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## Labor market transitions in Peru

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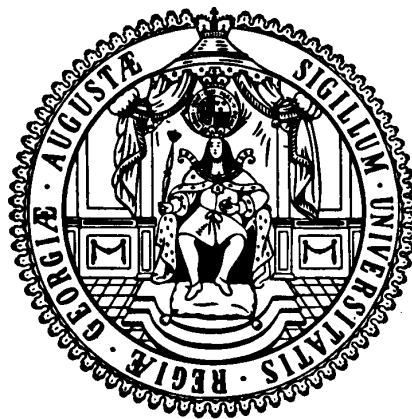
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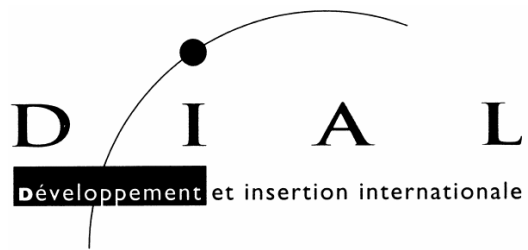
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**Labor Market Transitions in Peru**

**Javier Herrera  
Gerardo David Rosas Shady**

**November 2003**





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# Labor Market Transitions in Peru

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## LABOR MARKET TRANSITIONS IN PERU

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### RÉSUMÉ

Les analyses traditionnelles du marché du travail s'avèrent incapables d'expliquer le paradoxe apparent entre un taux de chômage relativement modéré dans un pays tel que le Pérou (environ 10%, taux peu sensible aux fortes fluctuations macro-économiques) et la perception d'une grave crise de l'emploi. Une explication possible pourrait résider dans le fait que cet indicateur statique en coupe instantanée ne mesure pas les flux élevés entre les situations d'emploi et d'inemploi.

Pour analyser ces questions, il est nécessaire de conduire une analyse dynamique sur données de panel. Nous avons ainsi construit un panel national d'individus en âge de travailler pour la période 1997-1999 à partir de l'enquête péruvienne auprès des ménages (ENAHO). Comme d'autres études réalisées dans des pays en développement, nous constatons qu'il existe une importante mobilité de l'emploi au Pérou. Nous trouvons également que la plupart des transitions interviennent entre emploi et inactivité plutôt qu'entre emploi et chômage. Le taux de chômage permanent apparaît très faible et le chômage serait donc essentiellement un phénomène frictionnel.

Pour aller plus loin, nous avons élaborés des profils de transition inconditionnels, incluant les caractéristiques individuelles et du ménage, telles que le genre, l'âge, et le niveau d'éducation, associé avec chaque état de transition. Finalement, après avoir examiné ces transitions sur le marché du travail et les biais de sélection possibles, nous avons estimé un modèle logit multinomial. Ce modèle nous a permis d'apprécier l'incidence (conditionnelle) des caractéristiques individuelles et des ménages ainsi que des différents chocs sur les états de transition en matière d'emploi.

### ABSTRACT

Traditional labor market analysis based solely on the net unemployment rate fails to explain the apparent paradox between a relatively moderate unemployment rate in Peru (around 10%, with a weak sensibility to wide macroeconomic fluctuations), and the fact that unemployment is one of the major issues in Peru. One possible explanation is that this static indicator of cross section net unemployment balance is compatible with high flows in and out of employment states.

To address these issues we needed to conduct a dynamic analysis using panel data. Using the Peruvian national household survey (ENAHO), we constructed a panel of working age individuals at the national level for the period 1997-1999. Like previous work in developing countries, we found that there is an important degree of job mobility in Peru. We also found that most of the transitions occur between employment and inactivity instead of between employment and unemployment. We also showed that the rate of permanent unemployment is very low so that unemployment would be essentially a frictional phenomenon.

Further, considering the different transition states, we elaborated an unconditional transition profile, including individual and household characteristics, like gender, age and education levels for example, associated with each transition status. Finally, after examining these labor market transitions and the possible sample selection bias, we estimated a multinomial logit model. This model allowed us to appreciate the (conditional) incidence of individual and household characteristics as well as the effects of different shocks on the labor transition states.

## Contents

<b>INTRODUCTION .....</b>	<b>4</b>
<b>1. PROBLEM STATEMENT .....</b>	<b>4</b>
1.1. Economic performance and the labor market in the 90's in Peru .....	4
1.2. Main results of previous studies of labor mobility in Peru .....	5
<b>2. DATA AND VARIABLES .....</b>	<b>6</b>
2.1. The ENAHO surveys and the 1997-99 panel.....	6
2.2. The selection bias issue.....	6
2.3. Variables .....	8
<b>3. LABOR MOBILITY IN PERU .....</b>	<b>8</b>
3.1. The descriptive analysis.....	8
3.1.1. Observed characteristics of labor market mobility in Peru .....	9
3.1.2. Labor mobility profile.....	13
3.2. The determinants of labor market transitions .....	16
3.2.1. The model .....	16
3.2.2. Main regressions results.....	17
<b>CONCLUSION.....</b>	<b>21</b>
<b>APPENDICES.....</b>	<b>22</b>
<b>BIBLIOGRAPHY.....</b>	<b>25</b>

## List of tables

Table 1: Descriptive statistics for individual in the panel and not in the panel, 1997 .....	7
Table 2: Flows in the labor market during the period 1998-1999 (%) .....	9
Table 3: Labor market transitions in the urban sector, 1997/98, 1997/99 and 1998/99 (%).....	10
Table 4: Labor market transitions in the rural sector, 1997/98, 1997/99 and 1998/99 (%).....	11
Table 5: Urban labor market mobility between 1998 and 1999 by individual characteristics in 1997 .....	14
Table 6: Rural labor market mobility between 1998 and 1999 by individual characteristics in 1997.....	15
Table 7: Urban Peru odds ratio .....	19
Table 8: Rural Peru odds ratio.....	20
Table 9: Specification test of the dependent variable.....	20
Table 10: Specification test of the explanatory variables with many modalities.....	20

## List of figures

Figure 1: Unemployment rates and macroeconomic fluctuations, Peru 1980-2000.....	5
Figure 2: Entry and exit urban labor market flows 1997-1999 .....	12
Figure 3: Entry and exit rural labor market flows 1997-1999.....	12
Figure 4: Urban odds ratio.....	22
Figure 5: Rural odds ratio .....	23

## INTRODUCTION

Unemployment is considered to be one of the major issues in Peru. However, the level of unemployment, estimated around 10%, is comparable to what is observed in other Latin American countries and, most importantly, is characterized by a weak sensitivity to wide macroeconomic fluctuations.

This apparent weak sensitivity of unemployment rates to macro economic fluctuations is possibly related to the level of labor mobility in Peru. Actually, some evidence exists indicating that labor mobility in Peru is very high and that most of labor transitions occur between employment and inactivity. These flows in and out of the labor market cannot be captured by a traditional analysis based on the unemployment rate. Therefore, this static indicator of cross-section net unemployment balance fails to explain what really happens in the Peruvian labor market.

However, to study labor mobility, we need panel data. Panel data allows us to follow the same individuals in the labor market during a given period and to observe if they move or not from one labor state to another. The Peruvian national household survey (ENAHO) allowed us to construct a large panel of working age individuals at the national level for the period 1997-1999. Thus, we could conduct a dynamic analysis to verify if labor mobility is indeed high in Peru and if permanent unemployment really exists. Also, we have examined factors determining labor mobility, focusing particularly on individual characteristics associated with labor market transitions.

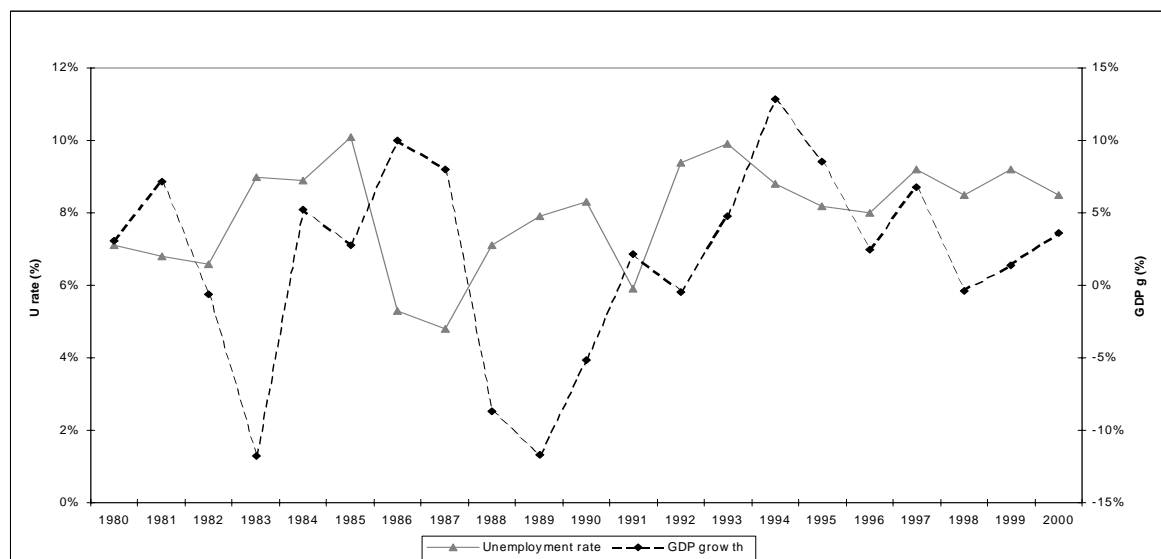
The first section summarizes the labor market situation during the nineties showing the evolution of the unemployment and the GDP growth rates. This section also presents the principal results obtained by previous studies concerning labor mobility in Peru. The second section gives some information about the surveys used to construct the 1997-99 panel and how this panel was constructed. This section also presents statistical tests in order to check for selection bias in our panel. Finally, the third section analyzes determinants of labor market mobility in the urban and rural sectors in a descriptive and econometric way.

## 1. PROBLEM STATEMENT

### 1.1. Economic performance and the labor market in the 90's in Peru

During the nineties, the Peruvian Government implemented a macroeconomic stabilization program and an important set of structural reforms, especially a significant labor market liberalization. The economic outcome of these policies was a strong economic growth between 1992 and 1997. But, between 1997 and 2000, the economic activity slowed down considerably (Figure 1). According to official figures, the most dynamic sectors during the first period were those of raw production, construction, financial sector and services.

**Figure 1: Unemployment rates and macroeconomic fluctuations, Peru 1980-2000**



Source: INEI

Note: Unemployment rates for Metropolitan Lima

The labor market performance was only mildly affected by this highly contrasted economic evolution. Even if the participation rate grew considerably over the period 1992–1997, the rate of unemployment did not increase and the proportion of inactive people fell. The labor market was characterized by a high job creation. According to official figures (1998), the employment growth was most pronounced in small enterprises, fewer than ten workers, operating in the service sector. During the second period (1997-2000), economic activity slowed down sharply and this slowed down had an adverse impact on the labor market and especially on employment growth.

However, the performance of the labor market was also affected, particularly during the first period, by the radical labor liberalization reform implemented in 1991. This reform and, particularly the reduction of job protection and the creation of new kinds of job contracts, like part time and limited time contracts, improved labor market flexibility and increased the rate of turnover. The consequences were a fall in the average employment duration and a large increase in labor mobility during this period (Chacaltana (1999), Diaz and Maruyama (2001)).

## 1.2. Main results of previous studies of labor mobility in Peru

Labor mobility has been rarely analyzed in Peru, the principal reason being the lack of suitable data. Panel data over a continuous period has existed in Peru only since 1996, when the INEI implemented a panel dimension in its ENAHO survey. This new survey allows us to construct a quarterly urban panel for 1996 and to follow up on people selected during this year.

Currently, there are three important studies of labor mobility in Peru and all use the quarterly panel of 1996. The first was undertaken by the Peruvian Ministry of Labor in 1998 (MTPS, 1998). This study was first improved by Chacaltana (1999), who also used an urban panel of 1997-98, and then by Diaz and Maruyama (2001). These studies confirmed that the mean duration of unemployment in Peru is very short. Actually, permanent unemployment seems not to be a very important problem, less of 0.1% of unemployed people stay in unemployment more than one year. However, the authors found other interesting results, mainly that labor mobility is very important in urban Peru, more than 40% of the active people changed labor market status during the year, and the authors observed that the most important transitions in the labor market occur between employment and inactivity status, and vice versa. Moreover, the authors identified individual characteristics that have important effects on labor market mobility like sex and age, females and young people are the most affected by transitions.



These results could be questioned on some points. First, the authors did not take into account the unemployment seasonality during the year. In addition, they did not check the quality of the quarterly panel used. These gaps could produce some bias in their interpretations and conclusions. Moreover, these studies analyzed only urban households and were focused on the unemployment problem (mainly on the duration of unemployment). At present, a complete study about labor transitions in Peru does not exist.

## **2. DATA AND VARIABLES**

### **2.1. The ENAHO surveys and the 1997-99 panel**

The ENAHO surveys have been developed by the INEI on a quarterly basis since 1997. These surveys have a national coverage, including both urban and rural areas, and deal with all the permanent household residents. The surveys principal objective is to give information on the household living conditions and they consist of four questionnaires. One of these questionnaires is the “Questionario general” (general questionnaire) that gives information about the characteristics, education, health and employment, of the dwelling and household member’s and about expenditures and social transfers. In this paper, we used the ENAHO surveys of the last quarters of 1997, 1998 and 1999. The numbers of individuals in the samples were respectively: 31,748; 33,325 and 18,786.

These surveys have a panel dimension that allowed us to follow some of the households and individuals during these three years. In 1997, the INEI selected some dwellings as panel dwellings and the household and individuals living there were identified. A relatively large number of individuals can thus be traced from one survey to the following ones. We focused on working age people, 14-65 years old. To construct the panel, we used the individual identification code and then information about sex, age and names. Finally, we obtained a large panel of 6006 individuals for the period 1997-1999.

### **2.2. The selection bias issue**

The individuals in the 1997-1999 panel represent only 38% of individuals older than 14 years in 1997 (see table 1). The difference is closely linked to the panel attrition caused by a combination of different factors-sample construction, migration and missing answers-that are not necessarily randomly distributed. Therefore, the “panel people” are not completely representative of the rest of the sample and we needed to check the quality of our panel by comparing the characteristics of individuals in the panel data against those not present in the panel in the 1997 survey.

At first glance, in 1997, the individuals present in our panel seemed to have the same characteristics as those not present in the panel. But, tests carried out showed some significant difference at 1%, 5% and 10% between the two samples. More precisely, in the panel sample, there were more people from Lima and less from the South and Central Sierra. Moreover, we observed more household heads and more partners but fewer children and other relatives. In the panel, more individuals have primary education and less have university education. We also observed a lower proportion of skilled people, a smaller number of hours worked during the week, in the main and secondary jobs, and a higher proportion of people who want to work more hours. Finally, there were a higher proportion of legal owners, a lower proportion of tenants or of owners without title and a higher proportion of people with working assets.

**Table 1: Descriptive statistics for individual in the panel and not in the panel, 1997**

<b>Individuals characteristics</b>	<b>No panel</b>	<b>Panel</b>
<b>Age</b>	31.4	33.7***
<b>Sex (%)</b>		
- male	47.7	48.3
- female	52.3	51.7
<b>Strata (%)</b>		
- urban	69.4	69.6
- rural	30.6	30.4
<b>Geographical regions (%)</b>		
-North Coast	15.5	14.1
-Central Coast	6.3	7.3
-South Coast	2.1	2.1
-North Sierra	7.0	6.2
-Central Sierra	14.6	10.2**
-South Sierra	15.4	9.4***
-Jungle	11.3	11.6
-Lima	27.8	39.1***
<b>Household head (%)</b>	27.3	31.0***
<b>Partner</b>	20.9	26.9***
<b>Children</b>	38.0	35.1***
<b>Others relatives</b>	13.8	6.9***
<b>Size of household</b>	5.8	5.9
<b>Marital status (%)</b>		
- living alone	51.5	44.5***
- living in couple	48.5	55.5***
<b>Education (%)</b>		
- without education	6.7	7.8*
- primary education	28.1	32.4***
- secondary education	44.2	42.0*
- university and others	21.1	17.8***
<b>Student</b>	19.2	18.5
<b>Human capital of the household</b>	0.44	0.43
<b>Labor situation (%)</b>		
- employed	68.2	67.4
- unemployment	6.5	6.2
- inactivity	25.3	26.3
<b>Sectors of activity (%)</b>		
- primary	29.8	30.6
- secondary	15.0	16.0
- tertiary	55.2	53.5
<b>Institutional division (%)</b>		
- public	9.4	7.9**
- formal	31.5	31.1
- informal	59.0	61.0
<b>Skills (%)</b>		
- skilled	19.8	16.9**
- unskilled	80.2	83.1**
<b>Worked before (%)</b>	74.7	75.9
<b>Hours worked during the week</b>	45.0	45.9*
<b>Wants to work more hours</b>	39.6	44.3***
<b>With a secondary job</b>	9.8	10.5
<b>Income</b>		
- number of income earners	2.40	2.43
- dependency rate	0.45	0.44
<b>Dwelling ownership status (%)</b>		
- legal owner	71.6	78.3***
- owner without title	3.3	4.9**
- tenant and others	25.1	16.9***
<b>Dwelling characteristics (%)</b>		
-without water, electr, wc	23.5	21.6
- 1 confort/3	18.8	19.4
-2 confort/3	10.9	12.3
- with water, electr, wc	46.7	46.6
<b>Dwelling with solid walls (%)</b>	45.7	46.4
<b>Assets (%)</b>		
- luxury assets	45.6	47.7
- working assets	36.0	40.5**
<b>Sample size</b>	<b>12,168</b>	<b>6,606</b>

Source: ENAHO Panel 1997-99 and ENAHO 1997, calculated by authors

Notes: \* Tests differences between the no panel and panel sample. \* Difference is significant at 10 % level, \*\* at 5% level and \*\*\* at 1% level.

## 2.3. Variables

We used two kinds of explanatory variables in this paper: individual, for example sex, age and education level, and household characteristics, for example the level of human capital and the dependency rate. These variables were measured in two ways: the initial characteristics in 1997 and the change from 1997 to 1998. These variables were:

<b>Individuals characteristics</b>	
Age	
Age groups	14-24, 25-34, 35-44, 45-54 or 55 and more years old
Sex (%)	Male or female
Household status	Head, partner, children or others relatives
Marital Status (%)	Living alone or living in couple
Education Level (%)	Without, primary, secondary or university and others.
Years of education	
Student	Still studying
<b>Individual labor market situation</b>	
Labor market status	Inactive, unemployed or employed
Sectors of activity (%)	
- primary	Agriculture
- secondary	Manufacture and construction
- tertiary	Commerce, transport, financial intermediation, etc.
Institutional division (%)	
- Formal	Working in a Public or private firm
- Informal	Working in a firm with less of 5 employees and where people don't have more than primary education.
Firm size	Number of employees in the enterprise
- 1-5	
- 6-99	
- 100 and more	
Skills (%)	The variable was created using the main occupation type
- skilled	Professionals or technical employees
- unskilled	Sellers, farmers, blue collars workers, etc.
Worked before (%)	Had a job before
Hours worked	During the week in the main and secondary occupation
Wants work more hours	Wants and can works more hours per week
Secondary occupation	With another occupation
<b>Household Characteristics</b>	
Size of household	Number of members
Number of young children	Number of children younger than 10 years old
Human capital of the household	(Years of education / age) for all of the household members
Income	
- number of income earners	
- dependency rate	Number of income earners / household size
Dwelling ownership status	Legal owner, owner without title or tenant and others
Dwelling characteristics	Without water, electricity and w.c., 1, 2 or any of these three comforts
Dwelling with solid walls (%)	Cement, brick, etc.
Assets (%)	Luxury assets or working assets
<b>Variables of change (events)</b>	Change during the period 1997-98
- change of household status	For example: children in 1997 and household head in 1998
- change of civil status	For example: living alone in 1997 and living in couple in 1998
- change of sector of activity	For example: had a job in the primary sector in 1997 and a job in the secondary or tertiary sectors in 1998
- change of the number of income earners	Increased or decreased in the number of income earners in the household

## 3. LABOR MOBILITY IN PERU

In contrast with the other dynamic studies about labor mobility and specially those concerning unemployment phenomena, our study used a larger panel data set. This panel was not only characterized by a longer time period of 3 years but was also larger in its coverage; we used a national sample instead of only an urban sample. Using the last quarter of each year allowed us to analyze labor mobility without the interference of seasonal effects.

### 3.1. The descriptive analysis

First, we presented mobility transition matrices in order to grasp the importance of labor transitions between the different labor market status, employment, inactivity and unemployment, and then we examined the labor mobility profile.

### 3.1.1. Observed characteristics of labor market mobility in Peru

In Table 2, we examined flows into and out of different labor market status as well as those that remain in the same labor market status throughout the 1998-99 period. First, we observed that, in Peru, labor mobility is very important, 27% of the working age population, and “permanent” unemployment is nearly non-existent and also “permanent” inactivity represent only 16% of observations. The most important transitions in the labor market occurred between employment and inactivity, 16%. Secondly, we observed that the level and characteristics of labor mobility differ between the urban and rural sectors. Labor mobility was higher in the urban sector. In this sector, transitions from employment to inactivity were predominant while the reverse was true in the rural sector, especially for women. Third, women seemed to be more “mobile” than men, especially in the rural sector.

These differences are related to their production and labor market characteristics. In the urban sector there are more salary workers and the effects of the labor market reform were larger. Moreover, the reservation wage for urban inactive people is higher than in rural areas, especially for the young and for the women. This may explain why we have a higher proportion of “permanent inactive” people, especially females, in the urban sector. In the rural sector, also families are larger and the proportion of agricultural producers is higher. Therefore, it is hard to differentiate between production and domestic activities. Because, most of these activities are agricultural, they are affected by seasonality. Individuals, especially the children and others relatives in the household move very easily from domestic to production activities (and vice versa). This explains why the proportion of permanently inactive people is relatively lower in this sector.

**Table 2: Flows in the labor market during the period 1998-1999 (%)**

	Total	1998-1999			
		Urban Males	Females	Rural Males	Females
<b>Immobility</b>					
Always employed	56.2	60.3	40.6	85.3	54.7
Always unemployed	1.4	1.8	2.1	0.0	0.6
Always inactive	15.7	11.8	24.5	3.6	15.6
<i>Total immobility</i>	<i>73.3</i>	<i>73.9</i>	<i>67.2</i>	<i>88.9</i>	<i>70.9</i>
<b>Mobility</b>					
Exit employment					
- to unemployment	2.7	3.5	2.8	1.5	2.0
- to inactivity	8.6	8.5	10.8	3.6	8.9
Exit unemployment					
- to employment	3.8	4.8	4.8	1.1	2.1
- to inactivity	2.1	2.2	2.9	0.4	1.9
Exit inactivity					
- to employment	7.2	4.8	8.5	4.1	12.6
- to unemployment	2.2	2.3	3.1	0.4	1.6
<i>Total mobility</i>	<i>26.6</i>	<i>26.1</i>	<i>32.9</i>	<i>11.1</i>	<i>29.1</i>

Source: ENAHO Panel 1997-99, build by the authors

In Tables 3 and 4, we analyzed labor mobility during three different periods (1997/98, 1997/99 and 1998/99). The lines refer to the labor status of the individuals in the first year, whereas the columns refer to the status of the same individuals one and two years later.

We observed that more than 70% of employees and 50% of inactive people did not change their labor market status in those years. The proportion of employees that transitioned directly from employment to inactivity is higher than the proportion of employees who entered or exited unemployment. We also confirmed that “permanent” unemployment was lower and that labor transitions were different in the rural and urban sectors. For example, in the rural sector, a higher proportion of unemployed and inactive people transited directly to employment. These transitions are consistent with the fact that, in the rural sector, “permanent” inactivity and “permanent” unemployment were relatively lower, especially for males.

We also observed the effects of the economic recession, which started in 1997, on the labor mobility. Labor market mobility changed between 1997-1998 and 1998-1999, especially in the urban sector. In this sector, in the latter period there were relatively fewer “permanent workers” and more “permanent inactive” people. The economic recession did not increase transitions from employment to unemployment but increased transitions from employment to inactivity. In the rural sector, the changes were less important but the differences between males and females were more pronounced. For males, the proportion of “permanent” workers was lower. There were more “permanent” inactive people and the proportion of “permanent” unemployed individuals was zero. At the same time, exits from employment increased whereas entries to employment decreased. The proportion of males who transitioned directly from unemployment to inactivity increased nearly threefold. For females we observed the opposite situation; and in particular we observed an increase in the proportion of those who transitioned to employment.

**Table 3: Labor market transitions in the urban sector, 1997/98, 1997/99 and 1998/99 (%)**

Years	1998					1999				
	E	U	I	Total	Total row	E	U	I	Total	Total row
<b>Males</b>										
<b>1997</b>										
E	87.5	6.6	5.9	100.0	72.3	82.9	5.1	12.1	100.0	69.9
U	42.3	19.0	38.7	100.0	8.8	48.4	14.4	37.1	100.0	7.6
I	28.7	13.3	58.0	100.0	18.9	31.2	14.4	54.5	100.0	22.5
Total column	72.6	6.9	20.5	100.0		72.6	6.9	20.5	100.0	
<b>1998</b>										
E						83.4	4.8	11.7	100.0	69.9
U						54.4	20.4	25.2	100.0	7.6
I						25.3	12.2	62.5	100.0	22.5
Total column						72.3	8.8	18.9	100.0	
<b>Females</b>										
<b>1997</b>										
E	77.9	7.7	14.4	100.0	54.2	74.9	6.0	19.1	100.0	53.9
U	30.8	23.7	45.5	100.0	9.8	33.2	23.1	43.6	100.0	8.0
I	23.4	9.9	66.7	100.0	36.1	26.6	7.8	65.9	100.0	38.2
Total column	55.4	7.8	36.8	100.0		55.4	7.8	36.8	100.0	
<b>1998</b>										
E						75.0	5.1	19.8	100.0	53.9
U						49.1	21.1	29.9	100.0	8.0
I						23.4	8.7	67.9	100.0	38.2
Total column						54.2	9.8	36.1	100.0	

Source: ENAHO Panel 1997-99, build by the authors

Notes: E = employed, U = unemployed and I = inactive.

**Table 4: Labor market transitions in the rural sector, 1997/98, 1997/99 and 1998/99 (%)**

Years	1998					1999				
	E	U	I	Total	Total row	E	U	I	Total	Total row
<b>Males</b>										
<b>1997</b>										
E	95.6	0.8	3.4	100.0	90.4	94.5	1.2	4.2	100.0	90.5
U	85.5	4.9	9.6	100.0	1.6	71.2	16.2	12.5	100.0	1.9
I	52.4	6.7	40.9	100.0	8.1	64.2	3.9	31.9	100.0	7.7
Total column	72.6	6.9	20.5	100.0		86.3	2.0	11.7	100.0	
<b>1998</b>										
E						94.4	1.6	4.0	100.0	90.5
U						71.9	0.0	28.1	100.0	1.9
I						50.4	4.9	44.7	100.0	7.7
Total column						90.4	1.6	8.1	100.0	
<b>Females</b>										
<b>1997</b>										
E	80.8	3.1	16.1	100.0	65.6	82.6	2.9	14.5	100.0	69.5
U	37.0	20.6	42.4	100.0	4.6	46.4	16.6	37.0	100.0	4.2
I	37.9	5.3	56.8	100.0	29.8	45.1	5.0	50.0	100.0	26.4
Total column	55.4	7.8	36.8	100.0		64.8	4.4	30.8	100.0	
<b>1998</b>										
E						83.4	3.1	13.5	100.0	69.5
U						46.2	12.5	41.3	100.0	4.2
I						42.3	5.3	52.4	100.0	26.4
Total column						65.6	4.6	29.8	100.0	

Source: ENAHO Panel 1997-99, build by the authors

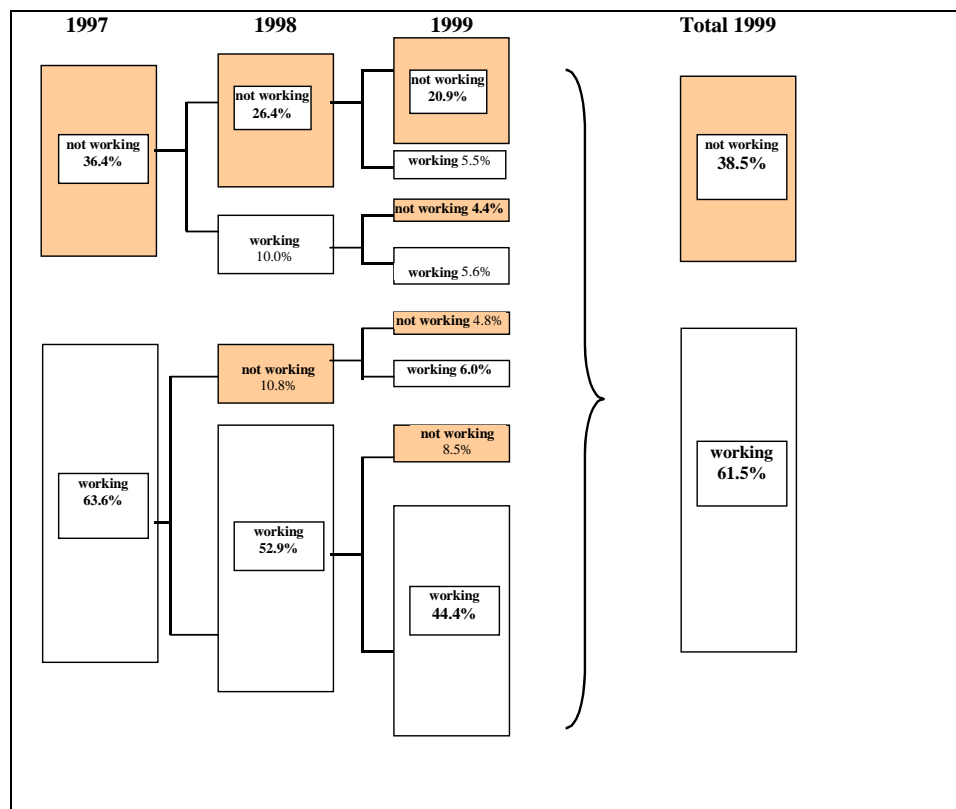
Notes: E = employed, U = unemployed and I = inactive.

In the previous sections, we observed that unemployment in the urban and rural sectors was very low and that most labor market transitions occurred between employment and inactivity. The small number of unemployed people forced us, in what follows, to merge the inactive and unemployed people. This aggregation can be also justified by the Peruvian unemployment characteristics, observed before, and especially by the fact that Peruvians do not have a particular interest in declaring themselves as unemployed or as inactive (there is no unemployment benefit system).

Figures 2 and 3 below show how complex labor market transitions can be in Peru and highlight differences between urban and rural sectors. It is interesting to note that nearly 21% of individuals in the urban sector but only 9% in the rural sector could be considered as “permanently not working” (inactive or unemployed) in each of the years of the observed period. These individuals can be referred to as the hard core of “permanent” inactive people, representing respectively over two-thirds and a half of all inactive individuals observed each year.

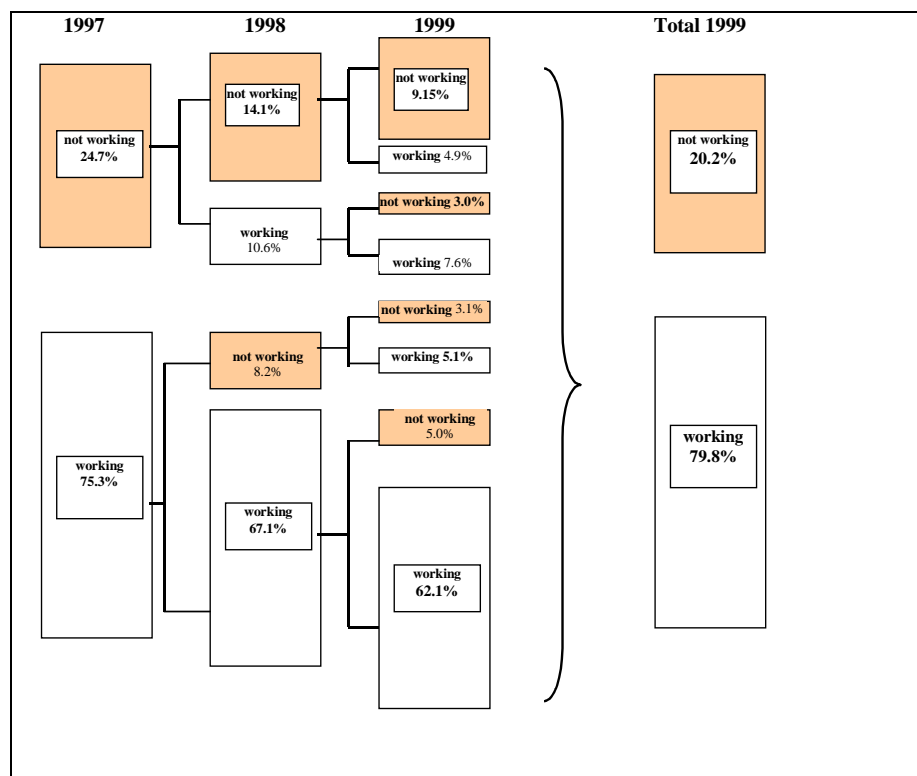
In 1999, almost half of inactive individuals in the two sectors were in fact “transient inactive”-persons experiencing some labor market transition during the three-year period. Static unemployment rates had low sensitivity to macroeconomic fluctuations, in part because they were absorbed by transient inactives. The almost constant percentage of non-working people observed each year is in fact the net result of compensating inflows and outflows of working and non-working individuals. Individuals permanently employed represented only 44% in the urban, and 62% in the rural working age population. We also observed that the longer the individual remains in the “non working” status, the lower his probability of re-entering the working status.

**Figure 2: Entry and exit urban labor market flows 1997-1999**



Source: ENAHO Panel 1997-99, build by the authors

**Figure 3: Entry and exit rural labor market flows 1997-1999**



Source: ENAHO Panel 1997-99, build by the authors.

### 3.1.2. Labor mobility profile

We made dynamic labor market profiles showing the incidence of labor mobility according to individual demographic and economic characteristics.

We obtained a profile of “mobile” people- i.e. people who went out or into employment- “permanent” inactive or unemployed people and those who are “always” employed. This exercise was particularly useful to characterize these different populations, but it could not examine causality between individual characteristics and the different labor market transitions. The specific effects of the different variables were examined later in the econometric part of the paper.

In Tables 5 and 6 we presented these profiles for urban and rural sectors and, in addition, we tested for means differences. For example, in the urban sector, the profile of individuals in a status of “permanent” inactivity (and unemployment) relative to those in a status of “permanent employment”, corresponds on average to younger individuals and to a higher proportion of women. Therefore, these individuals were less likely to be heads of household or to live as couples, but they were more likely to be children. They lived in smaller households and in households where the number of children younger than 10 was smaller. Moreover, a smaller proportion of these people completed primary education and a larger proportion were still students. Regarding the labor market status of the “permanent inactive” people the year before, the proportion of these people who were already inactive or unemployed was higher and the proportion that were employees, lower. Also, “permanent inactive” people were less skilled and worked fewer hours but were also less likely to have a secondary job. Finally, the “permanently” inactive people seemed to have a relatively higher standard of living. They lived in households with a higher number of income earners and most of them had working assets.

In the rural sector, the profile of “permanent inactive” people was quite different. In Particular, relative to “permanent” workers, these individuals were more likely to be children or partners and others relative. The proportion that was already inactive or unemployed was very high. They were also likely to work in the informal sector.

The profile of “mobile” individuals was similar to the profile of “permanent inactive” people. In particular, both groups were relatively young and included a higher proportion of women. But there were also some differences. In the urban sector, the proportion of “mobile” people with secondary education was higher. Individuals leaving the employment status (S) came from households with a higher level of human capital and a lower dependency rate. They had more luxury and working assets and lived in better dwellings. The proportion of those who were employed before was lower and the proportion of those who were inactive was higher. Finally, “mobile” urban individuals had informal jobs more often and worked in small enterprises.

In the rural sector, the profile of “mobile” and permanent inactive was almost the same. The only important difference was that “mobile” rural individuals were less likely to have jobs in the secondary sector than “permanent” employees. Rather, they were more likely to be tertiary sector employees.

We also observed some differences between individuals entering the labor market compared to those leaving it. In the urban sector, labor market entrants (E) were likely to be heads of household and less likely to be partners. Therefore, they were more likely to live in households with more children younger than 10 years old and in households with a lower level of human capital. Moreover, they were more likely to have completed their studies and to be obliged to have a secondary job. Finally, they seemed to have relatively lower standards of living and fewer assets.

In the rural sector, differences between the two kinds of “mobile” people were almost the same as in the urban sector. The only differences were that entrants had higher probabilities of being children than those leaving the employment status. Also, they were employed more often in the secondary sector and they worked relatively more hours per week.



**Table 5: Urban labor market mobility between 1998 and 1999 by individual characteristics in 1997**

Individuals characteristics	No mobility		Mobility		Total
	O	I	S	E	
Age	36.7	32.3***	29.5***	29.9***	33.5
Age groups (%)					
- 14-24	18.8	39.1***	54.3***	50.1***	34.1
- 25-34	26.2	22.1	12.7***	16.8***	21.1
- 35-44	26.9	16.7***	10.7***	13.0***	19.9
- 45-54	19.4	13.3**	11.3***	10.4***	15.6
- 55 and more	8.6	8.9	11.0*	9.2	9.3
Sex (%)					
- male	57.5	44.7***	33.6***	39.7***	47.7
- female	42.5	66.4***	55.3***	60.3***	52.3
Household head (%)	45.6	22.5***	6.8***	20.9***	29.8
Partner (%)	21.5	24.8	32.2***	24.4	25.0
Children (%)	25.0	46.9***	50.1***	46.8***	36.7
Others relatives	7.9	5.8	10.9*	8.0	8.4
Size of household	5.4	6.0**	5.9**	6.0***	5.7
Marital Status (%)					
- living alone	37.2	54.3***	59.9***	57.1***	47.5
- living as a couple	62.8	45.7***	40.1***	42.9***	52.5
Number of children with less than 10 years old	0.85	0.66***	0.64***	0.91	0.78
Education (%)					
- no education	3.0	3.8	5.4**	4.0	3.8
- primary education	24.4	18.4**	20.1**	20.4	21.8
- secondary education	42.5	46.4	56.2***	55.9	48.1
- university and others	30.5	31.4	18.4***	19.7***	26.2
Student (%)	8.6	24.6***	41.8***	32.6***	21.9
Human capital of the household (ratio)	0.51	0.52	0.54***	0.50	0.52
Labor market situation					
- employed	88.8	65.9***	18.5***	52.1***	63.6
- unemployed	3.5	7.0**	13.8***	10.4***	7.4
- inactive	7.7	27.1***	67.7***	37.5***	29.0
Sectors of activity (%)					
- primary	7.7	7.8	6.6	9.8	7.9
- secondary	19.5	17.5	22.2	19.4	19.4
- tertiary	72.7	74.6	71.2	70.8	72.7
Institutional division (%)					
- public	13.7	9.5	4.0***	4.6***	11.6
- formal	38.5	42.9	40.1	32.6	38.6
- informal	47.8	47.6	55.9*	62.9***	49.8
Skills (%)					
- skilled	29.1	22.5**	15.1***	18.5***	26.1
- unskilled	70.9	77.5***	84.9*	81.5***	73.9
Firm size (number of employees)					
- 1 –5	59.7	63.4	72.6***	75.3***	62.7
- 6- 99	17.0	18.7	16.7	17.5	17.2
- 100 and more	23.3	17.9	10.8***	7.3***	20.1
Worked before (%)	81.8	80.7	62.5***	74.1***	75.8
Hours worked	50.9	42.4***	35.0***	37.6***	47.4
Wants to work more hours (%)	45.4	46.8	51.0	53.8**	46.8
Has a secondary job	14.3	5.6***	1.4***	6.2***	9.0
Income					
- number of income earners	2.6	2.9**	2.5	2.6	2.6
- dependency rate	0.50	0.51	0.44***	0.46***	0.48
Dwelling ownership status (%)					
- legal owner	72.3	70.9	73.9	76.4	73.0
- owner without title	6.2	6.6	4.7	5.4	5.8
- tenant and others	21.5	22.6	21.4	18.2	21.2
Dwelling characteristics (%)					
- no water, electr, wc	3.5	2.9	1.8***	5.5**	3.2
- 1 confort/3	17.0	18.2	13.9*	18.6	16.6
- 2 confort/3	15.7	14.7	12.2**	15.8	14.7
- has water, electr, wc	63.8	64.2	72.1***	60.2	65.5
Dwelling with solid walls (%)	62.2	66.2	66.9**	62.8	64.0
Assets (%)					
- luxury assets	61.7	61.4	68.1***	56.0**	62.6
- working assets	44.4	50.5*	50.5**	42.7	46.6

Source: ENAHO Panel 1997-99, calculated by authors

Notes:

O = “always employed”, I = “permanent” inactive, E = entry into employment and S = exit out of employment.

\* Tests differences between all categories with respect to always employed and + Tests differences between exits out of employment with to entries into employment. \* or + difference is significant at 10 % level, \*\* or ++ at 5 % level and \*\*\* or +++ at 1 % level.

**Table 6: Rural labor market mobility between 1998 and 1999 by individual characteristics in 1997**

Individuals characteristics	No mobility		Mobility		Total
	O	I	S	E	
<b>Age</b>	35.9	31.0***	27.6***	28.5***	33.8
<b>Age groups (%)</b>					
- 14-24	23.2	39.5***	53.6***	46.3***	30.6
- 25-34	24.6	27.7	18.7**	24.2	24.1
				+	
- 35-44	24.8	12.2***	10.7***	15.8***	21.1
- 45-54	16.2	7.1***	10.3**	8.4***	14.0
- 55 and more	11.2	13.5	6.7***	5.3***	10.2
<b>Sex (%)</b>					
- male	59.9	30.9***	17.8***	25.3***	49.0
				++	
- female	40.1	69.1***	82.2***	74.7***	51.0
				++	
<b>Household head (%)</b>	45.6	11.1***	1.5***	4.9***	33.4
				++	
<b>Partner (%)</b>	25.6	41.7***	40.7***	44.2***	30.6
<b>Children (%)</b>	25.6	39.4***	52.3***	43.0***	31.7
				++	
<b>Others relatives</b>	3.3	7.8**	3.3*	7.9**	4.4
<b>Size of household</b>	5.9	6.3**	6.5***	6.3**	6.1
<b>Marital Status (%)</b>					
- living alone	33.2	45.0***	55.7***	50.1***	38.6
- living as a couple	66.8	55.0***	44.3***	49.9***	61.4
<b>Number of children with less than 10 years old</b>	1.54	1.58	1.42	1.40	1.52
<b>Education (%)</b>					
- no education	18.4	17.1	15.5**	20.1	18.1
- primary education	58.3	56.7	47.9**	51.7*	56.2
- secondary education	20.6	21.9	35.6***	26.1	22.7
- university and others	2.7	4.3	4.0	2.1	2.9
<b>Student (%)</b>	8.4	24.1***	32.8***	23.2***	14.1
				++	
<b>Human capital of the household (ratio)</b>	0.27	0.28	0.32***	0.30*	0.28
<b>Labor market situation</b>					
- employed	89.1	62.2***	25.0***	51.1***	75.3
				+++	
- unemployed	1.9	4.0	9.6***	4.0	3.2
				++	
- inactive	9.0	33.8***	65.4***	44.9***	21.5
				+++	
<b>Sectors of activity (%)</b>					
- primary	79.1	68.4**	76.8	76.0	78.1
- secondary	7.7	7.4	2.1***	7.2	7.4
				++	
- tertiary	13.1	24.2	21.1**	16.7	14.5
<b>Institutional division (%)</b>					
- public	2.2	3.8	0.6**	2.2	2.3
- formal	16.4	8.9**	14.9	23.5	16.4
- informal	81.2	87.3*	84.5	74.3	81.3
<b>Skills (%)</b>					
- skilled	2.2	3.2	0.6*	2.7	2.2
- unskilled	97.8	96.8	99.4*	97.3	97.8
<b>Worked before (%)</b>	75.4	72.9	63.8***	68.5**	73.1
<b>Hours worked</b>	43.9	34.8***	29.0***	35.5***	42.1
				+++	
<b>Wants to work more hours (%)</b>	39.4	28.7**	18.8***	28.8**	37.1
				+	
<b>Income</b>					
- number of income earners	1.84	1.94	1.88	1.85	1.85
- dependency rate	0.35	0.35	0.32***	0.32**	0.34
<b>Dwelling with solid walls (%)</b>	4.7	2.8	6.5	7.1*	5.0
<b>Assets (%)</b>					
- luxury assets	9.4	11.8	14.8**	11.4	10.5
- working assets	28.5	31.1	31.2	36.1**	29.8

Source: ENAHO Panel 1997-99, calculated by authors

Notes:

O = "always employed", I = "permanent" inactive, E = entry into employment and S = exit out of employment.

\* Tests differences between all categories with respect to always employed and + Tests differences between exits out of employment with to entries into employment. \* or + difference is significant at 10 % level, \*\* or ++ at 5 % level and \*\*\* or +++ at 1 % level.

Thus, the analysis of transition matrices showed us that the labor mobility in Peru is high and permanent unemployment did not really exist, especially in the rural sector. Moreover, we found that the most important labor market transitions occurred between inactivity and employment and that the labor market mobility differed greatly between rural and urban sectors, mobility was relatively higher in the later one, and across periods of time. Finally, we observed that age, sex, education level and living conditions seemed to have important effects on labor market mobility.

### 3.2. The determinants of labor market transitions

In the next section, we expanded on the knowledge of the principal factors that determine labor market transitions in Peru.

In commenting on the labor transition profile, we have examined the unconditional risk that individuals with given characteristics may experience any of the labor market transitions. For a more analytical purpose, we considered the relative risks conditional on the other factors that determine labor market transitions.

We estimated the determining factors of different forms of labor mobility between 1998 and 1999 using a multinomial unordered logit model, because our dependent variable is a categorical variable with four values corresponding to each of the labor market transitions, “always” employed (O), “permanent” inactive or unemployed (I), exit out of employment (S) and enter into employment (E).

#### 3.2.1. The model

This model was designed to estimate the impact of the different explicative variables on each of the forms of labor mobility. The model predicted the probability that an individual with given characteristics will experience one of the four labor market transitions. In order to identify the model one of the labor market transitions was taken as the baseline case. Different sets of coefficients were obtained for each state. We first commented on the statistical significance of the regression coefficients of the logits. In accordance with Long’s (1997) graphical presentation, we studied the impact of discrete changes in explanatory variables on the probability of ending in one of the four categories (O, I, E or S), in terms of odds ratio (relative risk ratio) given that we were interested in labor market dynamics. In others words, we were interested in knowing how each variable affects the odds of a person being “permanent” inactive, going into employment or going out of employment relative to being “always” employed (the base case). The multinomial logit is:

$$(1) \quad \Pr(y_i = m | x_i) = \frac{\exp(x_i \beta_m)}{\sum_{j=O, I, E, S} \exp(x_i \beta_j)}$$

Where Y is the dependent variable with m nominal outcomes and  $\Pr(y_i = m | x_i)$  the probability of observing outcome m given x.

To identify the model we decided that  $\beta_O = 0$  (the base case is “always” employed). Because  $\exp(x_i \beta_O) = \exp(x_i 0) = 1$ , the model is commonly written as:

$$(2) \quad \Pr(y_i = m | x_i) = \frac{\exp(x_i \beta_m)}{1 + \sum_{j=I, E, S} \exp(x_i \beta_j)} \text{ pour } m \neq O$$

We expressed the model in terms of the odds. The odds of outcome  $m$  ( $m=I, E$  et  $S$ ) relative to the base case outcome ( $O$ ) given  $x$ , reads:

$$(3) \quad \frac{\Pr(y_i = m|x_i)}{\Pr(y_i = O|x_i)} = \frac{\frac{\exp(x_i \beta_m)}{1 + \sum_{j=I,E,S} \exp(x_i \beta_j)}}{1} = \exp(x_i \beta_m), \text{ avec } m=I, E, S \text{ et } \beta_O = 0.$$

Therefore  $\exp(x_i \beta_m)$  represented the relative probability of being  $E$  or  $S$  relative to being  $O$  for a unit change in  $x_i$ . The interpretation became easier because, as Long notes, the value of the factor change in the odds does not depend on the value of the level of the variable considered or on the level of the other variables, as in the case of the marginal impact (Long 1997: 169).

Most of the explanatory variables used in the estimations of the model were dichotomous. However, there were some continuous variables, e.g. age, and some categorical variables, e.g. age group. The interpretation of the coefficients for these variables was also easier: for the former, we had to interpret the coefficients relative to the average and for the latter we had to interpret the coefficients to the omitted category.

We complemented the interpretation of results using odds figures (see appendices). As Long (1997) explains, “The large number of coefficients makes it difficult to see patterns in the results. If you also keep track of which coefficients are statistically significant, the difficulty increases. And odds ratio plots make it simple to find patterns among the coefficients.”

### 3.2.2. Main regressions results

Because, labor mobility differs in the urban and rural sectors we estimated models separately for each sector:

In the urban sample, like in the descriptive analysis, sex and age had important effects on labor mobility. However, in this case the relative probability of being “permanent” inactive” relative to being “always” employed increased with age. Moreover, no differentiated impact of age was found on outcome  $S$  (exit out of employment) and  $E$  (entry into employment). Women had higher probabilities of being “permanently” inactive or “mobile”, especially of being in  $E$ , relative to being “always” employed. No difference was found in the sex variable for  $I$ ,  $E$  or  $S$ .

Logically, we observed the opposite situation for the household heads (most of them are males) relative to their partners. Household heads have lower probabilities of being permanently inactive but are more likely to be in category  $S$  relative to  $O$  (this result could be related to the higher degree of labor mobility in the urban sector).

Higher levels of education seemed to protect against “permanent” inactivity. The impact of education was not significantly different for  $E$  and  $S$ . Students, who were relatively younger, were more likely to be “permanent” inactive or “mobile” relatively to “always” employed.

Labor market variables, like in the descriptive analysis, had high and significant effects on labor mobility. On the one hand, the odds of being “mobile” and of being “permanent” inactive were higher for people who were inactive during the previous year. On the other hand, work experience and skills seemed to protect against “permanent” inactivity. Moreover, people who worked in the primary or secondary sectors, relative to the tertiary sector, had higher probabilities of being “permanent” inactive than of being “always” employed. Likewise, people with a public job relative to people with informal jobs had lower probabilities of leaving employment or of being “permanent” inactive. Finally, the

individuals with higher probabilities of being “permanent” inactive or of entering employment were those who had the “worst” jobs. They were the ones who wanted to work more hours per week or to have a secondary job.

Most of the variables linked to living conditions, e.g. the kind of dwelling, were not significant. However, the probability of being “permanent inactive” relative to being “always” employed increased with the level of human capital of the household (income effect). The dependency rate had the same effects on the relative probability of being “permanent” inactive as it does on that of being “mobile”.

The variables related to events showed interesting results. For example, having previously exited from an economic sector apparently decreased the probability of being “permanent” inactive but increased the probability of leaving employment (relative to being “always” employed). Changes in the number of income earners had differentiated effects on S and E (income effect) they increased the probability of being in E but decreased the probability of exit employment.

In the rural sample, variables were less significant but the results and the coefficients were somewhat different from the variables in the urban sample. Age affected the probability of entering into employment. This probability increased with the age for all categories relative to being “always” employed. The effect of sex was stronger than in the urban sector (this is consistent with the descriptive analysis). The effect of being a student was also stronger. On the other hand, the effect of being skilled was different. Skilled individuals had relative higher probabilities of entering into employment. The effects of been previously inactive and the effect of the level of household human capital were not as strong as in the urban sector. Finally, two variables that were insignificant in the urban sector were significant here. Dwelling quality, represented by a dummy for living in a dwelling with solid walls, and a dummy for having working assets both increased the probability of being in E relative to being “always” employed.

Finally, we conducted three kinds of Wald tests to verify the robustness of our estimations. The first one (last column in tables 7 & 8) indicated that most of our explanatory variables had significant effects in all the categories of the dependent variable. The others test (Table 9 and 10) confirmed that the construction of our dependent variable and of the explanatory variables with many modalities, e.g. sectors of activity, were correct.

**Table 7: Urban Peru odds ratio**

	Transitions 1998-99			Chi2
	S	I	E	
<b>Individual characteristics in 1997</b>				
Age	1.001	1.021***	0.999	12.087***
Sex (woman = 1)	1.483**	1.506***	1.740***	17.171***
Status in the household (reference: partner)				
- head	0.499***	0.276***	0.790	38.801***
- children	0.756	1.161	0.955	1.427
- others relatives	0.397**	0.729	0.777	6.448*
Living as a couple	0.614**	0.907	0.819	5.221
Years of education	0.986	0.925***	1.010	18.723***
Student	1.859***	2.623***	2.320***	39.853***
Inactive or unemployed	2.621***	20.146***	6.006***	343.920***
Sectors of activity (reference: tertiary)				
- primary				2.966
	1.109	1.605*	1.248	
- secondary	0.779	1.589**	1.177	7.971**
Institutional division (reference: informal sector)				
- public	0.916	0.444**	0.525*	6.649*
- formal	1.119	1.015	0.827	2.485
Skills (reference: unskilled)	0.405***	0.550**	0.655*	19.982***
Worked before	1.139	0.702***	0.896	11.704***
Wants and can work more hours per week	0.390*	1.457**	1.343*	9.474**
With a secondary occupation	0.651***	0.433***	0.866	18.857***
<b>Household characteristics in 1997</b>				
Household size	0.998	0.995	1.041	2.660
Number of children with less than 10 years old	1.010	1.036	1.042	0.508
Human capital of the household	1.841	7.957***	1.072	21.909***
Dependency rate	1.879**	1.952**	1.890**	8.050**
Dwelling ownership status (reference: legal owner)				
- owner without title	1.266	1.087	0.847	2.011
- tenant and others	0.867	1.372**	0.921	9.711**
Dwelling with solid walls	1.192	1.167	1.151	3.158
Luxury assets	1.043	1.096	0.916	1.753
Working assets	1.077	1.153	1.086	1.773
<b>Variables of change (97/98)</b>				
- change of the head of the household	1.504	1.520	1.051	0.990
- change of place in the household	0.677	0.816	1.183	1.669
- change of civil status	1.008	1.540	0.861	2.724
- change of sector of activity	1.835***	0.601**	1.200	20.920***
- change of skill	1.771***	1.613**	3.263***	42.813***
- variation of the number of income earners	0.674***	0.951	1.451***	177.131***

Source: ENAHO Panel 1997-99, build by authors.

Notes:

Number of observations: 3807

Log likelihood = -3358.42

Pseudo R2 = 0.2591

O = always employed, I = always inactive, E = entry into employment and S = exit out of employment.

\* Tests differences between all categories with respect to always employed. \* difference is significant at 10% level, \*\* at 5% level and \*\*\* at 1% level.

The last column shows a Wald test performed to verify if an independent variable has a significant effect for all of the categories of the dependent variable.

**Table 8: Rural Peru odds ratio**

	Transitions 1998-99			Chi2
	S	I	E	
<b>Individual characteristics in 1997</b>				
Age	1.003	0.990	0.978**	6.377*
Sex (woman = 1)	2.623**	4.847***	2.809***	66.997***
Status in the household (reference: partner)				
- head	0.397***	0.782***	0.196***	40.082***
- children	1.039	0.696	0.521	2.209
- others relatives	1.760	0.881	0.751	2.143
Living as a couple	1.010	0.676	0.631	2.210
Years of education	1.001	1.009	0.994	0.149
Student	3.063***	2.422***	1.411	26.789***
Inactive or unemployed	1.554	6.977***	2.796***	39.397***
Sectors of activity (reference: tertiary)				
- primary	0.803	1.145	1.119	1.082
- secondary	1.119	0.752	1.797	2.333
Skills (reference: unskilled)	0.696	0.057**	1.133**	9.233**
Worked before	1.190	0.862	1.082	2.742
Wants and can work more hours per week	0.894	0.526	0.808	6.074*
With a secondary occupation	0.606*	0.702	0.711	4.292
<b>Household characteristics in 1997</b>				
Household size	0.980	1.091**	1.034	5.757
Number of children with less than 10 years old	1.111	0.931	0.949	4.798
Human capital of the household	1.097	3.459*	2.737	4.185
Dependency rate	1.498	1.747	0.984	2.037
Dwelling ownership status (reference: legal owner)				
- owner without title	1.813	1.156	1.282	0.753
- tenant and others	0.794	0.820	0.774	0.942
Dwelling with solid walls	1.748	1.226	1.624*	4.101
Luxury assets	0.893	1.316	0.884	2.699
Working assets	1.047	1.011	1.408**	5.016
<b>Variables of change (97/98)</b>				
- change of place in the household	0.950	0.750	1.135	0.447
- change of civil status	1.294	1.450	0.812	0.911
- change of sector of activity	1.272	0.804***	0.159***	27.407***
- change of skill	1.862***	11.11***	19.262***	48.362***
- variation of the number of income earners	0.695***	1.048	1.353***	67.367***

Source: ENAHO Panel 1997-99, build by authors.

Notes:

Number of observations: 2628

Log likelihood = -1877.90

Pseudo R2 = 0.2648

O = always employed, I = always inactive, E = entry into employment and S = exit out of employment.

\* Tests differences between all categories with respect to always employed. \* difference is significant at 10% level, \*\* at 5% level and \*\*\* at 1% level.

The last column shows a Wald test performed to verify if an independent variable has a significant effect for all of the categories of the dependent variable.

**Table 9: Specification test of the dependent variable**

Results	Urban		Rural	
	chi2	P>chi2	chi2	P>chi2
S-I	495.692	0.00	135.461	0.00
S-E	305.033	0.00	107.633	0.00
S-O	581.485	0.00	209.337	0.00
I-E	429.812	0.00	112.826	0.00
I-O	1458.193	0.00	360.850	0.00
E-O	824.641	0.00	285.585	0.00

Notes:

Ho: The categories of the dependent variable can be collapsed

**Table 10: Specification test of the explanatory variables with many modalities**

Results	Rural		Urban	
	chi2	P>chi2	chi2	P>chi2
Sectors of work	12.512	0.051	4.193	0.651
Dwelling ownership status	14.934	0.021	1.726	0.943

Notes:

Ho: The categories of an independent variable can be collapsed.

## CONCLUSION

We have shown that labor mobility in rural and urban sectors is indeed relatively very high, that permanent unemployment does not really exist and that most of the labor market transitions occur between employment and inactivity (and vice versa). Further, we observed that labor market mobility is higher in the urban sector than in the rural areas and that it does not affect the same people. Some individual characteristics, e.g. sex, age and education level, labor market characteristics, e.g. labor market status, sector of activity and desire to work more hours, household characteristics, e.g. level of human capital in the household and dependency rate, and variables of change, e.g. change of sector of activity, seem to be important determinants of labor market transitions.

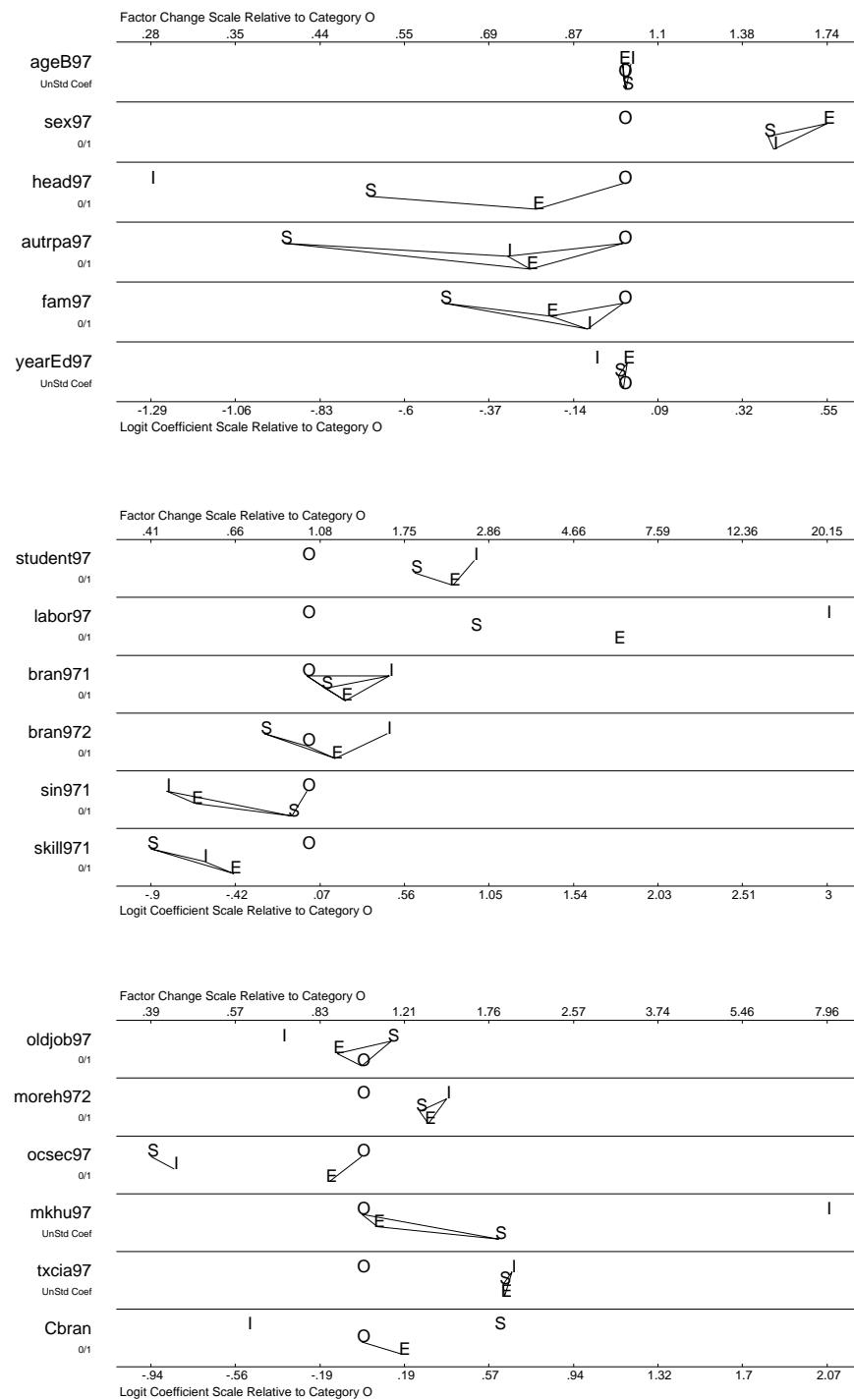
Some previous studies showed that labor mobility increased during the first half of the nineties and found that this increase was related to labor market reform, for example see Saavedra and Torero (2000). We found some evidence that labor market mobility was also enhanced by the economic recession, which started in 1997.

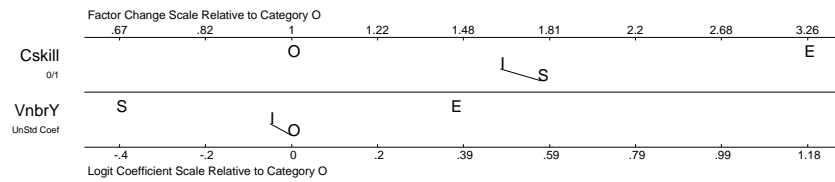
Thus, taking into account labor mobility allows us to understand why, even if static unemployment rates and permanent unemployment are very low, unemployment is one of the major issues in Peru and also why the unemployment rate is not very sensitive to wide macroeconomic fluctuations. Static labor indicators, like the unemployment rate, are not appropriate for understanding what really happens in the labor market in a developing country like Peru.



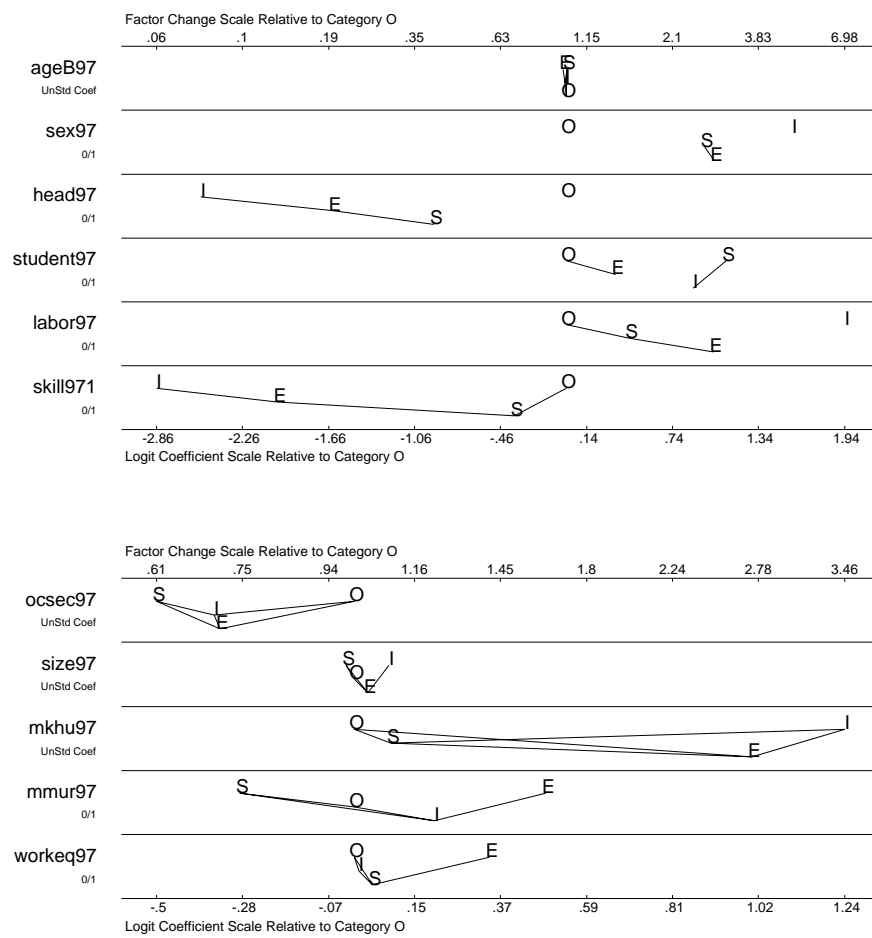
## APPENDICES

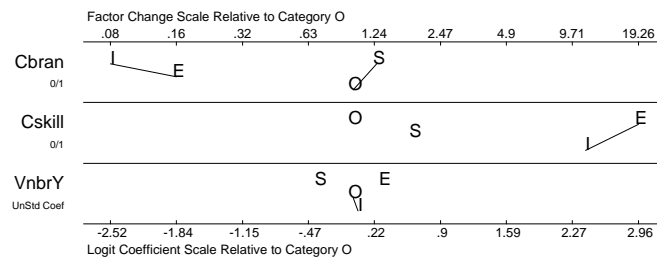
**Figure 4: Urban odds ratio**





**Figure 5: Rural odds ratio**





Notes: How to interpret the odds figures?

We have considered 4 outcomes of Y:

O = Always employed (the base outcome)

I = Always inactive

S = Exit out of employment

E = Entry into employment

As Long (1997: 171) explains, in each figure we need to think of the magnitude of the odds ratio  $\exp(\beta_{m|O})$  as the distance between an outcome  $m$  ( $m = I, E$  or  $S$ ) and the base outcome ( $O$ ). The larger the odds ratio, the greater the distance. If an increase in  $x_i$  increases the odds of  $E$  over  $O$  for example, then  $E$  would be plotted to the right of  $O$  and vice versa. The base outcome ( $O$ ) is located at 0 on the bottom scale to indicate that a change in  $x_i$  does not change the logit of  $O$  relative to  $O$ . A factor change scale is printed at the top of the figure. This is a logarithmic scale with each value equal to the exponential of the value on the bottom scale. Finally, the lack of statistical significance is shown by a connecting line. The intuition is that if a coefficient is not statistically significant, then the variable does not differentiate two outcomes and so those outcomes are linked.

The explanatory variables used in odds figures were:

ageB97 = age in 1997

sex97 = sex in 1997

head97 = household head in 1997

autrpa97 = other relatives

fam97 = living in a couple

yearEd97 = years of education

student97 = still student in 1997

labor97 = inactive or unemployed in 1997

bran971 = primary sector

bran972 = secondary sector

sin97 = working in the public sector in 1997

skill971 = skill in 1997

oldjob97 = worked before 1997

ocsec97 = have two or more jobs in 1997

moreh97 = wants and can work more hours by week

Size97 = household size in 1997

mkhu97 = human capital of the household in 1997

txcia97 = dependency rate

Cbran = change of economic sector

VnbrY = increase in the number of income earners

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