force survey, a household-based survey of 16 urban areas, and data from the National Employment Survey carried out every two to three years. They find that:

- The structure of unemployment in Mexico is broadly similar to that in other countries. Unemployment is highest for those 16 to 25, especially women. Surprisingly, however, it is higher among secondary school graduates than among the less educated.
- Unemployment as officially measured is quite low, and has remained moderate during adjustment. Most adjustment occurred through the real wage rather than through unemployment. There has been relatively little restructuring for greater productivity.
- The official definition of unemployment leads to an underestimate of the jobless, because it ignores short spells out of the labor force transitions in and out of the labor force which are frequent.
- Using a more extensive definition of unemployment raises the rate of male unemployment for 1988 from 3.4

percent to 6.4 percent, with the greatest increases in unemployment observed for people under 20 or with little education — yielding a structure of unemployment more like the one observed in other countries.

- Age, gender, and education are key determinants of unemployment. The probability of unemployment decreases with age and education for both men and women. Marriage is associated with lower risk of unemployment for men and for more educated women, but more probability of unemployment for women with less education.

- The typical spell of unemployment is not long: a mean duration of 5.7 months for men and 7.2 months for women (which explains the higher average unemployment rate for women).

- The duration of unemployment is longer for older workers but does not vary substantially according to educational attainment. Heads of households and individuals with household responsibilities tend to exit from unemployment faster.

- Although the typical spell of unemployment is relatively short, almost 70 percent of all unemployment in 1990-91 was attributable to spells lasting at least six months, and 30 percent corresponded to spells lasting at least a year.

- Although unemployment rates, as measured over a one-week period, are low (3 to 6 percent), 15 to 20 percent experience at least one spell of unemployment over a year. Among teenagers, the proportion is highest (50 percent) while it is only 10 percent for workers over 30.

This paper — a joint product of the Human Resources Operations and Country Operations I and the Environment Divisions, Latin America and the Caribbean, Country Department II — is part of a larger effort in the department to study labor market issues. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rajakumari Stephen, room H3-165, extension 37040 (29 pages), December 1993.

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**UNEMPLOYMENT IN MEXICO:  
AN ANALYSIS OF ITS CHARACTERISTICS AND DETERMINANTS**

**Ana Revenga and Michelle Riboud**

## EXECUTIVE SUMMARY

Over the past six years, Mexico has successfully implemented a program of sweeping economic reforms and made major strides towards a complete restructuring of its economy. Surprisingly, the reform process has occurred with little impact on unemployment. Official statistics drawn from the census and from employment surveys report an unemployment rate of 2.8% in 1991. An analysis of trends indicates that, even in the worst years of economic crisis, average unemployment rates did not increase beyond 6%. These figures seem very low when compared to those for other countries, especially given the magnitude of reforms and structural changes recently experienced by the Mexican economy. They raise a number of questions about the nature and relative importance of unemployment in Mexico.

A first question is whether the official definition of unemployment adequately reflects the importance of the phenomenon. In other words, is unemployment properly measured? A second issue relates to who bears the burden of unemployment. From a welfare perspective it matters greatly whether the cost of unemployment is widely spread or whether it falls primarily on a few. Even if only a small fraction of the labor force is unemployed at any point in time, these individuals may have specific characteristics that would make them particularly and repeatedly vulnerable, and therefore deserving of special attention. What are, in fact, the characteristics of the unemployed? Can one identify population groups that are more vulnerable to unemployment? Within each population group, is the risk of unemployment concentrated on a small number of individuals who are repeatedly hit? Another issue revolves around the relative importance of long-term unemployment. Specifically, one would want to know whether most unemployment is associated with normal turnover (movements from one job to the next), or rather comprised primarily of individuals who are out of work for a long period of time. All these questions have important implications for the design of policies and programs aimed at the unemployed.

In this report, we attempt to answer these questions using data drawn from two surveys. Our first source of data is the quarterly urban labor force survey (ENEU), a household-based survey of sixteen main urban areas. A key feature of the ENEU is its panel structure, which allows us to analyze certain aspects of unemployment --such as unemployment duration, persistence and turnover-- which could not be analyzed with purely cross-sectional surveys. The ENEU's main drawback, however, is its limited coverage: it provides no information on the population from the rural areas or from smaller urban centers.

Our second source of data is the National Employment Survey (ENE), which expands beyond the ENEU sample to cover in addition all other main urban areas and a sample of the rural population. The ENE is carried out every 2-3 years.

We work with both surveys, drawing on the larger ENE sample principally for the analysis of the characteristics and determinants of unemployment and on the ENEU, and its panel structure, for the analysis of the dynamics of unemployment.

The main findings of the report are the following:

- (1) The overall structure of unemployment is broadly similar to that observed for other countries. Unemployment rates are highest for the young --particularly for those 16 to 25 years of age-- and have been consistently higher among women than among men. With regard to education, the highest unemployment rates for males correspond to those with either incomplete or complete lower secondary schooling (7 to 9 years of school). For females, the highest rates are found among those with either complete low secondary or higher secondary (9 to 12 years of school). This pattern of higher unemployment rates for secondary school graduates differs somewhat from that observed in other countries, where unemployment appears to be more prevalent among the less-educated.
- (2) Unemployment rates as measured by official statistics are quite low, and have remained moderate throughout the adjustment process. This reflects the fact that most of the adjustment occurred through the real wage --which showed substantial downward flexibility-- rather than through employment. One consequence of this form of adjustment is that there has been relatively little productivity-enhancing employment restructuring.
- (3) The definition of unemployment used in official statistics tends to underestimate the true number of people who are jobless, because it fails to consider transitions in and out of the labor force, which are extremely frequent. The data show that 25% of all unemployment spells for men and 53% for women end in withdrawal from the labor force, and that a large fraction of those who withdraw reenter the labor force within 3 months. These short spells out of the labor force should, in most cases, be considered as unemployment.
- (4) Using a more extensive alternative definition of unemployment<sup>1/</sup>, the rate of male unemployment in 1988 is shown to increase from 3.4% to 6.4%. The largest increases in unemployment are observed for individuals under 20 years of age, and for those with little education. The use of this alternative definition thus yields a structure of unemployment by education more similar to that observed in most countries.
- (5) Multivariate analysis confirms that age, sex and education are key determinants of unemployment. Estimates obtained from a probit model reveal that the probability of unemployment decreases with age and education for both men and women. The probit analysis also finds a strong effect of marital status, although this effect tends to go in opposite directions for men and women. Marriage is associated with lower risk of unemployment for men and for more educated women, but increases the probability of unemployment for women at low levels of education.
- (6) The analysis of the distribution of completed unemployment spells suggests that the typical unemployment spell is not long. About 40% of all unemployment spells among men end within three months, and one-half of all spells are completed within four to five months.<sup>2/</sup> The mean duration of a completed spell for males is about 5.7 months. Mean duration for

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<sup>1/</sup> Which includes individuals who are not working and not actively looking for a job, but who are not studying, nor taking care of the household, nor retired nor physically disabled.

<sup>2/</sup> These figures refer to the standard definition of unemployment. Corresponding figures for the alternative definition of unemployment are presented in Table 11. Throughout the report, results regarding composition, duration and persistence of unemployment are presented separately for both definitions of the unemployed.

women is 7.2 months. Thus higher average unemployment rates for women are partly explained by longer duration.

- (7) Although the typical spell of unemployment is relatively short, there is a sizeable proportion of unemployed individuals (12% for all males) who suffer spells of over a year. As a result, almost 70% of all unemployment in 1990-91 was attributable to spells lasting at least six months, and 30% corresponded to spells lasting at least a year.
- (8) Duration of unemployment is longer for older workers, but does not seem to vary substantially by educational attainment. The report also finds that household heads and individuals with household responsibilities tend to exit from unemployment faster.
- (9) Finally, the report examines the degree of persistence of unemployment over time for the whole population and within age and education categories. It finds that although unemployment rates, as measured over a one-week period, are low (on the order of 3-6%), a significant fraction of the population (15-20%) experiences at least one spell of unemployment over a year. Sharp differences exist between young and adult workers. About one-half of teenagers experience at least one spell of unemployment in the course of a year, as compared to 10% of workers over the age of 30. This suggests that while the incidence of unemployment is widely shared among youth, it is concentrated on a much smaller group among older workers.

## I. INTRODUCTION

Over the past six years, Mexico has successfully implemented a program of sweeping economic reforms and made major strides towards a complete restructuring of its economy. Until 1985, the Mexican economy was highly protected, dominated by state-run industries, and heavily burdened by debt. As a result of the policy changes and reforms that have taken place since then, the economy's prospects today are vastly different. A fast and far-reaching trade reform has turned Mexico into one of the more open economies in the world. Domestically, the reforms have been equally comprehensive. The financial sector has been restructured and liberalized, fiscal expenditures have been cut dramatically, and the tax system has been overhauled. Key sectors, such as transport and telecommunications, have been deregulated. Moreover, in a still ongoing process of privatization, more than two-thirds of state enterprises have been sold, closed or spun off.

Despite the rapid and far-reaching reforms, which have had a clear impact on the labor market, unemployment has remained fairly low throughout the adjustment process. Official statistics drawn from the census and from employment surveys report a very low unemployment rate (2.8% in 1991). An analysis of the trends indicates that even in the worst years of the adjustment process, average unemployment rates did not increase beyond 6%. These figures, surprisingly low by international standards, raise a number of questions about the nature and relative importance of unemployment in Mexico.

A first question is whether the official definition of unemployment adequately reflects the importance of the phenomenon. In other words, is unemployment properly measured? A second issue relates to who bears the burden of unemployment. From a welfare perspective it matters greatly whether the cost of unemployment is widely spread or whether it falls primarily on a few. Even if only a small fraction of the labor force is unemployed at any point in time, these individuals may have specific characteristics that would make them particularly and repeatedly vulnerable, and therefore deserving of special attention. What are, in fact, the characteristics of the unemployed? Can one identify population groups that are more vulnerable to unemployment? Within each population group, is the risk of unemployment concentrated on a small number of individuals who are repeatedly hit? Another issue revolves around the relative importance of long-term unemployment. Specifically, one would want to know whether most unemployment is associated with normal turnover (movements from one job to the next), or rather comprised primarily of individuals who are out of work for a long period of time. All these questions have important implications for the design of policies and programs aimed at the unemployed.

In this report, we attempt to answer these questions using data drawn from two surveys. Our first source of data is the quarterly urban labor force survey (ENEU). The ENEU, a household-based survey of sixteen main urban areas, elicits a wealth of information on sociodemographic characteristics, employment status, type of job, monthly salary and hours of work. For those individuals who are unemployed, it also reports the length of their unemployment spells up to the time of the survey. It is the main source of time-series household-based labor market data, having been carried out continuously since 1983.

A key feature of the ENEU is its panel structure. The survey uses a quarterly rotation system such that each rotation group (of households) remains in the survey for five consecutive quarters, and

then leaves the sample. By matching individual survey responses in successive quarters, flows between labor force states can be roughly estimated. This allows us to analyze certain aspects of unemployment --such as unemployment duration, persistence and turnover-- which could not be analyzed with purely cross-sectional surveys. The ENEU's main drawback, however, is its limited coverage: it provides no information on the populations from the rural areas or from smaller urban centers.

Our second source of data is the National Employment Survey (ENE), which expands beyond the ENEU sample to cover in addition all other main urban areas and a sample of the rural population. The ENE is carried out every 2-3 years. The first ENE was fielded in 1988 and a second in 1991. The next ENE is planned for 1993. In its urban coverage, the ENE is very similar to the ENEU: the sampling schemes are alike and the survey questionnaires identical. This allows us to work with both surveys, drawing on the larger ENE sample principally for the analysis of the characteristics and determinants of unemployment, and on the ENEU, and its panel structure, for the analysis of the dynamics of unemployment.

## **II. STRUCTURE AND TRENDS OF UNEMPLOYMENT**

### **A. General Trends in Unemployment**

Official unemployment figures for Mexico are reported quarterly by the National Statistics Institute (INEGI) on the basis of the ENEU. These figures reflect the official definition of unemployment, which considers an individual as unemployed if he/she participates in the labor force and fulfills the following conditions:

- worked for less than one hour during the week preceding the survey
- was not sick, on paid vacation or waiting to return to work within the following month
- was actively searching for a job during the month before the survey

Table 1 reports these official unemployment rates for the 1980-91 period, separately for men and women.<sup>3/</sup> The trends should be interpreted with some care since the coverage of urban areas in the survey has increased over the period, from 12 in 1980 to sixteen from 1985 to date. The table shows that the aggregate urban unemployment rate in Mexico is quite low. In 1990, the unemployment rate stood at 2.8%, and even in the worst years of the adjustment process, the average rate did not rise beyond 6.1%. The table also reveals that the unemployment rate has consistently been higher among women than among men. In 1983, the unemployment rate for men peaked at 5.3%, while that for women stood a full two percentage points higher at 7.6%.

### **B. Characteristics and Structure of Unemployment**

Table 2 presents unemployment figures by age and education categories for men and women. These figures were obtained using individual response data from the 1988 National Employment Survey (ENE). The numbers show that unemployment rates are highest for the young, particularly

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<sup>3/</sup> Figures for 1980-82 are from the Continuous Survey on Occupation, the predecessor of the ENEU.

for those 16 to 25 years of age. In 1988, the unemployment rate for males aged 16 to 20 stood at 8.4%, while that for males 21 to 25 was 5.3%, as compared to an average male unemployment rate of 3.4%. Similarly, for women aged 16 to 20, the unemployment rate in 1988 stood at 14%, and for those aged 21 to 25 percent it stood at 8.9%, while the female average was 6.3%. By educational attainment categories, the highest rates for males correspond to those with either incomplete or complete low secondary (7-9 yrs of schooling). For women, the highest rates correspond to those with either complete low secondary (9 yrs) or higher secondary (10-12 yrs) levels of education.

The above unemployment figures are based upon a strict definition of unemployment that defines an individual as unemployed only if he/she is actively searching for a job. However, research on other countries suggests that the distinction between "unemployment" and "not in the labor force" based on intensity of search is often very weak.<sup>4</sup> For example, in their study of U.S. unemployment, Clark and Summers (1979) find that repeated spells of unemployment interrupted only by brief spells outside the labor force are very common. They find that approximately 50% of all unemployment spells for males aged 16 to 20 end in withdrawal from the labor force. About 80% of those, however, return to employment within 2 months. Although less pronounced, the patterns are similar for individuals 20 and over. These findings, and those for other countries, underscore the importance of looking beyond the official definition of unemployment to transitions in and out of the labor force in understanding unemployment patterns.

Table 3 presents some characteristics of labor force withdrawal and reentry based on data from the 1990-1991 ENEUs. As discussed above, the ENEU uses a quarterly rotation system such that each rotation group (of households) remains in the survey for five consecutive quarters, and then leaves the sample. We obtained panel data for the rotation group that remained in the survey from the third quarter of 1990 to the third quarter of 1991, matched individual survey responses in the successive quarters, and used these data to estimate flows between labor force states.

Table 3 shows that 25% of all unemployment spells for men and 53% of all unemployment spells for females, end in withdrawal from the labor force. As is the case in the U.S., these fractions are higher for those under 20 years of age: 37% of unemployment spells for males aged 16 to 20 end in withdrawal from the labor force, while the comparable figure for women is 55%. A large fraction of those who withdraw (55% of males and 41% of females), reenter the labor force within 3 months. This suggests that at any point in time the distinction between "unemployed" and "out of the labor force" is quite fuzzy for certain groups of workers and implies that the official definition of unemployment, which includes only those individuals who report to be actively searching for a job, will tend to underestimate the true number of people who are in fact jobless.

Our analyses of the individual survey responses from the ENE and the ENEU reveal a large fraction of men who report to be idle -- these individuals are out of work, able to work, not studying, and not taking care of the household. The panel structure of the ENEU allows us to follow them over time, revealing that many of them subsequently find employment, and often do so without going through a spell of what is officially defined as unemployment -ie. without reporting to have been actively searching for a job. This raises a question: how should one treat these apparently idle workers? As out of the labor force? As discouraged unemployed workers who have given up searching actively but will nevertheless take a job if the opportunity arises?

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<sup>4</sup> See Clark and Summers, 1979 for an analysis of unemployment and labor force transitions in the U.S..

Table 4 presents an alternative definition of unemployment for males, computed using the 1988 ENE, which includes those who appear to be idle -that is, those individuals who are not working, studying, taking care of the household or otherwise occupied, but who are too young to be retired and are physically able to work. We do not compute similar alternative unemployment rates for females since their labor force attachment patterns are necessarily more complex because of their household and child-rearing responsibilities. Column (1) in Table 4 shows the official unemployment rate, calculated to include only those who have actively looked for a job during the month preceding the survey. Column (2) shows the unemployment rate computed including those who looked for a job sometime during the two months preceding the survey. Finally, column (3) presents an alternative definition of unemployment, which includes those who appear to be idle. Using the alternative definition of unemployment increase the average rate significantly from 3.4% to 6.4%. The most interesting feature of the table is that the largest increases correspond to those under 20 and to those with little education. This suggests that the choice of definition can have important implications for the analysis of the structure and characteristics of unemployment.

Tables 5 and 6 report the distribution of unemployment by age and education categories. Using the standard definition of unemployment (corresponding to the official rate and to column (1) in Table 4), we find that for men as much as 60% of total unemployment is accounted for by individuals below the age of 25. The comparable fraction for females is even higher at about 77%. As regards education, 53% of total male unemployment and 62% of total female unemployment corresponds to individuals with some form of secondary education. Individuals with completed secondary education (9 years of schooling) account for 20% of total male unemployment and about 19% of total female unemployment. Those with higher secondary education (10-12 years of schooling) account for an additional 20% of male unemployment and a stunning 35% of female unemployment. These figures indicate that unemployment is concentrated among those with a certain level of education and not, as could be expected, among the least educated. This suggests, in turn, that the reservation wage and, possibly, family income are important determinants of unemployment: more educated individuals will tend to have both a higher reservation wage and more family income, which would allow them to afford longer job search periods.

These conclusions have to be modified slightly when the alternative definition is used. Taking into account those individuals who report to be idle slightly alters the age pattern, giving more importance to those between the ages of 12 and 16. More importantly, using the alternative definition also tends to increase the fraction of males with less than secondary education in total unemployment. This reflects the fact that many of those individuals who report to be idle have little education.

The above tables suggest that a large fraction of the unemployed are young. This raises the question of how many of these young unemployed individuals are first-time job seekers or new entrants into the labor force? Table 7 presents the fraction of total unemployment accounted for by new entrants from 1983 through 1991. The table shows that, although it is still significant, the proportion of new labor market entrants among the unemployed has actually declined steadily since 1983, from nearly 30% to about 19% in 1991.

### **III - THE DETERMINANTS OF UNEMPLOYMENT**

The previous section analyzed both unemployment rates and the distribution of unemployment by sex, age and education levels. However, further statistical analysis is needed to take into

consideration other possible determinants of unemployment and to ascertain the joint effect of different variables as well as the interaction between them.

To this effect, this section presents the results of a multivariate analysis which aims at estimating the effect of different variables - age, education, geographical location and marital status - on the probability of being unemployed in a given week. Probit models are estimated for men and women, using data on urban areas drawn from the 1988 National Employment Survey (ENE). Results are presented in Tables 8 to 10.

Our estimates show that sex, education levels, age, marital status and geographical location are important determinants of the probability of unemployment. They also show that the effect of some of these variables is somewhat different from what was observed earlier when interactions between variables were not taken into account.

#### A. Results for Males

Results obtained for men are presented in tables 8 and 9. Table 8 reports probit estimates obtained with the two definitions of unemployment. Table 9 considers only the broader definition but reports estimates obtained by dividing the sample by age and education groups.

Table 8 shows that while the effect of schooling on the probability of being unemployed is positive when only active job seekers are considered as unemployed, the effect is reversed when a broader definition of unemployment is used. This result is consistent with what was observed earlier in the previous section. Movements in and out of the labor force over short time spans, as well as low search intensity, are more prevalent among low educated workers. When this is taken into account, the probability of being unemployed appears higher at lower levels of education. Table 9, which reports estimates obtained by dividing the sample by education levels, indicates that the probability of unemployment declines with education up to 6 years of schooling; beyond, it remains constant.

Age decreases the likelihood of being unemployed up to the age of about 45. The effect is not linear: the decline is much stronger at an early stage of working life (between ages 12 and 20) than afterwards; it is also sharper among secondary graduates than for other levels of education (see table 9).

Being married or cohabitating reduces significantly the probability of being unemployed, which is consistent with the hypothesis that family responsibilities induce greater labor force attachment among men.

Regional differences also appear to be significant. Estimates obtained for the whole sample suggest that the probability of unemployment is higher in Mexico City (the DF) than in other parts of the country. However, when the sample is divided into education groups (as shown in Table 9, column 6), this effect disappears for those with at least 10 years of schooling, suggesting that more highly educated workers are not any more likely to be unemployed in the D.F. than in other regions of Mexico. Similarly, while the probability of unemployment does not appear higher in the northern states of Mexico than in the center or southern states for the sample as a whole, distinguishing according to age and education shows that the likelihood of being unemployed is higher in the North for teenagers (and similar to what is observed in the DF). It is also higher for individuals with less

than 10 years of schooling. There is obviously a strong demand for skilled workers both in the DF and in the North which makes them less vulnerable to unemployment than other education groups.

#### B. Results for Females.

Estimates obtained for women (Table 10) refer only to the standard definition of unemployment. As explained in the previous section, it is difficult to construct an appropriate broader definition of unemployment for women because of their more complex patterns of labor force participation, resulting from their greater household and family responsibilities.

The effect of schooling on the likelihood of being unemployed appears positive and significant (the same effect was found for men when a restrictive definition of unemployment was used). This positive effect, however, only occurs up to 6 years of schooling. Beyond, the effect is no longer statistically significant.

As for men, the effect of age is negative and significant up to the age of 45. The decline is stronger for women with at least 7 years of schooling than for women with lower levels of education. When the sample is divided into three age groups, the negative effect of age only appears after the age of 20, while for men, the decline is sharp even among teenagers.

Significant differences can be observed between men and women regarding the effect of marital status. While marriage can be clearly associated with lower risk of unemployment for men, it increases the probability of unemployment for women at low levels of education, but decreases it at higher levels. Cohabitation, which appears more frequently among the less educated, also tends to increase the likelihood of unemployment. Both effects most likely reflect patterns of labor force attachment which are consistent with what is observed in most countries. Marriage, and to some extent cohabitation, are correlated with family responsibilities which increase the demand for women's time spent at home.

Regional variables confirm the greater probability of unemployment in the DF than in other parts of the country. Although the effect is weaker at higher levels of education, it still persists. In the northern states, the lower probability of unemployment found for older and more educated women seems consistent with the hypothesis that the demand for labor in the North is biased towards educated and experienced workers.

Overall, these results seem consistent with human capital theory. Theory predicts that, as work experience is acquired, specific human capital stock is built up, jointly financed by the worker and the firm, and which neither employer nor employee wish to lose. This reduces incentives for both quits and layoffs. As a result, one can expect a decrease in the probability of unemployment with age. The fact that, for women, this effect only appears after the age of 20 and not earlier as for men, suggests that the job matching process takes more time for them. In the same way, firms are expected to invest more in more educated workers as human capital acquired on the job is highly complementary with education. This also induces a higher probability of unemployment for workers with low levels of education and little specific on-the-job human capital.

#### IV. DURATION OF UNEMPLOYMENT

The analysis in sections II and III suggests that there are some important differences in unemployment rates among demographic groups. In this section, we extend our analysis of unemployment differentials, with particular attention to the dynamics of unemployment and how they differ by sex, age and education.

Recent research in labor economics suggests that unemployment should be viewed not as a static phenomenon affecting a stagnant pool of job seekers, but rather as the result of individuals flowing in and out of unemployment, each experiencing jobless spells of varying length. At any point in time, observed unemployment may comprise a number of individuals experiencing very short spells of unemployment as they move from one job to another (the "churning" or "normal turnover" component of unemployment), as well as a smaller number of people who are out of a job for a long time. The relative importance of these two components in explaining observed unemployment has important welfare implications. If most of unemployment is associated with normal turnover, the burden will be widely spread and few individuals suffer greatly. If, however, most unemployment is associated with a few individuals remaining unemployed for extended periods of time, the hardship associated with unemployment will fall primarily on a few.

This perspective on unemployment emphasizes the difference between frequency and duration of unemployment, and suggests that the measured unemployment rate, in itself, contains relatively little information: a similar rate of unemployment could reflect a large proportion of the labor force being unemployed for a short period of time, or a small group experiencing long spells of unemployment. Better insights into the nature of unemployment in Mexico may be gained by explicitly exploring the dynamics of unemployment and labor market behavior.

#### A. Analysis of the Distribution of Spells of Unemployment.

We begin our analysis by examining the distribution of the duration of completed unemployment spells. We calculate this distribution using individual data for the 1990-91 quarterly urban labor force survey (ENEU). The questions we seek to answer are: (i) what is the mean duration of a completed spell?; and (ii) what is the relative importance of long-term unemployment?

The procedure we used to calculate the distribution of unemployment spells is the following. We first constructed a dataset comprising two ENEU cohorts. The first cohort included individuals who were unemployed in the third quarter of 1990. These individuals were then observed at discrete three-month intervals over the following twelve months. The second cohort included individuals who became unemployed in the fourth quarter of 1990 and were not in the first cohort. For this latter cohort, individuals were followed for only nine months.

As discussed above, most individuals in our dataset report the duration of their (incomplete) unemployment spell up to the time of the survey. We calculate complete unemployment spells by tracking individuals over time, identifying their transitions to employment, and adding time elapsed until the job was found to the incomplete unemployment spell reported in the initial quarter. Unfortunately, the ENEU does not include a question on starting date for the current job. As a result, if an individual moves from unemployment one quarter to employment the next, it is impossible to know exactly when in the intervening three months the transition took place --in other words, knowing which quarter an individual finds a job does not allow us to compute the exact length of the unemployment spell. To obtain a fairly smooth distribution of spells over the quarter, we assume that fifty percent of those who found jobs exited unemployment within one month, thirty

percent exited in the second month, and the remaining twenty percent exited in the third month.<sup>5/</sup> If an individual remains unemployed at the end of one year, his/her unemployment spell is truncated at twelve months (53 weeks).

Some basic features of the distribution of completed unemployment spells are presented in Table 11 for males and Table 12 for females. For males, we present separate statistics for the two alternative definitions of unemployment presented in Sections II and III above. The first five rows of Table 11 show some basic duration statistics obtained using the standard definition of unemployment (ie. excluding idle/discouraged workers). These numbers suggest that the typical unemployment spell is not long.<sup>6/</sup> Approximately forty percent of all unemployment spells in 1990-91 were completed within three months, and one-half of all spells were completed within four to five months. The mean duration of a completed spell for males was about 5.7 months.<sup>7/</sup> There are slight differences in duration patterns by age, with young and prime-age males exiting unemployment more quickly than older males (those aged 41 and over). Unemployment duration also appears to differ by educational attainment, with duration being shortest for individuals with secondary education. It is interesting to note that the average unemployment rate is actually higher for this educational group than for the less and more educated (in 1990, the unemployment rate for those with seven to nine years of schooling was 3.3% versus 1.6% for those with one to six years of schooling and 2.3% those with ten or more). Given that unemployment duration is shorter for those with secondary education, their higher rate must necessarily reflect a higher incidence of unemployment among that group.

Although the typical spell of unemployment does not appear to be long, there is a sizeable proportion of unemployed individuals (12% for all males) who suffer spells of unemployment of over a year. This proportion is highest among older workers (those 41 and over). Table 13 weights spells of unemployment by their length to obtain the distribution of months of unemployment. This exercise yields an interesting result: although most spells are relatively short, unemployment seems to be concentrated in longer spells. Using the standard definition of unemployed (column 1 of Table 13), we find that almost seventy percent of all unemployment in 1990-91 was attributable to spells lasting at least six months, and that thirty percent corresponded to spells lasting at least a year.

The bottom five rows of Table 11 present basic duration statistics for men obtained using the alternative definition of unemployment discussed above. Using this second definition (which includes those individuals who appear to be idle --not working but able to work, not searching for a job, yet not studying or taking care of the household), yields slightly longer duration of unemployment,

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<sup>5/</sup> Although arbitrary, this assumption allows one to smooth unemployment exit over the quarter. As alternatives we also tried simply adding 1, 1.5 and 3 months to the reported incomplete unemployment spell for each individual who exited unemployment over the course of the quarter.

<sup>6/</sup> Although the typical spell appears to be fairly short, duration is significantly longer than in the U.S., for example. In one study of unemployment dynamics, Clark and Summers (1979) found that in 1975 the mean duration of a completed unemployment spell in the U.S. was 1.6 months, and that seventy-one percent of spells ended within one month.

<sup>7/</sup> This is likely to be an underestimate, since long spells are truncated at 12 months.

although the patterns are fairly similar.<sup>8/</sup> Using the alternative definition of unemployment tends to slow down the exit rate from unemployment, and in particular, sharply increases the tail of the distribution. Mean duration of unemployment for males goes up to 6.4 months. The concentration of unemployment in longer spells is even more marked using this second definition: seventy-five percent of all unemployment is accounted for by spells lasting at least six months.

Table 12 shows comparable duration statistics for females. Female unemployment spells appear to be substantially longer than for males. Mean duration of a completed spell for women is 7.2 months as compared to 5.7 months for men. Women's higher average unemployment rate is thus partly explained by longer duration. As a result, almost eighty percent of all female unemployment in 1991 is attributable to spells lasting at least 6 months, and forty-six percent corresponds to spells lasting at least a year (see Table 13). As was the case for men, young women tend to move out of unemployment more quickly than do older women, with a much larger proportion of the latter remaining unemployed for over a year. Finally, as in the case of males, females with secondary education appear to experience shorter unemployment spells than those with primary or post-secondary schooling.

### B. Proportional-Hazard Models of Unemployment Duration

The duration of unemployment spells, and the impact of different variables --age, education, marital status and other household characteristics-- on said duration can be further analyzed using hazard model techniques. In this section, we use a proportional hazards model which factors the time path of the probability of escaping from unemployment (the re-employment probability) into a function of time (which is the same for all individuals) and a function of other individual-specific explanatory variables (such as age and education). Formally, we parametrize the overall hazard rate of exit from unemployment for individual  $i$  at time  $t$ ,  $h_i(t)$ , as:

$$h_i(t) = h_0(t) \cdot \exp(x_i' \beta)$$

where  $h_0(t)$  is the baseline hazard at time  $t$ ,  $x_i$  is a vector of explanatory variables for individual  $i$ , and  $\beta$  is a vector of parameters which is unknown. The estimated  $\beta$  coefficients reveal the elasticities of the hazard with respect to the exponential of each of the variables included in  $x_i$ . We obtain estimates of  $\beta$  using maximum likelihood.

We estimate separate hazards for men and women. Our vector of explanatory variables includes age, education and dummies for whether the individual has children and whether he/she is the household head. The results are presented in Table 14. The estimates for males suggest a strong effect of age on the hazard of exiting unemployment. The negative and significant coefficient on the age variable indicates that the hazard is lower, and therefore duration of unemployment longer, for

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<sup>8/</sup> The results for males aged 41 and over should be considered with some care since their labor force participation is likely to be measured with noise. Many of them may have effectively retired from the formal sector yet may be sporadically active in the informal sector, without this showing up in their survey responses.

older workers.<sup>9/</sup> The simplest Cox specification, which enters schooling as a continuous linear variable, reveals no effect of education on the duration of unemployment. However, the specification with school dummies shows that relative to those with university-level schooling, those with complete secondary education have a higher hazard and therefore shorter unemployment spells. Similarly, the results suggest a weak link between primary education and shorter unemployment duration, and between higher secondary education and shorter duration.

The estimates also show that household heads have significantly higher hazards, and thus shorter unemployment spells. This finding is explained by the fact that individuals with household responsibilities have a much higher cost associated with job search. Similarly, having children is associated with a higher hazard and shorter unemployment duration.

For women, the Cox estimates are much weaker, perhaps reflecting the much smaller sample size. In the simplest specification, none of the explanatory variables appear to have a significant effect on the hazard. When age is entered as a quadratic, however, it becomes negative and almost-significant, indicating that the hazard decreases with age (these are the results presented in the table). The continuous school variable does not reveal any significant effect of education on unemployment duration. However, the dummies for no formal education and for complete secondary weakly suggest that those groups have higher hazards of exiting unemployment. Neither the household head dummy nor the dummy for children are significant in any of the specifications.

## V. PERSISTENCE AND TURNOVER

Previous analysis showed that the incidence of unemployment (probability of being unemployed at a given time) and to some extent also the duration of unemployment, vary according to sex, age, education and family characteristics. The active population is thus heterogeneous: certain population subgroups appear more vulnerable than others to unemployment. Policy and programs can therefore be especially designed and targeted towards them.

An interesting question, which the previous analysis did not address is whether each population subgroup is homogeneous (with each member facing equal risk) or on the contrary, heterogeneous (some members facing a higher risk than others). The extreme case of heterogeneity would correspond to a situation in which the same people would be repeatedly hit by unemployment, alternating periods of unemployment with periods of employment, while others would face zero risk of being unemployed. The extreme case of homogeneity would, on the contrary, correspond to a situation in which only a fraction of the labor force would be hit by unemployment at one point of time, but, as time goes by, an increasing portion of the labor force would end up experiencing unemployment. When the period of observation becomes sufficiently long, this proportion approximates one. This distinction, and in particular, the possibility of identifying high risk individuals or subgroups, has obvious implications for an appropriate policy design. Heterogeneity calls for more precise targeting and raises issues on the distributive impact of support programs.

### Methodology and Data.

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<sup>9/</sup> We tried a quadratic specification for age, but the data strongly favor the simple linear specification.

By allowing individuals to be followed over time, longitudinal or panel data constitute the appropriate instrument for this type of analysis and for the measurement of the degree of persistence of unemployment on specific groups or individuals.

Following Mincer (1982), let us define  $P$  as the incidence of unemployment over a period of time (for example, over one, two or three years). If unemployment is repeatedly experienced by the same individuals, the incidence remains the same, whether or not measured over one, two or three year period,  $P_1 = P_2 = P_3$ . If on the contrary, the group is homogeneous and there is perfect turnover with a probability  $P_i = P$  for each individual, over any single time period, the proportion of the labor force who experiences unemployment spells will grow over time from  $P$  to an upper limit:

$$P_n \text{ max} = 1 - (1 - P)^n$$

when the observation period reaches  $n$ -time periods. The actual comparison between the observed  $n$ -year incidence  $P_n$  and the value of this upper limit  $P_n \text{ max}$  allows for an estimation of the degree of persistence (or turnover) of the phenomenon.

The panel data from the Mexican Urban Employment survey (ENEU) allow to follow the same individuals from the 3rd quarter of 1990 to the 3rd quarter of 1991, that is over one full year, with a snapshot every quarter. The question on unemployment unfortunately only refers to the week preceding the survey rather than to the whole three-month period. As a result, the data provide information over the five successive snapshots but there is need to correct the information gap between each of them. For this reason, we proceed in several steps:

- (i) We estimate the incidence of unemployment from each of the five successive quarterly surveys. An average incidence  $P_{wk}$  is calculated. It refers to a one-week observation period.
- (ii) We calculate the incidence observed over the five consecutive surveys  $P_{yr}$ . This measures the proportion of the labor force observed hit by unemployment at least once (a person found unemployed in several snapshots is only counted once).
- (iii) We attempt to estimate the number of workers who both enter and exit unemployment between two successive surveys and therefore, escape our accounting process done at three-month intervals. The number of these workers is inferred from the analysis of duration of unemployment spells presented in the previous section. From this analysis, information is drawn on the size of each cohort entering unemployment over one month, and the proportion exiting before three months. Estimating the number of these short-term unemployed workers who escape our accounting between our different observation points allows to draw some inference on the incidence of unemployment over a three-month period and thus, correct estimate (i).
- (iv) Based on (iii), the incidence corresponding to a full-year period is calculated:  $P_{yr, corr}$ . Lower and upper bound estimates are calculated. Lower-bound estimates correspond to the case in which the short-term unemployed (with duration inferior to three months) who cannot be captured from a survey to the next, are repeatedly hit during each quarter (perfect persistence or heterogeneity). The upper-bound estimate corresponds to the opposite case (perfect turnover or homogeneity): a "new" group of short-term unemployed enters each quarter.

(v) The degree of heterogeneity (or persistence) is measured as proposed by Mincer (1982) by:  $1 - \lambda$  where  $\lambda = (P_{yr} - P_{wk}) / (P_{yrmax} - P_{wk})$ . When  $\lambda = 0$ , there is complete persistence in the unemployment experience which always affects the same individuals.

### Results.

Results are presented separately for men and women in Tables 15 and 16. For both, estimates are presented for different age and education groups. In the case of men, we use both the standard and alternative definitions of unemployment. Column (1) shows the unemployment rate corresponding to a one-week observation period; column (2) indicates the proportion of the labor force unemployed at least once over the five successive quarterly surveys; column (3) corrects this estimate to indicate a range of likely estimates for the proportion of the labor force unemployed over one year period; column (4) indicates the upper limit of P in the case of perfect homogeneity of the labor force and perfect turnover week after week; column (5) presents the value of the persistence indicator; columns (6) and (7) indicate the sample size of each cell; N refers to the number of unemployed and LF to the labor force.

The distinction between a snapshot relative to a one-week period and an analysis covering one full year provides interesting insights. While only about 5 percent of all males are found unemployed over a given week (broader definition of unemployment), between 18 and 20 percent will enter unemployment over one year, ie. 4 times as many. As could be expected from previous analysis, rates differ between age and education groups. The most striking result refers to the 12-20 age group: over half of youth will experience at least one period of unemployment over a year. Beyond the age of 20, the proportion decreases sharply although it remains above average until the age of 30. The effect of age is also noticeable when one considers the persistence indicator: persistence increases with age. Unemployment is thus clearly more uniformly spread among youth, especially teenagers, than among adult workers. Experience acquired in the labor market protects workers from the risk of unemployment. However, it induces greater heterogeneity.

Differences among education levels are less clear. Persistence of unemployment appears to be higher at lower and higher levels of education, than at intermediate levels. However, the result may be biased as low educated groups are typically older. Small sample size unfortunately prevent us from measuring persistence by education levels for given age groups.

Results of the analysis of persistence of unemployment with data for women are consistent with those for men. Persistence is shown to increase with age and sharp differences exist between teenagers, young and adult women. Even using the most restrictive definition of unemployment, over one third of teenage women will experience unemployment over one year.

Finally, it is interesting to observe that, although unemployment rates are higher for women than for men, persistence is somewhat stronger among young men.

In sum, although unemployment rates in Mexico, as measured over one week period, are low compared to what is observed in other countries, in particular industrialized countries, unemployment is experienced by a significant fraction of the population: 15% to 20% of men and women will experience at least one spell of unemployment over a one year period. There are sharp differences between young and adult workers. About half of teenagers will experience unemployment over one

year, as compared to about 10% for workers aged over 30. This characteristic of the functioning of the labor market is also observed in other Latin-American countries. In Peru, data indicate that, while the male unemployment rate observed over one week was 6% in 1985 (fairly comparable to the Mexican case), 37% of the male labor force experienced unemployment over one year. The degree of turnover is thus much stronger in Peru than in Mexico.

Table 1

UNEMPLOYMENT RATES IN URBAN AREAS BY SEX 1980-1991			
	TOTAL	MEN	WOMEN
1980	4.68	3.83	5.90
1981	4.20	3.53	5.58
1982	4.21	3.87	4.94
1983	6.06	5.33	7.56
1984	5.57	4.85	7.03
1985	4.36	3.63	5.76
1986	4.29	3.74	5.34
1987	3.88	3.42	4.77
1988	3.54	3.03	4.51
1989	2.92	2.59	3.55
1990	2.81	2.63	3.04
1991 Jan-Jun	2.55	2.47	2.68
Jan-Oct	2.75	2.62	2.97

Table 2

UNEMPLOYMENT RATES FOR POPULATION SUBGROUPS, 1988 URBAN AREAS (OVER 100,000 INHABITANTS)		
	Men	Women
Age		
12-15	4.2	4.8
16-20	8.4	14.0
21-25	5.3	8.9
26-30	3.0	4.0
31-40	1.2	3.3
41-50	1.7	3.4
51-60	1.9	2.3
61-70	2.4	4.0
Education		
No educ	2.1	1.8
1-5 yrs	2.1	3.8
6 yrs	2.5	5.2
7-8 yrs	4.8	5.4
9 yrs	4.7	10.6
10-12 yrs	4.1	7.9
13 + yrs	3.4	5.7
Total	3.4	6.3

Note: unemployed defined as active job seekers

Source: own estimates from 1988 National Employment Survey, INEGI

TABLE 3: CHARACTERISTICS OF LABOR FORCE WITHDRAWAL AND REENTRY POPULATION 12 AND OVER 1991						
	MEN			WOMEN		
	All	Age < 20	Age 20 >	All	Age < 20	Age 20 >
<b>% withdrawing from the labor force:</b>						
from employment	.05	.18	.03	.19	.25	.17
from unemployment	.24	.37	.17	.53	.55	.51
<b>% withdrawals reentering the labor force:</b>						
within 3 mos.	.55	.48	.62	.41	.39	.42
within 6 mos.	.55	.48	.63	.43	.41	.43

Source: Own results from 1988 National Employment Survey, INEGI

Table 4

MEN: ALTERNATIVE MEASURES OF UNEMPLOYMENT 1988			
	Official Definition (Active job seekers)	All job seekers	"Alternative" Definition (Job seekers and id'a workers)
<b>Age</b>			
12-15	4.2	5.3	17.7
16-20	8.4	9.9	15.2
21-25	5.3	5.9	7.9
26-30	3.0	3.1	4.5
31-40	1.2	1.5	2.4
41-50	1.7	2.0	4.0
51-60	1.9	2.1	4.3
61-70	2.4	3.0	3.0
<b>Education</b>			
No educ.	2.1	2.3	6.9
1-5 yrs	2.1	2.3	5.2
6 yrs	2.5	2.8	5.9
7-8 yrs	4.8	5.7	8.9
9 yrs	4.7	5.3	8.1
10-12 yrs	4.1	4.8	6.9
13 + yrs	3.4	4.0	4.8
<b>Total</b>	<b>3.4</b>	<b>3.9</b>	<b>6.4</b>

Source: own results from 1988 National Employment Survey, INEGI

Table 5

DISTRIBUTION OF UNEMPLOYED BY AGE 1988			
Age	Men		Women
	Standard Definition	Alternative Definition	Standard Definition
12-15	4.25	10.67	2.53
16-20	33.32	33.46	36.54
21-25	24.68	19.35	38.14
26-30	13.33	10.46	
31-40	8.80	8.97	11.71
41-50	8.01	9.48	6.84
51-60	5.06	5.95	2.54
61-70	2.55	1.65	1.70

Table 6

DISTRIBUTION OF UNEMPLOYED BY EDUCATION LEVEL, 1988			
Years of school	Men		Women
	Standard Definition	Alternative Definition	Standard Definition
0	2.44	4.40	1.65
1-5 years	9.72	12.53	8.56
6	15.99	19.94	14.56
7-8	12.92	12.83	8.61
9	20.37	18.81	18.90
10-12	20.17	18.06	35.61
13 and more	18.39	13.43	12.12

Table 7

PROPORTION OF NEW LABOR MARKET ENTRANTS AMONG UNEMPLOYED 1983-1991 *			
YEAR	UNEMPLOYED	WITH WORK EXPERIENCE	NEVER WORKED
1983	100.00	70.79	29.21
1984	100.00	67.75	32.25
1985	100.00	73.18	26.82
1986	100.00	77.22	22.78
1987	100.00	75.97	24.03
1988	100.00	73.78	26.22
1989	100.00	76.79	23.21
1990	100.00	78.65	21.35
1991 JAN - OCT	100.00	81.40	18.60

\* Average of 16 urban areas

Source: 'TPs' results from National Urban Employment Surveys 1983-1991, INEGI

Table 8 : Probit Estimates of the determinants of Unemployment - Males

Variable	Standard Definition of Unemployment			Alternative Definition of Unemployment		
Yrs School	.013 (4.5)	.013 (4.2)	.044 (3.5)	-.015 (-6.3)	-.015 (-6.1)	-.023 (-2.7)
Yrs School <sup>2</sup>			-.001 (-2.2)			.0009 (2.1)
Age	-.021 (-17.9)	-.008 (-5.9)	-.033 (-5.3)	-.028 (-32.2)	-.011 (-10.8)	-.064 (-14.4)
Age <sup>2</sup>			.0003 (4.3)			.0007 (12.4)
Married		-.542 (-16.3)	-.496 (-14.0)		-.732 (-27.5)	-.63 (-22.4)
Cohab.		-.478 (-6.4)	-.425 (-5.6)		-.678 (-11.7)	-.57 (-9.7)
North		.006 (.23)	.005 (.21)		.025 (1.18)	.031 (1.4)
DF		.268 (6.42)	.267 (6.4)		.179 (5.06)	.190 (5.3)
No. Obs.	43633	43633	43633	45076	45076	45076
Means:						
Unemp.	.03			.06		
Yrs. Sch.	8.1			8.1		
Age	33.4			33.2		
Married	.58			.57		
Cohab.	.05			.05		
North	.41			.41		
DF	.08			.08		

Notes: T-statistics in parentheses. Yrs School = number of completed years of schooling. Unemp = dummy variable which takes on the value 1 if individual is unemployed. Married/Cohab = dummy variables which take on the value 1 if individual is married or cohabitating with partner. North/DF = dummy variables which take on the value 1 if individual resides in the Distrito Federal (Mexico City) or in one of the Northern states.

Table 9: Probit Estimates of the Determinants of Unemployment - Males  
Alternative Definition of Unemployment

Variable	(1) Age 12-20	(2) Age 21-40	(3) Age 41+	(4) Sch<=6	(5) Sch 7-9	(6) Sch 10+
School	-.086 (-4.18)	-.025 (-1.75)	-.027 (1.73)	-.022 (-2.72)	-.017 (-.65)	-.001 (-.08)
School <sup>2</sup>	.006 (4.55)	.001 (1.89)	-.002 (-1.95)			
Age	-.089 (-10.17)	-.011 (-3.49)	-.007 (-2.07)	-.063 (-10.87)	-.084 (-8.30)	-.058 (-5.12)
Age <sup>2</sup>				.001 (9.00)	.001 (7.48)	.001 (4.92)
Married	-.494 (-5.02)	-.752 (-20.21)	-.452 (-7.62)	-.594 (-14.04)	-.66 (-10.69)	-.690 (-13.76)
Cohab.	-.536 (-2.94)	-.568 (-7.404)	-.439 (-3.92)	-.566 (-7.60)	-.672 (-5.01)	-.435 (-2.96)
North	.180 (5.13)	-.061 (-1.811)	-.037 (-0.75)	.104 (3.22)	.107 (2.59)	-.149 (-3.61)
DF	.216 (3.27)	.121 (2.32)	.257 (3.56)	.258 (4.17)	.279 (4.33)	.033 (0.56)
No. Obs.	8469	24120	12487	20779	10561	13736
Means:						
Unemp	.157	.04	.03	.05	.07	.05
School	7.52	9.27	6.36	4.29	8.44	13.71
Age	17.24	29.59	50.91	37.07	27.76	31.44
Married	.06	.62	.83	.62	.46	.59
Cohab.	.02	.06	.06	.07	.04	.02
North	.40	.42	.40	.40	.42	.41
DF	.07	.09	.09	.06	.09	.11

Notes: T-statistics in parentheses. See notes on variable definitions at the bottom of Table 8.

Table 10 : Probit Estimates of the Determinants of Unemployment - Females  
Active Job Seekers only.

Variable	(1) Age12-70	(2) Age12-70	(3) Age12-70	(4) Sch<=6	(5) Sch7-9	(6) Sch10+	(7) Age 12-20	(8) Age 21-40	(9) Age 41 +
School	.013 (3.39)	.013 (3.37)	.072 (4.43)	.064 (3.9)	.067 (1.4)	.015 (1.2)	.150 (2.7)	.036 (1.6)	.056 (1.9)
School <sup>2</sup>			-.002 (-3.1)				-.005 (-1.6)	-.001 (-0.9)	-.003 (-1.5)
Age	-.017 (-11.4)	-.017 (-10.2)	-.083 (-11.0)	-.047 (-4.3)	-.100 (-6.4)	-.14 (-8.6)	1.02 (3.6)	-.186 (-3.9)	-.058 (-1.77)
Age <sup>2</sup>			.0009 (9.4)	.0006 (3.9)	.0012 (5.5)	.002 (6.9)	-.029 (-3.7)	.002 (3.3)	.001 (1.0)
Married		-.126 (-3.2)	-.023 (.55)	.149 (2.1)	-.009 (-.10)	-.115 (-1.8)	.158 (1.2)	-.077 (-1.5)	.206 (2.2)
Cohab.		.082 (.93)	.212 (2.36)	.194 (1.5)	.31 (1.8)	.229 (1.0)	.455 (2.2)	-.017 (-.13)	.55 (3.2)
North		-.054 (-1.5)	-.060 (-1.7)	.007 (.11)	-.03 (-.45)	-.15 (-2.8)	-.044 (-0.7)	-.069 (-1.4)	-1.81 (-1.8)
DF		.334 (7.0)	.338 (7.0)	.375 (4.2)	.43 (4.4)	.26 (3.7)	.547 (5.9)	.308 (4.7)	.090 (.72)
No. Obs.	19748	19748	19748	7593	4439	7716	4170	11449	4129
Means:									
Unemp	.043			.03	.05	.05	.08	.04	.02
Yrs.Sch.	8.6			4.1	8.4	13.0	8.3	9.6	5.9
Age	31.0			35.7	27.4	28.6	17.7	29.0	50.3
Married	.33			.35	.28	.35	.05	.40	.43
Cohab.	.03			.06	.03	.01	.01	.04	.04
North	.40			.36	.48	.39	.44	.40	
DF	.10			.09	.10	.12	.08	.11	

Notes: T-statistics in parentheses. See variable definitions in Table 8.

Table 11: Characteristics of Completed Spells of Unemployment:  
Males Aged Twelve and Over, 1990-91

Characteristics	Proportion Remaining Unemployed							
	All Males	By Age Group				By Education		
		12-20	21-30	31-40	41+	0-6	7-9	10+
<b>1. Standard Definition UE</b>								
Proportion of spells ending								
within three months	.41	.38	.40	.50	.43	.44	.45	.34
within six months	.69	.66	.69	.79	.57	.76	.70	.58
within nine months	.81	.82	.82	.82	.75	.85	.84	.72
Proportion of spells lasting over a year								
	.12	.09	.13	.10	.18	.10	.09	.16
Mean duration of a completed spell (months)	5.7	5.7	5.6	5.3	6.4	5.2	5.3	6.6
<b>2. Alternative Definition UE</b>								
Proportion of spells ending								
within three months	.39	.37	.39	.45	.35	.39	.42	.34
within six months	.61	.62	.64	.71	.43	.62	.65	.65
within nine months	.72	.76	.77	.74	.55	.70	.80	.69
Proportion of spells lasting over a year								
	.19	.14	.15	.19	.41	.25	.12	.20
Mean duration of a completed spell (months)	6.4	6.1	6.0	5.9	8.4	6.7	5.8	6.8

Table 12: Characteristics of Completed Spells of Unemployment:  
Females Aged Twelve and Over, 1990-91

Characteristics	Proportion Remaining Unemployed						
	All Females	By Age Group			By Education		
		12-20	21-30	31+	0-6	7-9	10+
<b>I. Standard Definition UE</b>							
<b>Proportion of spells ending</b>							
within three months	.27	.31	.23	.24	.25	.33	.26
within six months	.54	.51	.56	.57	.47	.66	.52
within nine months	.80	.84	.65	.71	.75	.75	.67
<b>Proportion of spells lasting over a year</b>	.22	.14	.31	.28	.19	.19	.25
<b>Mean duration of a completed spell (months)</b>	7.2	7.0	7.4	7.1	7.5	6.2	7.4

Table 13: Proportion of Unemployment By Length of Spell

Length of Spell (months)	Males		Females
	(1)	(2)	(3)
3 or more	.91	.92	.96
6 or more	.68	.75	.78
9 or more	.41	.59	.60
12 or more	.30	.43	.46

\* Column (1) is using standard definition of unemployed; column (2) uses alternative definition which includes idle workers; column (3) uses standard definition.

Table 14 : Proportional-Hazards Model Estimates of Unemployment Duration

Variable	Males		Females	
Age	-.030 (-4.654)	-.027 (-4.050)	-.086 (-1.397)	-.067 (-1.051)
Age <sup>2</sup>			.001 (1.251)	.001 (0.975)
Yrs. School	.006 (0.476)		-.005 (-0.189)	
School Dummies:				
No Formal		.095 (0.316)		1.894 (1.588)
Inc. Primary		-.104 (-0.527)		.229 (0.470)
Primary		.214 (1.202)		.095 (0.330)
Inc. Secondary		.083 (0.395)		.061 (0.192)
Secondary		.334 (1.900)		.347 (1.442)
High Secondary		.257 (1.413)		.033 (0.132)
University				
Household Head	.414 (2.590)	.420 (2.587)	.505 (1.281)	.425 (1.012)
With Children	.071 (2.197)	.076 (2.222)	-.024 (-0.267)	-.081 (-0.844)
Chi-Square	24.64	33.35	4.20	8.14
Number Obs.	439	439	152	152

\* T-Statistics in parentheses. See variable definitions in Table 8. Household head = dummy variable which takes on the value 1 if individual is household head. With children = similar dummy variable for having children. School dummies include no formal education, incomplete primary (1-5 years school), primary (6 years school), incomplete secondary (7-8 years school), secondary (9 years school), higher secondary (10-12 years school) and university (13 or more years of school).

Table 15  
Persistence and Turnover, Males

	$p_{wk}$	$p_{yr}$	$p_{yr,corr.}$	$p_{yr,max}$	$1-\lambda$	N	LF
<u>Standard UE Def</u>							
All Males	.022	.093	.097-.110	.69	.88	614	6616
Age 12-20	.055	.225	.236-.267	.95	.78	256	1138
21-30	.026	.106	.112-.128	.75	.87	204	1918
31-40	.011	.044	.048-.057	.44	.90	70	1578
41+	.010	.042	.042	.41	.92	64	1982
Educ. < =6	.016	.068	.073-.087	.57	.88	189	2786
7-9	.033	.135	.140-.156	.82	.85	229	1696
10+	.023	.092	.095-.103	.70	.89	196	2135
<u>Alternative UE Def</u>							
All Males	.050	.174	.182-.205	.93	.84	1186	6810
Age 12-20							
21-30	.144	.474	.504-.579	1.0	.53	595	1255
31-40	.042	.155	.160-.177	.89	.85	302	1951
41+	.020	.070	.074-.085	.65	.91	112	1593
Educ. < =6	.024	.088	.090-.096	.72	.90	177	2011
7-9	.048	.157	.165-.190	.92	.85	451	2878
10+	.069	.242	.251-.279	.98	.78	427	1762
	.039	.142	.147-.160	.87	.86	308	2170

**Table 16**  
**Persistence and Turnover, Females**

	$P_{wk}$	$P_{yr}$	$P_{yr}$ corr.	$P_{yrmax}$	$1-\lambda$	N	LF
<b>Standard UE def</b>							
<b>All females</b>	.033	.135	.140-.152	.82	.86	431	3182
<b>Age 12-20</b>	.074	.304	.319-.363	.98	.71	207	681
<b>21-30</b>	.034	.137	.140-.149	.83	.86	147	1070
<b>31-40</b>	.015	.064	.064	.54	.91	47	740
<b>41+</b>	.010	.043	.043	.41	.92	30	691
<b>Educ. &lt;=6</b>	.020	.090	.092-.097	.65	.88	100	1114
<b>7-9</b>	.041	.177	.182-.199	.89	.82	127	719
<b>10+</b>	.039	.151	.156-.169	.87	.85	204	1350

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