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Job Stability and Labor Mobility in Urban Mexico: A Study Based on Duration Models and Transition Analysis

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Introduction

Can the relatively slow growth of the formal sector in Mexico during the 1990s be attributed to a rigid labor market and to low turnover rates? Is the increasing share of workers in the informal sector and of self-employed workers evidence of market segmentation, and hence a source of inequality and poverty? Or, as suggested by Maloney (1997), could the relatively large and symmetric flows of workers among all sectors (formal, informal, self-employed, unemployed, etc.) be "more consistent with a well-integrated market where workers search across sectors for job opportunities than one where informal workers seek permanent status in the formal sector and stay until they retire?"[1]

What characterizes the workers who are likely to stay for long in the formal sector when they enter it, and what characterizes those with low probabililties of leaving informal sectors and unemployment? When workers leave these statuses, what determines the other statuses to which they move? Has the pattern of mobility between the formal and informal sectors and between these two sectors and self-employment and other job statuses been modified by the increased flexibility in labor contracts and by the structural changes of the 1990s?

We address these questions by means of an analysis based on duration models and continuous semi-Markov processes. With hazard and transition intensities functions for 1991 to 1998 for the formal sector and other job statuses in which the labor force is commonly grouped in a semi-industrialized economy[2] we estimate, among other parameters: a) the time spent by different groups in each job status, b) the factors which influence the probability that a worker will leave a job status, given that he or she has stayed in that sector up to that point in time, and c) what the next job status is likely to be when a person moves out.

We measure the extent to which work experience, training courses, level of school education and other variables, such as being in the service sector or working in a firm with fewer than 15 employees, affects the probability of remaining in the formal sector. We show that these variables are also important determinants of job mobility out of the informal sector and self-employment.

A number of studies of the relative degree of mobility in the labor market of industrialized economies have addressed problems which are also relevant in a context such as the Mexican case. On the one hand, Fougere and Kamionka (1992) showed for France that, by assessing how frequent and likely is the mobility between bad and good jobs in a country, it is possible to consider such mobility's social implications.[3]

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[1] Maloney, (1997, p. 13).

[2] These are: informal sector, self-employment, unemployment, unpaid jobs, commission or percentage and out of the labor force.

[3] These authors considered whether the dual nature of French labor market was leading to a segregated society, which would be the case if it were the same people who always end up in bad jobs. They showed that their estimations are also useful to consider the opposite case, namely that bad jobs play a role in the insertion of workers into the labor market, as a source of professional experience. Indeed, as Saint Paul (1996) stressed, an assessment of the heterogeneity in the transition probabilities of different groups is required to determine if a core of "stayers" within each group are unlikely to find a good job.

On the other hand, studies of the dynamics of labor markets (e.g., Saint-Paul *et al*., 1998, for France and the U.S.) have illustrated how job separation and hiring rates determine aggregate unemployment rates in industrial economies. These studies show how two countries may end up with the same shares of employment and unemployment in the total labor force, even though the working of their labor markets might be quite different. The difference is explained in terms of the different degrees of flexibility and mobility implied by their different job separation and hiring rates.

Extending the implications of these latter studies, it follows that two semi-industrialized countries may end up having a similar share of formal, informal and self-employed workers in the total labor force, although the propensities of workers to move from (into) one sector of employment or job status to (from) another one may be different. Addressing the Mexican case from this perspective, we show that aggregate shares of workers in different job statuses of its labor force for the periods 1991-1994 and 1994-1997 can be interpreted as being determined in terms of: a) the estimated hazard rates of leaving a status, b) the determinants of moving into another status, and c) the long-run equilibrium state occupancy probabilities obtained from the semi-Markov process implied by these kinds of processes (Lancaster, 1990).

This paper is structured in three sections. The first discusses stylized facts of the Mexican labor market, among them quarterly variations in the relative shares of different job statuses during the decade and indicators of the stability of employment relationships in Mexico, such as four and six-year job retention rates, which are calculated by means of a "synthetic cohort" followed over time.

The first section also presents a number of transition matrices to compare a person's job status at a certain point in time with the status that he or she had three and six months earlier. Based on the information provided by workers, we discuss high-frequency movements by workers from one job status to another.

The first section additionally discusses Mexican labor regulations involving job dismissals, why these regulations constitute a potential source of conflict and why these regulations, together with provisions related to seniority premiums, might be causing successful and productive matches to end sooner than would otherwise be optimal. To empirically assess this possibility, we consider fired employees for the years 1991-1997 who were registered in the formal and informal sectors. We search for spikes in the hazard rate of being fired that could be associated with a discrete jump in firing cost that occurs in Mexico before the fifteenth year of tenure. In turn, some aspects of labor flexibilization for 1995—such as labor contracts or firms' internal working agreements regulating firing of workers, subcontracting and hiring of temporary workers—are also included in the analysis of determinants of job stability in the manufacturing sector.

Section 2 addresses the following questions: how long does it take before workers in the formal, informal and self-employment sectors, respectively, move into another job status (including unemployment and out of the labor force), and what are the respective odds that such movements will take place among groups with different experience, education, age and other characteristics?

The results of duration models and the hazard rates of leaving the formal, informal and self-employment sectors are presented in this section. Finally, transition intensities implied by our six job statuses duration model are estimated and analyzed, and the results of duration models for the manufacturing sector are also presented.

Section 3 deals with the long run equilibrium state occupancy probabilities obtained by considering the continuous time semi-Markov process specified in this study. The section addresses the following question: given the time that each worker spends in the formal sector or in any other job status (including self-employment, unemployment and out of the labor force), what is the probability that a certain type of worker will "eventually" be found in the formal sector and in each of the other job statuses?

1. Stylized Facts in the Urban Labor Market

1.1 Trends in Job Status, 1987-1998

Our point of departure in this study is the idea that problems in the functioning of Mexico's labor market must be analyzed within a context broader than answering only what determines being unemployed[4] and the time spent until a job is found.[5] Therefore, we posit that the question should also include asking what determines being in non-formal job statuses, how long workers stay there, what determines moving to another job status and, when they move, to which status are they likely to move.

Answers to these questions would help us to assess whether the relatively large and increasing share of self-employed, informal sector and persons working without payment or by commission is a reflection that the labor market in Mexico is not allowing workers to move to their best uses in a short period of time.[6] Alternatively, it may be possible to assess whether the existence of such a large and growing non-formal sector greases the wheels of the labor market. Stated differently, these answers may help us to answer whether there are welfare and efficiency costs associated with the pattern presented in Figure 1, which highlights the lack of growth in the formal sector over time. Indeed, as shown in the figure, the only period in which the net generation of jobs in the formal sector (defined here as the set of workers registered in the social security institutions, IMSS and ISSSTE, as they are called in Mexico[7]) appears to have grown relatively fast in Mexico is during 1990-1991.[8]

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[4] In Mexico, workers cannot afford open unemployment—the lack of unemployment insurance combined with their very low savings forces them to take low paying jobs in which they are less productive than they would be in their best use. Hence the urban unemployment rate (which remained between 3 and 5 per cent during the seven years period previous to the 1994 crisis and rose to a peak of around 8 per cent in 1995) is therefore an incomplete indicator of "unavailability of adequate employment opportunities" during a recession or during structural adjustment.

[5] Revenga and Riboud have addressed this topic for the case of Mexico (1993) and (1994).

[6] Even if human capital does not depreciate as a consequence of an involuntary departure from the formal sector, a job in the informal sector may be perceived by employers to reflect a depreciation of human capital, so that a worker who consequently re-enters the formal sector will receive a lower wage than in his previous job in the formal sector.

[7] For many workers the formal sector implies more than having access to social security services, for example, it implies severance payments in the event of being fired, and other rights offered by labor legislation.

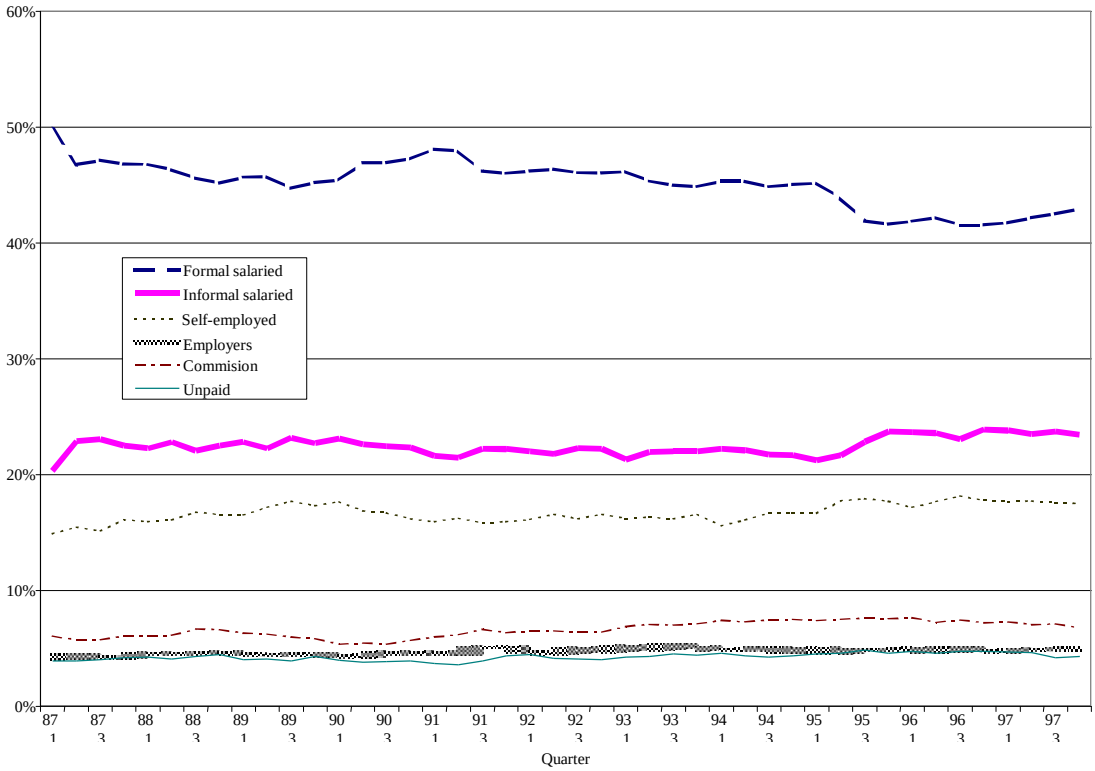
[8] This period was characterized not only by relatively high GDP growth, but also by the more flexible application, relative to 1988 and 1989, of wage and price norms to control inflation.

The figure also shows that, during the period 1987-1989 the share of jobs in the formal sector diminished with a corresponding increase in the share of self-employment: by the end of 1989 this latter share increased to a figure of 22%, from 20% in 1987, while the share of the informal sector remained constant. (Informal employees are defined as wage- earning workers not registered in the social security institutions, while the self-employed consist of non-wage earners working on their own account, including bosses.)

Also noticeable in Figure 1 is that the share of workers in the formal sector, which fluctuated between 41% and 49% for the period 1987 to 1997, presents a sharp decline during the 1995 recession—by more than three percentage points in only one year. The figure also shows the failure of formal sector employment to recover even after the boom that began in 1997. This failure is reflected, in part, in an increase in the corresponding share of the informal sector and partly in a larger share of self-employment.

Figure 1.

Distribution among Sectors of Workers of the Mexican Urban Labor Market



In Subsection 1.3.2 and Section 3 we show that the proportions of different job statuses in the urban labor force, as represented in Figure 1, are determined by exit rates (or hazard) from one job status to another and by how likely destinations depend on workers' characteristics.

1.2 Employment Stability and Job Retention Rates

We present in this subsection a description of job tenures in Mexico and an analysis in which a "synthetic cohort" of urban workers, whose job tenure is known, is followed over time during periods of four and six years. This involves a comparison of the number of workers classed by the length of their current work and age groups in order to provide, based on changes in job status, a first estimate of the probability of remaining in a job status for four or six years more. The estimate in turn enables us to establish international comparisons of the stability of the employment relationships.[9]

We consider first the results of Table 1, which indicate that mean and median job tenures in Mexico are short, compared to those in the United States, the United Kingdom, and Spain, as well as the average of OECD countries.[10] They also show that about one out of four urban workers in the formal sector in Mexico had less than two years in their job at the end of the first half of 1995, a figure only slightly below that of the weighted average for the OECD countries. In contrast, one out of two workers in the informal sector reported having less than two years in their job and 25% of wage earners in the informal sector reported having been in their jobs not more than six months.

At the other side of the tenure spectrum, Table 1 shows that the percentage of workers with more than ten years in the same job is twice as high for the formal sector than it is for those with jobs in the informal sector. As a result, the median tenure of the latter is only two years, while the corresponding figure for the formal sector is four years.

[9] We follow the format presented by the OECD (1997) in its analysis of job stability in OECD countries, which did not include Mexico (despite the fact that it is a member). These data can also be compared with those analyzed by Anderson-Shaffner (1996) for Colombia.

[10] OECD (1997, pp. 141-142).

Table 1. Distribution of Employment by Employee Tenure, 1995

	Under 6 months	6 months and under 1 year	1 and under 2 years	2 and under 5 years	5 and under 10 years	10 and under 20 years	20 years and over	Mean Tenure Years	Median Tenure Years
Mexico: Urban Working population	13.8	7.1	11.8	25.4	17.3	15.3	9.2	6.53	3.50
Formal sector	8.7	7.0	11.7	26.5	18.8	18.2	9.0	6.87	4.00
Informal sector	24.8	10.0	15.0	24.2	13.7	7.8	4.5	4.12	2.00
Self employed	9.9	4.9	7.7	23.1	18.6	19.6	16.3	8.68	6.00
OECD unweighted average	10.6	6.9	10.2	17.9	19.1	20.5	16.3	8.8	6.7
United States	12.6	13.4	8.5	20	19.8	16.8	9.0	9.8	6.7
United Kingdom	10.5	9.1	10.7	19.5	23.5	17.3	9.4	7.8	5.0
Spain	27.3	8.2	4.9	11.1	14.4	17.7	16.5	8.9	4.6

Source: INEGI (1995) and OECD (1997, Table 5.5).

The retention rates that are presented in Table 2 approximate the probability that workers with a particular level of tenure today will have an additional t years of tenure in t years. In order to do this, we obtain the ratio of the number of workers who are age x+6 with tenure t+6 in 1997 to the number of workers who are age x with tenure t in 1991, thereby obtaining the six year retention rate for a group of workers with given characteristics. The corresponding figure for four year retention rates (1991-1995 and 1993-1997) is similarly calculated.

Table 2. Four and Six Years Job Retention Rates
Percentages

	Urban working population	Formal sector	Informal sector	Self-employment	
Four years retention rate for 1991-95	21.0	27.6	20.6	49.7	
Four years retention rate for 1993-97	20.8	29.7	22.1	43.4	
Six years retention rate for 1991-97	12.3	17.6	13.3	30.3	
	Gender		**Age**		
	Men	Women	15-24	25-44	45+
Four years retention rate for 1991-95	26.6	16.0	10.1	29.3	30.7
Four years retention rate for 1993-97	25.2	16.7	10.3	28.7	30.4
Six years retention rate for 1991-97	15.7	9.3	5.4	18.1	17.8
95 mean tenure years	6.96	5.75	2.26	6.10	13.01
	Level of education				
	Primary	Secondary	Tertiary	University	
Four years retention rate for 1991-95	20.3	16.2	19.2	6.2	
Four years retention rate for 1993-97	19.9	17.5	19.8	6.3	
Six years retention rate for 1991-97	12.0	9.8	11.5	3.8	

Source: Own calculations based on data from INEGI, Enece surveys 1991,1993,1995,1997
*Datasets were adjusted to avoid calculation biases due to geographical enlargement of surveys with time (17 cities for comparisons with 1991 and 34 cities for comparisons with 1993)

95 mean tenure years	7.37	5.41	5.25	4.99

Table 2 indicates that workers in the informal sector change jobs more often than those in the formal sector: from the second column of this table it follows that out of 100 workers holding a job in the formal sector in 1991, not more than 28 of them lasted four more years with the same employer. It also follows that of those 28 workers, around ten of them were no longer with the same employer two years later.[11]

Although self-employment tends to be, by its nature a stable activity, results in Table 2 suggest that after six years a very high percentage of the self-employed (70%) would not be engaged in the same activity

[11] For comparisons with job retention rates in developed countries (some of them twice as high as those obtained here) *Cfr*. OECD (1997, p.141). It is possible to show that the probability of job changes declines with tenure, when as in Anderson Schaffner (1996), retention rates are calculated for disaggregated levels of initial tenure.

Another interesting result is that four-year retention rates for wage earners are slightly higher during the period 1993-1997 than during 1991-1995. It suggests that the period including the years 1991-1993 partly reflects the fact that labor market adjustments were associated with the effects of the NAFTA agreement signed in 1993. In other words, the period leading up to NAFTA, when most trade liberalization took place, was associated with a higher level of job turnover.

The only available retrospective survey that refers to more than one job was applied to workers in the manufacturing sector in the final quarter of 1993.[12] Of those workers answering that they have had more than two paid jobs, we can know, as the Table 3 indicates, that one out of every two of them did not last more than two years in his/her previous jobs.

The two-year retention rates for workers in the manufacturing sector calculated for the years 1995-1997 (calculated following the methodology used in subsection 1.2) suggest a low probability of lasting more than two years in the manufacturing sector. As shown in Table 3, it is particularly low for workers with less than six months of job tenure.[13]

Table 3

Job Tenure Statistics for Manufacturing Sector

1995-1997		1993			
Initial Tenure	Retention Rates		Current Job	Previous Job	First Job
0 to 6 months	27.98%	Mean	7.0	3.6	3.1
>6 months to 1 year	29.63%	90%	17.0	12.0	7.0
>1 up to 3 years	29.60%	75%	10.0	8.8	4.0
>3 up to 5 years	42.49%	50%	4.3	2.0	2.0
>5 up to 10 years	42.79%	25%	1.9	1.0	1.0
>10 up to 20 years	51.01%	10%	0.7	0.5	0.5
> than 20 years	60.16%				
		Standard Dev.	7.4	4.5	3.6
		Number of Obs.	7,665	5,668	3,634
Source: ENECE & ENEU Surveys		Source: ENTRAM 93 Survey			

In the following subsection we base our analysis on the panel-linked structure of employment surveys. This feature enabled us to follow interviewed persons for up to five consecutive quarters—tracking four fifths for one quarter, three fifths for two, two fifths for three and one fifth for five quarters—thereby identifying if and when they changed job status. This approach is in contrast to the artificial cohorts approach considered in this subsection; although it enables us to refer to a longer period of time, tenure and other data were obtained from cross-section surveys, with no panel structure, for persons interviewed in 1991, 1993, 1995 and 1997.

[12] As opposed to the case with the ENEU, the ENTRAM survey (Encuesta Nacional de Trabajadores Manufactureros) was applied to workers the manufacturing sector. In each establishment of the ENESTYC sample, 15 workers were randomly selected. (Out of the 8 categories of employees found in the ENESTYC surveys, e.g., 3 blue-collar workers, 3 specialized, 3 non-specialized, 1 supervisor, etc.).

[13] By identifying workers in their activity sector, it is possible to use, as in Calderón-Madrid (1998), our panel structure to consider how workers move within type of activity.

In Section 2 we discuss how the identification of "completed spells of employment"—together with "incomplete spells" or censored data—enabled us to estimate the hazard functions of moving out of a job status by means of duration models. This is possible because of the five-quarter panel-linked structure of the employment surveys, together with the job tenure information provided by each of the persons followed in the panel. In turn, by identifying which of the six alternative job statuses was the destination of the movers, we can have a more elaborate analysis, in terms of transition intensities of a competing-risks model.

1.3 Transition among Sectors: Are Workers Just Playing "Musical Chairs"?

Maloney (1997), sketching patterns of mobility among sectors by considering panels for 1987-1991, posits that a high degree of mobility of workers characterized the labor market in Mexico. His analysis is based on a transition matrix that enabled him to compare a person's job status at a certain point of time with the status that he or she had twelve months earlier. His analysis excluded women and persons with a level of education above high school.

Table 4. Quarterly ENEU Panel, Movers and Stayers One Quarter Later

II-93 to III-93	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**	
FS	80.3%	8.8%	1.5%	4.4%	2.4%	2.3%	0.4%	100.0%	22.5%
IS	19.4%	50.4%	3.0%	12.3%	8.1%	4.7%	2.1%	100.0%	11.1%
Un	14.5%	17.4%	19.7%	33.7%	7.8%	4.7%	2.2%	100.0%	1.8%
OLF	2.0%	3.7%	1.8%	86.3%	3.0%	0.9%	2.4%	100.0%	46.0%
SE	4.5%	7.3%	1.3%	11.5%	69.5%	3.8%	2.1%	100.0%	12.1%
Comm	13.6%	14.7%	2.2%	10.3%	12.4%	45.4%	1.4%	100.0%	3.6%
UnP	2.9%	9.0%	1.6%	31.8%	9.4%	2.2%	43.1%	100.0%	2.8%
Total	22.5%	11.3%	2.1%	45.3%	12.1%	3.7%	3.0%	100.0%	

II-95 to III-95	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**	
FS	81.0%	8.4%	2.3%	3.3%	2.5%	2.3%	0.3%	100.0%	20.5%
IS	14.2%	52.9%	5.2%	12.0%	8.5%	5.2%	2.1%	100.0%	11.0%
Un	10.1%	18.5%	28.1%	25.4%	10.6%	5.0%	2.3%	100.0%	3.4%
OLF	1.4%	3.6%	2.7%	85.3%	3.3%	1.0%	2.7%	100.0%	45.7%
SE	3.5%	7.5%	2.8%	11.0%	68.9%	4.1%	2.2%	100.0%	12.6%
Comm	11.3%	13.6%	4.6%	9.9%	12.4%	46.6%	1.6%	100.0%	3.8%
UnP	1.9%	8.1%	2.6%	32.4%	9.4%	1.9%	43.7%	100.0%	3.1%
Total	20.1%	11.5%	3.8%	44.6%	12.8%	4.0%	3.3%	100.0%	

II-97 to III-97	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**	
FS	83.0%	7.4%	1.3%	3.5%	2.4%	2.1%	0.3%	100.0%	21.7%
IS	15.6%	55.0%	2.6%	12.5%	7.8%	4.5%	1.9%	100.0%	12.3%
Un	15.8%	19.7%	17.6%	32.1%	8.8%	3.9%	2.1%	100.0%	1.9%
OLF	1.9%	4.0%	1.6%	86.0%	3.2%	0.9%	2.4%	100.0%	44.2%
SE	4.2%	7.7%	1.1%	11.0%	70.0%	3.7%	2.2%	100.0%	13.0%
Comm	13.4%	15.5%	1.8%	9.9%	12.5%	45.7%	1.1%	100.0%	3.9%
UnP	2.4%	9.5%	1.4%	32.6%	9.8%	1.8%	42.5%	100.0%	3.0%
Total	22.2%	12.4%	1.9%	43.7%	12.9%	3.8%	3.0%	100.0%	

Source: Own calculations with ENEU surveys

In order to assess the validity of Maloney's remarks for a more comprehensive set of data, for a more recent period of time and within a shorter time span, we analyze transitions from the second to the third quarter for 1993, 1995 and 1997 in our transitions matrices of Table 4.[14] The letters in the left-hand side column of the matrices indicate the job status in which the person was located in the second quarter of the year. The letters in the upper row indicate the job status in which they were found three months later. The cells of the main diagonal represent the share of workers in that job status who have not moved between quarters II and III (i.e., are stayers) and the other cells indicate to which of the 6 possible sectors or job statuses they moved (formal and informal sectors, unemployment, out of the labor force, self-employment, paid by commission or percentage, and unpaid jobs).[15]

These matrices highlight that the Mexican economy is characterized by a high frequency of movements by workers from one job status to another within a time span of one quarter. The figures are especially high for wage earners in the informal sector: between 45% and 50% of those in these status were no longer there three months later. In turn, between 15% and 20% of formal workers move, in only one quarter, to another job status.

Consider what happens with those who were trying to find a job in June 1995. According to the employment surveys those unemployed persons who found a job during the third quarter of 1995 had spent, on average, nine months looking for a job. In turn, as shown in the corresponding matrix, almost half of those who were trying to find a job in June 1995 were already working by September. An equal number of workers found jobs in the formal sector as became self-employed: 10% found work in each of these job statuses, and about twice as many found work in the informal sector. These figures contrast with those of the years of economic expansion, 1993 and 1997, in which around half as many unemployed workers as those who found a job in the formal sector became self-employed.

The time that an unemployed person spends trying to find a job depends on the availability and speed of creation of vacancies, which in turn depends on how long it takes workers who have a job to move out of it. That is, it depends on the frequency of job changes by workers who have a job—which, as pointed out earlier, appears to be high in the urban market.

The matrices in Table 4 represent those "earmarked" persons interviewed in two consecutive quarters. The final column of the matrices indicates persons at the initial quarter in each job status as a percentage of the sum of persons in the seven statuses. In turn, the final rows refer to the corresponding percentages after one quarter—i.e., persons found during the next quarter in each job status as a percentage of the sum. By comparing cells in final column with corresponding cells in final row, an interesting stylized fact arises: the shares that each job status represents within total population does not vary significantly from one quarter to another, in spite of significant movements of persons among job status. This implies that the spaces left by the

[14] Persons under 16 and over 75 were excluded from the dataset. The number of observations, without factor of expansion, of Table 4 are in Tables 19, 21 and 23 in the Appendix. Additional considerations could be added with corresponding matrices for the years 1991, 1994 and 1996, which can be found in the Appendix, in Tables 18, 20 and 22.

[15] Paid by commission or percentage is answered as such by the interviewed person, whereas unpaid workers are divided either working with the family or unpaid, but without family relationship in their jobs. Informal workers are those employees receiving salary but not registered in the social security institutions.

flow of persons out of one job status and into another one are to a great extent filled by a flow of persons moving in the opposite direction. This last stylized fact explains why, in spite of relative frequent movements in and out of different job statuses, the share of workers in the total active population represented in Figure 1 remains relatively constant across quarters.

For a more explicit relationship between the shares represented in Figure 1, and those appearing in the matrices, it is possible to re-express the latter by excluding from the analysis those persons who are out of the labor force.[16] When this is done, it is possible to consider the flows of workers moving out of one job status and into another.

When we focus on those wage earners who are at the beginning of our panel in 1993, we find that, as a share of the economically active population (i.e., excluding OLF), formal and informal workers represented 41.7% and 20.6%, respectively. Of those persons followed from the second to the third quarter of 1993, more than 8.5% of formal workers—i.e., 3.67% of the economically active population—moved to the informal sector. During the same period, 3.99% of the total active population in the informal sector moved to the formal sector (almost one out of five informal workers). That is, in spite of the high frequency of movements by workers, in net terms only 0.32% of the total active population moved from the informal to the formal sector. As a result, the shares of the formal and informal sectors in the total active population do not change significantly.

In turn, during 1997, another year of economic expansion, the net increase in the formal sector was 0.54% of the economically active population, whereas during 1995 the corresponding figure was a net decline of 0.29%. That is, during the period associated with a severe recession, 14.2% of those working in the informal sector during the second quarter of 1995 had found a job in the formal sector by the third quarter of that year (2.88% of the economic active population), but at the same time 3.17% of the economic active population that had been in the formal sector moved to the informal sector.

1.3.1 Underestimation of the Frequency of Changes in Job Statuses with Yearly Comparisons

There are at least three reasons why our results, when compared with those presented by Maloney (1997), reveal a higher frequency of changes among job status in Mexico, First, as suggested by previous studies along these lines, particularly Cruz (1994), women change their job status more often than men, the only group considered by Maloney. Second, major structural changes (e.g., the NAFTA agreement) and a more volatile macroeconomic environment characterize the period 1991-1997, compared to the 1987-1991 period analyzed by Maloney. Third, and more important, by comparing the initial state with a state twelve months later, Maloney's study allows for the following result: persons who moved out of a job status but returned to that initial status within the time span of three, six or nine months are considered as workers who were in that status for the whole year.

[16] This can be done by dividing the numbers in the cells of the matrices by one minus the share that OLF represents in the total population. The resulting figures do not necessarily coincide with those in Figure 1, since the numbers appearing in the cells are not adjusted by the corresponding "factor of expansion," whereas those used in the figure are.

To illustrate the importance of the last kind of change, we present two different transition matrices; both compare workers' initial states with their job status two quarters later. The first, Table 5, compares job status at the end of the year relative to the status two quarters earlier, ignoring changes registered between June and September and between September and December. The second matrix, Table 6, classifies as stayers only those who remained in the same job status during the three quarters in which they were interviewed. In the latter matrix movers are only those who changed between the third and fourth quarters (thus, those changing between the second and third quarters were excluded from the matrix).

Table 5. Quarterly ENEU Panel, Movers and Stayers Two Quarters Later
(Comparing status initial and six months later only)

II-93 / IV-93	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	20,138	2,359	395	1,365	735	640	84	25,716
IS	2,556	5,953	353	1,733	1,099	661	254	12,609
II-95 / IV-95	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	19,937	2,348	526	970	670	608	75	25,134
IS	1,981	6,762	507	1,651	1,185	664	255	13,005
II-97 / IV-97	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	24,008	2,045	376	1,144	737	618	107	29,035
IS	2,882	8,406	425	2,144	1,341	711	283	16,192

Source: Own calculations with ENEU Surveys

Consider, for example, what happens with those "earmarked" workers who were in the formal and informal sectors in the second quarter of 1993, two quarters later. Comparing Table 6 with Table 5, we deduce that results in Table 5 overestimated the number of persons not moving out of the formal and informal sectors by 8% and 39.5%, respectively.[17] This overestimation is due to the workers who moved out of the sector between the second and third quarter and with a further movement between the third and fourth quarter ended up in their initial sector when interviewed in the fourth quarter.[18]

[17] This figure refers to numbers before applying the factors of expansion to the survey.
[18]The analysis of these features of the labor market requires a multiple cycle semi-Markovian model, as suggested by Hopenhayn (1998) in his study of turnover rates in Argentina.

Table 6. Quarterly ENEU Panel, Movers and Stayers Two Quarters Later

(Comparing status initial and six months later excluding those that changed, but returned three months later)

II-93 / IV-93	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	18,608	1,274	199	646	334	305	31	21,397
IS	852	4,265	137	538	337	243	77	6,449
II-95 / IV-95	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	18,230	1,141	231	385	228	261	18	20,494
IS	725	4,788	174	474	388	261	79	6,889
II-97/ IV-97	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	21,929	978	194	511	275	310	35	24,232
IS	1,030	6,208	186	643	441	268	81	8,857

Source: Own calculations with ENEU Surveys

1.3.2 Long Run Proportions of Workers in Different Job Statuses and their Relationship with Flow Exit Rates

In Subsection 1.3.1 we show that, in spite of the high frequency of movements by workers, in net terms shares of each job status as a share of total active labor force did not changed significantly from one quarter to the other. In this subsection we present the following arguments (taken from Heckman, 1998) to illustrate how exit rates from different job statuses determine aggregate shares of the urban labor force. Consider a homogeneous population with only two possible statuses: employment or non-employment. $P_e(t)$ is the proportion of people who are employed at time *t*; $P_n(t)$ is the proportion of non-employed. In Section 3 we generalize the argument to consider more than two job statuses and, following Lancaster (1990), estimate long run occupancy probabilities using Mexican data for the periods 1991-1994 and 1995-1998.

The conditional probability of exit from the state in time interval $(t+\Delta t)$ is simply the hazard, $(h\Delta t)$. Thus the probability of exit from the employment state to the non-employment state is $(h_e \Delta t)$ and the probability of exit from the non-employment state to the employment state is $(h_n \Delta t)$. Hence, we have that the proportion employed in period $t + Dt$ consists of the proportion of those employed at *t*, $P_e(t)$, who do not leave employment (an event with probability $(1- h_e\Delta t)$), plus the probability that non-employed persons enter employment (an event with probability $h_n\Delta t$). *Viz:*

$$P_e(t+\Delta t) = P_e(t)(1- h_e\Delta t) + P_n(t)\, h_n \Delta t \qquad (1)$$

Similarly, since the conditional probability of remaining in the unemployment state is $1- (h_n \Delta t)$, we have:

$$P_n(t+\Delta t) = P_e(t)(h_e\Delta t) + P_n(t)(1- h_n\Delta t) \qquad (2)$$

Rearranging terms, dividing through by Δt and taking the limit we get two differential equations:

$$dP_e(t)/dt = - h_e P_e(t) + h_n P_n(t)$$
$$dP_n(t)/dt = h_e P_e(t) - h_n P_n(t) \quad (3)$$

In steady state, $dP_e(t)/dt = dP_n(t)/dt = 0$, we solve for P_e and P_n: and get:

$$P_e = h_n/(h_e + h_n) \quad (4)$$
$$P_n = h_e/(h_e + h_n)$$

These long-run equilibrium proportions or probabilities imply that the larger the exit rate (or hazard) h_n from the non-employment state relative to the exit from the employment state h_e, the more likely is the person to be found in the employment state at a point in time. They state that, in equilibrium, the odds of finding someone in the state of employment state are h_n/h_e.

Moreover, in the case in which the hazard rates are constant, these odds can also be represented as the share of mean average duration in each status, since in this case the hazard rate h_i equals $1/\mu_i$, where μ_i is the mean duration in state *i*. Hence, substituting it in P_e and P_n we obtain that:

$$P_e = \mu_e/(\mu_e + \mu_n) \quad (5)$$
$$P_n = \mu_n/(\mu_e + \mu_n)$$

It can also be shown that the complete paths for the probabilities that states *e* or *n* will be occupied at any time are given by:[19]

$$P_e(t) = \frac{h_n}{h_n + h_e} + \left[P_e(0) - \frac{h_n}{h_n + h_e}\right]\exp\left(-(h_n + h_e)t\right) \quad (6)$$
$$P_n(t) = \frac{h_e}{h_n + h_e} + \left[P_n(0) - \frac{h_e}{h_n + h_e}\right]\exp\left(-(h_n + h_e)t\right)$$

As time goes to infinity, these probabilities converge to constants irrespective of initial conditions.

[19] For t large enough, the exponential terms in the equations vanish and we obtain the same results as before (either in terms of hazards or means).

1.4 Termination of Contracts and the Severance Payments System

Along with major commercial reforms and liberalization measures in areas other than laws regulating hiring and firing, the functioning of the labor market in Mexico has gone through changes during the present decade. The relative strength of the enforcement of the labor law has been changing, although no explicit modification has occurred. These changes have been noticed at least since the early 1990s, as exemplified by the following statement of the leader of the influential telephone company union: "While we have been fighting for the federal labor legislation not to be modified, firms in practice have been modifying the collective contracts according to their interests in order to face trade liberalization. It is there where the change is taking place."[20]

Indeed, there are a number of indications that labor regulation enforcement differs across industries and firms. Smaller firms are difficult to monitor, for example, and a minimum of 20 workers is required to constitute a trade union. On the other hand, studies reveal that some industry specific trade unions have been more prone to accept "modernization" in their contracts,[21] effectively implying flexibilization of labor regulations. Comparisons of different degrees of labor flexibility can be established even between new and old factories of the same firm (e.g., Ford factories in different states of the country).[22]

During the last 30 years there have been no changes in legislation regarding job dismissals or regarding temporary and fixed-term contracts. According to current labor legislation, temporary or fixed-term contracts are only allowed for jobs that are temporary in nature and for specific tasks.

Employment surveys of June 1995 and June 1997 indicate that 46% of those formal workers without a permanent written contract, or without a written contract of a defined term but longer than six months, left the formal sector within five quarters, compared to 25% of those who had such a contract. (Workers without a written contract of more than six months represented 17.3% of formal workers in June of those years).

The law establishes that in the case of individual dismissals without "just cause" (redundancy or low productivity are not legal grounds for dismissal) the employer has to make a lump-sum severance payments equivalent to 3 months' pay plus 20 days' salary per year of service. In addition, in the case of workers with more than 15 years of service, the employer is required to pay a seniority premium of 12 days of salary per year of service rendered. Hence, there is a discrete jump in firing costs in Mexico at the fifteenth year, as is shown in Figure 2. The salary that the employer considers for severance payments and for the seniority premium has a ceiling of two minimum wages.[23]

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[20] Quoted by Zapata (1995, p. 132), from a statement appearing in the newspaper *La Jornada* in newspaper February 1992.

[21] See for example Bouzas and de la Garza (1998).

[22] In Mexico, for example, trade unions can and do stipulate additional severance payments above those required by law. Since 1992 a number of changes in these and other issues have been registered (see STPSS, 1993, OECD, 1996 and Bouzas and de la Garza, 1998).

[23] The substantial drop that minimum wages has had during the last ten years has therefore had an effect in reducing the real cost of severance payments for workers with relatively high salaries.

There are no data available that could indicate whether severance payments represent a high financial burden to firms in Mexico. A national survey of firms in the manufacturing sector carried out in 1992 and again in 1995 enabled us to estimate the rate of firing in the manufacturing sector for 1992 and the turnover rate for both years. These results, presented in Table 7, suggest that the cost of severance payments in 1992 was as high as 7% of the wage bill for the steel industry, although on average they were below 4% for the manufacturing sector. The table shows too that, in spite of very high turnover rates in the *maquiladora* industry, total firing costs are about half those in the manufacturing sector. This is because most job separations are voluntary in the *maquiladora* industry.

Figure 2. Severance Payments

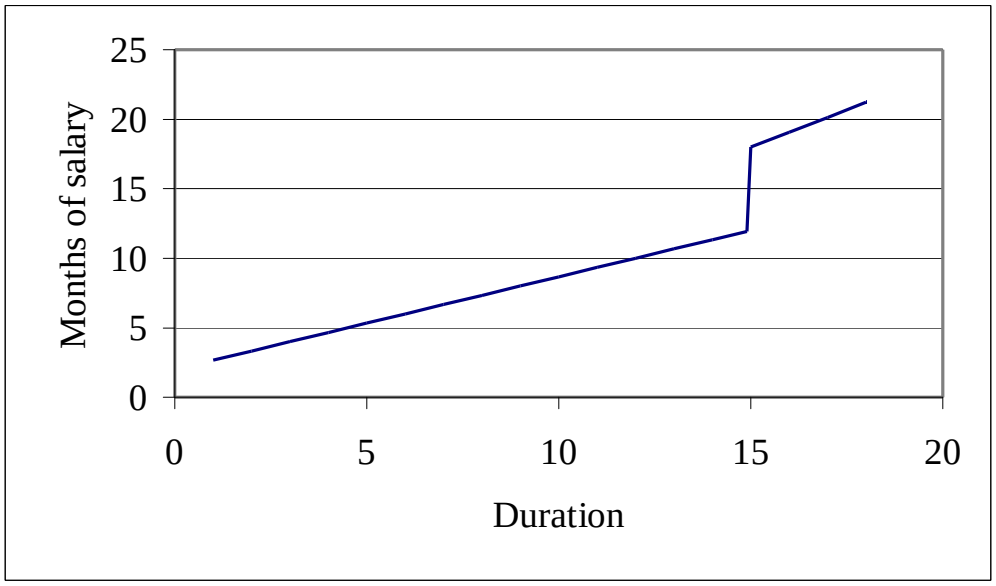


Table 7. Cost of firing in the manufacturing sector and other related indicators

		Year	Glass industry	Steel industry	Automobile	*Maquilado-ra* industry	Manufacturing sector
	Monthly	1992	1.0%	1.0%	1.3%	3.4%	1.9%
A	Quitting rate	1995	-	-	-	-	-
	Monthly	1992	0.6%	0.9%	0.6%	0.3%	0.5%
B	Firing rate	1995	-	-	-	-	-
	Monthly	1992	1.7%	2.0%	1.8%	3.7%	2.4%
C=A+B	Layoffs rate	1995	0.9%	2.2%	3.4%	-	2.8%
	Monthly	1992	1.8%	1.2%	1.5%	3.7%	2.2%
D	Hiring rate	1995	1.0%	1.4%	1.6%	-	2.4%
	Turnover	1992	3.5%	3.2%	3.4%	7.4%	4.5%
E=C+D	Rate	1995	1.9%	3.6%	5.0%	-	5.2%
Monthly labor		1992	2,293	2,203	2,598	1,389	1,970
Payments (per worker)		1995	3,019	3,089	2,752	-	2,394
Percentage of workers		1992	49.5%	73.6%	42.4%	46.3%	42.9%
Trained by firm		1995	83.7%	56.2%	85.3%	-	63.3%
Average Tenure		1992	4.9	5.2	4.5	3.3	4.9
(in years)		1995	-	-	-	-	-
Total Firing Costs		1992	4.4%	6.9%	3.9%	1.8%	3.4%
(percentage of wages)		1995	-	-	-	-	-

Source: Calculated with data from Enestyc Establishment Surveys INEGI (1992) and (1995).

The way in which payments to dismissed workers are currently regulated by law represents a potential source of conflict, in addition to the disincentive these payments pose to the ending of employment relationships no longer desired by either party. Since workers who resign voluntarily have no right to severance payments, and they do not receive the seniority premium until the fifteenth year of work, they have an incentive to force their dismissal and be fired.

Some provisions of Mexican labor legislation, together with the relatively high degree of discretionality of labor authorities, substantially increase the transaction costs of firms and workers in ending a job relationship. Among these are the so-called "reinstatement clause"[24] and that "lost wages" have to be paid until a legal process is finished (i.e., the worker receives wages for the period between separation and his/her receipt of dismissal payments). Dávila (1994) suggests that up to 40% of what a worker receives must be paid to his lawyer, and data from the Ministry of Labor shows that up to 5,000 "unjustified" dismissals cases are presented each year for consideration by the labor authorities.[25]

While Mexican labor legislation, which dates back to the late 1930s, has as its explicit purpose protecting workers and ensuring job security, studies have yet to be conducted to consider whether it is in fact having the opposite effect, as has occurred in other countries. That is, the fact that a worker is employed in a certain position implies that there are advantages for both employer

[24] Laid-off workers can ask to be reinstated by filing a case with the Conciliation Board.
[25] STPS (1996). p.129.

and employees in their job match, and the question arises if there are reasons to believe that labor market regulations could create incentives to destroy the match.

One aspect of Mexican labor legislation that might be causing successful/productive matches to end sooner than what would otherwise be optimal is associated with "seniority rights for promotion". According to one article of Mexico's labor legislation, the employer must promote the worker with the longest tenure of those who have been trained, and not the one who is most productive. This regulation reduces the incentives for employers to offer training and for workers to demand it. In addition, this feature can cause workers with little tenure and high potential productive capacity to leave the firm due to a lack of opportunities for promotion.

Finally, another factor that influences the rate of hiring and firing in Mexico is that the law prohibits probationary or apprenticeship periods. The costs of training, which must take place within working hours, have to be absorbed by the employer.[26]

1.5 Do Severance Payments Regulations Influence the Timing of Worker Dismissal?: Spikes in Hazard Rates of Being Fired

As previously mentioned, labor legislation, as in Mexico, in which severance labor costs increase automatically with tenure might represent a case in which labor market regulations could cause a match to be destroyed. Moreover, as explained above, there is a discrete jump in firing costs in Mexico in the fifteenth year (see Figure 2); this feature raises the question of whether current regulation induces a degree of flexibility above that needed for an efficient reallocation of workers.

To address this question we estimate quit hazard rates (the conditional probability that an employee is fired) for wage earners in the formal and informal sectors, respectively. If this specific feature related to the Mexican institutional framework is affecting firms' layoff decisions, a spike in the hazard function (the function that relates a worker's tenure with his or her probability of exiting employment conditional on having attained that tenure) of workers in the formal sector will be detected. There is no reason to expect spikes in the sample of workers in the informal sector, since labor regulations cannot be enforced in that sector.

Our set of "completed spells" data is drawn from those persons who were employed in the second quarter of 1991, 1993, 1995 and 1997 but became unemployed while being followed in the panel for up to five quarters.[27] The data set also includes those persons who were identified as unemployed when the panel started.

[26] Raw data shows that the share of workers in the informal sector is reduced as one controls for experience, which might imply that low productivity workers must acquire experience in the informal sector, before joining the formal sector.

[27] Our definition of unemployed corresponds to individuals without a job within the twelve months period previous to the date in which the survey was conducted and refers to those who, having previously worked, were not working the week before they were interviewed, due to reasons other than holidays or sickness, whether searching for a job or not. They answered the question, "Why did you leave your last job?" The answer to this question enabled us to classify the unemployed according to whether they voluntarily left their job or not.

As a first step in this direction we rely on the estimation of stratified Kaplan-Maier estimators (see Kiefer, 1988 and Lee, 1992) to obtain layoff hazard rates for four types of workers and consider if there are obvious spikes:[28] rates at which employment spells for men and women, in formal and informal sectors, will be ended after t periods, given that they last until t.

The results are presented in Figures 3 and 4. When we consider the hazard rates of being fired in the formal sector (and thus entitled to severance payments) for male workers with tenure close to 15 years, we find that no relevant spike occurs, suggesting that Mexican legislation has no counterproductive effects in the case of men. However, the results are not so conclusive for the case of women.

Among the reasons why the seniority premium may not have a strong effect is that the level of salaries (both the 20 days per year and the 12 days per worked year of seniority premium after fifteen years) is capped at a level equal to two minimum wages (the minimum wage is established by the government). Since minimum wages have declined substantially in real terms in Mexico since 1987, adjustment costs for firms in terms of severance payments have fallen *pari passu*. Indeed, after reaching a peak in 1976, the minimum wage in Mexico had lost two thirds of its real value by 1998.

Spikes in the Hazard of Being Fired

Figure 3
Kaplan-Meier for Formal Salaried Workers

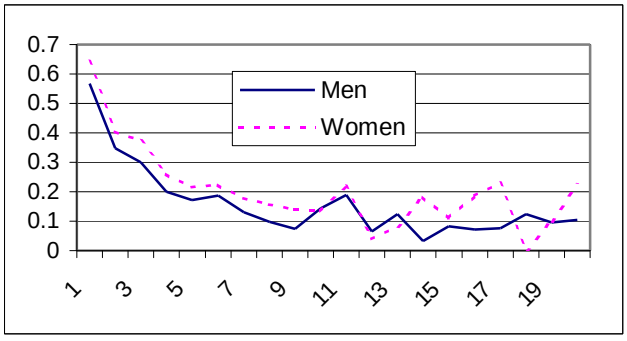
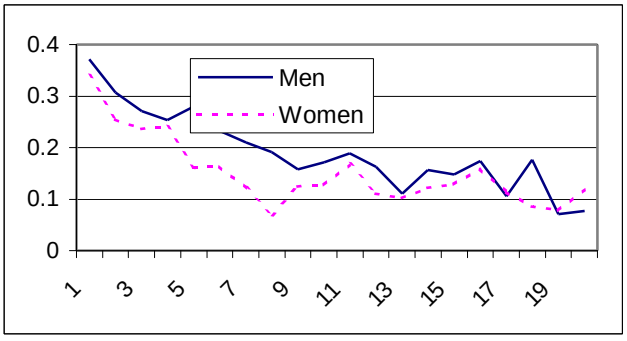


Figure 4
Kaplan-Meier for Informal Salaried workers



Thus, in addition to reducing the incentives to fire a worker before he/she reaches his 15th year, this cap reduces financial incentives that employers might otherwise have to avoid actions which increase wages to employees with high tenure, such as on-the job training.

[28] The parametric hazard functions estimated in the following section do not allow for the calculation of spikes. Hence a step to follow for a proper estimation of this problem would be to estimate, as in MaCurdy and Alan (1993), by maximum likelihood a continuous time flexible hazard model with co-variates that allows for spikes, an elaborate procedure which is left for future research.

2. Duration Models and Parametric Estimation of Hazard and Transition Intensities Functions.

We use two pieces of information to consider the determinants of mobility in the labor market in Mexico from one job status to another one: the number of months a person has spent in the job in which he/she is currently working as well as the job tenure in their last job for those reported as unemployed (in addition to the length of the unemployment spell). Following these "earmarked" persons over five quarters, using the panel structure of the employment surveys, we know if, during this period of time, they stay in the same job status or move to another one. Using this information and relying on techniques of "survival" analysis, we estimate not only when and how different groups of the labor force change from one job status to another, but also how long they are likely to spend in each job status.

In this section we calculate the odds that a spell of a job in one of the statuses analyzed here will end in any given month, given that it has lasted up to this time, showing and quantifying how these odds depend on a number of explanatory variables, such as sex, age, education and training, among others. For this purpose we estimate duration models, which have the distinctive advantage that they can handle censored data effectively (Kiefer, 1988).[29] These models take as their point of departure the definition of a nonnegative continuous random variable T, which represents the spell duration with a density function f(t).

In turn, it is established that f(t) has its corresponding distribution function, F(t). Hence, the survivor function is simply defined as 1-F(t), i.e., as the probability that duration will equal or exceed the value t.

It is also established that for any specification of t in terms of a density function there is a mathematically equivalent hazard function, h(t), which is the conditional density of T given T>t>0; *viz*:

$$h(t) = f(t|T > t) = \left(\frac{f(t)}{1 - F(t)} \right)$$

In this relationship h(t) can be interpreted as an exit rate or escape rate from the state, because it is the limit (as Δ tends to zero) of the probability that a spell terminates in interval (t, t+ Δ), given that the spell has lasted t periods (Heckman and Singer, 1985).

In duration models with more than one destination, also called "competing risk specifications," spells can end in different ways, as is the case in the transition matrices analyzed in Section 1. There, a person leaving one job status could go into one of six different destinations. Hence, the hazard rate of leaving one job status, $h_i(t)$, is given by the sum of the hazard functions

[29] Some people who started a spell of employment/unemployment in a given job status may still have been in the same status when they are last interviewed. Data for these people are called censored, and they would constitute a problem for a standard regression model where the dependent variable was the length of the spell. If we exclude people with unfinished spells, we throw away part of the data set and introduce a serious bias against people with longer and more recent spells in each of the job statuses.

of leaving that job status to different destinations, $h_{ij}(t)$, which are called transition intensities functions; *viz*:

$$h_i(t) = \sum_j h_{ij}(t) \tag{7}$$

There is no a priori reason that enables us to assume that different transition intensity functions have a constant time dependence relationship. A general case, which considers positive and negative time dependence as particular cases, is a Heckman-Flinn (1982) flexible Box-Cox hazard rate specification, represented by:

$$h_{i,j}(t) = \exp(\beta' x).\exp\left(\left(\frac{t^{\lambda_1}-1}{\lambda_1}\right)\cdot \gamma_1 + \left(\frac{t^{\lambda_2}-1}{\lambda_2}\right)\cdot \gamma_2\right), \qquad \lambda_1 < \lambda_2 \tag{8}$$

where x is a set of co-variates (time invariant regressors), t represents time. In turn, $\beta, \gamma_1, \gamma_2, \lambda_1, \lambda_2$ are permitted to depend on the origin state and the destination state. This specification contains, as special cases, virtually all commonly utilized functions.[30]

In the following sections we present results of the particular cases of time dependent hazard functions for urban employees moving out of three different job statuses:[31] formal and informal sectors and self-employment. For these cases we estimated monotonic (Weibull) and non-monotonic (logistic) hazard functions.[32] The former is represented by:

$$h(t) = \alpha\, t^{\alpha-1} \exp(\beta' x) \tag{9}$$

It is a function which is always monotonic and can capture positive (α >1) or negative time dependence (α <1),

In turn, the logistic hazard function is:

$$h(t) = \left(\frac{\alpha t^{\alpha-1}\exp(\beta' x)}{1 + t^{\alpha}\exp(\beta' x)}\right) \tag{10}$$

[30] For example, the essential features of Jovanovic's (1979) turnover model can be captured by choosing λ_1=1 and λ_2=2. In this case we will expect that γ_1>0 and γ_2< 0, so that initial positive duration dependence is eventually followed by negative dependence.

[31] Most of the empirical studies that use yearly data have found that the hazard rate of leaving a job declines sharply with tenure, hence indicating that monotonic time-dependent specifications may be satisfactory (Farber, 1998). However, some studies (McCall, 1990 and Farber, 1994) have found that, using periods shorter than a year, a more accurate specification is hazard of a job ending that first increases with tenure before beginning to decline with time. This last evidence is consistent with a number of theoretical arguments that suggest that hazard functions of employed wage earners will not be monotonic. For example, Jovanovic's (1979) turnover model predicts that an initial positive duration dependence is eventually followed by negative duration dependence.

[32] Weibull hazard functions corrected for heterogeneity using gamma distribution, have also been calculated and some of the results are presented in Calderón-Madrid (1998).

and is not always monotonic with respect to time; for values of a greater than one, the hazard first increases with duration, then decreases. (If $a < 0$ the hazard function decreases with duration.

In turn, as an approximation to the problem of the competing risk specification, at the end of this section and in the following section we concentrate on the particular case in which transition intensities are assumed to be proportional. That is, it is assumed that the intensities of transition to any pair of destination states are always in the same proportion, i.e., that, given that departure occurs at t from status i, the probability that it is to job status *j* does not depend upon *t*. Hence the following equation applies:

$$p_{ij} = \frac{h_{ij}(t)}{h_i(t)} = m_{ij} = \frac{a_i t^{a_i - 1} \exp(b_j' \cdot x)}{\sum_l a_i t^{a_i - 1} \exp(b_l' \cdot x)} = \frac{a_i t^{a_i - 1} \exp(b_j' \cdot x)}{a_i t^{a_i - 1} \sum_l \exp(b_l' \cdot x)} = \frac{\exp(b_j' \cdot x)}{\sum_l \exp(b_l' \cdot x)} \quad (11)$$

where (7) olds, and therefore $\sum_j p_{ij} = 1$.

Relying on this assumption has the empirical advantage that the m_{ij} component can be estimated with the multinomial logit method, which is not dependent on time. In turn, the denominator of equation (11), which represents the time dependent hazard of moving out of job status i, can be estimated with a Weibull hazard function since this specification is a member of the proportional hazards functions family.

Therefore, time dependent transition intensities can be deduced by means of a hazard function multiplied by the multinomial logit results, *viz.*:

$$h_{ij}(t) = m_{ij} h_i(t) \quad (12)$$

Hence, with the Weibull hazard functions for each job status on the one hand—to be estimated in the following subsection—and with the multinomial logit estimations, on the other hand, we calculate by means of (12) transition intensities of leaving one job status to move into different destinations.

2.1. Hazard Functions for Formal and Informal Sectors and For Self-Employed Persons

We constructed four sets of five-quarter panels with "ear-marked" persons whose job-tenure is known. These, in turn, have been merged in two sets for estimation purposes: the year 1991 was merged with 1993 (therefore including from 1991-II to 1992-II together with 1993-II to 1994-II) and the year 1995 with 1997 (i.e., 1995-II to 1996-II together with 1997-II to 1998-II).

One reason for not estimating the four sets of panels together was to consider episodes which were not subject to the same kind of changes—e.g., trade liberalization and the NAFTA agreement in the first, and a severe economic crisis in the second.[33]. Another reason was that a

[33] Non-wage cost—e.g., social security contributions, paid vacations and year-end bonuses—in formal sector remained fairly constant during the two periods of study (at around 27% of base salary).

very worthy question for the analysis of job stability was not included in surveys previous to the second quarter of 1994, namely, the kind of contract under which the person was employed, if they had a contract.

Tables 10 and 11 present the results of the Weibull and logistic specifications of hazard functions for formal, informal and self-employed workers.[34]. The co-variates (time invariant regressors) used were:

a) sex (binary dummy variable that equals one if man, zero if woman).
b) age (introduced with its value and with its squared value in order to capture non-linear effects).
c) position in household, which can be breadwinner, spouse (second salary aboard), son and daughter or a position different to these ones.
d) level of formal education (which has been aggregated in six different categories: incomplete and complete elementary school, secondary school, high school, echnical formation and college).
e) marital status (dummy equals one if married, zero otherwise).
f) number of jobs in life.
g) training course during the last fifteen months: a dummy which equals one for those persons who answered that they took one.
h) number of months of working experience.
i) Type of contract: contract under which the person was employed, if they have one, (with a dummy equal one for those having a written contract of indefinite duration or one for a period longer than six months, a question only available after 1994).
j) size of firm: a dummy equal one if the person was working in a firm with less than 15 persons, zero otherwise).
k) working in the service sector (a dummy equal to one if the worker did, zero otherwise).

The estimated hazard functions for the formal sector are represented in Figure 5. In Figure 6 the cases for informal sector wage earners and self-employed persons are presented. These figures, and the discussion that follows, refer to the estimations obtained with the logistic specification, because of its better fit, although most conclusions apply for the Weibull cases as well.

As can be observed in these figures, the period 1991-1994—associated with the years leading up to the NAFTA agreement and most structural changes in the economy—displays hazard rates higher than those of the period 1995-1998.[35]

[34] In Table 29 of the Appendix, we present the results for the Weibull hazard functions estimated for the remaining job status represented in Table 4 of Section 1.

[35] It may be adventurous to draw conclusions comparing the two datasets estimated here. There might be a bias estimation due to an omitted variable in 1991-1994 (type of contract, which is available only for the other data set) and due to the non-stationary setting to which the analysis refers. Dealing with these kinds of bias, together with those due to heterogeneity and flow/stock sampling, is left for future research.

Figure 5

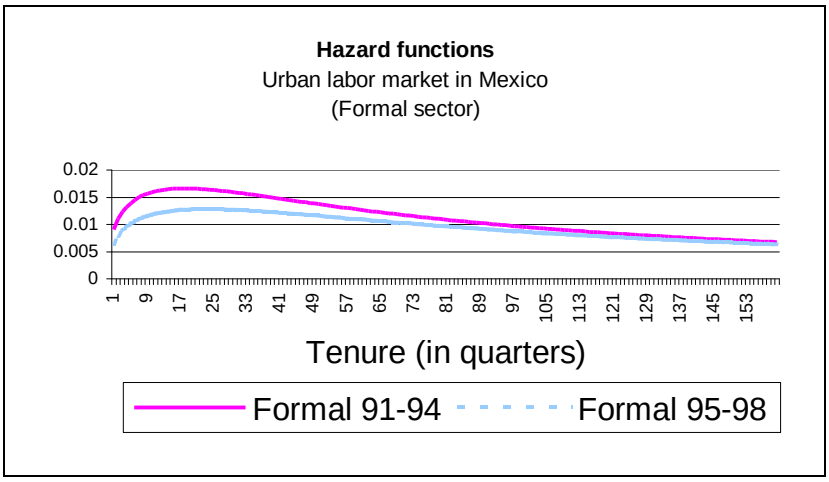


Figure 6

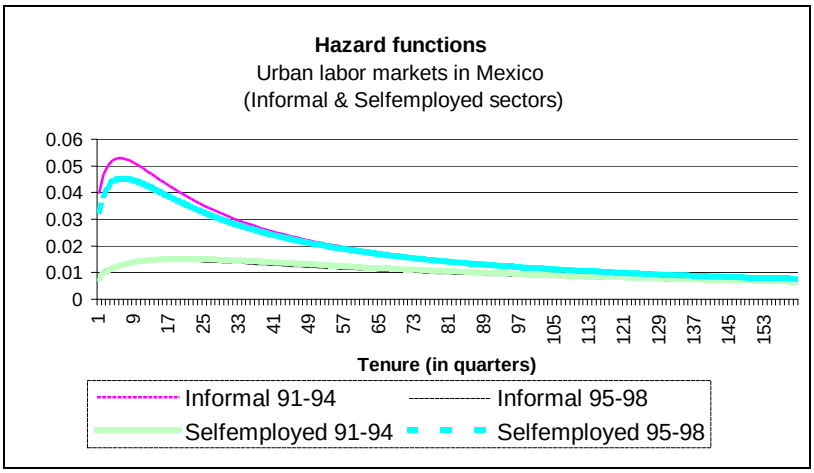


Table 10

Hazard Functions

Urban labor market in Mexico 1991-1994

	Formal				Unemployed		Self Employed				Informal			
	Weibull		Logistic		Weibull		Weibull		Logistic		Weibull		Logistic	
	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val
Constant	-0.805	0.00	-1.036	0.00	-0.416	0.00	0.021	0.03	-0.086	0.00	0.352	0.00	-0.352	0.00
Sex	-0.107	0.00	-0.069	0.00	-0.354	0.00	0.540	0.00	0.277	0.00	0.240	0.00	0.648	0.00
Age	0.205	0.00	0.214	0.00	0.119	0.00	0.172	0.00	0.137	0.00	0.134	0.00	0.179	0.00
Age squared	-0.001	0.00	-0.002	0.00	-0.001	0.00	-0.001	0.00	-0.001	0.00	-0.001	0.00	-0.001	0.00
Breadwinner	0.415	0.00	0.489	0.00	-0.543	0.00	0.215	0.00	-0.067	0.00	-0.081	0.00	0.232	0.00
Spouse (2nd salary aboard)	0.193	0.00	0.213	0.00	0.268	0.00	-0.198	0.00	-0.445	0.00	-0.398	0.00	-0.264	0.00
Son/daughter	0.199	0.00	0.199	0.00	-0.032	0.00	-0.041	0.00	-0.324	0.00	-0.295	0.00	-0.095	0.00
Elementary School Incomplete	0.195	0.00	0.087	0.00	0.005	0.61	-0.079	0.00	0.190	0.00	0.098	0.00	-0.098	0.00
Elementary School Complete	0.416	0.00	0.322	0.00	0.152	0.00	0.016	0.00	0.098	0.00	0.011	0.00	-0.056	0.00
Secondary	0.517	0.00	0.418	0.00	0.181	0.00	-0.055	0.00	-0.030	0.00	-0.107	0.00	-0.087	0.00
High School	0.424	0.00	0.290	0.00	0.458	0.00	-0.134	0.00	-0.216	0.00	-0.302	0.00	-0.179	0.00
College & Higher	0.267	0.00	0.142	0.00	0.128	0.00	-0.085	0.00	-0.139	0.00	-0.233	0.00	-0.080	0.00
Married	0.040	0.00	0.064	0.00	0.108	0.00	0.048	0.00	-0.001	0.53	0.000	0.66	-0.005	0.04
Jobs in life	-0.054	0.00	-0.146	0.00	-0.031	0.00	-0.068	0.00	-0.152	0.00	-0.075	0.00	-0.111	0.00
Training course last 15 months	0.228	0.00	0.257	0.00	0.013	0.00	-0.140	0.00	0.246	0.00	0.250	0.00	-0.196	0.00
Work experience	0.006	0.00	0.008	0.00	-0.005	0.00	0.002	0.00	0.023	0.00	0.015	0.00	0.005	0.00
Service sector	0.190	0.00	0.231	0.00	-0.364	0.00	-0.029	0.00	0.365	0.00	0.316	0.00	-0.047	0.00
Size of firm	-0.440	0.00	-0.490	0.00	-0.646	0.00	-0.342	0.00	0.180	0.00	0.182	0.00	-0.342	0.00
a	1.081	0.00	1.298	0.00	1.110	0.00	1.067	0.00	1.302	0.00	0.963	0.00	1.307	0.00
l	0.07	0.00	0.022	0.00	0.104	0.00	0.064	0.00	0.07	0.00	-0.03	0.00	0.020	0.00
Log likelihood	-7228933.20		-7164469.00		-879635.07		-4055954.55		-4092263.02		-5169014.66		-5159878.20	
Total observations	8,408,364		8,408,364		633,789		3,794,528		3,794,528		3,769,740		3,769,740	
Censored data	5,747,836		5,747,836		48,495		2,022,934		2,022,934		1,236,737		1,236,737	

* Total observations in the survey without factor of expansion were: formal 42,213, self-employed 19,451, unemployed 3,050, informal 17,047.

Table 11

Hazard Functions

Urban labor market in Mexico 1995-1998

	Formal				**Unemployed**		Self Employed				Informal			
	Weibull		Logistic		**Weibull**		Weibull		Logistic		Weibull		Logistic	
	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val
Constant	-0.646	0.00	-0.961	0.00	0.643	0.00	0.315	0.01	0.112	0.00	1.158	0.00	0.953	0.00
Sex	0.007	0.00	0.034	0.00	-0.225	0.00	0.422	0.00	0.510	0.00	0.178	0.00	0.158	0.00
Age	0.185	0.00	0.192	0.00	0.054	0.00	0.160	0.00	0.159	0.00	0.114	0.00	0.105	0.00
Age squared	-0.001	0.00	-0.001	0.00	-0.000	0.00	-0.001	0.00	-0.001	0.00	-0.001	0.00	-0.000	0.00
Breadwinner	0.198	0.00	0.242	0.00	-0.085	0.00	0.368	0.00	0.403	0.00	-0.437	0.00	-0.292	0.00
Spouse (2nd salary aboard)	0.065	0.00	0.075	0.00	0.689	0.00	-0.304	0.00	-0.393	0.00	-0.807	0.00	-0.786	0.00
Son	-0.063	0.00	-0.100	0.00	0.038	0.00	-0.118	0.00	-0.128	0.00	-0.653	0.00	-0.644	0.00
Elementary School Incomplete	0.155	0.00	0.019	0.00	0.118	0.00	0.002	0.34	-0.055	0.00	0.081	0.00	0.058	0.00
Elementary School Complete	0.231	0.00	0.112	0.00	0.247	0.00	-0.146	0.00	-0.204	0.00	-0.072	0.00	-0.055	0.00
Secondary	0.407	0.00	0.339	0.00	0.376	0.00	-0.074	0.00	-0.122	0.00	-0.241	0.00	-0.245	0.00
High School	0.174	0.00	0.103	0.00	0.303	0.00	0.002	0.51	-0.015	0.00	-0.365	0.00	-0.327	0.00
Technological F.	0.186	0.00	0.105	0.00	0.328	0.00	-0.094	0.00	-0.127	0.00	-0.323	0.00	-0.349	0.00
College & Higher	-0.081	0.00	-0.155	0.00	0.445	0.00	-0.022	0.00	-0.022	0.00	-0.548	0.00	-0.512	0.00
Married	0.019	0.01	-0.001	0.37	-0.176	0.00	-0.026	0.00	-0.001	0.54	0.009	0.00	-0.041	0.00
Jobs in life	-0.057	0.00	0.117	0.00	-0.016	0.00	-0.052	0.00	-0.101	0.00	-0.076	0.00	-0.143	0.00
Training course last 15 months	0.258	0.00	0.273	0.00	-0.057	0.00	-0.138	0.00	-0.204	0.00	0.106	0.00	0.130	0.00
Type of Contract	0.799	0.00	0.937	0.00	-0.671	0.00	NA	NA	NA	NA	0.772	0.00	0.834	0.00
Work experience	0.003	0.00	0.003	0.00	-0.004	0.00	0.000	0.05	0.001	0.00	0.010	0.00	0.013	0.00
Service sector	0.025	0.00	0.028	0.00	-0.325	0.00	-0.003	0.02	0.016	0.00	0.115	0.00	0.169	0.00
Size of firm	-0.247	0.00	-0.297	0.00	-0.867	0.00	-0.249	0.00	-0.303	0.00	0.294	0.00	0.299	0.00
a	1.103	0.00	1.300	0.00	1.275	0.00	1.014	0.00	1.233	0.00	0.956	0.00	1.294	0.00
l	0.06	0.00	0.017	0.00	0.10	0.00	0.03	0.00	0.019	0.00	0.07	0.00	0.06	0.00
Log likelihood	-6769885.09		-6724247.04		-1556414.20		-5050992.81		-5076143.25		-6013007.27		-5969053.62	
Total observations	8,607,919		8,607,919		1,222,021		4,679,641		4,679,641		4,542,868		4,542,868	
Censored data	6,183,669		6,183,669		149,931		2,582,955		2,582,955		1,693,385		1,693,385	

* Total observations in the survey without factor of expansion were: formal 25,726, self-employed 14,606, unemployed 3,124, informal 13,108.

As was *a priori* expected on the basis of theoretical arguments by Jovanovic (1979), the resulting parameters α of the hazard functions imply that hazard rates first increase and after two years start declining monotonically for both periods under consideration. The results show that the co-variate with the most important weight in explaining the reduction in hazard of leaving the formal sector during the period 1995-1998 is type of contract, *viz*, having a written contract for an indefinite period or one with a definite period longer than six months. Those wage earners hired with that kind of contract reduced their hazard of leaving the formal sector to half the corresponding value for other workers.

Hazard rates out of the formal sector are also reduced for those workers with education above elementary school,[36] with secondary education having the most significant effect in increasing the time spent in a job in the formal sector. The opposite effect is registered in the cases of employees in the informal sector and in self-employment: persons with formal education spend less time in these job statuses, compared to workers without it. Moreover, during the period 1995-1998 having secondary or high school education was more important, relative to what happened four years earlier, in reducing the odds of staying in the informal sector.

The estimates also indicate that working in a firm with fewer than 15 workers increases the hazard rates of not staying in a job in the formal sector. This result might be associated with the fact that, in Mexico, the enforcement of labor regulations differs across industries and firms, smaller firms being more difficult to monitor. Hence job dismissals in small firms might be more expeditious. This hypothesis can be reinforced by the fact that a minimum of 20 workers is required to constitute a trade union.

It is interesting to point out that taking a training course would have helped a worker leave the informal sector during the period 1991-1994 but not during the period 1995-1998 (the parameter of the co-variate actually changed sign). In contrast, having received a training course within a period smaller than fifteen months reduces the hazard of leaving the formal sector in both periods.

A final result worth mentioning is that breadwinners were less likely to leave the formal sector during the period 1991-1994 than during 1995-1997. The same result is obtained for working spouses of breadwinners (i.e., second salary aboard), although the change is more pronounced within this latter group.

The results of the hazard functions enable us to calculate median time spent by workers in the formal sector relative to the median time spent by those in the informal sector. These results are shown in Table 12, together with a comparison across periods. They indicate that median time spent in the formal sector is more than 3.5 times that in the informal sector during 1995-1998 and less than 3.25 for 1991-1994.

Table 12

Percentiles of survival distribution	0.25	0.50 *(median)*	0.75	0.95
Time *Formal: 95-98/91-94*	1.03	1.28	1.34	1.17
Time *95-98 Formal/Informal*	2.95	3.67	3.87	3.37
Time *91-94 Formal/Informal*	3.22	3.21	3.20	3.18

[36] Except for college in the period 1995-1998, which actually increases the hazard of leaving the formal sector.

The hazard functions also enable us to calculate hazard rates and survival probabilities for different groups and for a particular length of time, as in the example presented in Table 13, where we present results for two particular cases (and in Table 30 of the Appendix for the 1991-1994 period).

Table 13

Survival models

Urban labor market (1995-1998)

	Weibull Models				Logistic Models			
	Survival Probability S(t)		**Hazard rate h(t)**		**Survival S(t)**		**Hazard rate h(t)**	
	1 year	**5 years**	**10 years**	**1 year**	**1 year**	**5 years**	**10 years**	**1 year**
Woman, Age=30, Spouse (2nd salary), High School, 2 jobs in life and 5 years of work experience, written contract, course training								
Formal salaried	0.974	0.849	0.700	0.013	0.995	0.964	0.916	0.001
Informal salaried	0.817	0.446	0.230	0.028	0.951	0.711	0.501	0.015
Unemployed	0.610	0.036	0.000	0.210				
Self employed	0.854	0.480	0.242	0.032	0.900	0.554	0.345	0.030
Man, Age=45, Breadwinner, High School, 5 jobs in life and 25 years of work experience, written contract, course training.								
Formal salaried	0.990	0.942	0.878	0.005	0.999	0.998	0.995	0.000
Informal salaried	0.921	0.719	0.549	0.000	0.996	0.972	0.935	0.001
Unemployed	0.305	0.000	0	0.440				
Self employed	0.972	0.877	0.776	0.005	0.993	0.954	0.898	0.002

2.2 Hazard Functions for Formal Workers in the Manufacturing and Other Sectors

Information associated with relative flexibilization of labor contracts and changes in labor organization in the manufacturing sector during 1995 is available in an establishment-based survey, known by its Spanish acronym ENESTYC. From this survey, which was representative at a national level,[37] we used the data provided by the following questions:

Does the collective labor contract, internal working regulations or special arrangements regulate the following issues?

a) firing of workers
b) subcontracting of workers
c) hiring of temporary workers

[37]This survey was carried out in 5242 establishments. Their results are representative at a national level for 52 branches of industrial activity and of four sizes according to number of workers (Large: 251 or more, median: 101 to 250, small: 16 to 100 and micro: 1 to 15).

If the firm has made changes in labor organization in the production area since 1994, which was the main change?

e) Personnel rotation of job positions.

f) Increase in number or reallocation of duties per worker.

In addition, a question related to formal training opportunities provided by the firm was also selected, *viz*:

g) Does the firm provide formal training to workers, in addition to the one provided by fellow workers?

In this subsection we use the information from these questions together with data from employment surveys to assess, by means of hazard functions for the manufacturing sector, how changes in labor regulation and functional flexibility affected job stability in the formal sector. In order to link the data provided by the answers to these questions with the data of our panel-linked employment surveys we followed a number of steps. We first classified firms in 36 different cells, according to nine main manufacturing branches and four different sizes. With the information obtained from the firms' surveys we identified values for each of the 36 cells. The number of affirmative answers, as a share of the total firms which responded the above stated questions, constituted the co-variates related to the flexibilization of labor contracts and changes in labor organization, which were included in the hazard function of the manufacturing sector.

In turn, we eliminated all workers and unemployed persons who did not belong to the manufacturing sector in the ENECE-ENEU survey. The remaining persons of these surveys were then identified according to the "industry-size of firm" cells in which they were registered.[38] As a final step, the information obtained from the ENESTYC survey was integrated to the data set for each worker, according the cell to which he/she was related.

The co-variates specified in the hazard functions for the manufacturing sector include, in addition to the variables related to worker characteristics (obtained from the ENECE and ENEU survey and referred to in the previous subsection), six variables obtained from the establishments surveys. Those specified for the non-manufacturing sector were only those related to worker characteristics.

[38] With one of the questions of the ENEU is possible to identify the branch to which the firm in he/she worked belonged to, with another one the number of workers.

The results are presented in Table 9. All co-variates are significant at a 5% confidence interval, and a positive sign indicates that the co-variate reduces the hazard of leaving the sector.

Table 9		
Estimated Logistic Hazard Functions for Formal Workers in 1995		
	Manufacturing	*Non-manufacturing*
	Coef.	Coef.
Age	0.132	0.194
Age^2	-0.001	-0.001
Elementary School Incomplete	0.378	-0.053
Elementary School Complete	0.546	0.262
Secondary School	0.710	0.348
High School	0.603	0.174
Technological Formation	0.494	0.082
College	0.426	-0.149
Training Course	0.262	0.317
Work Experience	0.004	0.000
Contract	0.794	0.969
Jobs in Life	-0.127	-0.110
Married	0.160	-0.064
Man	0.126	-0.015
Breadwinner	0.283	0.357
Spouse (second salary aboard)	-0.428	0.391
Son	-0.075	0.115
Enestyc: Contract regulates firing	-0.007	NA
Enestyc: Contract regulates hiring of temporary personnel	-0.004	NA
Enestyc: Contract regulates subcontracting	0.013	NA
Enestyc: Implemented personnel rotation	0.018	NA
Enestyc: Incremented number of duties per worker	0.013	NA
Enestyc: Training provided by firm	0.007	NA
Constant	-0.786	-1.372
a	1.319	1.315
l	0.020	0.018
Log likelihood	-935524.6	-2616865
Total observations	1,256,584	3,133,137
-out of which censored data	919,838	2,162,325
Source: INEGI. ENECE, ENEU and ENESTYC surveys.		
*Total observations in the survey without factor of expansion were 4,230 employees for manufacturing and 8,977 for non-manufacturing.		

The estimations indicate that employees of firms in which collective working arrangements regulate issues associated with flexibilization of labor contracts (firing of workers and hiring of temporary workers) have higher hazard rates of leaving their jobs in the manufacturing sector relative to those in which these issues are not regulated. In contrast, when the regulation refers to changes in labor organization (rotation of job positions and increase in number of duties per worker), hazard rates diminish.

In turn, employees who work in industries in which training is provided by the firm have lower hazard rates than those working in firms that do not. This result is linked to, and acts in the same direction as, the effect of the co-variate "training course," which identifies those workers who actually took a training course during the last fifteen months.

An interesting result associated with the effects of labor legislation within the Mexican institutional context is captured by the co-variate "contract," which indicates that the worker has a written contract for an indefinite period, or for a period longer than six months. The size of the parameter measuring the effect of having a contract is larger in the hazard function of the non-manufacturing sector than in the function for the manufacturing sector. This means that, although in both type of activities having a written contract reduces the risk of moving out of the formal sector, its effect is less important in the manufacturing sector.

The opposite result is obtained regarding the variable of formal education: the hazard rates of leaving the formal sector for employees with secondary, high school and technical formation in manufacturing activities are not only lower than the ones for uneducated workers, but also lower than the hazard rates of those workers with formal education in the non-manufacturnig sector.

Indeed, as Table 9 shows, the parameters for the different levels of education corresponding to the hazard function for the manufacturing sector are positive and more than twice the size of those corresponding to non-manufacturing activities.

Finally, the results also indicate that, unlike what happens with married men, the hazard rates of leaving a formal job in the manufacturing sector increase for working spouses and sons—a result not obtained in the case of non-manufacturing activities.

2.4 Hazard Functions with Multiple Destinations

According to surveys of self-employed persons in Mexico,[39] a large percentage of them went to this job status because they were fired, having previously been salaried workers. In addition, these surveys also indicate that to start their business, they relied more on their severance payment and their own savings than on any other source of financing (see Samaniego, 1998).

In the previous subsection we concluded that employees who have a written contract to work for an indefinite period have lower hazard rates of leaving the formal sector. With the results to be considered next, it is possible to state that if a worker who has a written contract to work exits the formal sector, he/she is 25% more likely to have self-employment, relative to the informal sector, as a destination. Since dismissed workers with written contracts are those likely

[39] E.g., INEGI (1997).

to receive severance payments and seniority premiums, these results suggest that dismissals makes initiating a self-employed job easier.

Given that the amount of severance payments that can be used by dismissed workers to start their own business increases with tenure, a flexible hazard rate specification is required to consider these results. That is, in order to consider the effects that severance payment regulations have on labor market dynamics, the analysis must not discard transition intensity functions such as those in Figure 8. In this figure, as time elapses there is a change in the relationship between exits from the formal sector into self-employment (transition intensities) and exits from the formal sector into the informal sector, $h_{f,se}$ and $h_{f,I,}$ respectively.

These possibilities are left for future research. In what follows we assume that different transition intensities functions have a constant time dependence relationship, as, for example, the functions represented in Figure 7.

Figure 7

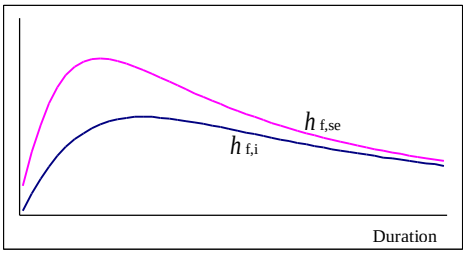
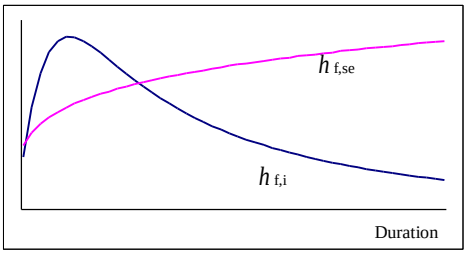


Figure 8



We therefore concentrate on the particular case in which proportional intensities are assumed, as stated by equation (12), repeated below for convenience:

$$h_{ij}(t) = m_{ij} h_i(t)$$

This relationship states that it is possible to estimate transition intensities for each job status as a destination, $h_{ij}(t)$, as the product of the results of a multinomial logit estimation for different destinations, m_{ij}, multiplied by hazard rates of moving out of each job status, $h_i(t)$—provided that the function specifying these rates belongs to the family of proportional hazard functions.

The results for the six destination multinomial logit estimations for 1995-1998 and 1991-1994 are presented in Table 14 for the formal and informal sectors and for self-employed persons. These results, together with the estimations of hazards of moving out of each job status given by the Weibull hazard functions of Tables 10 and 11,[40] constitute the required input for the estimation of the transition intensities functions.

[40]The multilogit results for the remaining job status are in the Appendix in Table 31 and those for the Weibull hazard functions in Table 29.

Table 14

MultiLogit Output of Relative Risk Ratios (1995-1998)

Initial State	Final State	Constant	Sex	Age	Age^2	Elementary Inc	Elementary Com	Secondary School	High School	Tecnological Formation	College or higher	Contract	Married	Jobs in life	Work Experience	Trainnng course	Breadwinner	Spouse (2nd salary aboard)	Son	Service	Micro
FS	IS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FS	Un	0.56	1.22	0.96	1.00	1.37	1.06	1.39	1.55	1.17	1.92	0.87	0.68	1.06	1.00	1.18	1.28	0.27	1.00	0.34	0.63
FS	OLF	12.54	0.34	0.83	1.00	1.08	1.73	1.55	2.66	1.04	3.79	1.39	0.64	0.97	0.99	0.85	0.57	2.63	1.00	0.41	0.56
FS	SE	0.00	1.97	1.12	1.00	1.04	1.15	1.19	1.49	2.59	1.55	1.25	0.99	1.06	1.01	0.66	2.97	1.36	1.12	0.41	1.44
FS	Cm	0.01	2.01	1.11	1.00	1.35	2.08	1.85	2.95	1.25	1.63	1.25	1.15	1.04	1.00	1.26	1.88	0.87	1.00	0.21	0.77
FS	UP	0.02	1.85	0.97	1.00	1.00	0.79	2.93	3.88	4.38	1.44	1.00	0.79	1.09	0.98	0.82	0.40	4.15	0.83	0.46	1.07
IS	FS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
IS	Un	1.13	1.56	0.94	1.00	1.00	0.45	0.47	0.31	0.36	0.22	0.35	0.80	1.04	0.99	0.83	1.05	0.93	1.45	1.23	1.70
IS	OLF	49.38	0.48	0.81	1.00	0.58	0.31	0.32	0.46	0.17	0.58	0.40	0.95	0.98	0.99	0.89	0.31	2.96	0.91	1.17	2.47
IS	SE	0.04	2.10	1.14	1.00	0.45	0.24	0.21	0.19	0.40	0.20	0.34	1.18	0.95	1.00	0.65	1.13	1.46	0.73	1.33	4.68
IS	Cm	0.04	4.23	1.07	1.00	0.99	0.70	0.64	0.50	0.40	0.42	0.31	1.15	0.96	1.00	0.64	1.04	1.23	1.10	0.85	2.71
IS	UP	2.28	1.18	0.86	1.00	0.23	0.21	0.36	0.44	0.13	0.62	0.45	1.02	0.78	1.02	0.33	0.06	1.36	1.25	0.36	7.52
SE	FS	0.00	7.32	1.28	1.00	1.36	2.24	2.63	3.70	8.29	2.02	1.00	1.26	1.02	1.01	1.04	3.05	0.45	1.38	1.52	0.24
SE	IS	0.13	4.52	1.20	1.00	0.77	0.59	0.51	0.39	0.51	0.17	1.00	0.92	1.02	1.01	0.93	2.90	0.44	1.37	1.76	0.36
SE	Un	0.00	5.52	1.33	1.00	1.28	1.52	1.13	2.17	2.30	0.52	1.00	1.16	1.08	1.01	1.09	2.49	0.29	1.47	1.38	0.63
SE	OLF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SE	Cm	0.00	6.84	1.25	1.00	0.72	0.85	1.03	0.94	0.89	0.75	1.00	1.23	1.01	1.00	1.25	2.99	0.73	1.63	1.52	0.50
SE	UP	1.38	1.82	0.98	1.00	1.13	1.16	1.30	0.73	2.43	0.84	1.00	0.98	0.95	1.00	0.48	0.45	1.13	1.26	0.23	0.30
MultiLogit output of relative risk ratios (1991-1994)																					
FS	IS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	NA	1.00	NA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FS	Un	0.12	1.27	0.99	1.00	0.96	1.34	2.47	2.43	NA	1.70	NA	0.66	1.04	0.99	1.30	1.18	0.94	1.51	0.39	0.58
FS	OLF	15.03	0.36	0.82	1.00	1.14	1.39	1.76	2.32	NA	1.66	NA	0.84	0.90	1.01	0.98	0.61	3.03	0.90	0.60	0.60
FS	SE	0.00	2.42	1.23	1.00	0.75	1.16	1.86	1.50	NA	2.33	NA	0.99	0.99	0.99	0.85	1.78	0.99	0.79	0.69	1.38
FS	Cm	0.02	2.24	1.11	1.00	1.09	1.37	1.75	1.57	NA	0.96	NA	1.24	0.99	1.00	0.93	1.33	0.81	0.86	0.37	0.94
FS	UP	0.22	0.77	1.05	1.00	1.12	1.06	1.66	1.72	NA	1.32	NA	1.54	0.95	0.99	1.07	0.12	0.22	0.55	0.61	0.61
IS	FS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	NA	1.00	NA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
IS	Un	0.11	1.70	0.97	1.00	1.33	0.98	0.77	0.68	NA	0.74	NA	0.67	1.01	0.98	0.87	1.29	2.68	2.24	0.77	1.96
IS	OLF	34.82	0.55	0.78	1.00	0.61	0.46	0.29	0.46	NA	0.48	NA	0.75	0.98	0.99	0.71	0.84	5.67	1.50	1.08	3.09
IS	SE	0.01	3.23	1.09	1.00	0.88	0.60	0.40	0.52	NA	0.50	NA	1.90	0.99	1.00	0.47	1.27	2.65	1.53	0.94	4.52
IS	Cm	0.03	4.48	1.01	1.00	1.87	1.32	0.88	0.65	NA	0.72	NA	1.24	1.00	1.00	0.89	1.35	1.90	1.74	0.67	3.05
IS	UP	1.44	1.42	0.90	1.00	1.26	1.14	0.56	0.67	NA	0.79	NA	0.78	0.92	0.99	0.63	0.11	0.40	0.46	1.02	4.43
SE	FS	0.01	7.26	1.24	1.00	1.27	1.63	2.84	2.07	NA	3.60	NA	1.48	0.99	1.00	1.36	2.11	0.23	0.93	1.76	0.25
SE	IS	0.10	4.99	1.16	1.00	1.54	0.87	1.08	0.68	NA	0.95	NA	1.20	1.02	1.00	0.90	1.10	0.22	0.57	2.15	0.86
SE	Un	0.00	6.56	1.11	1.00	0.93	0.88	1.21	0.80	NA	1.19	NA	0.82	1.07	1.01	1.35	1.06	0.21	0.90	1.54	18.42
SE	OLF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	NA	1.00	NA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SE	Cm	0.01	15.82	1.12	1.00	0.75	0.78	1.07	1.29	NA	0.97	NA	1.58	1.04	1.01	1.21	1.14	0.45	0.56	1.18	1.62
SE	UP	0.11	3.59	1.10	1.00	1.31	1.37	1.50	1.08	NA	1.40	NA	1.43	1.04	1.00	0.64	0.23	0.33	0.84	0.58	0.54

Table 15
Relative Risk Ratios

Exiting	FORMAL SECTOR		INFORMAL SECTOR	
	1995-1998	1991-1994	1995-1998	1991-1994
Variable	Self-employment / Informal Sector	Self-employment / Informal Sector	Formal Sector / Self-employment	Formal Sector / Self-employment
High School	1.49	1.49	5.35	1.92
Secondary	1.18	1.86	4.77	2.52
Primary	1.14	1.16	4.13	1.65
Men	1.97	2.41	0.47	0.31
Contract	1.24	0.84	NA	NA

The results of Table 14, restated in Table 15 for the particular case of how formal education affects transition intensities, show that, relative to joining the informal sector, a worker exiting the formal sector has self-employment as a more likely destination. In addition, the larger the number of years in school spent by him/her, the less attractive the informal sector becomes. These results also imply that, compared to what happened during 1991-1994, four years later there is an increase in the odds that a worker without a high school education moves to the informal sector.

In the previous subsection we stressed the importance that secondary and high school education have in reducing the hazard rates of leaving the formal sector and of increasing the hazard rates of leaving the informal sector. We also pointed out that there was an increase in the importance of secondary or high school education in reducing the odds of staying in the informal sector; the importance was greater during the period 1995-1998, relative to 1991-1994.

The results of Table 15 indicate a corresponding pattern with respect to workers exiting the informal sector; for example, they reveal an important change across periods in the relationship of workers with high school education ending up in the formal sector relative to self-employment: during the period 1991-1994 the odds were 2 to 1, and in 1995-1998 they increased to 5 to 1.

3. Long Run Job Status Occupancy Probabilities

In Subsection 1.3.2 we showed that in a population with only two possible job statuses, employment and non-employment, the long run equilibrium proportions of these statuses (or state occupancy probabilities) was determined by the hazard rate out of one job status relative to the hazard rate out of the other one.

By extending this argument to the case of more statuses, we can illustrate the way in which the analysis of Subsection 1.3.1 enables us to consider labor market dynamics in Mexico in terms of a continuous semi-Markov process. At the end of this section we present an example of how these results can be obtained by means of the hazard and transition intensities functions estimated in this research.

When we consider the extension of the 2x2 case presented in Subsection 1.3.2 to determine the long run equilibrium proportions or state occupancy probabilities, we obtain, for the kxk case,

instead of a system such as that given by (3) in that subsection, a differential equations system which is now given by:

$$\frac{dP_k(t)}{dt} = P_k(t)Q \qquad (13)$$

where the elements of $P_k(t)$ give the probabilities with which each of the k states will be occupied at time *t* by a person who began at *t=0* in state *k*. The elements of the matrix Q now include hazard rates and transition intensities.[41] Since the number of states is finite and the transition intensities are such that it is possible to get from any state to any other, there exists a unique row vector of probabilities, P_k, satisfying:

$$P_kQ = 0 \qquad (14)$$

which, enables us to deduce that the long-run state occupancy probabilities (or long-run equilibrium proportions) for the three job statuses case, are given by the following equations:

$$p_1 = \frac{h_2h_3 - h_{23}h_{32}}{g}$$

$$p_2 = \frac{h_1h_3 - h_{13}h_{31}}{g} \qquad (15)$$

$$p_3 = \frac{h_1h_2 - h_{12}h_{21}}{g}$$

where $g = h_2h_3 - h_{23}h_{32} + h_1h_3 - h_{13}h_{31} + h_1h_2 - h_{12}h_{21}$

and h_i is the hazard rate of leaving state i and h_{ij} the transition intensity of leaving state i with destination j.

By means of the hazard and the transition intensity functions estimated in the previous subsections, we can estimate long run equilibrium proportions or probabilities for groups of different characteristics in Mexico. In turn, dividing the estimated probabilities for two job statuses, enable us to obtain the odds of finding a worker with given characteristics in one status relative to the other one.

An alternative procedure for estimating these equilibrium state occupancy probabilities is by means of the transition probabilities given by (11) and by the calculation of the average length of time spent in each job status. With this alternative procedure it becomes more explicit that workers move through a sequence of statuses, e.g., he/she might start being an unpaid worker and move to the informal sector before entering the formal sector or, once in the formal sector, a worker might move back to the informal sector only to return to the formal sector after a period of unemployment.

Formally, the procedure is as follows: let p_{ij} be the transition probability, as stated by equation (11) defined above, for $i \neq j$ and zero otherwise, and determine a fixed point of the transition probabilities matrix, that is $\bar{p} = \bar{p} \cdot \Pi$, and define the equilibrium state occupancy

[41] See Flinn and Heckman (1982), p. 75.

probabilities satisfying $\sum_i \overline{p_i} = 1$. For example, in the 3 states case, the equilibrium state occupancy probabilities are obtained by solving:

$$[\overline{p_1} \quad \overline{p_2} \quad \overline{p_3}] = [\overline{p_1} \quad \overline{p_2} \quad \overline{p_3}] \cdot \begin{bmatrix} 0 & p_{12} & p_{13} \\ p_{21} & 0 & p_{23} \\ p_{31} & p_{32} & 0 \end{bmatrix} \tag{16}$$

In turn, it can be shown that estimating the long run state occupancy probabilities by means of (14) is equivalent to estimating them with the following equation (Lancaster, 1990):

$$P_i = \frac{\overline{p_i} m_i}{\sum_j \overline{p_j} m_j} \tag{17}$$

where P_i is the long run state occupancy probability of state *i* and m_i is the average length of time spent in each state once it is entered.[42]

With equation (17) we can calculate long run equilibrium proportions or probabilities for groups of different characteristics in Mexico by means of the results related to the average length of time spent in each job status (estimated with the Weibull hazard rate) and with the multinomial logit estimations (which enable us to calculate the transition probabilities required to obtain the values of the equilibrium state occupancy probabilities in (16), when it is assumed that, given that departure occurs at t, the probability that it is to state *k* does not depend upon *t).*

In Table 16 we present the long run state occupancy probabilities calculated for workers with different characteristics for the period of 1995-1998 and in Table 32, relegated to the Appendix, we present corresponding results for 1991-1994.

[42] This is calculated using the fact that $m_i = \int_0^\infty S_i(u)du$ and $S_i(t)$ is the survival function corresponding to the Weibull distribution

Table 16
(1995-1998)

	*Transition probabilities p_j							**Equilibrium state occupancy probability $\overline{p_j}$	***Mean duration m	****Long run state occupancy probabilities P_i
Woman, Age=30, Spouse (2nd salary), High School, 2 jobs in life and 5 years of work experience, written contract, course training										
	FS	**IS**	**Un**	**OLF**	**SE**	**Com**	**UP**			
FS	**0**	0.22	0.02	0.64	0.02	0.06	0.01	0.24	23.80	0.58
IS	0.53	**0**	0.01	0.39	0.02	0.01	0.01	0.11	6.88	0.08
Un	0.27	0.06	**0**	0.57	0.05	0.03	0.00	0.14	1.71	0.02
OLF	0.36	0.10	0.29	**0**	0.10	0.04	0.08	0.34	6.42	0.22
SE	0.03	0.00	0.66	0.00	**0**	0.28	0	0.05	7.07	0.04
Com	0.16	0.02	0.00	0.67	0.10	**0**	0.02	0.05	4.33	0.02
UP	0.04	0.31	0.00	0.51	0.05	0.06	**0**	0.04	2.83	0.01
Man, Age=45, Breadwinner, High School, 5 jobs in life and 25 years of work experience, written contract, course training										
	FS	**IS**	**Un**	**OLF**	**SE**	**Com**	**UP**			
FS	**0**	0.28	0.13	0.04	0.17	0.37	0.00	0.32	58.34	0.57
IS	0.81	**0**	0.02	0.03	0.07	0.07	0.00	0.12	19.50	0.07
Un	0.25	0.15	**0**	0.07	0.43	0.09	0.00	0.06	0.82	0.00
OLF	0.27	0.08	0.42	**0**	0.19	0.02	0.00	0.03	2.06	0.00
SE	0.25	0.20	0.14	0.07	**0**	0.31	0.00	0.16	43.26	0.20
Com	0.68	0.07	0.01	0.02	0.21	**0**	0.00	0.29	16.98	0.15
UP	0.18	0.29	0.05	0.15	0.26	0.05	**0**	0.00	3.23	0.00

* Probability of entering state *j* given that the state *i* was left.
** Long run probability that the state *j* is entered at any transition.
*** Average length of time spent in each state, once it is entered (calculated with Weibull model).
**** Probability of the process being in each of the seven states at an arbitrary time remote from the origin (do not depend upon which state was occupied at time 0).

The long-run equilibrium state occupancy probability in the formal sector, estimated for a man 45 years old with the characteristics stated in Table 16, was 0.57 for the sample period 1995-1998. This result can be compared with the corresponding figure for the estimated models with the sample period 1991-1994, (which was 0.62, as shown in the Table 32 of the Appendix). With comparisons like this, we can identify those groups in the urban labor force that became less likely to stay long in the formal sector due to structural and institutional changes occurring after 1994 in the Mexican economy. In the case of these kinds of workers, the odds of being found in a job status in which one is paid by commission, relative to the formal sector, more than double in four years.[43]

[43]As shown in Table 32, the probability of being found paid by commission was only .05 in 1991-1993, which is one third of corresponding value in Table 16.

With the results obtained in the previous section, we can also assess how the characteristics linked to groups of workers determine long run changes in job status probabilities. Characteristics that can be thus assessed include those related to the enforcement of labor regulations (e.g., having a written contract to work for an indefinite period or working in a small firm), to the worker's potential productivity (e.g,. years of formal education, number and kind of training courses taken) or to his/her personal situation (e.g., bread-winner, age, sex , etc.).

With assessments like this we move in the direction of answering whether the increasing share of workers in the informal sector and of self-employed people is evidence of market segmentation or is instead consistent with a well-integrated market, where workers search across sectors for job opportunities.

Conclusions

In this study we have pointed out a number of features indicating a high frequency of job changes by workers during the 1990s in Mexico, among them:

a) that the time spent in a job and the so-called four and six-year retention rates are short relative to OECD countries; b) that between 15% and 20% of wage earners in the formal sector move out to another job status in only one quarter, and that the figures for other job status (informal workers, self-employment, unpaid jobs, etc.) are much higher; and c) that the shares that each job status represented within the total population did not vary significantly, in spite of substantial movements of persons among job statuses. This last feature implies that the spaces left by the flow of persons out of one job status and into another one are to a great extent filled by a flow of persons moving in the opposite direction.

One of the questions that these indicators lead to is whether there are institutional or structural features suggesting that successful and productive job matches end sooner than otherwise be optimal in Mexico. In turn, the high frequency of job changes by workers indicates, relative to a situation with a lower frequency, a faster speed of creation of vacancies. This implies not only that individuals looking for another job and unemployed people searching for a job are more likely to find one, but also that they might do so in a shorter period of time. Hence, these features also lead to another question, namely: Is the high frequency of changes among job statuses that characterizes the urban market a reflection of problems that demand policy intervention, or do these changes only grease the wheels of the labor market?

We estimated hazard functions for two periods, 1991-1994 and 1991-1998, for employees in the formal sector and compared them with corresponding functions for other job statuses in the urban labor force. Among other determinants of interest, we measured the extent to which hazard rates out of the formal sector are reduced for workers with education above elementary school. The results pointed out important reductions in the hazard rates of leaving the formal sector for employees with secondary, high school and technical formation, relative to hazard rates for uneducated workers.

Our study also showed that the opposite effect is registered in the cases of employees in the informal sector and in self-employment: persons with formal education spend less time in these job statuses, compared to workers without it. Moreover, we showed that during the period 1995-1998 having secondary or high school education was more important—relative to what happened four years earlier—to reduce the odds of staying in the informal sector. With these hazard functions we calculated median time spent by workers in the formal sector relative to the median time spent by those in the informal sector. They indicated that median time spent in the formal sector is more than 3.5 times that in the informal sector during 1995-1998 and less than 3.25 for 1991-1994.

We also found that taking a training course would have helped a worker leave the informal sector during the period 1991-1994, but not during the period 1995-1998. In contrast, having received a training course within a period smaller than fifteen months reduces the hazard of leaving the formal sector in both periods.

Although Mexican labor legislation has undergone no explicit modification for decades,[44] the relative strength of its enforcement has been changing along with commercial and other structural reforms. Among the regulations whose less strict enforcement could be reducing job stability in the formal sector is the one related to having written contracts to work for an indefinite period or for a period longer than six months.

We measured the extent to which this kind of contract reduces the risk of moving out of the formal sector. We showed that it is quite important. The estimates also indicate that working in a firm with fewer than 15 workers increases the hazard rates of not staying in a job in the formal sector. This result might be associated with the fact that, in Mexico, the enforcement of labor regulations differs across industries and firms, with smaller firms being more difficult to monitor. Hence job dismissals in small firms might be more expeditious. This hypothesis can be reinforced by the fact that a minimum of 20 workers is required to constitute a trade union.

We also extended our analysis to assess the likely destination of workers with different characteristics when they exit a job status. We discussed a number of results, for example, that it is possible to state that if a worker that has a written contract to work exits the formal sector, he/she is 25% more probable to have the self-employment, relative to the informal sector, as a destination. Since dismissed workers with written contracts are those likely to receive severance payments and seniority premiums, these results suggest that, in view of credit market imperfections, dismissals makes initiating a self-employed job easier.

With the transition intensities functions implied by these results and the hazard rate functions, we calculated long-run equilibrium proportions or probabilities for groups of different characteristics in Mexico. We have attempted to show that this procedure may contribute to determining answering if the increasing share of workers in the informal sector and of self-employed people is evidence of market segmentation or if it is consistent with a well-integrated market where workers search across sectors for job opportunities.

[44] *Cfr*. Dávila (1994) and OECD (1998).

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Appendix

Table 17

Initial Sample for each ENEU Panel Structure

	II-91		II-93		II-94		II-95		II-96		II-97	
FS	28,847	23.0%	53,140	22.5%	53,825	22.0%	52,488	20.7%	54,169	20.4%	59,080	21.7%
IS	13,671	10.9%	27,020	11.4%	28,013	11.4%	28,573	11.3%	32,825	12.4%	34,472	12.6%
Un	1,463	1.2%	4,295	1.8%	4,732	1.9%	8,537	3.4%	7,308	2.8%	5,345	2.0%
OLF	61,076	48.6%	107,881	45.6%	113,421	46.3%	115,190	45.4%	119,227	45.0%	119,894	44.0%
SE	14,132	11.2%	28,389	12.0%	29,119	11.9%	31,774	12.5%	33,441	12.6%	35,101	12.9%
Comm	4,009	3.2%	8,612	3.6%	9,253	3.8%	9,740	3.8%	10,294	3.9%	10,692	3.9%
UnP	2,482	2.0%	6,409	2.7%	6,859	2.8%	7,666	3.0%	7,848	3.0%	8,083	3.0%
Total	125,680	100%	235,746	100%	245,222	100%	253,968	100%	265,112	100%	272,668	100%

Number of obsevations are without factor of expansion.

Table 18

ENEU 1991, quarterly linked panel structure

II-91 to III-91	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**		**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	16,167	1,853	258	1,101	671	444	59	20,553		78.7%	9.0%	1.3%	5.4%	3.3%	2.2%	0.3%	100%
IS	1,976	4,774	195	1,254	835	420	192	9,646		20.5%	49.5%	2.0%	13.0%	8.7%	4.4%	2.0%	100%
Un	200	181	154	340	99	46	15	1,035		19.3%	17.5%	14.9%	32.9%	9.6%	4.4%	1.4%	100%
OLF	1,153	1,669	540	38,375	1,215	309	885	44,146		2.6%	3.8%	1.2%	86.9%	2.8%	0.7%	2.0%	100%
SE	638	833	115	1,127	6,991	384	164	10,252		6.2%	8.1%	1.1%	11.0%	68.2%	3.7%	1.6%	100%
Comm	479	427	52	277	387	1,217	31	2,870		16.7%	14.9%	1.8%	9.7%	13.5%	42.4%	1.1%	100%
UnP	72	196	14	673	150	23	721	1,849		3.9%	10.6%	0.8%	36.4%	8.1%	1.2%	39.0%	100%
Total	20,685	9,933	1,328	43,147	10,348	2,843	2,067	90,351		22.9%	11.0%	1.5%	47.8%	11.5%	3.1%	2.3%	100%
III-91 to IV-91	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**		**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	9,533	720	98	381	223	180	19	11,154		85.5%	6.5%	0.9%	3.4%	2.0%	1.6%	0.2%	100%
IS	483	2,054	45	294	204	119	49	3,248		14.9%	63.2%	1.4%	9.1%	6.3%	3.7%	1.5%	100%
Total	10,016	2,774	143	675	427	299	68	14,402		69.5%	19.3%	1.0%	4.7%	3.0%	2.1%	0.5%	100%

Table 19

ENEU 1993, quarterly linked panel structure

II-93 to III-93	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	30,141	3,286	558	1,637	896	866	150	37,534		80.3%	8.8%	1.5%	4.4%	2.4%	2.3%	0.4%	100%
IS	3,611	9,394	550	2,299	1,502	881	392	18,629		19.4%	50.4%	3.0%	12.3%	8.1%	4.7%	2.1%	100%
Un	443	531	600	1,026	237	142	66	3,045		14.5%	17.4%	19.7%	33.7%	7.8%	4.7%	2.2%	100%
OLF	1,515	2,824	1,396	66,328	2,311	694	1,817	76,885		2.0%	3.7%	1.8%	86.3%	3.0%	0.9%	2.4%	100%
SE	915	1,472	271	2,320	14,035	774	415	20,202		4.5%	7.3%	1.3%	11.5%	69.5%	3.8%	2.1%	100%
Comm	830	898	131	629	755	2,766	83	6,092		13.6%	14.7%	2.2%	10.3%	12.4%	45.4%	1.4%	100%
UnP	136	425	75	1,506	446	106	2,037	4,731		2.9%	9.0%	1.6%	31.8%	9.4%	2.2%	43.1%	100%
Total	37,591	18,830	3,581	75,745	20,182	6,229	4,960	167,118		22.5%	11.3%	2.1%	45.3%	12.1%	3.7%	3.0%	100%

III-93 to IV-93	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	18,608	1,274	199	646	334	305	31	21,397		87.0%	6.0%	0.9%	3.0%	1.6%	1.4%	0.1%	100%
IS	852	4,265	137	538	337	243	77	6,449		13.2%	66.1%	2.1%	8.3%	5.2%	3.8%	1.2%	100%
Total	19,460	5,539	336	1,184	671	548	108	27,846		69.9%	19.9%	1.2%	4.3%	2.4%	2.0%	0.4%	100%

Table 20

ENEU 1994, quarterly linked panel structure

II-94 to III-94	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	30,852	3,015	580	1,458	1,018	918	130	37,971		81.3%	7.9%	1.5%	3.8%	2.7%	2.4%	0.3%	100%
IS	3,474	9,776	606	2,368	1,462	983	374	19,043		18.2%	51.3%	3.2%	12.4%	7.7%	5.2%	2.0%	100%
Un	549	575	687	1,017	309	155	64	3,356		16.4%	17.1%	20.5%	30.3%	9.2%	4.6%	1.9%	100%
OLF	1,613	2,897	1,549	69,243	2,402	782	1,943	80,429		2.0%	3.6%	1.9%	86.1%	3.0%	1.0%	2.4%	100%
SE	922	1,483	301	2,271	14,535	802	403	20,717		4.5%	7.2%	1.5%	11.0%	70.2%	3.9%	1.9%	100%
Comm	833	945	158	643	908	2,834	81	6,402		13.0%	14.8%	2.5%	10.0%	14.2%	44.3%	1.3%	100%
UnP	127	456	88	1,636	442	81	2,087	4,917		2.6%	9.3%	1.8%	33.3%	9.0%	1.6%	42.4%	100%
Total	38,370	19,147	3,969	78,636	21,076	6,555	5,082	172,835		22.2%	11.1%	2.3%	45.5%	12.2%	3.8%	2.9%	100%

III-94 to IV-94	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	18,746	998	205	578	360	309	28	21,224		88.3%	4.7%	1.0%	2.7%	1.7%	1.5%	0.1%	100%
IS	806	4,542	133	495	351	234	74	6,635		12.1%	68.5%	2.0%	7.5%	5.3%	3.5%	1.1%	100%
Total	19,552	5,540	338	1,073	711	543	102	27,859		70.2%	19.9%	1.2%	3.9%	2.6%	1.9%	0.4%	100%

Table 21

ENEU 1995, quarterly linked panel structure

II-95 to III-95	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	29,673	3,070	840	1,203	907	834	112	36,639		81.0%	8.4%	2.3%	3.3%	2.5%	2.3%	0.3%	100%
IS	2,780	10,359	1,010	2,342	1,675	1,027	403	19,596		14.2%	52.9%	5.2%	12.0%	8.5%	5.2%	2.1%	100%
Un	604	1,109	1,682	1,523	637	300	140	5,995		10.1%	18.5%	28.1%	25.4%	10.6%	5.0%	2.3%	100%
OLF	1,173	2,923	2,171	69,633	2,735	788	2,225	81,648		1.4%	3.6%	2.7%	85.3%	3.3%	1.0%	2.7%	100%
SE	798	1,692	620	2,470	15,500	918	496	22,494		3.5%	7.5%	2.8%	11.0%	68.9%	4.1%	2.2%	100%
Comm	774	931	315	680	851	3,196	108	6,855		11.3%	13.6%	4.6%	9.9%	12.4%	46.6%	1.6%	100%
UnP	103	444	143	1,779	519	107	2,403	5,498		1.9%	8.1%	2.6%	32.4%	9.4%	1.9%	43.7%	100%
Total	35,905	20,528	6,781	79,630	22,824	7,170	5,887	178,725		20.1%	11.5%	3.8%	44.6%	12.8%	4.0%	3.3%	100%

III-95 to IV-95	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	18,230	1,141	231	385	228	261	18	20,494		89.0%	5.6%	1.1%	1.9%	1.1%	1.3%	0.1%	100%
IS	725	4,788	174	474	388	261	79	6,889		10.5%	69.5%	2.5%	6.9%	5.6%	3.8%	1.1%	100%
Total	18,955	5,929	405	859	616	522	97	27,383		69.2%	21.7%	1.5%	3.1%	2.2%	1.9%	0.4%	100%

Table 22

ENEU 1996, quarterly linked panel structure

II-96 to III-96	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	32,000	2,979	620	1,322	983	849	99	38,852		82.4%	7.7%	1.6%	3.4%	2.5%	2.2%	0.3%	100%
IS	3,484	12,604	734	2,714	2,002	1,037	463	23,038		15.1%	54.7%	3.2%	11.8%	8.7%	4.5%	2.0%	100%
Un	669	925	1,137	1,495	537	246	85	5,094		13.1%	18.2%	22.3%	29.3%	10.5%	4.8%	1.7%	100%
OLF	1,358	3,113	1,670	74,597	2,761	784	2,152	86,435		1.6%	3.6%	1.9%	86.3%	3.2%	0.9%	2.5%	100%
SE	951	1,718	409	2,798	17,107	918	529	24,430		3.9%	7.0%	1.7%	11.5%	70.0%	3.8%	2.2%	100%
Comm	908	1,059	195	720	947	3,485	90	7,404		12.3%	14.3%	2.6%	9.7%	12.8%	47.1%	1.2%	100%
UnP	160	486	79	1,930	546	106	2,539	5,846		2.7%	8.3%	1.4%	33.0%	9.3%	1.8%	43.4%	100%
Total	39,530	22,884	4,844	85,576	24,883	7,425	5,957	191,099		20.7%	12.0%	2.5%	44.8%	13.0%	3.9%	3.1%	100%

III-96 to IV-96	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	19,848	939	214	482	227	274	26	22,010		90.2%	4.3%	1.0%	2.2%	1.0%	1.2%	0.1%	100%
IS	968	5,979	178	520	409	291	88	8,433		11.5%	70.9%	2.1%	6.2%	4.8%	3.5%	1.0%	100%
Total	20,816	6,918	392	1,002	636	565	114	30,443		68.4%	22.7%	1.3%	3.3%	2.1%	1.9%	0.4%	100%

Table 23

ENEU 1997, quarterly linked panel structure

II-97 to III-97	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	34,800	3,113	563	1,483	989	877	113	41,938		83.0%	7.4%	1.3%	3.5%	2.4%	2.1%	0.3%	100%
IS	3,729	13,123	614	2,982	1,871	1,070	463	23,852		15.6%	55.0%	2.6%	12.5%	7.8%	4.5%	1.9%	100%
Un	582	726	649	1,184	326	142	77	3,686		15.8%	19.7%	17.6%	32.1%	8.8%	3.9%	2.1%	100%
OLF	1,581	3,378	1,364	73,345	2,747	801	2,076	85,293		1.9%	4.0%	1.6%	86.0%	3.2%	0.9%	2.4%	100%
SE	1,055	1,938	264	2,764	17,536	926	556	25,039		4.2%	7.7%	1.1%	11.0%	70.0%	3.7%	2.2%	100%
Comm	1,018	1,178	136	750	951	3,466	81	7,580		13.4%	15.5%	1.8%	9.9%	12.5%	45.7%	1.1%	100%
UnP	137	548	78	1,873	563	105	2,443	5,747		2.4%	9.5%	1.4%	32.6%	9.8%	1.8%	42.5%	100%
Total	42,902	24,004	3,668	84,381	24,983	7,387	5,809	193,135		22.2%	12.4%	1.9%	43.7%	12.9%	3.8%	3.0%	100%

III-97 to IV-97	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	21,929	978	194	511	275	310	35	24,232		90.5%	4.0%	0.8%	2.1%	1.1%	1.3%	0.1%	100%
IS	1,030	6,208	186	643	441	268	81	8,857		11.6%	70.1%	2.1%	7.3%	5.0%	3.0%	0.9%	100%
Total	22,959	7,186	380	1,154	716	578	116	33,089		69.4%	21.7%	1.1%	3.5%	2.2%	1.7%	0.4%	100%

Table 24

ENE-ENECE-ENEU match 1991, quarterly linked panel structure

II-91 to III-91	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**		**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	16,156	1,850	257	1,089	661	443	692	21,148		76.4%	8.7%	1.2%	5.1%	3.1%	2.1%	3.3%	100%
IS	1,974	4,771	197	1,251	832	420	601	10,046		19.6%	47.5%	2.0%	12.5%	8.3%	4.2%	6.0%	100%
Un	200	180	155	339	99	47	64	1,084		18.5%	16.6%	14.3%	31.3%	9.1%	4.3%	5.9%	100%
OLF	1,144	1,661	550	37,844	1,203	305	1,851	44,558		2.6%	3.7%	1.2%	84.9%	2.7%	0.7%	4.2%	100%
SE	628	830	115	1,107	6,975	381	381	10,417		6.0%	8.0%	1.1%	10.6%	67.0%	3.7%	3.7%	100%
Comm	479	426	52	273	384	1,216	118	2,948		16.2%	14.5%	1.8%	9.3%	13.0%	41.2%	4.0%	100%
UnP	84	206	15	768	162	28	1,055	2,318		3.6%	8.9%	0.6%	33.1%	7.0%	1.2%	45.5%	100%
Total	20,665	9,924	1,341	42,671	10,316	2,840	4,762	92,519		22.3%	10.7%	1.4%	46.1%	11.2%	3.1%	5.1%	100%

III-91 to IV-91	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**		**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	9,534	720	92	277	218	180	424	11,445		83.3%	6.3%	0.8%	2.4%	1.9%	1.6%	3.7%	100%
IS	484	2,054	41	153	204	119	336	3,391		14.3%	60.6%	1.2%	4.5%	6.0%	3.5%	9.9%	100%
Total	10,018	2,774	133	430	422	299	760	14,836		67.5%	18.7%	0.9%	2.9%	2.8%	2.0%	5.1%	100%

IV-91 to I-92	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**		**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	5,308	255	43	120	69	71	188	6,054		87.7%	4.2%	0.7%	2.0%	1.1%	1.2%	3.1%	100%
IS	153	928	19	45	60	35	78	1,318		11.6%	70.4%	1.4%	3.4%	4.6%	2.7%	5.9%	100%
Total	5,461	1,183	62	165	129	106	266	7,372		74.1%	16.0%	0.8%	2.2%	1.7%	1.4%	3.6%	100%

I-92 to II-92	**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**		**FS**	**IS**	**Un**	**OLF**	**SE**	**Comm**	**UnP**	**Total**
FS	2,250	108	16	39	19	28	59	2,519		89.3%	4.3%	0.6%	1.5%	0.8%	1.1%	2.3%	100%
IS	47	340	4	13	13	5	21	443		10.6%	76.7%	0.9%	2.9%	2.9%	1.1%	4.7%	100%
Total	2,297	448	20	52	32	33	80	2,962		77.5%	15.1%	0.7%	1.8%	1.1%	1.1%	2.7%	100%

Table 25

ENE-ENECE-ENEU Match 1993, quarterly linked panel structure

II-93 to III-93	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	16,129	1,836	344	937	513	531	97	20,367		79.2%	9.0%	1.7%	4.6%	2.5%	2.6%	0.5%	100%
IS	1,978	4,852	280	1,183	836	403	222	9,754		20.3%	49.7%	2.9%	12.1%	8.6%	4.1%	2.3%	100%
Un	238	280	318	520	139	60	30	1,585		15.0%	17.7%	20.1%	32.8%	8.8%	3.8%	1.9%	100%
OLF	823	1,440	666	34,790	1,155	336	982	40,194		2.0%	3.6%	1.7%	86.6%	2.9%	0.8%	2.4%	100%
SE	529	815	137	1,215	7,422	371	236	10,725		4.9%	7.6%	1.3%	11.3%	69.2%	3.5%	2.2%	100%
Comm	468	463	69	310	372	1,493	47	3,220		14.5%	14.4%	2.1%	9.6%	11.6%	46.4%	1.5%	100%
UnP	85	217	32	796	239	41	1,300	2,710		3.1%	8.0%	1.2%	29.4%	8.8%	1.5%	48.0%	100%
Total	20,250	9,903	1,846	39,731	10,676	3,233	2,934	88,553		22.9%	11.2%	2.1%	44.9%	12.1%	3.7%	3.3%	100%

III-93 to IV-93	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	9,631	670	116	335	164	178	14	11,108		86.7%	6.0%	1.0%	3.0%	1.5%	1.6%	0.1%	100%
IS	470	2,126	54	267	187	123	35	3,262		14.4%	65.2%	1.7%	8.2%	5.7%	3.8%	1.1%	100%
Total	10,101	2,796	170	602	351	301	49	14,370		70.3%	19.5%	1.2%	4.2%	2.4%	2.1%	0.3%	100%

IV-93 to I-94	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	5,322	264	59	134	46	79	6	5,930		89.7%	4.5%	1.0%	2.3%	0.8%	1.3%	0.1%	100%
IS	125	961	24	80	36	28	11	1,265		9.9%	76.0%	1.9%	6.3%	2.8%	2.2%	0.9%	100%
Total	5,447	1,225	83	214	82	107	17	7,175		75.9%	17.1%	1.2%	3.0%	1.1%	1.5%	0.2%	100%

I-94 to II-94	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	2,262	89	28	43	19	22	5	2,468		91.7%	3.6%	1.1%	1.7%	0.8%	0.9%	0.2%	100%
IS	41	378	8	22	9	8	3	469		8.7%	80.6%	1.7%	4.7%	1.9%	1.7%	0.6%	100%
Total	2,303	467	36	65	28	30	8	2,937		78.4%	15.9%	1.2%	2.2%	1.0%	1.0%	0.3%	100%

Table 26

ENE-ENECE-ENEU Match 1995, quarterly linked panel structure

II-95 to III-95	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	10,723	1,148	309	492	369	349	44	13,434		79.8%	8.5%	2.3%	3.7%	2.7%	2.6%	0.3%	100%
IS	1,029	3,673	334	879	592	344	158	7,009		14.7%	52.4%	4.8%	12.5%	8.4%	4.9%	2.3%	100%
Un	241	441	631	541	241	108	40	2,243		10.7%	19.7%	28.1%	24.1%	10.7%	4.8%	1.8%	100%
OLF	449	1,004	757	24,679	953	243	700	28,785		1.6%	3.5%	2.6%	85.7%	3.3%	0.8%	2.4%	100%
SE	326	666	210	910	5,581	316	160	8,169		4.0%	8.2%	2.6%	11.1%	68.3%	3.9%	2.0%	100%
Comm	293	304	108	229	277	1,127	37	2,375		12.3%	12.8%	4.5%	9.6%	11.7%	47.5%	1.6%	100%
UnP	28	181	52	610	168	36	770	1,845		1.5%	9.8%	2.8%	33.1%	9.1%	2.0%	41.7%	100%
Total	13,089	7,417	2,401	28,340	8,181	2,523	1,909	63,860		20.5%	11.6%	3.8%	44.4%	12.8%	4.0%	3.0%	100%

III-95 to IV-95	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	6,623	355	78	169	86	100	5	7,416		89.3%	4.8%	1.1%	2.3%	1.2%	1.3%	0.1%	100%
IS	265	1,756	52	174	129	98	22	2,496		10.6%	70.4%	2.1%	7.0%	5.2%	3.9%	0.9%	100%
Total	6,888	2,111	130	343	215	198	27	9,912		69.5%	21.3%	1.3%	3.5%	2.2%	2.0%	0.3%	100%

IV-95 to I-96	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	3,728	130	43	75	26	48	3	4,053		92.0%	3.2%	1.1%	1.9%	0.6%	1.2%	0.1%	100%
IS	86	819	27	64	37	28	6	1,067		8.1%	76.8%	2.5%	6.0%	3.5%	2.6%	0.6%	100%
Total	3,814	949	70	139	63	76	9	5,120		74.5%	18.5%	1.4%	2.7%	1.2%	1.5%	0.2%	100%

I-96 to II-96	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	1,641	57	15	45	19	18	0	1,795		91.4%	3.2%	0.8%	2.5%	1.1%	1.0%	0.0%	100%
IS	36	300	10	26	15	3	3	393		9.2%	76.3%	2.5%	6.6%	3.8%	0.8%	0.8%	100%
Total	1,677	357	25	71	34	21	3	2,188		76.6%	16.3%	1.1%	3.2%	1.6%	1.0%	0.1%	100%

Table 27

ENE-ENECE-ENEU Match 1997, quarterly linked panel structure

II-97 to III-97	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	10,342	952	161	453	296	285	30	12,519		82.6%	7.6%	1.3%	3.6%	2.4%	2.3%	0.2%	100%
IS	1,122	3,638	159	716	561	297	106	6,599		17.0%	55.1%	2.4%	10.9%	8.5%	4.5%	1.6%	100%
Un	167	181	156	319	77	34	18	952		17.5%	19.0%	16.4%	33.5%	8.1%	3.6%	1.9%	100%
OLF	493	746	349	14,165	613	163	387	16,916		2.9%	4.4%	2.1%	83.7%	3.6%	1.0%	2.3%	100%
SE	328	567	69	737	4,860	301	152	7,014		4.7%	8.1%	1.0%	10.5%	69.3%	4.3%	2.2%	100%
Comm	327	301	35	182	271	954	22	2,092		15.6%	14.4%	1.7%	8.7%	13.0%	45.6%	1.1%	100%
UnP	35	120	15	365	150	26	544	1,255		2.8%	9.6%	1.2%	29.1%	12.0%	2.1%	43.3%	100%
Total	12,814	6,505	944	16,937	6,828	2,060	1,259	47,347		27.1%	13.7%	2.0%	35.8%	14.4%	4.4%	2.7%	100%

III-97 to IV-97	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	6,490	308	49	154	91	104	13	7,209		90.0%	4.3%	0.7%	2.1%	1.3%	1.4%	0.2%	100%
IS	326	1,688	46	166	125	88	29	2,468		13.2%	68.4%	1.9%	6.7%	5.1%	3.6%	1.2%	100%
Total	6,816	1,996	95	320	216	192	42	9,677		70.4%	20.6%	1.0%	3.3%	2.2%	2.0%	0.4%	100%

IV-97 to I-98	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	3,642	124	33	164	40	54	3	4,060		89.7%	3.1%	0.8%	4.0%	1.0%	1.3%	0.1%	100%
IS	100	754	21	89	36	27	4	1,031		9.7%	73.1%	2.0%	8.6%	3.5%	2.6%	0.4%	100%
Total	3,742	878	54	253	76	81	7	5,091		73.5%	17.2%	1.1%	5.0%	1.5%	1.6%	0.1%	100%

I-98 to II-98	FS	IS	Un	OLF	SE	Comm	UnP	Total		FS	IS	Un	OLF	SE	Comm	UnP	Total
FS	1,573	45	9	76	22	13	1	1,739		90.5%	2.6%	0.5%	4.4%	1.3%	0.7%	0.1%	100%
IS	33	235		24	15	6	6	319		10.3%	73.7%	0.0%	7.5%	4.7%	1.9%	1.9%	100%
Total	1,606	280	9	100	37	19	7	2,058		78.0%	13.6%	0.4%	4.9%	1.8%	0.9%	0.3%	100%

Table 28. Distribution of Workers among Sectors (ENEU)						
% of total workers						
Quarter	Formal salaried	Informal salaried	Self-Employed	Commission	Unpaid	Total
I-87	49.85	20.33	19.83	6.09	3.9	100
II-87	46.74	22.92	20.71	5.73	3.9	100
III-87	47.13	23.08	20.01	5.74	4.04	100
IV-87	46.83	22.53	20.42	6.04	4.19	100
I-88	46.77	22.27	20.64	6.08	4.24	100
II-88	46.34	22.8	20.67	6.11	4.07	100
III-88	45.58	22.06	21.38	6.7	4.28	100
IV-88	45.17	22.51	21.2	6.61	4.5	100
I-89	45.69	22.83	21.11	6.32	4.05	100
II-89	45.73	22.25	21.68	6.23	4.11	100
III-89	44.73	23.21	22.19	5.96	3.91	100
IV-89	45.19	22.71	21.96	5.83	4.3	100
I-90	45.45	23.11	22.09	5.36	3.99	100
II-90	46.9	22.6	21.21	5.48	3.81	100
III-90	46.94	22.46	21.36	5.36	3.88	100
IV-90	47.28	22.35	20.74	5.69	3.94	100
I-91	48.1	21.66	20.6	5.96	3.68	100
II-91	47.93	21.48	20.8	6.18	3.6	100
III-91	46.21	22.24	20.96	6.65	3.95	100
IV-91	46	22.22	21.04	6.38	4.36	100
I-92	46.2	22.01	20.82	6.49	4.48	100
II-92	46.36	21.79	21.17	6.53	4.14	100
III-92	46.07	22.3	21.14	6.39	4.11	100
IV-92	46.03	22.23	21.35	6.39	4	100
I-93	46.17	21.33	21.36	6.88	4.26	100
II-93	45.37	21.99	21.24	7.07	4.33	100
III-93	44.99	22.03	21.45	7.01	4.51	100
IV-93	44.83	22	21.65	7.12	4.41	100
I-94	45.33	22.22	20.46	7.45	4.55	100
II-94	45.34	22.11	20.95	7.26	4.35	100
III-94	44.84	21.75	21.69	7.47	4.25	100
IV-94	45.08	21.68	21.38	7.49	4.36	100
I-95	45.18	21.26	21.63	7.4	4.53	100
II-95	43.89	21.69	22.33	7.54	4.55	100
III-95	41.92	22.83	22.77	7.6	4.89	100
IV-95	41.62	23.71	22.55	7.54	4.57	100
I-96	41.88	23.64	22.11	7.66	4.7	100
II-96	42.16	23.59	22.44	7.24	4.57	100
III-96	41.54	23.08	23.18	7.47	4.73	100
IV-96	41.56	23.92	22.57	7.2	4.76	100
I-97	41.74	23.83	22.43	7.31	4.7	100
II-97	42.16	23.52	22.67	7.04	4.61	100
III-97	42.52	23.73	22.45	7.09	4.21	100
IV-97	42.94	23.44	22.56	6.78	4.29	100
I-98	41.88	23.29	22.90	6.88	5.05	100
II-98	42.18	23.00	22.87	7.02	4.92	100

Source: ENEU I-87 to IV-97.

Table 29

Hazard Functions

Urban labor market in Mexico

	1991-1994						1995-1998					
	OLF		Comm		UnPaid		OLF		Comm		UnPaid	
	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val	Coef	P-Val
Constant	2.099	0.00	-0.115	0.00	-0.168	0.00	2.971	0.00	0.198	0.00	1.141	0.00
Man	-0.464	0.00	0.356	0.00	0.218	0.00	-0.414	0.00	0.494	0.00	0.013	0.00
Age	0.079	0.00	0.141	0.00	0.121	0.00	0.069	0.00	0.113	0.00	0.108	0.00
Age ^2	-0.000	0.00	-0.001	0.00	-0.001	0.00	.0.00	0.00	-0.000	0.00	-0.001	0.00
Breadwinner	-0.297	0.00	0.100	0.00	0.411	0.00	-0.529	0.00	0.459	0.00	-0.379	0.00
Spouse (2^{nd} aboard)	0.342	0.00	-0.355	0.00	0.225	0.00	0.045	0.00	0.132	0.00	-0.088	0.00
Son	-0.267	0.00	-0.024	0.00	0.629	0.00	-0.308	0.00	0.163	0.00	0.034	0.00
Elementary School Inc.	0.009	0.00	0.211	0.00	0.222	0.00	-0.460	0.00	-0.053	0.00	-0.539	0.00
Elementary School Comp.	0.034	0.00	0.119	0.00	0.109	0.00	-0.358	0.00	-0.071	0.00	-0.347	0.00
Secondary	-0.074	0.00	0.119	0.00	0.129	0.00	-0.510	0.00	-0.152	0.00	-0.497	0.00
High School	0.317	0.00	0.013	0.02	0.084	0.00	-0.366	0.00	-0.284	0.00	-0.493	0.00
Technological F.	NA	NA	NA	NA	NA	NA	-0.533	0.00	-0.664	0.00	-0.701	0.00
College & Higher	0.451	0.00	-0.201	0.00	-0.045	0.00	-0.057	0.00	-0.600	0.00	-0.257	0.00
Contract	NA	NA	NA	NA	NA	NA	-1.263	0.00	0.335	0.00	NA	NA
Married	0.419	0.00	-0.032	0.00	-0.019	0.00	0.392	0.00	-0.177	0.00	-0.092	0.00
Jobs in life	-0.061	0.00	-0.061	0.00	-0.066	0.00	-0.058	0.00	-0.065	0.00	-0.117	0.00
Training course last 2 years	-0.114	0.00	-0.003	0.31	-0.137	0.00	-0.175	0.00	0.105	0.00	-0.212	0.00
Work experience	-0.052	0.00	0.002	0.00	0.018	0.00	-0.045	0.00	0.000	0.01	0.014	0.00
Services	-0.651	0.00	-0.128	0.00	-0.005	0.15	-0.495	0.00	-0.133	0.00	-0.268	0.00
Micro	-1.302	0.00	-0.070	0.00	0.004	0.00	-1.547	0.00	0.220	0.00	0.756	0.00
Alpha	0.957	0.00	1.042	0.00	1.055	0.00	1.001	0.00	0.995	0.00	1.161	0.00
Lambda	0.07	0.00	0.022	0.00	0.104	0.00	0.064	0.00	0.07	0.00	-0.03	0.00
Log likelihood	-8997482.29		-1651112.74		-1093519.31		-9194582.96		-2020955.36		-1186563.79	
Total observations	11,191,341		1,231,427		826,446		11,955,522		1,487,157		929,272	
Censored data	8,151,407		351,781		238,509		8,851,142		458,469		258,364	

* Total observations in the survey without factor of expansion were: 1995-1998.- OLF 36,067, Comm 4,335, UnP 2,747; 1991-1994.- OLF 56,716, Comm 6,180, UnP 4,263.

Table 30									
Survival Models									
Urban labor market (1991-1994)									
	Weibull Models					Logistic Models			
	Survival Rates S(t)			Hazard Rate h(t)		Survival Rates S(t)			Hazard Rate h(t)
	1 year	5 years	10 years	1 year		1 year	5 years	10 years	1 year
Woman, Age=30, Spouse (2nd aboard), High School, 2 jobs in life and 5 years of work experience, course training									
Formal salaried	0.967	0.826	0.667	0.013		0.973	0.818	0.647	0.008
Informal salaried	0.846	0.454	0.215	0.036		0.922	0.59	0.368	0.025
Unemployed	0.486	0.013	0	0.242					
OLF	0.906	0.631	0.409	0.02					
Self employed	0.955	0.772	0.581	0.016		0.814	0.349	0.179	0.06
Comission	0.884	0.518	0.258	0.036					
Unpaid	0.837	0.38	0.133	0.055					
Man, Age=45, Breadwinner, High School, 5 jobs in life and 25 years of work experience, course training.									
Formal salaried	0.987	0.927	0.852	0.005		0.991	0.934	0.853	0.002
Informal salaried	0.913	0.652	0.434	0.019		0.996	0.973	0.936	0.001
Unemployed	0.57	0.034	0	0.192					
OLF	0.883	0.559	0.323	0.025					
Self employed	0.979	0.891	0.785	0.007		0.971	0.809	0.633	0.009
Comission	0.94	0.72	0.508	0.019					
Unpaid	0.926	0.656	0.417	0.025					

Table 31. MultiLogit Output of Relative Risk Ratios (1995-1998)																					
Initial State	**Final State**	**Constant**	**Sex**	**Age**	**Age^2**	**Incomplete Elementary**	**Complete Elementary**	**Secondary School**	**High School**	**Tecnological Formation**	**College or higher**	**Contract**	**Married**	**Jobs in life**	**Work Experience**	**Course last two years**	**Breadwinner**	**Spouse (2nd salary**	**Son**	**Service**	**Micro**
Un	FS	0.01	2.10	1.43	0.99	0.27	0.32	0.28	0.21	0.23	0.14	3.07	0.62	1.10	1.04	1.69	0.94	0.20	0.74	1.01	0.80
Un	IS	0.11	2.34	1.22	1.00	0.63	0.29	0.22	0.13	0.15	0.07	1.49	0.75	1.11	1.01	1.51	1.37	0.26	1.01	0.88	1.75
Un	OLF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Un	SE	0.00	4.70	1.53	0.99	0.66	0.42	0.50	0.43	0.57	0.18	1.30	1.21	1.08	1.01	1.33	1.76	0.29	1.27	1.01	2.22
Un	Cm	0.00	3.07	1.28	1.00	1.86	2.27	1.43	1.12	1.22	0.20	2.24	1.74	1.10	1.01	1.12	1.09	0.22	1.50	0.71	3.26
Un	UP	0.00	6.43	1.26	1.00	0.17	0.16	0.25	0.07	0.33	0.16	2.32	0.36	1.09	1.00	0.42	33.50	40.14	17.7	1.44	0.75
OLF	FS	0.03	0.83	1.06	1.00	3.78	6.08	9.63	10.45	19.57	12.62	3.11	1.09	0.97	1.02	1.31	0.70	0.73	0.68	0.85	0.86
OLF	IS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
OLF	Un	0.08	0.77	1.07	1.00	1.80	3.40	4.90	7.03	6.70	5.22	1.69	0.83	1.06	1.00	1.73	1.36	0.68	0.84	0.48	0.96
OLF	SE	0.01	1.08	1.20	1.00	1.47	1.41	1.69	1.71	1.90	1.67	0.65	1.71	0.98	0.99	1.20	1.26	1.17	0.87	0.75	0.84
OLF	Cm	0.01	2.34	1.10	1.00	3.72	3.10	3.42	3.58	1.87	3.15	0.93	1.39	1.00	0.98	1.35	1.02	2.62	1.00	0.55	1.21
OLF	UP	0.25	0.99	0.94	1.00	2.11	3.09	3.18	4.46	3.58	4.28	0.65	1.19	0.85	0.99	0.92	0.38	2.52	1.50	0.32	0.71
Cm	FS	0.08	0.83	1.13	1.00	2.14	3.18	2.60	2.40	2.91	3.92	3.74	1.50	0.99	0.99	2.50	0.50	0.24	0.62	0.33	0.35
Cm	OLF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cm	Un	2.42	0.88	0.90	1.00	1.19	0.90	1.20	0.65	2.51	2.56	0.36	1.03	1.03	1.01	3.05	0.47	0.83	0.97	0.41	0.79
Cm	OLF	11.50	0.18	0.88	1.00	1.21	1.82	1.94	3.25	1.71	4.88	0.92	0.83	0.99	0.97	1.70	0.23	2.76	0.76	0.44	0.54
Cm	SE	0.04	1.20	1.11	1.00	1.09	1.82	2.03	2.54	2.34	2.03	0.79	1.35	0.97	1.00	1.40	0.81	1.98	0.58	0.61	1.02
Cm	UP	0.00	0.40	0.91	1.00	##	##	###	###	###	###	0.83	0.58	0.91	0.98	1.99	0.12	5.18	1.99	0.83	1.14
UP	FS	0.14	2.15	1.17	1.00	0.14	0.39	0.43	0.51	2.12	0.22	1.00	1.11	0.91	1.07	2.62	0.91	0.15	0.55	0.69	0.19
UP	IS	0.04	4.30	1.23	1.00	1.40	1.02	0.95	0.79	1.69	0.44	1.00	0.81	1.10	0.98	2.22	0.21	0.23	0.78	0.81	0.40
UP	Un	0.00	2.84	1.17	1.00	###	###	###	###	###	###	1.00	0.34	1.03	1.10	2.31	1.10	0.34	0.35	0.53	2.13
UP	OLF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
UP	SE	0.00	4.08	1.29	1.00	0.77	0.92	1.17	0.42	1.17	0.22	1.00	2.07	1.02	1.01	1.60	0.75	0.59	1.53	0.32	2.38
UP	Cm	0.00	8.78	1.05	1.00	5.24	13.0	7.71	3.09	9.74	2.77	1.00	7.28	1.15	0.97	1.56	3.25	3.44	8.88	3.10	0.20
MultiLogit Output of Relative Risk Ratios (1991-1994)																					
Un	FS	0.01	1.91	1.25	1.00	0.55	0.95	1.59	1.85	NA	2.06	NA	1.40	1.10	1.03	1.04	2.17	0.20	1.16	1.79	0.54
Un	IS	0.02	1.68	1.09	1.00	2.39	3.13	4.65	3.17	NA	4.54	NA	2.09	1.22	1.03	0.48	1.87	0.25	1.34	1.23	1.07
Un	OLF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	NA	1.00	NA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Un	SE	0.00	3.23	1.47	0.99	0.98	0.87	0.80	1.24	NA	1.15	NA	1.22	1.07	1.01	0.65	7.54	2.16	2.92	1.82	1.77
Un	Cm	0.00	4.20	1.42	0.99	7.66	7.90	6.56	7.33	NA	12.51	NA	1.40	1.09	1.02	0.89	2.64	0.34	1.69	1.86	2.05
Un	UP	0.00	0.89	0.97	1.00	##	##	###	###	NA	###	NA	1.05	0.98	0.99	0.25	6.56	0.84	0.72	0.86	1.54
OLF	FS	0.03	0.76	1.08	1.00	2.84	5.68	8.08	7.26	NA	10.41	NA	1.12	1.03	1.02	0.75	1.07	0.98	1.14	1.05	0.50
OLF	IS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	NA	1.00	NA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
OLF	Un	0.09	0.60	1.02	1.00	2.11	2.62	5.36	5.72	NA	5.93	NA	0.75	1.07	1.01	1.29	1.33	1.32	1.14	0.69	0.57
OLF	SE	0.01	1.06	1.17	1.00	1.17	1.55	1.56	2.13	NA	2.05	NA	2.33	1.03	1.00	1.31	0.76	1.10	0.69	0.60	1.04
OLF	Cm	0.03	1.26	1.07	1.00	0.98	1.49	1.75	1.61	NA	1.79	NA	2.44	1.06	1.01	1.14	0.66	1.30	1.01	0.54	1.16
OLF	UP	0.66	0.81	0.99	1.00	1.22	1.28	1.40	1.71	NA	1.70	NA	2.08	0.89	0.99	0.93	0.24	0.53	0.70	0.36	0.79
Cm	FS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	NA	1.00	NA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cm	OLF	1.37	1.20	0.94	1.00	1.08	0.75	0.92	0.63	NA	0.94	NA	0.81	1.04	1.00	0.65	0.90	2.60	1.20	1.79	3.77
Cm	Un	0.06	1.86	1.05	1.00	0.45	0.60	0.74	0.33	NA	0.20	NA	0.46	1.01	0.97	1.06	0.95	10.93	1.62	1.21	2.51
Cm	OLF	197.75	0.38	0.74	1.00	0.28	0.18	0.16	0.17	NA	0.29	NA	0.81	1.04	1.01	0.78	0.73	25.63	1.93	2.04	1.86
Cm	SE	0.03	1.72	1.08	1.00	1.39	0.75	1.17	0.96	NA	1.50	NA	1.15	1.02	1.00	0.80	0.52	2.16	0.78	1.57	6.52
Cm	UP	0.09	1.39	1.02	1.00	0.32	0.31	0.53	0.29	NA	0.38	NA	1.76	0.87	1.00	1.19	0.17	2.99	1.73	1.69	2.13
UP	FS	0.00	2.66	1.32	1.00	3.00	8.42	14.84	13.04	NA	14.50	NA	0.43	1.09	1.02	0.67	2.88	0.38	0.71	0.99	0.48
UP	IS	0.00	5.62	1.29	1.00	1.77	2.93	3.12	2.06	NA	0.49	NA	0.88	1.11	1.00	0.92	0.12	0.12	1.03	1.37	3.30
UP	Un	0.00	4.19	1.64	0.99	##	##	###	###	NA	###	NA	0.25	1.21	1.01	1.96	10.45	0.99	8.12	0.58	1.63
UP	OLF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	NA	1.00	NA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
UP	SE	0.00	3.38	1.40	1.00	0.81	0.86	1.42	0.88	NA	0.94	NA	1.13	1.05	1.00	0.43	1.76	0.88	1.27	1.46	3.44
UP	Cm	0.00	4.90	1.29	1.00	1.42	1.23	1.74	0.16	NA	0.57	NA	1.23	1.06	1.04	1.21	1.71	0.40	0.91	2.47	0.74

Table 32

(1991-1994)

	*Transition probabilities							**Equilibrium state occupancy probability	***Mean duration	****Long run state occupancy probabilities
Woman, Age=30, Spouse (2nd aboard), High School, 2 jobs in life and 5 years of work experience, written, course training										
	FS	**IS**	**Un**	**OLF**	**SE**	**Com**	**UP**			
FS	0	0.37	0.11	0.05	0.17	0.24	0.04	0.37	22.3	0.6
IS	0.74	0	0.4	0.03	0.1	0.08	0	0.21	6.5	0.09
Un	0.41	0.13	0	0.18	0.17	0.11	0	0.06	1.28	0
OLF	0.13	0.19	0.15	0	0.38	0.06	0.08	0.06	11.45	0.05
SE	0.65	0.19	0	0.07	0	0.06	0.02	0.13	17.3	0.16
Com	0.68	0.115	0.03	0.03	0.08	0	0.02	0.13	7.36	0.07
UP	0.34	0.02	0.06	0.36	0.11	0.11	0	0.03	5.04	0
Man, Age=45, Breadwinner, High School, 5 jobs in life and 25 years of work experience, course training										
	FS	**IS**	**Un**	**OLF**	**SE**	**Com**	**UP**			
FS	0	0.36	0.08	0.06	0.25	0.24	0.02	0.37	52.7	0.62
IS	0.72	0	0.03	0.03	0.13	0.07	0	0.19	12.3	0.07
Un	0.34	0.13	0	0.17	0.29	0.06	0	0.05	1.61	0
OLF	0.11	0.1	0.14	0	0.54	0.05	0.05	0.06	8.98	0.02
SE	0.67	0.16	0	0.08	0	0.05	0.02	0.18	36.8	0.22
Com	0.62	0.14	0.01	0.04	0.17	0	0.01	0.12	14.3	0.05
UP	0.36	0.03	0.03	0.21	0.17	0.18	0	0.02	11.1	0

* Probability of entering state j given that the state i was left.

** Long run probability that the state j is entered at any transition.

*** Average length of time spent in each state, once it is entered (calculated with Weibull model).

**** Probability of the process being in each of the seven states at an arbitrary time

remote from the origin (do not depend upon which state was occupied at time 0).