LABOR MOBILITY ACROSS THE FORMAL/INFORMAL DIVIDE IN TURKEY: EVIDENCE FROM INDIVIDUAL LEVEL DATA*

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Abstract

Informality has long been a salient phenomenon in developing country labor markets, thus has been addressed in several theoretical and empirical research. Turkey, given its economic and demographic dynamics, provides rich evidence for a heterogeneous and multifaceted informal labor market. This is the first study of worker transitions between sectors using panel data from Turkey. We aim to provide a diagnosis of dynamic worker flows across distinct labor market states and identify the effects of certain individual and job characteristics on variant mobility patterns. More specifically, we first develop and discuss a set of probability statistics based on annual worker transitions across distinct labor market states utilizing Markov transition processes. Next, we conduct multinomial logit regressions individually for each set of panel to identify the impact of individual, household and job characteristics underlying worker transitions. We find evidence that mobility patterns are fairly similar across different time spans. The probability of remaining in initial state is higher than probability of transition into another state for all the labor market states, except for unemployment showing the static nature of the Turkish labor market. Gender, education and sector of economic activity are observed to display significant effects on mobility patterns. The results reveal several relationships between the covariates and likelihood of variant transitions, and are of remarkable importance for designing policy to address labor informality and reduce its negative externalities.

Keywords: Labor market dynamics, informality, Markov processes, multinomial logit, Turkey
JEL Classification: J21, J24, J40, J63, O17

1. Introduction

Informality has long been a salient phenomenon in developing country labor markets, thus has been addressed in several theoretical and empirical studies since the 1950s. In the early literature, most analyses hinged on static and aggregate approaches. Recently, the introduction of advanced panel data sets and techniques empowered more profound and thorough dynamic research. In particular, mobility analysis led to a paradigm shift in the labor market literature by providing the means for investigating the implications of and motivations for workers' transitions into and out of informal employment and the extent to which and how specific individual and job characteristics influence worker flows. In this study, we aim to expand the literature by implementing the mobility analysis to the Turkish labor market with a specific emphasis on informality.

Turkey, given its economic and demographic dynamics, provides rich evidence for a growing, heterogeneous and multifaceted informal labor market (Tansel, 1997, 1999, 2001; Bulutay and Tasti, 2004; Ozdemir et al., 2004; DPT, 2009; Kenar, 2009; Aydin et al., 2010; World Bank, 2010). However, existing evidence is mixed and scant. Data limitations and conceptual obscurity have hindered detailed analyses. Along these lines, the aim is to provide a diagnosis of dynamic worker flows across distinct labor market states and identify the effects of certain characteristics (i.e. age, gender, education, work experience, economic activity sector, household demographics, etc.) on variant mobility patterns. To the best of our knowledge, this study is the first to undertake a labor mobility analysis in the context of the formal/informal employment divide in Turkey.

More specifically, we first develop and discuss a set of probability statistics based on annual worker transitions across distinct employment states utilizing Markov transition processes. As Bosch and Maloney (2007) claim: "labor status mobility can be assumed as a process in which changes in the states occur randomly through time and probabilities of moves between particular states are governed by Markov transition matrices". Starting with the pioneering works of Funkhouser (1996, 1997a, 1997b) and Maloney (1999), several attempts have been made to model labor mobility using transition matrices constructed from probabilities of actual movements of the same individuals across distinct labor market states. To name a few, Gong et al. (2004) explore the mobility patterns in five urban cities of Mexico and their underlying dynamics associated with individual characteristics and business cycles. Duryea et al. (2006) provide an empirical mobility analysis of nine countries of Albania, Georgia, Hungary, Poland, Russia, Ukraine, Argentina, Mexico, and Venezuela. Krstić and Sanfey (2007) examine the labor mobility in Bosnia and Herzegovina. Lehmann and Pignatti (2007) investigate employment flows in Ukraine. Canavire-Bacarreza and Soria (2007) study worker mobility in Argentina. Bigsten et al. (2007) study the worker transitions in the Ethiopian labor market. Bernabè and Stampini (2009) analyze the mobility patterns in Georgia. Pagés and Stampini (2009) provide a comparative analysis of labor mobility patterns for Argentina, Mexico, Venezuela, Albania, Georgia and Ukraine. In a more recent comprehensive study, Bosch and Maloney (2010) use panel data from Argentina, Brazil and Mexico and using continuous time Markov transition processes derived from an underlying discrete time counterpart.

Following similar vein, we compute the transition probabilities of individuals moving across six different labor market states using the novel Income and Living Conditions Survey (SILC) panel data for 2006, 2007, 2008 and 2009. In this framework, we start by computing the transition probabilities separately for two, three and four year transitions pertaining to the 2006 to 2007, 2006 to 2008 and 2006 to 2009 transitions. In line with the recent literature, we define six labor market states as formal-salaried (FS), informal-salaried (IS), informal self-employed (ISE), formal self-employed (FSE), unemployed (U), and inactive (N). This categorization facilitates investigating various possible transitions into and out of informal employment. In particular, disentangling the formal/informal divide further into salaried/self-

employed subgroups provides the means for assessing the extent to which and how informality prevails in different forms. Moreover, including unemployed and inactive categories, we are able to provide a more comprehensive labor market analysis, as informal employment displays substantial transitivity into/out of these non-employment states.

We find evidence that mobility patterns are fairly similar across different time spans. Moreover, the probability of remaining in initial state is higher than the probability of transition into another state for all the labor market states, except for unemployment. All together, these findings depict that the Turkish labor market has a relatively static nature. Regarding the direction and degree of outflows, we note that there is only very limited mobility into the formal-salaried state. This evidence is suggestive of the entry barriers to and/or preference for formal-salaried employment, thereby confirming the traditional segmentation theory of formal and informal labor markets. Another noteworthy pattern pertains to informal self-employed who display only minimal mobility into salaried employment. This finding is of great importance since it reveals the nature of informal self-employment in Turkey. The evidence implies that informal self-employment is mostly an agricultural and female phenomenon, thus differs from that in Brazil, Mexico and Argentina, where it often prevails in the form of voluntary entrepreneurial activities (Bosch and Maloney, 2010).

The transition analysis, however, is mostly descriptive in nature and falls short of explaining the underlying dynamics of observed transitions. In order to examine the nature of labor mobility patterns in more detail, we estimate six multinomial logit models individually for each labor market state by adopting a number of individual, household and job characteristics as explanatory variables. The results reveal several relationships between the covariates and the likelihood of variant transitions. Particularly, gender, education and economic sector are found as significantly related to mobility tendencies, hence of great importance for designing effective policies to address labor informality in Turkey. To the best of our knowledge, this study offers the first such formal/informal labor mobility analysis in the context of the Turkish labor market.

The organization of the paper is as follows. Section 2 describes recent economic developments in Turkey, and presents the data and some descriptive evidence. The methodology and results of Markov transition analysis are presented in Sections 3.1 and 3.2, respectively. The methodology of multinomial logit models is explained in Section 4.1 and estimation results are discussed in Section 4.2. Finally, Section 5 provides a summary of the main findings and implications for policy.

2. Economic background and data

2.1. Recent economic developments in Turkey

One of the severest crisis of Turkey's recent history occurred in November 2000 and February 2001. The per capita GDP declined by 9.6 percent in 2001 but recovered quickly in 2002 with a growth rate of 8 percent and achieved high growth rates for the period 2002-2007. However, the adverse labor market impact of the 2001 crisis was large and the subsequent output growth has not led to improvements in the unemployment rates. This is dubbed as the "jobless growth". Employment declined and remained below the pre-crisis level until 2004. In 2004, unemployment rate in urban areas reached 16 percent and that of the educated youth was 30 percent. Recently Turkey was affected by the global crisis in 2008 and 2009. In 2008 the rate of growth of GDP was less than one percent. During the first quarter of 2009 the GDP dropped by 14.7 percent and the annual decline in GDP was 4.8 percent. The economy recovered in 2010 with an annual rate of growth of 8.9 percent. The unemployment, which reached the 14 percent in 2009, declined to 11.9 percent in 2010. In 2009 unemployment increased along with the declines in wages. Non-agricultural unemployment rate was 17.4 percent in 2009 and declined to 14.8 percent in 2010.Youth unemployment rate was 25.3 percent in 2009 and declined to 21.7 percent in 2010.

The salient labor market characteristics of Turkey are low employment creation, low employment ratio, low labor force participation rates and large informal sector. Non-registry to the social security system, which is one way of defining informality, is widespread. In the urban areas one out of three and in the rural areas three out of four workers are unregistered. In Turkey, the taxes on labor are relatively high. Employer and employee contributions for pension, disability insurance, health insurance, unemployment insurance and workers compensation insurance as a total is 36.5-41 percent of the gross wages. The income tax is the 15-35 percent of the gross wages. At different wage levels and family characteristics the tax wedge on the labor income of the workers is one of the highest among the OECD countries (World Bank, 2006). The high tax rates on labor income create incentives for non-compliance and thus contribute to informality.

2.2. Data and descriptive evidence

The data used in this analysis is drawn from the Income and Living Conditions Survey (SILC), which has been conducted by the Turkish Statistical Institute (TurkStat) since 2006.[1] The novel, nationally representative, rich, panel survey provides detailed information on the employment status, social security coverage, working hours, labor and other income, demographic characteristics, living conditions, job characteristics and socioeconomic conditions of the subjects. The survey results have only recently been released in micro data sets, thus to our knowledge have not yet been used in any other studies.

As regards to defining informality, the first internationally agreed operational definition adopted in the 15th International Conference of Labor Statisticians in 1993 was "all jobs in informal sector enterprises, or all persons who, during a given reference period, were employed in at least one informal sector enterprise" (Hussmanns, 2005). Put differently, informality was ascribed to small-scale enterprises; enterprises operating without a legal status and/or employing unregistered workers; and family enterprises with unpaid family workers and the self-employed (Aydın et al., 2010). The ILO definition was later extended to comprise self-employed in informal enterprises (i.e. workers, employer/owner of small firms, own-account workers, unpaid contributing family members); and wage employment in informal jobs (i.e. employees in informal enterprises, casual and domestics workers, industrial outworkers) (Chen, 2007). ILO later extended the informality definition to refer to employment relationships, which are not subject to labor legislation, social protection, taxes or employment benefits (Hussmanns, 2005).

The definitions in this study are adopted to be as consistent as possible to the existing theoretical and empirical literature. SILC questionnaire allows us to distinguish along employed/non-employed, salaried/self-employed, formal/informal divides. Using this feature, we identify six different labor market states: formal-salaried , informal-salaried, formal self-employed, informal self-employed, unemployed and inactive. Employees working for a wage/salary are defined as formal-salaried if they are registered at the social security institution for their main job and informal-salaried if not. Own-account workers and unpaid family workers form the self-employed category, which is divided into formal self-employed if registered at the Social Security Institution and informal self-employed if not. Following Pages and Stampini (2009), unpaid family workers are classified as informal self-employed. Employers are excluded from the sample,

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as the number of observations is not sufficient to perform any reasonable analysis. Unemployed comprises individuals who are not working, but actively searching for a job. Lastly, individuals are classified as inactive if they are neither working nor searching for a job. In particular, students, retirees, seasonal workers, old or those unable to work, and domestic workers form the inactive category. By disaggregating the labor force into multiple subcategories, we are able to scrutinize variant patterns of labor mobility defined as worker transitions between distinct labor market states.

The frequencies and shares of each labor market state for 2006, 2007, 2008 and 2009 are reported in Table 1. The distribution reveals a stable pattern for all states across the four years under study, except for a notable rise in the share of formal-salaried category. As Table 1 illustrates, inactives make up the largest share of total sample, reaching almost 50 percent. The shares of informal self-employed and formal-salaried are similar in 2006 at 18 and 16 percent, respectively. The remaining sample is comprised of informal-salaried at 10 percent, unemployed at 5 percent and formal self-employed at only 3 percent. Informal workers, including both salaried and self-employed, make up a larger fraction than the sum of formal-salaried and formal self-employed workers.

A gender breakdown of distribution analysis is of significant importance in the Turkish labor market. Indeed, the incidence of inactive women still stands as a major virtue of the Turkish labor market, distorting most aggregate labor market figures. Along these lines, Table 2 and 3 present a breakdown of the labor force into men and women and recalculation of the labor market distribution accordingly. As expected the inactivity rate increases to 70 percent for women and falls to 22 percent for men. That proves the magnitude of inactive women to be a fundamental driving force behind the labor market dynamics. Moreover, sample proportions of all other labor market states are considerably lower for women compared to that of men. As regards to informality, figures also reveal a salient stylized fact of the Turkish labor market that almost two thirds of those women who are employed are informal, while men exhibit a more or less equal distribution across formal and informal employment. Further decomposition displays that men are mostly employed in salaried work and women in self-employment. Women exhibit almost no existence in formal self-employment. In contrast, majority of women are found in informal self-employment, which is a mere reflection of women unpaid family workers in agriculture.

In order to provide an overall picture, labor informality in Turkey is decomposed across time and by a number of demographic and employment related key factors.[2] Table 4 details the sample distribution of informality by gender, age, education, marital status, occupation, sector, employment status, firm size, household type and geographical location for 2006 and 2009.[3] The decomposition analysis is conducted separately for total employment and non-agricultural employment with the aim of detaching the effects of agriculture sector being 90 percent informal on the dynamics of labor informality. In this analysis, we define informal employment as those who are employed without being registered to the compulsory Social Security Institution of Turkey (SSI). Following the same vein, formal employment refers to those workers who are registered to SSI. Accordingly, women are approximately 70 percent informal, whereas informality among male labor stands at around 45 percent. The shares of informality for men and women converge at approximately 40 percent if agriculture is excluded. In terms of age, we observe young and elderly to be more informal; in both total and non-agricultural employment. Informality appears to be perfectly negatively related to education level, descending from over 90 percent for none education to around 10 percent for university graduates. Single workers tend to be slightly more informal as opposed to married. The occupational distribution of informality reveals that professionals, technicians and clerks are to a large extent formal at around 80-90 percent, whereas skilled agricultural, elementary operations and service workers are mostly employed without being registered to the SSI. With regards to sectoral informality, agriculture assumes the lead in terms of informal employment, reaching a level of almost 90

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[2] For a more comprehensive decomposition, see Table 5 which details the breakdown of each of the six labor market states by multiple variables.
[3] For presentational brevity, Table 4 only reports numbers for 2006 and 2009 which correspond to the initial and final years of our data. The numbers for 2007 and 2008 are similar.

percent throughout the four years. Construction sector also exhibits a considerable rate of informality. On the other hand, mining, utilities, finance, education, health and public administration sectors remain mostly formal at around 80-90 percent. Sectoral informality rates remain more or less similar over the four years, except for the construction sector which displays a 10 percent fall in informality from 2006 to 2009. Employment status portrays an even more discernible informality pattern. Regular employees are the least informal at around 20 percent, whereas casual employees, own-account workers and unpaid family workers are typically informal. Firm size reveals a perfectly negative relationship with informality, thereby affirms the theory. Lastly, as for the household characteristics, informal employment appears to be more common among non-single households both with/without children.

To sum up, informality is typically associated with those individuals who are female, young and/or old, illiterate and/or none educated, single; work as agricultural and/or construction worker, casual and/or unpaid family worker, in small-size firms and live in rural areas. When agriculture is excluded, formal/informal divide in employment somewhat softens, as most of the above presented informality patterns ceases to be evident. The summary statistics set out the preliminary framework of the informality analysis in the Turkish labor market. The sample is weighted by nationally representative survey weights, and hence characterizes roughly the current aggregate labor market along all dimensions being considered. Furthermore, comparing 2006 and 2009 labor market outlooks, one observes that the labor market in Turkey displays a somewhat increasing formalization across all dimensions under study. In order to further delve into its dynamics, following sections provide transition analysis and multinomial logit estimation.

3. Markov transition analysis of worker flows in the Labor Market

3.1. Methodology

The use of micro-level panel data and multistate stochastic models has led to a paradigm shift in the empirical labor markets literature. In particular, individual labor market transitions between different labor market states have now became traceable through Markov chain models.[4] As Fabrizi and Mussida (2009) summarize, Markov chain models enable estimating transition probabilities when subjects are observed only at discrete time points and exact transition dates are not available.

A random process X_t defined over a discrete state space $K = \{1, \ldots, K-1\}$ is called a first-order discrete Markov chain if:

$$\Pr\,(X_t = k \mid X_{t-1}, \ldots, X_1) = \Pr\,(X_t = k \mid X_{t-1}) \tag{1}$$

If X_t is a Markov chain and $j, k \in \{K\}$, the conditional probability:

$$p_{kj}(t, t+1) = \Pr\,(X_{t+1} = j \mid X_t = k) \quad \text{for } \forall t \text{ and } j, k \in K \tag{2}$$

is called the transition probability of moving from state k to j at time t. If the transition probabilities are independent of time, Markov chain is time-homogenous[5], that is:

$$p_{kj}(t, t+n) = \Pr\,(X_{t+n} = j \mid X_t = k) \quad \text{for } \forall t, n \text{ and } j, k \in K \tag{3}$$

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[4] For detailed discussion on Markov chain models, see Gourieroux, C. (1989, chapter 5) or the English version translated by Klassen, P. B. (2000, chapter 6).
[5] For further information, see http://www.math.rutgers.edu/courses/338/coursenotes/chapter5.pdf

Given a finite set of states $K = \{1, \ldots, K-1\}$, transition probabilities can be represented in a discrete time transition probability matrix as follows:

$$P = \begin{bmatrix} p_{00} & \cdots & p_{0K} \\ \vdots & \ddots & \vdots \\ p_{K0} & \cdots & p_{KK} \end{bmatrix} \tag{4}$$

Along these lines, p_{kj} refers to the probability of finding a worker in state j at the end of the period given that the worker was at state k at the beginning of the period.[6] The P matrix can be estimated by the maximum likelihood estimator for $p_{kj} = N_{kj}/N_{k.}$ where N_{kj} is the number of transitions from state k to j and $N_{k.}$ is the number of transitions out of state k. For the specific purposes of the study, we identify X_t to denote the labor market state of a given individual at time t. We define the state space K to comprise six labor market states: formal-salaried , informal-salaried , formal self-employed, informal self-employed , unemployed and inactive.

In the following analysis, we estimate the P-matrix of raw transition probabilities for 2006-2007, 2006-2008 and 2006-2009 flows. That is, we construct three different P-matrices for one, two and three year transitions. In this way, we compare transition tendencies across different time spans, and hence in a sense test for robustness of the results. Furthermore, given the weight of the agriculture sector in the Turkish labor market, transition analysis is conducted separately for both total and non-agricultural employment.

3.2. Results

The first thing to notice in Tables 6 through 8 is that the transition probabilities are more or less similar over the two, three and four year panels. Nevertheless, each case will be discussed below for integrity purposes. Secondly, when agriculture is excluded from the sample, the picture somewhat alters but the changes are limited mostly to informal self-employed and inactive groups. Thirdly, the most discernible transition pattern can be observed along the main diagonal of the probability matrix. By definition, p_{jj} reflects the probability that an individual remains in a given state. The high levels of p_{jj} imply that majority of the subjects in each category, except for the unemployed, do not move out of their initial labor market state.

From 2006 to 2007, one observes that approximately 90 percent of those who are initially formal-salaried remain in their state. This result is well consistent with the traditional segmentation theory, which sees labor informality as a survivalist strategy when formal employment opportunities are limited (Yu, 2012).[7] Once an individual becomes formal-salaried, he/she is unlikely to leave this state. The almost negligible transitions into other states are typically due to early retirement schemes in Turkey which encourage individuals leave their formal job at an early age, then either move out of labor force or informal employment. When agriculture is excluded, the transition dynamics of the formal-salaried do not alter at all. This finding is a mere reflection of agriculture being almost exclusively an informal sector.

The informal-salaried workers, who constitute about 10 percent of total employment, demonstrate higher levels of mobility. Approximately 13 percent of those who were employed as informal-salaried in 2006 become formal-salaried in 2007. Considering that the reverse transition probability from formal-salaried into informal-salaried employment amounts to only 2.8 percent, the figure is quite illustrative. More specifically, this finding indicates that the flows between formal-salaried and informal-salaried are asymmetrical, hence conforms to the traditional theory's presumption of one-way flows from informality to formality. Almost 22 percent of informal-salaried move into non-employment, either as unemployed or

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[6] As Lehmann and Pignatti (2007) state, these estimates are close to the true transition probabilities in the absence of round-tripping.

[7] Fields (1975), Mazumdar (1976), Bernabè (2002), Perry et al. (2007)

inactive. Probability of transition from informal-salaried to informal self-employed state is limited at 7 percent. Exclusion of agricultural employment appears to have only trivial effects on the transition patterns of informal self-employed workers. This result proves that agricultural workers do not figure in informal-salaried state.

Formal self-employed workers, who make up only 3.5 percent of the sample, do not reveal a remarkable mobility pattern. The most noticeable flow out of formal self-employment is that into informal self-employment. The underlying dynamics for such a transition tendency are scrutinized in the next section. For the non-agricultural sample, formal self-employed workers display almost identical transition patterns, the only exception being a fall in the probability of flows into informal self-employment.

Informal self-employment constitutes nearly one fifth of the sample labor market. Outflows are limited to 4 percent into informal-salaried, 4.5 percent into formal self-employed, and 13 percent into non-employment states. Transition to formal-salaried state is almost negligible. Altogether, these figures imply that informal self-employed are usually those disadvantaged in the labor market who face barriers to mobility. As the labor market composition analysis have demonstrated, agricultural employment mostly prevails under informal self-employment. The sample weight of this state falls from nearly 18 percent to 4 percent when agricultural employment is left out. Thus, the most noticeable effect of excluding agriculture from the sample can be observed on the transition dynamics of this state. In particular, the transition probabilities of flows into all other states double, except for that into inactive state. Put differently, when agricultural workers, who constitute the majority are left out, informal self-employment emerges as a rather active state. Transition probabilities, albeit change in magnitude, do not imply a major change in the outflow pattern of the informal self-employed workers. Likelihoods of transiting out are, in decreasing order, into inactive, formal self-employed, informal-salaried, unemployed and formal-salaried states.

Unemployed individuals are visibly the most mobile among all labor market groups. Nevertheless, they display a rather heterogeneous transition pattern. The stayers are limited to only 27.9 percent, whereas flows into formal-salaried state prevail at 15.2 percent, informal employment at 32.4 percent and inactivity at 23.8 percent. In other words, unemployed display the highest probabilities of transition into these states. These findings, overall, are a mere reflection of the heterogeneity within unemployment category. The most discernible inference to be drawn is that for unemployed individuals, probability of transition into informal employment is twice of that into formal employment. It follows that formal employment opportunities are limited and have higher entry barriers. By definition unemployed state is irrelevant to exclusion/inclusion of agriculture, thus transition probabilities are analogous.

Inactives constitute the largest segment of our sample. The almost negligible levels of outflows reflect the rigid nature of inactive state. Reluctance to move of inactives can be explained by several structural characteristics of the Turkish economy and labor market. Two most common of these are discouraged workers and women inactivity. Indeed, the incidence of female inactivity still stands as a major feature of the Turkish labor market and distorts most aggregate labor market figures given that the inactivity rate stands at 70 percent for women, whereas for men it is only 22 percent (see Tables 2 and 3). When agriculture sector is excluded, sample weight of inactives increase by about 10 percent. However, probabilities of transition into other states are almost identical with the former counterparts.

Considering 2006-2008 panel in Table 7, one can easily notice that the transition probabilities remain on average similar. The most notable changes are a rise in the probability of informal-salaried to formal-salaried transitions from 12.9 percent to 24.1 percent; a rise in the probability of formal self-employment to formal-salaried transitions from 3.3 percent to 8.2 percent and a rise in unemployment to formal-salaried transition probability from 15.2 percent to 21.4 percent. Overall, labor market displays somewhat a higher level of mobility. In particular, flows into formal-salaried employment display a significant increase. When time span is further increased to comprise 2006 to 2009 transitions, as Table 8 illustrates

the picture is also similar. The most discernible change is that transitions into non-employment states, that are unemployment and inactivity, increase significantly. This finding may be indicative of the impact of the economic crisis on the labor market. Another interesting finding is that, among those who move into non-employment, salaried workers tend to move into unemployment, whereas self-employed workers are more likely to move into inactivity. Similar conclusions apply for the non-agricultural sample.

4. Multinomial Logit Regression Analysis

4.1. Methodology

Identifying the variables related to the probability of worker flows is of paramount practical and policy-making interest. In order to characterize mobility patterns in more detail, we rely on multinomial logit (MNL) specification to model the labor market transitions. Indeed, MNL model offers a statistically rigorous way to predict the probability of each possible transition as a function of individual characteristics.

Formally, a simple MNL model specifies that:

$$\Pr\left(X_{i,t+n} = j \mid X_{i,t} = k\right) = \frac{\exp\left(Z_i{}'\beta_{j|k}\right)}{\sum_{l=0}^{K} \exp\left(Z_i{}'\beta_{l|k}\right)} \tag{5}$$

where Z_i are case-specific regressors for each individual i; $X_{i,t} \in \{0, 1, 2, \dots, K\}$ is the labor market state of individual i at time t. In order for such a MNL model to identifiable, one outcome $k \in K$ is specified as the base or reference group such that $\beta_{k|k} = 0$. Thereafter the parameter vector β is straightforward to estimate by the maximum likelihood estimation (MLE) method. For MNL models, however, β coefficients are seldom used for inference.[8] Instead, marginal effects of the independent variables are computed as[9]:

$$\frac{\partial \Pr\ (X_i = j)}{\partial z_m} = \Pr\ (X_i = j \mid Z) \cdot \left[\beta_m^j - \sum_{l=0}^{K} \beta_m^j \Pr\ (X_i = j \mid Z)\right] \tag{6}$$

In this study, we modify the above MNL methodology to be compatible with our specific purposes and comparable to the existing studies on other countries. We estimate six simple multinomial logit regressions for each of the six labor market state of departure.[10] Multinomial logit analysis is conducted for each set of panel individually to check for robustness and variation of the results, but (i.e. 2006-2007, 2006-2008 and 2006-2009 panels).[11] To this end, dependent variable in each regression conveys a different interpretation. It is defined as a categorical variable, which takes the value 0 if the individual maintains his/her labor market state from 2006 to 2007.[12] Whereas for each of the five possible outflows, values from 1 to 5 are assigned. For instance, consider the subsample of individuals who were employed as formal-salaried in 2006. The dependent variable takes the value 0 if the individual remained as formal-

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[8] As Greene (2002) states, the parameters of the multinomial logit model do not have a direct intuitive interpretation in regards to their sign or magnitude. Their use for drawing statistical inference in empirical research is uncommon.

[9] The time subscript (t and n) is omitted for expositional convenience.

[10] Multinomial logit regressions are estimated by Maximum Likelihood Estimation (MLE). The marginal effects are computed at the means of the explanatory variables. All empirical analyses are done with STATA version 10.

[11] Following the same vein as Transition analysis in Section 5, we consider transitions for 2006 to 2007, 2006 to 2008 and 2006 to 2009, separately.

[12] For presentation brevity, the variable definitions are given for 2006-2007 panel only. Same definitions apply when 2007 is replaced with 2008 and 2009, for the 2006-2008 and 2006-2009 panels respectively.

salaried in 2007. If the individual changed state in 2007, the dependent variable assumes values from 1 to 5 for transitions into informal-salaried, formal self-employed, informal self-employed, unemployed and inactive states, respectively. The explanatory variables include demographic characteristics of the individual in 2006 (gender, age, education level, marital status) and employment characteristics of the individual (occupation, sector of economic activity, firm size, work tenure, work tenure squared). A comprehensive list of variable definitions is provided in Appendix (Table A.1.).

The marginal effects of the multinomial logit models for 2006-2007, 2006-2008 and 2006-2009 panels are reported through Tables 9, 10 and 11 respectively. The presentation adopts the standard multinomial logit regression interpretation within the following framework: Marginal effects depict "how the given explanatory variables influence the probability of leaving the initial state for a certain destination state relative to the probability of no outflow" (Bukowski and Lewandowski, 2005).

Note that the transition analysis has shown that the evidence does not change on a large scale if agricultural workers are excluded from the sample. The only notable differences in mobility patterns are observed for informal self-employed, since they are mostly found in agriculture sector. In the following analysis, we estimate MNL regressions for the total sample.[13]

4.2. Results

4.2.1. Transitions from Formal-Salaried employment

MNL results provide significant insight into the observed outflows from the formal-salaried state for the 2006-2007 transitions. For this particular case, coefficient estimates represent the impact of the explanatory variables on the probability of leaving formal-salaried state for a certain destination relative to the probability of remaining. The results are reported in Table 9. First thing to notice, gender plays a powerful role in explaining mobility out of the formal-salaried state. In particular, formal-salaried women are significantly less likely than men to become informal-salaried. Likewise, being female reduces the likelihood of transitions into formal self-employment, *ceteris paribus*. Considering the fact that only less than one percent of the women in the sample are formal self-employed (see Table 5), the highly significant negative coefficient comes by no surprise. On the contrary, the effect of this variable becomes significantly positive for probability of moving into inactivity. This result is well consistent with our earlier finding that almost 70 percent of sample women are inactive (see Table 5). The high level of inactivity among women seems to dominate their mobility patterns. Given the traditional division of gender roles and family responsibility of women in Turkey, women are significantly under-represented in formal employment. Apparently, if and/or once they become formal-salaried, they are more persistent in this state compared to men. Notwithstanding, estimation results indicate statistically significant differences among transition patterns of women of different age groups. Accordingly, formal-salaried women aged 15-24 are less likely than those aged 25-44 to move into informal-salaried and formal self-employed states. It is also noteworthy to mention at this point that the prime working age in Turkey is between 25-44, which corresponds to the age when families are started and children are born. In this context, middle age women tend to have stronger incentives (i.e. household financial needs) for working and/or re-employment in case of a job loss. Along these lines, one can conclude that gender remains as a robust and powerful predictor of transitions out of formal-salaried state.

Regarding age, we find that formal-salaried workers aged 25-44 and/or 45-64 are significantly less likely to become informal-salaried, compared to the base category of workers aged 15-24. This finding may be the reflection of two facts. First, as mentioned by Huitfeldt (1998), young individuals have a higher probability of moving out of employment. Second, young and less experienced workers often experience

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[13] For presentational brevity purposes, we estimate MNL regressions only for the total sample but not the non-agricultural sample.

entry barriers to formal-salaried employment. Given that only about seven percent of aged 15-24 is formal-salaried, it is no surprise that they are the least likely age group to maintain their state. Another noticeable finding is related to transitions into inactivity. Compared to workers who are formal-salaried in 2006 and belong to 15-24 age group, the probability of dropping out of labor force is lower for 25-44 age group, but higher for 45-64 age group. The interpretation can be twofold. First, young adults are often the first to be affected in case of a layoff. Yet, they are more flexible in remaining inactive compared to middle aged workers who often cannot afford to drop out of labor force. Second, early retirement schemes in Turkey is the most likely reason behind older individuals displaying a higher likelihood of transition into inactivity.[14]

Household demographic structure seems to play only negligible roles in explaining transitions of the formal-salaried workers. The marginal effect of marriage on outflows is only slightly significant for flows into formal self-employment and inactivity states. In particular, married formal-salaried are significantly more likely to become formal self-employed, but less likely to drop out of the labor force compared to the singles. This evidence points to the spouse effect on one's employment choice. As for female-marital status interaction, we find a strongly negative effect of being married and female on outflows into informal-salaried and/or formal self-employed states, and a positive effect on transitions into inactivity. Having/not having children has almost no statistically significant explanatory power for the mobility patterns of formal-salaried workers. Turning to the household size, estimation results indicate a significantly negative relationship only for transitions into formal self-employment and inactivity. That is, the larger the household size the lower the probability of leaving formal-salaried employment and becoming formal self-employed and/or inactive. Overall, these findings point to the traditional family influence on individual employment decisions due to increased family responsibility, increased dependence on safe employment and higher motivation for re-employment in case of a job loss. Turning to 2006-2008 transitions reported in Table 10, marital status becomes insignificant for all outflows, though coefficient signs remain same. The marginal effect of household size appears still significantly negative for outflows into formal self-employment, but becomes insignificant for explaining outflows into inactivity. Estimation results for 2006-2009 transitions in Table 11 also do not reveal a remarkable difference. The effect of being married on transitions into inactivity continues to be significantly negative, but that into formal self-employment now becomes positive albeit insignificant. We prefer not to treat the reverse in sign as meaningful, but only as a statistical outcome.

In line with the conventional wisdom, high school and university degree significantly reduce the probabilities of every movement out of formal-salaried. This pattern may be explained as purely result of formal-salaried jobs being intrinsically more stable as argued by Pages and Stampini (2009). However, there usually exist other underlying factors. First, as Maloney (1999) suggests, the opportunity cost of working informally is often lower for low-skilled individuals, especially for those who usually have only minimal earnings in the formal sector. Second, the risk of being subject to involuntary layoffs is usually lower for better-educated workers. Even in case of a job loss they are on average more likely than less-educated workers to find another formal-salaried job. Moreover, as suggested by Gong et al. (2004) "These effects may, however, also be demand-side driven, reflecting different educational requirements in the two sectors, with the formal sector jobs typically requiring more (formal) education than the informal sector jobs". Taking the evidence on education altogether suggests that labor market transition

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[14] Until 1992, Turkish pension system stipulated a minimum retirement age threshold of 60 for males and 55 for females, and a minimum premium payment equivalent to 5000 days of work. Law No.3774, which was passed in February 1992, pledged a minimum period of social security system attachment for 25 years for males and 20 for females (World Bank, 2006). In 1999, the minimum age thresholds were reinstated at 60 for male and 58 for female, and minimum premium payment requirement was increased to 7000 days of work. With the latest reforms which came into force in October 2008, benefit entitlements and incentives for early retirement were reduced to a large extent. In particular, retirement age is increased from 60 and 58 for men and women, respectively, to 65 for both, and the number of mimimum contribution days are increased from 7000 to 7200 (OECD, 2009). However, these stipulations will be phased in gradually and become effective for age cohorts born after 1980.

probabilities are to a great extent determined by prior educational attainment. Considering the estimation results for the three and four year panels of 2006-2008 and 2006-2009, we find the explanatory power of education as increased. The coefficient of no education dummy becomes significant for transitions into informal self-employment and inactivity for 2006-2008 panel, and those into informal-salaried and unemployment for 2006-2009 panel. In other words, individuals with no education are more persistent in formal-salaried state compared to the primary school graduates. These results appear to contradict the basic premises of established theory. Given that only about one percent of formal-salaried have no education, the coefficients can be regarded as of doubtful validity. The coefficient of secondary school becomes significant for outflows into informal-salaried state if the time span of the panel is increased. This evidence is consistent with earlier arguments that as the level of education rises, one is more likely to remain in formal employment. Formal-salaried workers with secondary school degree are also found to be significantly less likely to become unemployed and/or inactive compared to primary school graduates, which again confirms the basic premises. The influence of higher education exhibits almost identical patterns for three and four year panels, thereby underlining its explanatory power.

The MNL results reveal that experience, measured by total years of employment, does not significantly explain any transition out of formal-salaried state, except for those into inactivity. Accordingly, probability of moving into inactivity relative to remaining in formal-salaried state significantly decreases with work experience. As well-established in literature, the higher the experience, the lower the effect of negative labor shocks on a worker. Therefore, it is often easier for more experienced workers to maintain labor market state and/or achieve a match between jobs and personal attributes in case of a job loss. Considering 2006-2008 and 2006-2009 transitions out of formal-salaried state, the signs of experience and experience squared though remain the same, cease to be statistically significant. The only exception is the negative coefficient of experience for transitions into unemployment, which becomes significant for 2006-2008 panel. Overall, estimation results indicate that experience may not be a powerful explanatory variable, which can be interpreted in two ways: First, formal-salaried workers in Turkey are mostly employed in public sector and public jobs often offer life-time employment. If one ever becomes formal-salaried, which usually happens in the initial years of employment, he/she is quite unlikely to exchange it for another type of employment or be subject to layoff. In this regard, experience does not exert a determinate effect on their mobility patterns.

Sector of economic activity plays a fairly significant role in explaining movements out of formal-salaried employment. Compared to base category of industrial workers, services workers are significantly less likely to move into informal-salaried, unemployed and inactive states. In other words, industrial workers display a somewhat stronger persistence in formal-salaried employment relative to services sector workers. The result is coherent with the fact that about 70 percent of industrial workers are indeed formal-salaried. The coefficient of agriculture appears to be significantly negative for all flows out of formal-salaried state. However, considering the share of formal-salaried in agriculture is only less than one percent, we prefer not to make any conclusive statement on this coefficient. Construction is associated with a significantly lower probability of formal-salaried to formal self-employment transition relative to industry sector. Overall, a closer look at the sectoral breakdown of labor market transitions highlights the importance of sector's nature in affecting mobility tendencies, and evinces that some sectors are intrinsically more stable than others. Sector coefficients somewhat alter in terms of either size, magnitude or significance if one considers three and four year panels, namely 2006-2008 and 2006-2009. We will briefly discuss the differences which are found notable and indicative. First, coefficients of agriculture appear to switch signs and become positive for outflows into informal self-employment. Though not strongly significant, this effect seems more consistent with the existing theory and evidence. As reported in Table 5, over 80 percent of agricultural workers in our sample are informal self-employed. That being said, one would typically expect the likelihood of transitions from formal-salaried to informal self-employment to be higher for the agricultural workers compared to the industrial workers. A similar result holds for the construction sector dummy, which exhibits a negative sign for 2006-2007 transition, but

becomes significantly positive for 2006-2008 and 2006-2009 outflows into informal-salaried state. Given that approximately 60-70 percent of construction workers are employed as informal-salaried, they are expected to display a higher probability to move into informal-salaried state compared to industry workers. The coefficient of services, though still negative, becomes insignificant for outflows into informal-salaried state when 2006-2008 and 2006-2009 transitions are considered. Given that over 50 percent of services workers and about 70 percent of industry workers are formal-salaried services variable is not expected to have a strong determining effect.

Firm size, confirming our priors, offers a powerful tool for understanding transitions out of formal-salaried state. In particular, workers in firms of size 50 or more are strongly less likely than those in firms of size less than 10 to leave formal-salaried employment and move into any other labor market state. Considering the fact that more than 90 percent of large firm employment is associated with formal-salaried state, this finding comes by no surprise. Whereas firm size 11-49 turns out as statistically significantly negative for only outflows into informal-salaried and formal self-employed groups. Results confirm the universally accepted stylized fact that informality declines sharply with increasing firm size. Taymaz (2009) attributes this fact to: "the probability of enforcements, and productivity differentials since small firms are, on average, less productive and thus have a stronger incentive to operate informally to reduce the cost of compliance". Firm size displays the similar effects when 2006-2008 and/or 2006-2009 transitions are considered, reflecting the fact that it is a pretty powerful predictor of formal-salaried workers' mobility.

4.2.2. Transitions from Informal-Salaried employment

For transitions of informal-salaried individuals, the coefficients of the multinomial logit regression represent the marginal effect of a given explanatory variable on the probability of moving into any given labor market state relative to remaining in the informal-salaried state. First, there exists plentiful evidence for the impacts of gender on transition patterns of informal-salaried individuals. Women are significantly less likely than men to leave informal-salaried employment and move to either formal or informal self-employment. This finding points to women being more settled in informal-salaried positions and less likely to moving into self-employment. Whereas, they display a significantly higher probability of dropping out of the labor force as compared to men. As Cook et al. (2009) report, women are often disproportionately pushed out of salaried (i.e. formal or informal) employment and are disadvantaged compared to men for new employment opportunities in the labor market given equal qualifications. Notwithstanding, the reproductive role of women and traditional gender division of labor in family structure in Turkey are often the most important underlying causes. Turning to estimation results for 2006-2008 and 2006-2009 transitions, the effect of female dummy seems to remain robust. When combined with its high significance level, this finding suggests that gender is a powerful variable explaining mobility patterns of informal-salaried workers, particularly flows into self-employment and inactivity.

In the context of transitions out of informal-salaried state, age has almost no statistically significant explanatory power. The only remarkable age effect prevails for outflows into inactivity. Compared to the 15-24 age group, individuals aged 45-64 are more likely to perform a transition into inactivity rather than remain in informal-salaried state. Same results hold when one considers female-age interaction variables. Turkey's early and gender differentiated retirement policy and pension system are the primary reasons for such a pattern. Especially elderly women, either retired or laid off, find it comparatively harder to find new employment, hence become inactive. Turning to the 2006-2008 panel, one notices that informal-salaried workers aged 45-64 are significantly less likely to become formal-salaried. This finding is consistent with the fact that public sector jobs which account for a large share of formal-salaried employment are often acquired at young ages. Moreover, generous pension schemes cause an epidemic of early retirement, after which elder individuals often move into other types of employment or inactivity. Overall, age remains to be insignificant in explaining informal-salaried workers' transitions for the three and four year panel specifications as well. Any differences in estimation results are barely discernible.

It is interesting to note that marital status and children have no statistically significant relationship with any type of informal-salaried mobility. Household size, on the other hand, appears to somewhat explain transitions into informal self-employment, unemployment and inactivity. Considering the highly significant coefficient of *hsize* for all given outflows, one can readily assert that the probability of remaining in informal-salaried employment increases with the household size. Clearly, this result stems from increased responsibility and financial needs coming with increased household size. As for the 2006-2008 and 2006-2009 multinomial logit results, we observe that similar findings apply.

Regarding the education level and in line with the conventional wisdom, university graduates are significantly more likely than primary school graduates to move into formal-salaried state rather than remain in informal-salaried employment. Moreover, likelihood of flows into formal self-employment is significantly lower for uneducated and/or university graduates relative to the reference group of primary school graduates. We also find evidence that secondary school graduates are less likely to become inactive relative to primary school graduates. While interpreting results, one should account for the fact that primary school graduates dominate all labor market states with the highest share, and comprise about half of the labor force. Nevertheless, evidence appears to be in line with the existing theory and conventional wisdom that formality increases with education. For 2006-2008 and 2006-2009 transitions, the most notable change can be observed for individuals without any education. First, uneducated informal-salaried workers become significantly less likely than primary school graduates to move into informal-salaried employment. Given that share of formal-salaried employment is only 2 percent for uneducated individuals compared to 13 percent for primary school graduates, the result confirms our expectations. Second, the sign of no education switches from positive to negative for outflows into unemployment and becomes significant for 2006-2009 estimation. This difference may be an impact of the economic crisis. Third, secondary school graduates become significantly more likely than primary school graduates to remain in informal-salaried employment when we increase time dimension of the panel. This result is nothing but typical given our basic premises.

Experience appears to be the most significant determinant of the outflows of informal-salaried workers. As experience increases, the likelihood of switching out of informal-salaried state to all other labor market states significantly falls. That is, higher the experience, higher the probability that an individual persists in informal-salaried state. This finding is consistent with the view pointed out by Galli and Kucera (2004) and several studies, that returns to experience are often higher in informal employment.[15] However, experience variable seems to lose almost all of its explanatory power for the three and four year panels, albeit displaying the same signs.

The multinomial logit coefficient estimates for sector of economic activity imply that workers in agriculture, services and construction sectors are significantly less likely to become formal-salaried than industrial workers. As Table 5 depicts, share of formal-salaried employment in industry sector is approximately 70 percent. The evidence taken together, point to the intrinsically formal nature of industry. If one leaves informal-salaried state for formal-salaried employment, he/she is more likely to be employed in industry sector. Similarly, informal-salaried workers in construction and services sectors display a lower probability of transition into formal self-employment, compared to industrial workers. Moreover, we find evidence that probability of transition into informal self-employment is significantly lower for construction workers, which can be attributed to the intrinsic salaried nature of construction sector. Lastly, informal-salaried workers in services sector are less apt to become inactive compared to workers in

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[15] See Funkhouser (1996) for El Salvador, Guatemala, Honduras, Nicaragua and Costa Rica; Funkhouser (1997) for El Salvador; and Marcouiller *et al.* (1997) for El Salvador, Mexico and Peru for examples. Related evidence is found in two other studies. Telles (1993) finds higher returns to experience for both male and female unprotected workers (self-employed and employees) than for self-employed protected by social security in Brazil; and Mohan (1986) finds higher returns to experience for male self-employed workers than for blue-collar and white-collar employees in Colombia" (Galli and Kucera, 2004).

industry sector. Comparing and contrasting three sets of panels, we do not detect a marked disparity. Moreover, in order to scrutinize underlying dynamics, we have run intersectoral transition analysis individually for 2006-2007, 2007-2008 and 2008-2009.[16] Except for construction workers who recorded the highest outflow rate overall from 2008 to 2009, transition probabilities are somewhat similar implying that Turkish labor market exhibits a fairly static structure in terms of intersectoral mobility.

In line with the conventional literature and also our previous findings, there is a clear firm size influence. As firm size increases the probability of informal-salaried moving to formal-salaried state rises. Similar results hold for the corresponding variables in the 2006-2008 and 2006-2009 transitions.

4.2.3. Transitions from Formal Self-Employment

The discussion on the transitions of formal self-employed workers is deliberately kept brief, since their share in our sample is only minimal. We only present estimation results but refrain from making conclusive interpretations. Also, estimation results for 2006-2008 and 2006-2009 transitions are not discussed, since the number of observations becomes more than halved, thereby renders interpretations of estimation statistics muddled at best and erroneous at worst. Multinomial regression results mark a number of relationships between individual characteristics and probability of flows out of formal self-employment. The most evident explanatory factor in transitions out of formal self-employed state appears to be gender. The female dummy, albeit being significant for all outflows, should be approached with caution. Since the female share of formal self-employment accounts for less than one percent of the sample, thus the marginal effects may be artificially high.

Regarding age, middle-aged individuals (those between 25 to 44) are less likely to switch to informal-salaried state compared to those in the reference age group of 15-24. Furthermore, 25-44 aged formal self-employed workers are strongly less likely to become non-employed (unemployed and/or inactive) compared to the young. These findings represent a very lucid pattern of the Turkish labor market. As can also be observed in summary statistics in Table 5, formal self-employment in Turkey is mostly a middle age and male phenomena, which mostly corresponds to *voluntary or upper-tier* self-employment as put by Perry et al. (2007). On the other hand, informal self-employment, which comprises almost all unpaid family work, displays a rather equal distribution across age and gender groups. Following this line of thinking, it would not be wrong to conclude that informal self-employment in Turkey pertains to an *involuntary* or *lower-tier* self-employment type. For female-age interaction effect, we find that females aged 25-44 are significantly more likely than those aged 15-24 to perform a transition from formal into informal self-employment. On the other hand, women of age 45 to 64 display a higher probability of maintaining in formal self-employment rather than moving into formal- and/or informal-salaried employment, compared to women aged 15-24. This effect is reversed for transitions into inactivity.

With respect to education, we find that outflows into formal- and informal-salaried employment are significantly lower for the none educated workers compared to those with a primary school degree. The reverse is true for transitions into unemployment that is, non-educated are significantly more likely than primary school graduates to become unemployed. Secondary school graduates exhibit a 35 percent lower probability of transition out of formal self-employment into unemployment. University degree appears significantly negatively related with transitions into informal self-employment, unemployment and inactivity.

The likelihood of outflows into informal self-employment and unemployment are significantly lower for married who appear to be more persistent in formal self-employment compared to the singles. Though

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[16] See Appendix Table A.2, A.3 and A.4 for 2006-2007, 2007-2008 and 2008-2009 intersectoral transitions, respectively.

household size does not exert a significant effect on any outflow, having children turns out significantly negative at 5 percent for transitions into unemployment.

Regarding the sectoral effects, we find that for construction workers, probabilities of transition into informal-salaried, informal self-employed and inactive states are significantly lower than the probability of remaining in formal self-employment. Considering the fact that construction workers are only about one percent formal self-employed, the estimation results should not be taken as conclusive. The odds of being unemployed are lower for services workers.

4.2.4. Transitions from Informal Self-Employment

Informal self-employment accounts for the second largest state in the sample after inactives. The decomposition analysis depicts that majority of informal self-employed are female, low skill and work in agriculture sector. Combined with these findings illustrated in Table 5, multinomial logit evidence provides significant insight to the mobility dynamics of informal self-employed workers.

Female dummy is statistically significant for all the outflows from informal self-employment. Particularly, informal self-employed women exhibit a higher probability to move into inactivity, but a lower probability to move into all other states. Put differently, they are more persistent in informal self-employment. Considering the fact that shares of informal self-employment in male and female samples are almost identical, and that more than half of the female workers in our sample are employed as informal self-employed, the results are of great importance. When we increase the time dimension of the panel and consider 2006-2008 and 2006-2009 flows, female dummy loses much of its explanatory power except for the case of transitions into inactivity. Particularly noticeable is the change of sign for transitions into unemployment, as informal self-employed women now exhibit a greater likelihood of becoming unemployed as opposed to their male counterparts. Though not found to be statistically significant, we consider a positive sign as more accurate. This finding may be interpreted as a reflection of the entry barriers faced by women. The robust effect of gender on transitions into inactivity is nothing but the manifestation of the magnitude of inactivity among women.

Age does not have a strong explanatory power in informal self-employment mobility patterns. We only find evidence that transitions from informal self-employment to inactivity is lower for 25-44 age group, but higher for 45-64 age group, compared to base group of 15-24. Additionally, probability of becoming unemployed compared to remaining in informal self-employment is lower for elder individuals. The findings are identical for 2006-2008 and 2006-2009 transitions as well.

Education has virtually no role in explaining mobility of informal self-employed workers for 2006-2007 transitions. The picture slightly changes if one considers three and four year transitions for 2006-2008 and 2006-2009. First, in conformity with the traditional theory, those informal self-employed with no education are found to be highly less likely than primary school graduates to become formal-salaried in 2006-2009 logit results. Moreover, university degree becomes highly significantly negative for moves into unemployment for both three and four year panels. Third, we find some evidence that if education level increases, likelihood of moving from informal self-employment to informal-salaried employment significantly falls. This result denotes that education, hence skill level of informal self-employed is on average lower than that of informal-salaried workers.

Experience is only significant for transitions out of informal self-employment into inactivity. More specifically, individuals with more work experience exhibit a lower likelihood of becoming inactive compared to remaining in informal self-employment. The effect is robust for all panel specifications.

In the analysis of transitions out of informal self-employment, we trace significant sectoral effects. First, informal self-employed agricultural workers exhibit significantly lower probabilities for all transitions out of informal self-employment compared to that of industry workers. This finding is most likely a statistical artifact resulting from 80 percent of informal self-employment prevailing in agriculture but only about 5 percent in industry. Another interpretation would be that informal self-employment is a far more unstable labor market state where entry and exit are easier. Similarly, services workers are found to be negatively associated with all outflows, thereby significantly more persistent in informal self-employment compared to industry workers. However, the statistical results should arguably be approached with some caution considering that share of informal self-employment in industry sector is only trivial. For 2006-2008 and 2006-2009 transitions, similar findings are reported except for construction workers now being significantly far less likely than industry workers to move into formal-salaried state.

4.2.5. Transitions from Unemployment

In this section, we focus on the determinants of outflows from unemployment. Confirming our priors, we find that unemployed women are seemingly less likely than men to find employment, but more likely to become inactive. The effect of female dummy is negative (positive) and significant for outflows into formal and informal self-employments (inactivity). These results are in line with two salient gender-specific characteristics of the Turkish labor market: women are disadvantaged to get a job and/or less encouraged about wanting a job, thereby making fewer efforts to find work. With regards to three and four year transitions analysis, a noticeable finding is the significantly positive female coefficients for outflows into both formal and informal-salaried employments in 2006-2008 logit results. This result is most likely just a statistical error.

Age also appears to play an important role in explaining mobility of the unemployed individuals. Odds of transition out of unemployment into formal-salaried, informal-salaried and inactive states are significantly lower for middle-aged workers compared to the young. Similarly, the coefficients of 45-64 age dummy is significantly negative for outflows into formal-salaried, informal-salaried and formal self-employment states. This finding illustrates the higher persistence of the elderly in unemployment compared to the base age category of 15-24, who are somewhat more likely to find either salaried and/or self-employment jobs. More interesting are the coefficients of female-age interaction dummies. In particular, women of age 45-64 exhibit a significantly lower probability of finding a formal-salaried and/or informal self-employment position (i.e. leaving unemployment state) in relation to women of age 15-24. On the contrary, they are significantly more likely to become formal self-employed rather than remain as unemployed. When combined, reported coefficients imply that the young somewhat find it easier to move from unemployment into employment, which may be explained by their eagerness to find a job or employers being more favorably disposed toward employing younger workers. Age loses much of its explanatory power in mobility of the unemployed when 2006-2008 and 2006-2009 transitions are considered. The only robust effect is the 45-64 aged unemployed being significantly less likely than those 15-24 aged in moving to formal-salaried employment, which confirms the characteristic of Turkish labor market that formal-salaried employment is mostly attained in early ages of working life.

Marital status and having children do not exhibit a significant influence on outflows from unemployment. Household size, though only weakly significant, is negatively related to finding formal and/or informal self-employment. Put differently, as household size increases one is less likely to prefer self-employment to unemployment. That is, if other members of the household are employed one has less incentives to find a job. Therefore, he/she can remain as unemployed for a longer time. Three and four year panels do not reveal any significant mobility pattern regarding household demographics. Combined with the fact that the one and only statistically significant household variable, *hsize*, is only merely significant, one may conclude that household demographics do not have a powerful influence in the mobility tendencies of the unemployed individuals.

With respect to education, we find that chances of finding a formal-salaried job out of unemployment state is significantly higher for high school and university graduates compared to the primary school graduates. The estimation results indicate that the coefficient of no education and secondary school dummies are statistically significant for transitions into formal self-employment. However, we prefer to view these coefficients with skepticism, since the share of formal self-employment is almost negligible for these two education groups. The estimation results for 2006-2008 and 2006-2009 transitions reveal more or less the same mobility patterns. Overall, the age effects confirm the conventional theory which presumes that the duration of unemployment is usually lower for individuals with higher levels of education.

Experience appears to be negatively related to the probability of giving up on job searching and dropping out of the labor force, although the significance is weak. This finding may be interpreted in the way that more experienced workers are often more encouraged to find employment compared to those with less experience, or that having experience enables them to find a job more easily than those less experienced. Almost identical results are reported for 2006-2008 and 2006-2009 transitions.

4.2.6. Transitions from Inactivity

High levels of inactivity, which account for more than 45 percent of our sample, have been a long-standing incidence in Turkish labor markets. However, as decomposition analysis reveals labor force detachment phenomenon is predominantly a product of female inactivity. Multinomial evidence also confirms this fact, as women are found to display significantly lower probabilities for all outflows, or in other words higher persistence in inactivity. Simply put, women are voluntarily opting out of the labor force. The low level of female labor force participation rate can be explained by several structural determinants.[17] Moreover, gender effects on mobility of inactives are markedly robust for the 2006-2008 and 2006-2009 transitions.

We detect age to be a powerful determinant of transition probabilities pertaining to the inactives. In particular, middle aged and elderly individuals are significantly less likely to move out of inactivity than those in the reference age group 15-24. The age effects are robust for the 2006-2008 and 2006-2009 transitions. As reported by ILO (2010) there is a strong fall in the labor force participation among youth since "many more youth now have the choice to stay in education rather than enter the labor market". Whereas, labor force participation rates are higher for higher age bands of 25-44 and 45-64 years. Turning to female-age interaction effect, women at age 25-44 are significantly more likely to become informal self-employed rather than remain out of labor force. Second, women at age 45-64 are found to be positively associated with outflows into formal-salaried and informal self-employed states, but negatively associated with transitions into formal self-employment.

Marital status, although weakly significant, exhibits a positive relationship with movements out of inactivity into employment. The evidence is most likely the result of increased household financial burden and welfare responsibilities. Therefore, one is more motivated to leave inactivity and look for employment opportunities. The result is also confirmed by the significantly negative coefficient of household size for transitions into unemployed. Put differently, the larger the household size, the greater is the likelihood of entering the labor force and searching for work.

Regarding the influence of education on the probability of leaving inactivity, estimation results reveal a somewhat ambivalent picture. Overall, we find that as education level increases, the likelihood of leaving inactivity significantly falls. In particular, secondary school dummy is significant for transitions into both of salaried and self- informal employment. Inactives with high school degree are less likely than primary

school graduates to move into informal-salaried, formal self-employment and informal self-employment states. Almost similar results hold for individuals with a university degree.

5. Concluding remarks

Research on informal employment in Turkey has been confined only to aggregate and static statistics due to data limitations. Recently, TurkStat has introduced a nationally representative and rich panel data set from the Income and Living Conditions Survey (SILC) which enables more thorough analysis of labor market dynamics. In this paper, we examine the mobility in the Turkish labor market with a specific emphasis on informality using the SILC panel data for the period between 2006 and 2009. In particular, we explore to what extent the Turkish evidence confirms the conventional labor market segmentation theory and characterize the labor mobility patterns and their underlying dynamics. In this regard, we first compute the Markov transition probabilities of individuals moving across the labor market states of formal-salaried, informal-salaried, formal self-employed, informal self-employed, unemployed and inactive. The transition analysis is conducted separately for both total and non-agricultural samples, considering the fact that agriculture sector, being almost 90 percent informal in Turkey, may conceal some important facts. The most evident aspect of the Turkish labor market during the given period is that inactives clearly dominate the labor force. Combined with female labor force being almost 70 percent inactive, labor market dynamics are driven considerably by these two main factors.

The transition probabilities display most of the characteristics peculiar to the Turkish labor market. Having computed the P-matrix of raw transition probabilities separately for 2006-2007, 2006-2008 and 2006-2009, we identify that the transition probabilities are fairly similar. The most discernible pattern is that most individuals remain in their initial state, except for the unemployed, implying a pretty static labor market structure. Formal-salaried individuals are found as the most reluctant to leave their state, confirming the traditional theory which sees formal employment as the ultimate desirable labor market state. Informal-salaried workers, on the other hand, demonstrate a higher level of mobility than those formal-salaried. The probability of transition from informal-salaried state to formal-salaried state is about 5 times of the probability of reverse transition, hence conforms to the traditional theory asserting one-way flows from informality to formality. Regarding the mobility patterns of informal self-employed individuals, outflows are fairly limited which may imply that the state is more like a *lower-tier* self-employment. However, exclusion of agriculture changes the picture to a remarkable extent. In particular, the transition probabilities of flows into all other states double, except for that into the inactive state. The unemployed appear as the most mobile among all labor market groups and display a heterogeneous transition pattern. A noteworthy finding is that probability of transition from unemployment to informal employment is almost twice of that to formal employment when 2006-2007 panel is considered. This result also depicts that formal employment opportunities are limited and have higher entry barriers. Inactives, who constitute the largest share of the labor force, exhibit almost negligible outflows indicating the rigid nature of the state. The result can be explained by discouraged worker effects and women deliberately opting out of the labor market.

Next, we conducted multinomial logit regressions individually for each set of panel to identify the impact of individual characteristics underlying worker transitions. The multinomial logit analysis is of considerable importance for designing policy to address labor informality and reduce its negative externalities. Gender evinces to be the most significant determinant of labor flows. The findings clearly support the view that female are significantly disadvantaged in terms of labor market mobility. Particularly evident is that they are mostly found either in informal self-employment or inactive states, and display relatively lower probabilities of transition into other types of employment. This fact can be explained by several intrinsic factors including the traditional division of gender roles and family responsibility in the household, their reproductive role, negative discrimination against women in hires and layoffs and their lower average level of education. Following these lines, policy makers should first

address the female labor force in order to reduce informality. Increasing their participation rate through positive discrimination tools and policies might alter the informality patterns drastically. Furthermore, investing in education, which turns out to be strongly negatively related to informality, may increase women's chances of finding formal employment.

The intrinsic demographics associated with individual and household characteristics also display noticeable relationships with labor market transitions. Regarding age, we find that the young often experience entry barriers to formal employment, confirming the traditional theory. Generous pension schemes resulting in an epidemic of early retirement, is also another significant determinant of mobility patterns in Turkey. In particular, elderly display higher probabilities of transitions into inactivity, but lower probabilities of transitions out of inactivity. Moreover, they are found to be more persistent in unemployment as compared to the young, who are somewhat more likely to find either salaried and/or self-employment jobs. Household size proves to display two notable effects on labor market transitions. First, we find that the probability of remaining in informal-salaried employment increases with the household size, which stems from increased responsibility and financial needs coming with increased household size. Whereas, as household size increases the probability of moving from unemployment to both types of self-employment falls.

Another key factor explaining labor market transition patterns is education. In line with the conventional wisdom, having a high school and university degree appears to strongly reduce the probability of transition into informal employment. The level of entry barriers and risk of being subject to involuntary layoffs are usually lower for better-educated workers. Also, they display a higher probability of moving into formal employment compared to the less-educated individuals. Evidently, policy makers should aim at increasing the level of education, hence skills of the overall labor force in order to alleviate labor informality problem.

Sector of economic activity appears to play a fairly significant role in explaining most of the transitions in the labor market. Notably, we find that industrial workers are more likely to remain as formal-salaried, agricultural workers are less likely to move out of informal self-employment and construction workers display higher probability of becoming informal-salaried. The results, overall, signify the intrinsic nature of the given sector as an important determinant of the labor market flows.

To conclude, this study provides a comprehensive and detailed diagnosis of the Turkish labor market. The market is observed to display a rather static structure throughout the period considered. This indicates that a well recognition of underlying dynamics may help policy makers to produce various effective tools for addressing informality.

Table 1: Distribution of sample labor market states

	2006		2007		2008		2009	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Formal Salaried (FS)	4,198	15.9	4,661	17.6	5,506	20.1	5,500	19.2
Informal Salaried (IS)	2,695	10.2	2,633	9.9	2,456	8.9	2,526	8.8
Formal Self-Employed (FSE)	805	3.1	944	3.6	1,089	3.9	981	3.4
Informal Self-Employed (ISE)	4,651	17.6	4,627	17.5	4,320	15.8	4,769	16.7
Unemployed (U)	1,433	5.4	1,268	4.8	1,477	5.4	1,917	6.8
Inactive (N)	12,567	47.7	12,342	46.6	12,533	45.8	12,886	45.1
Total	26,349	100	26,475	100	27,381	100	28,579	100

Source: Authors' own calculations based on SILC 2006-2009.
Notes: See Appendix Table A.1 for variable definitions.

Table 2: Distribution of sample labor market states (Male only)

	2006		2007		2008		2009	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Formal Salaried (FS)	3,332	27.2	3,661	29.5	4,307	33.3	4,234	31.1
Informal Salaried (IS)	2,054	16.8	2,045	16.5	1,886	14.6	1,984	14.6
Formal Self-Employed (FSE)	748	6.1	835	6.7	994	7.7	896	6.6
Informal Self-Employed (ISE)	2,217	18.1	2,133	17.2	1,973	15.3	2,275	16.7
Unemployed (U)	1,093	8.9	991	8	1,080	8.4	1,358	9.9
Inactive (N)	2,789	22.8	2,728	22	2,689	20.8	2,890	21.2
Total	12,233	100	12,393	100	12,929	100	13,637	100

Source: Authors' own calculations based on SILC 2006-2009.
Notes: See Appendix Table A.1 for variable definitions.

Table 3: Distribution of sample labor market states (Female only)

	2006		2007		2008		2009	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Formal Salaried (FS)	866	6.1	1,000	7.1	1,199	8.3	1,266	8.5
Informal Salaried (IS)	641	4.5	588	4.2	570	3.9	542	3.6
Formal Self-Employed (FSE)	57	0.4	109	0.8	95	0.7	85	0.6
Informal Self-Employed (ISE)	2,434	17.2	2,494	17.7	2,347	16.2	2,494	16.7
Unemployed (U)	340	2.4	277	1.9	397	2.8	559	3.7
Inactive (N)	9,778	69.3	9,614	68.3	9,844	68.1	9,996	66.9
Total	14,116	100	14,082	100	14,452	100	14,942	100

Table 4: Composition of Informality in Total Sample and Non-Agricultural Sample (2006 and 2009 only)

	ALL SAMPLE				NON-AGRICULTURAL SAMPLE			
	2006		2009		2006		2009	
	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal
	%	%	%	%	%	%	%	%
Gender								
Male	49.6	50.4	55.5	44.6	59.7	40.3	65.6	34.4
Female	23.5	76.5	31.2	68.8	57.5	42.5	66.6	33.4
Age								
15-24	28.3	71.7	35.2	64.8	41.5	58.5	51.7	48.3
25-44	52.1	47.9	59.6	40.4	67.8	32.2	73.7	26.3
45-64	28.7	71.3	31.9	68.1	49.8	50.2	53.3	46.8
Education								
None	6.4	93.7	7.8	92.2	20.7	79.4	22.2	77.9
Primary	32.6	67.5	36.6	63.4	48.2	51.8	53.0	47.0
Secondary	40.3	59.7	43.1	56.9	51.7	48.3	56.1	43.9
High	66.6	33.5	71.6	28.4	72.5	27.5	77.5	22.5
University	85.2	14.8	91.3	8.7	86.2	13.8	92.7	7.3
Marital								
Married	43.3	56.8	49.2	50.8	62.9	37.1	67.6	32.4
Single	36.1	63.9	43.8	56.2	49.7	50.3	60.1	39.9
Occupation								
Legislators	62.2	37.8	68.3	31.8	62.3	37.7	68.3	31.7
Professionals	89.6	10.4	93.9	6.1	89.6	10.5	93.9	6.1
Technicians	81.3	18.7	86.9	13.1	81.4	18.6	86.9	13.2
Clerks	81.6	18.5	86.1	13.9	81.6	18.4	86.1	13.9
Service Workers	49.4	50.6	55.0	45.0	49.4	50.6	55.0	45.0
Skilled Agricult.	9.7	90.3	10.6	89.4	64.9	35.1	56.0	44.0
Craftsmen	41.7	58.3	50.7	49.3	41.7	58.3	50.6	49.4
Plant Operators	62.0	38.0	68.2	31.8	62.1	37.9	68.4	31.7
Elementary Opr.	37.2	62.8	40.1	59.9	48.3	51.7	52.4	47.6
Sector								
Agriculture	9.0	91.0	10.0	90.0				
Mining	81.1	18.9	67.6	32.4	81.1	18.9	67.6	32.4
Manufacturing	64.1	35.9	71.9	28.1	64.1	35.9	71.9	28.1
Utilities	96.9	3.1	96.3	3.7	96.9	3.1	96.3	3.7
Construction	26.2	73.8	39.0	61.0	26.2	73.8	39.0	61.0
Trade	50.5	49.6	60.1	39.9	50.5	49.6	60.1	39.9
Hotels& Rest.	46.7	53.3	49.5	50.5	46.7	53.3	49.5	50.5
Transportation	48.6	51.4	54.8	45.3	48.6	51.4	54.8	45.3
Finances	87.6	12.4	90.1	9.9	87.6	12.4	90.1	9.9
Business Services	71.3	28.8	80.7	19.3	71.3	28.8	80.9	19.1
Public Admin.	93.6	6.4	90.2	9.8	93.6	6.4	90.2	9.8
Education	92.1	7.9	94.2	5.9	92.1	7.9	94.2	5.9
Health	91.4	8.6	93.7	6.3	91.4	8.6	93.7	6.3
Others	33.4	66.6	35.8	64.2	33.4	66.6	35.8	64.2
Employment Status								
Regular employees	73.5	26.5	80.7	19.3	74.1	25.9	81.3	18.7
Casual employees	5.9	94.1	9.5	90.5	7.7	92.3	11.7	88.3
Employers	59.4	40.6	71.0	29.0	64.3	35.7	76.1	23.9
Own-account workers	24.2	75.8	28.8	71.2	37.8	62.2	39.6	60.4
Unpaid family workers	4.3	95.7	4.2	95.8	16.0	84.0	17.3	82.7
Firm Size								
10 or less	22.9	77.1	27.9	72.1	37.2	62.8	44.3	55.7
11-49	68.9	31.1	76.2	23.8	73.0	27.0	80.0	20.0
50 or more	91.9	8.1	95.2	4.9	92.0	8.0	95.3	4.7
Household Type								
Single	56.9	43.1	65.4	34.6	69.6	30.4	76.4	23.6
No Children	39.3	60.7	48.5	51.5	58.2	41.8	68.4	31.6
With Children	42.0	58.0	47.5	52.5	59.5	40.6	64.7	35.3
Location								
Rural	23.5	76.6	25.5	74.5	52.8	47.2	55.4	44.6
Urban	58.8	41.2	65.7	34.4	61.6	38.4	68.9	31.2

Source: Authors' own calculations based on SILC 2006-2009
Notes: See Appendix Table A.1 for category definitions.

Table 5: Summary Statistics of the Variables by Labor Market State

	2006						2007						2008						2009					
	FS	IS	FSE	ISE	U	N	FS	IS	FSE	ISE	U	N	FS	IS	FSE	ISE	U	N	FS	IS	FSE	ISE	U	N
Gender																								
Male	27.2	16.8	6.1	18.1	8.9	22.8	29.5	16.5	6.7	17.2	8	22	33.3	14.6	7.7	15.3	8.4	20.8	31.1	14.6	6.6	16.7	10	21.2
Female	6.1	4.5	0.4	17.2	2.4	69.3	7.1	4.2	0.8	17.7	2	68.3	8.3	3.9	0.7	16.2	2.8	68.1	8.5	3.6	0.6	16.7	3.7	66.9
Age																								
15-24	9.0	12	0.6	12.4	9.1	56.9	11.3	11.4	1	12.0	8	56.3	13.5	10.1	0.9	11.0	8.8	55.8	11.5	10.5	0.5	11.9	10.3	55.2
25-44	25.2	11.4	4.3	17.1	5.4	36.7	27.6	10.7	4.6	17.1	4.6	35.4	30.7	9.6	5.2	14.7	5.3	34.6	30	9.3	4.8	15.2	6.8	33.9
45-64	8.2	6.9	3.5	23.3	2.2	55.9	8.4	7.5	4.3	23	2.2	54.6	9.5	7.1	4.9	21.7	2.6	54.2	9.4	6.7	3.8	23.1	3.6	53.4
Marital																								
Married	17.6	9.6	4.0	20.1	3.4	45.4	18.6	9.5	4.6	19.9	2.9	44.5	21.1	8.6	5.1	17.6	3.6	43.9	20.6	8.3	4.4	18.7	4.7	43.3
Single	12.4	11.6	1.0	12.4	9.8	52.7	15.5	10.8	1.3	12.3	8.8	51.3	17.6	9.8	1.1	11.3	9.8	50.3	15.9	10.1	1.1	11.8	11.7	49.5
Children																								
With	15.9	10.6	3.1	17	5.4	48	17.1	10.4	3.5	16.9	4.8	47.3	19.4	9.5	4.1	15.4	5.4	46.3	18.6	9.3	3.6	16.3	6.6	52
No	16	9	3	19.7	5.6	46.8	19.1	8.6	3.7	19.2	4.8	44.6	22.3	7.5	3.7	16.9	5.4	44.2	21.1	7.5	3.0	17.7	7	51
Education																								
None	1.4	7.1	0.7	25.2	3.5	62.1	1.5	6.9	1.3	25	2.9	62.4	2.0	7.7	1.2	24.0	3.2	62	1.8	7.3	0.9	24.8	3.5	61.8
Primary	11.6	12.6	4.4	22.3	4.2	44.8	12.7	12.3	5.0	22.6	3.7	43.6	14.8	11	6	20.4	4.3	43.5	13.1	10.6	5.2	22.3	5.5	43.4
Secondary	13.4	11.7	2.6	12.9	6.4	52.9	15.6	11.7	2.8	12.9	6	51.1	17.5	11	2.9	11.8	7.3	49.6	15.0	11.0	2.3	12.6	8.1	51
High	28.2	8.4	3.2	7.6	8.7	43.9	30.2	8.3	3.9	7.6	7.4	42.7	32.8	6.6	4	6.9	7.8	41.9	32.4	7.4	4.0	7.5	10.0	38.8
University	60.4	6	2.6	3.6	7.9	19.5	63.1	4.5	2.4	3.6	6.4	20	66.8	3	2.4	2.5	6.6	18.7	64.5	2.8	2.4	3.1	9.2	18
Sector																								
Agriculture	0.6	8.1	8.0	83.2	0	0	0.7	8.2	9.2	81.8	0	0	1.7	8.5	10.4	79.5	0	0	1.3	8.4	8.6	81.6	0.1	0.2
Industry	63	27.0	2.4	7.6	0	0	67.8	23.1	3.3	5.8	0	0	71.3	19.5	3.7	5.6	0	0	68.8	20.1	3.3	7.4	0.1	0.3
Construction	23.7	68.8	1.5	6.1	0	0	28.0	64.5	2	5.4	0	0	35.9	56	2.6	5.6	0	0	34.9	53	2.9	7.7	1.2	0.4
Services	53.5	25.0	7.7	13.8	0	0	55.5	23.1	8.3	13.1	0	0	59.3	19.3	9.2	12.3	0	0	58.2	20.1	7.9	13.3	0.1	0.3
Location																								
Rural	8.8	9.1	4.6	36.2	4.0	37.4	9.9	9.3	5.5	36.1	3.6	35.6	11.6	8.8	6.2	33.6	4.2	35.5	9.7	8.6	5.2	36.3	4.3	35.9
Urban	20.7	11	2	5.2	6.4	54.6	22.8	10.4	2.3	5	5.6	54	25.5	9.1	2.6	4.6	6.1	52.2	24.7	9.0	2.4	5.5	8.1	50.3
Firm Size																								
10 or less	10.6	24.0	9.7	55.7	0	0	12.4	22.3	11.1	54.3	0	0	15.7	20.9	12.8	50.6	0	0	14.5	20.9	11	53.2	0.2	0.2
11-49	69	29.7	0.1	1.2	0	0	69.7	29.4	0.2	0.8	0	0	76.1	23.2	0	0.7	0	0	75.9	22.5	0.1	1.1	0	0.5
50 or more	91.9	8	0	0.1	0	0	92.8	7.2	0	0	0	0	94.2	5.8	0	0	0	0	94.8	4.8	0	0	0.1	0.3
Occupation																								
Legislators	30.6	8.5	30	30.9	0	0	32.5	10.4	28.9	28.2	0	0	34.6	7.9	30.8	26.8	0	0	35.9	6.8	29.2	28	0	0.1
Professionals	87.8	7	2.7	2.6	0	0	89.4	5.8	2.5	2.3	0	0	92.2	3.4	2.8	1.6	0	0	91.2	3.8	2.6	2.0	0	0.3
Technicians	79.5	13.6	2.1	4.8	0	0	81.6	10.6	3.2	4.7	0	0	82.5	9.2	3.2	5.1	0	0	83.7	7.1	3.3	5.5	0.1	0.4
Clerks	81.4	16.2	0.2	2.2	0	0	83.3	13.1	1.6	2.1	0	0	88.1	9.6	0.7	1.6	0	0	84.7	12.3	0.9	1.6	0	0.6
Service Workers	46.7	37.1	3.1	13.2	0	0	47	35.2	4.3	13.6	0	0	51.9	29.6	6.3	12.2	0	0	49.9	34.4	4.4	10.9	0.1	0.3
Skill. Agricultu.	0.6	0.5	8.7	90.1	0	0	0.5	0.9	10	88.6	0	0	0.5	0.4	11.4	87.6	0	0	0.8	1.0	9.6	88.4	0.0	0.2
Craftsmen	35.3	46.9	5.2	12.7	0	0	40.4	43.1	6.0	10.5	0	0	47.7	35.1	6.6	10.7	0	0	43.3	34.8	6.3	14.8	0.5	0.3
Plant Operators	56	27.8	6	10.2	0	0	61.8	22.6	6.6	9	0	0	63.9	19.3	8.8	8.1	0	0	59.8	20.9	7.8	11.2	0.1	0.2
Elementary Opr.	36.4	53.4	0.7	9.5	0	0	40.5	51.6	0.9	7.1	0	0	41.6	49.8	1.1	7.5	0	0	38.9	42.6	1.0	16.5	0.6	0.4

Table 6: Transition Probabilities (P$_{ij}$) 2006-2007 (%)

	TOTAL SAMPLE						NON-AGRICULTURAL SAMPLE					
	LMS2007							LMS2007				
LMS 2006	FS	IS	FSE	ISE	U	N	LMS 2006	FS	IS	FSE	ISE	U	N
FS	89.3	2.8	0.4	0.9	2.7	4.1	FS	89.8	2.7	0.4	0.4	2.7	4.1
IS	12.9	57.7	0.8	7.0	9.4	12.2	IS	15.0	59.7	0.9	3.9	9.4	11.2
FSE	3.3	2.6	78.8	12.0	0.9	2.4	FSE	4.3	2.1	81.9	7.5	1.1	3.2
ISE	1.3	4.0	4.5	77.3	2.0	10.9	ISE	2.9	8.7	9.4	62.0	5.3	11.6
U	15.2	26.4	0.7	6.0	27.9	23.8	U	16.3	23.7	0.8	3.2	30.3	25.8
OLF	1.7	3.3	0.2	5.4	2.7	86.7	OLF	1.8	2.7	0.2	1.1	2.9	91.4
P.j (Total)	17.5	10.0	3.5	18.2	4.6	46.3	P.j (Total)	21.7	10.3	2.3	4.0	5.3	56.3

Source: Authors' own calculations based on SILC 2006-2007 (Panel observations only).
Notes: [1] P.j is the relative size of a state at the end of a period. [2] FS: Formal-salaried IS: Informal-Salaried FSE: Formal Self-employed ISE: Informal Self-employed U: Unemployed N: Inactive

Table 7: Transition Probabilities (P$_{ij}$) 2006-2008 (%)

	TOTAL SAMPLE						NON-AGRICULTURAL SAMPLE					
	LMS2008							LMS2008				
LMS 2006	FS	IS	FSE	ISE	U	N	LMS 2006	FS	IS	FSE	ISE	U	N
FS	85.0	3.7	0.8	1.3	3.8	5.4	FS	78.7	4.5	0.7	2.6	6.5	7.1
IS	24.1	41.6	1.6	7.8	9.4	15.7	IS	20.5	38.0	1.8	12.4	11.3	15.9
FSE	8.2	1.2	73.0	12.5	0.9	4.3	FSE	6.4	3.2	60.5	20.4	1.9	7.6
ISE	3.0	5.7	6.9	65.9	1.8	16.8	ISE	2.7	6.2	6.3	64.6	1.8	18.5
U	21.4	23.0	1.9	9.2	23.3	21.2	U	17.3	16.5	3.5	10.0	27.3	25.4
OLF	2.8	3.8	0.3	7.0	3.0	83.1	OLF	3.6	3.5	0.2	7.7	3.2	81.7
P.j (Total)	19.7	8.8	3.9	16.8	4.5	46.3	P.j (Total)	18.8	8.4	3.5	17.5	5.6	46.3

Source: Authors' own calculations based on SILC 2006-2008 (Panel observations only).
Notes: [1] P.j is the relative size of a state at the end of a period. [2] FS: Formal-salaried IS: Informal-Salaried FSE: Formal Self-employed ISE: Informal Self-employed U: Unemployed N: Inactive

Table 8: Transition Probabilities (P$_{ij}$) 2006-2009 (%)

	TOTAL SAMPLE						NON-AGRICULTURAL SAMPLE					
	LMS2009							LMS2009				
LMS 2006	FS	IS	FSE	ISE	U	N	LMS 2006	FS	IS	FSE	ISE	U	N
FS	78.7	4.5	0.7	2.6	6.5	7.1	FS	79.6	4.4	0.7	1.5	6.6	7.3
IS	20.5	38.0	1.8	12.4	11.3	15.9	IS	23.9	38.8	1.1	8.3	12.9	14.9
FSE	6.4	3.2	60.5	20.4	1.9	7.6	FSE	8.8	4.4	59.3	15.4	1.1	11.0
ISE	2.7	6.2	6.3	64.6	1.8	18.5	ISE	5.5	9.9	12.7	45.9	5.5	20.4
U	17.3	16.5	3.5	10.0	27.3	25.4	U	17.9	16.3	3.3	5.4	29.6	27.5
OLF	3.6	3.5	0.2	7.7	3.2	81.7	OLF	3.9	3.2	0.2	2.0	3.4	87.3
P.j (Total)	18.8	8.4	3.5	17.5	5.6	46.3	P.j (Total)	22.8	8.4	2.4	5.0	6.7	54.7

Source: Authors' own calculations based on SILC 2006-2008 (Panel observations only).
Notes: [1] P.j is the relative size of a state at the end of a period. [2] FS: Formal-salaried IS: Informal-Salaried FSE: Formal Self-employed ISE: Informal Self-employed

Table 9: Multinomial Logit estimation results (2006 to 2007 Transitions)

	MNL 1: Transitions out of Formal-Salaried						MNL 2: Transitions out of Informal-Salaried				
	FS to IS	FS to FSE	FS to ISE	FS to U	FS to OLF		IS to FS	IS to FSE	IS to ISE	IS to U	IS to OLF
female	-1.662*	-31.78***	-1.290	-0.152	0.703*	female	-0.330	-33.18***	-1.696*	-0.702	1.446***
age25to44	-2.501***	-4.169**	-0.225	-0.545	-1.478***	age25to44	-0.0167	-0.192	0.310	0.293	-0.300
age45to64	-1.389*	-3.013	0.437	0.601	1.415*	age45to64	-0.389	-2.006	0.275	0.887	1.497**
married	-0.115	1.650*	-1.292	-0.686	-0.750*	married	0.0487	0.574	-0.600	-0.461	-0.550
child	0.381	0.317	-0.0506	0.0972	0.0195	child	-0.309	-0.437	-0.0900	-0.125	-0.183
hsize	-0.120	-1.393**	-0.330	-0.165	-0.215**	hsize	-0.0403	-0.226	-0.274***	-0.182**	-0.181***
nosch	0.567	-31.74***	1.372	-0.747	-0.591	nosch	-0.664	-33.02***	0.520	0.661**	0.165
secondarysch	-0.290	-0.936	-0.234	-0.592	0.000163	secondarysc	-0.165	-1.454	-0.554	-0.471	-0.934***
highsch	-1.397***	0.944	-1.639**	-0.790**	-0.695**	highsch	0.331	0.245	-0.463	-0.128	-0.517
universityup	-1.872***	-32.21***	-2.210*	-2.081***	-1.130***	universityup	0.717*	-32.78***	-0.343	-0.331	-0.604
exper	-0.0369	0.0937	-0.110	-0.0938	-0.131***	exper	-0.0967**	-0.239**	-0.0673*	-0.121***	-0.143***
expersq	0.00193	-0.00158	0.00164	0.00115	0.00333***	expersq	0.00152	0.00670**	0.00174*	0.00198*	0.00322***
femX25to44	3.882***	1.901*	0.523	0.122	0.302	femX25to44	0.234	-0.0992	0.00989	-0.00445	-0.0899
femX45to64	3.091*	1.149	-32.97***	-0.445	-1.236	femX45to64	-0.201	1.912	0.595	-0.585	-1.318*
femXmar	-2.381**	-2.463*	0.547	0.264	1.291*	femXmar	-0.624	-0.700	1.164	-0.170	0.816
agriculture	0.550	-33.35***	-34.70***	-35.47***	-35.97***	agriculture	-1.705***	-1.702	0.384	0.168	-0.00923
construction	-0.0677	-33.11***	-0.143	0.215	-0.830	construction	-0.588*	-2.027**	-0.642*	0.0763	-0.517
services	-0.612*	0.0731	-0.383	-0.572*	-0.497*	services	-0.403*	-1.258**	-0.339	-0.225	-0.497**
fsize11to49	-0.901**	-33.41***	-0.156	-0.288	-0.428	fsize11to49	0.677***	-0.599	-0.933**	0.501*	0.0600
fsize50plus	-1.148***	-3.479**	-1.625*	-0.899**	-0.601*	fsize50plus	1.093***	-0.377	-0.325	0.507	0.380
N	2830	2830	2830	2830	2830	N	1784	1784	1784	1784	1784

Table 9: Multinomial Logit estimation results (2006 to 2007 Transitions) (continued)

	MNL 3: Transitions out of Formal-Self Employed						MNL 4: Transitions out of Informal-Self Employed				
	FSE to FS	FSE to IS	FSE to ISE	FSE to U	FSE to OLF		ISE to FS	ISE to IS	ISE to FSE	ISE to U	ISE to OLF
female	-41.89***	-42.40***	-21.27***	-36.30***	-38.01***	female	-2.016*	-1.331**	-1.123*	-1.255*	0.990***
age25to44	-0.0966	-1.191*	-0.800	-3.152***	-21.51***	age25to44	-0.109	-0.475	0.320	-0.873	-1.252**
age45to64	-0.647	-1.987	-0.465	2.237	3.586*	age45to64	-0.636	-0.560	-0.192	-2.760**	0.905*
married	-0.539	-0.838	-1.147*	-1.242*	-1.754	married	-0.822	0.395	0.355	-0.297	-0.148
child	-0.648	0.130	0.380	2.139*	-0.0635	child	-0.373	-0.296	-0.738***	-0.0848	0.0295
hsize	0.0565	-0.450	-0.150	-0.411	-0.164	hsize	-0.104	0.111	0.0180	-0.0994	-0.0393
nosch	-36.35***	-37.21***	-1.003	2.848**	-0.459	nosch	-0.774	0.0963	-0.101	0.471	0.232
secondarysch	0.380	0.990	0.201	-35.63***	0.120	secondarysch	-0.0959	-0.221	-0.186	-0.283	-0.281
highsch	0.229	-0.221	-0.213	1.207	0.622	highsch	0.399	-0.402	0.233	-0.395	0.0392
universityup	-0.809	0.282	-39.12***	-38.68***	-38.92***	universityup	0.180	-1.869	-0.224	0.0551	0.258
exper	-0.0900	-0.0410	-0.0109	0.147	-0.268*	exper	-0.000698	0.000781	-0.0150	0.0759	-0.106***
expersq	-0.000305	0.000952	0.000714	-0.00821*	0.00559*	expersq	-0.000936	-0.00108	0.000184	-0.00171	0.00179***
femX25to44	21.82	23.68	22.70***	2.399	40.90	femX25to44	-0.618	0.510	-0.724	0.159	1.303*
femX45to64	-9.548***	-11.47***	23.79	1.983	20.48***	femX45to64	-30.58***	0.274	0.177	1.858	-0.275
femXmar	18.76	20.03	-0.769	-1.310	20.31	femXmar	-0.0163	-0.545	-0.162	-1.513	-0.252
agriculture	-0.710	0.292	0.0611	-3.119***	-2.470**	agriculture	-1.767***	-2.231***	-2.177***	-2.243***	-1.623***
construction	2.548	-37.47***	-36.89***	2.038	-36.71***	construction	-1.906	-0.611	-2.211**	-1.510	-0.807
services	-1.144	-0.442	-0.551	-4.342*	-0.657	services	-1.224*	-1.525***	-1.528***	-1.197**	-1.216***
						fsize11to49	-31.92***	2.114*	1.075	-32.33***	0.304
						fsize50plus	29.22	27.14***	-8.462***	-7.615***	-8.843***
N	542	542	542	542	542	N	3253	3253	3253	3253	3253

Table 9: Multinomial Logit estimation results (2006 to 2007 Transitions) (continued)

	MNL 5: Transitions out of Unemployed						MNL 6: Transitions out of Inactive				
	U to FS	U to IS	U to FSE	U to ISE	U to OLF		OLF to FS	OLF to IS	OLF to FSE	OLF to ISE	OLF to U
female	-0.04	-0.04	-32.79***	-40.42***	1.436**	female	-1.442**	-1.238***	-43.02***	-1.871***	-1.529**
age25to44	-0.973*	-1.117**	0.57	-0.24	-1.421**	age25to44	-3.873**	-1.662*	-2.126*	-3.462***	-0.63
age45to64	-1.631*	-1.902**	-32.09***	0.14	0.16	age45to64	-5.175***	-2.499***	-3.254*	-3.732***	-2.356**
married	0.64	0.53	-0.15	-0.71	0.34	married	3.038*	0.06	2.929**	0.38	-0.11
child	-0.33	0.35	-0.37	0.18	0.19	child	0.07	0.43	-1.808**	0.18	-0.30
hsize	0.03	0.04	-0.940*	-0.259*	-0.04	hsize	-0.18	-0.13	-0.11	-0.11	-0.290*
nosch	-0.79	0.06	-32.99***	-0.36	0.13	nosch	-1.65	0.03	0.40	0.32	0.38
secondarysch	0.09	-0.20	-33.83***	-1.08	-0.33	secondarysch	-0.87	-0.815**	-0.27	-0.730*	0.06
highsch	0.700*	-0.19	0.29	-0.07	0.50	highsch	0.35	-0.789**	-32.16***	-0.962**	-0.11
universityup	1.409**	-0.81	1.08	-0.03	0.28	universityup	0.65	-0.33	-32.51***	-2.554*	0.01
exper	0.05	0.05	-0.04	0.02	-0.103*	exper	-0.07	0.02	-0.21	0.0806**	-0.01
exper sq	0.00	0.00	0.00	0.00	0.00269*	exper sq	0.00	0.00	0.00	-0.00122*	0.00
femX25to44	0.29	0.13	-0.90	19.61	0.80	femX25to44	2.81	1.05	22.61	2.722**	0.78
femX45to64	-35.63***	1.17	34.07***	-17.13***	-0.18	femX45to64	3.585*	0.49	-7.961***	2.216**	0.20
femXmar	-0.14	0.00	-0.47	21.98	0.92	femXmar	-3.859**	-1.302*	16.39	-0.81	-0.98
N	661	661	661	661	661	N	2498	2498	2498	2498	2498

Source: Authors' own calculations based on SILC 2006-2007 (Panel observations only).

Notes: [1] For variable definitions, see Appendix Table A.1 [2] FS: Formal-salaried IS: Informal-Salaried FSE: Formal Self-employed ISE: Informal Self-employed [3] The results are the marginal effects for the MNL model [4] Dependent variable Base category: MNL 1: Remaining in FS, For MNL 2:Remaining in IS, For MNL 3: Remaining in FSE, For MNL 4:Remaining if IS, MNL 5: Remaining in U, MNL 6: Remaining in N [5] Independent variable Base category: Male, Age 15-24, single, does not have a child, primary school graduate, industry sector, firm size 1-10.

Legend: * for p<.05, ** for p<.01, and *** for p<.001

Table 10: Multinomial Logit estimation results (2006 to 2008 Transitions)

	MNL 1: Transitions out of Formal-Salaried						MNL 2: Transitions out of Informal-Salaried				
	FS to IS	FS to FSE	FS to ISE	FS to U	FS to OLF		IS to FS	IS to FSE	IS to ISE	IS to U	IS to OLF
female	-1.264	-36.89***	-21.59***	-0.0403	0.562	female	-0.633	-40.79***	-22.52***	-0.380	0.969*
age25to44	-1.669***	-1.797*	-0.899	-0.260	-1.518***	age25to44	0.0417	-1.373	0.707	-0.00180	-1.260*
age45to64	-0.700	-0.650	1.617	1.194	1.156*	age45to64	-1.063*	-2.502	0.367	-0.250	0.908
married	-0.621	0.0845	-1.078	-0.676	-0.341	married	-0.213	0.410	-0.707	-0.969*	-0.875
child	0.148	0.377	-0.198	-0.104	-0.294	child	-0.112	-0.210	0.0107	-0.179	-0.340
hsize	-0.0486	-0.572*	-0.293	0.0259	-0.141	hsize	0.0988	-0.265	-0.229*	-0.0778	-0.0566
nosch	-0.801	-35.81***	-37.72***	-0.997	-38.83***	nosch	-1.232**	-41.14***	-0.101	-0.0291	-0.217
secondarysch	-0.726*	-1.058	-0.414	-1.175**	-0.485	secondarysch	-0.193	-1.894	-0.884*	-0.238	-0.756*
highsch	-1.187**	-0.559	-0.618	-0.813**	-0.972***	highsch	0.438	0.423	-0.755	-0.235	0.00369
universityup	-1.834***	-36.99***	-2.363*	-1.516***	-0.987**	universityup	0.982*	-40.30***	-41.58***	-0.249	-0.301
exper	-0.0413	0.125	-0.00856	-0.113*	-0.0665	exper	-0.0000801	-0.125	-0.0271	-0.0514	-0.0416
expersq	0.00248*	-0.00725	-0.00116	0.00149	0.00202	expersq	-0.000720	0.00473*	0.000863	0.00135	0.00139
femX25to44	1.852	0.857	22.32	-0.370	0.613	femX25to44	0.0332	0.812	20.39***	-0.479	0.579
femX45to64	1.759	1.540	-15.99***	-36.74***	-0.485	femX45to64	0.908	1.241	20.00	-1.230	-0.825
femXmar	-1.529	-0.610	0.226	-1.208	0.805	femXmar	-0.516	-0.567	1.719	0.809	1.457*
agriculture	0.169	-36.63***	1.508	-37.50***	-0.391	agriculture	-0.811*	-0.434	0.0203	0.135	-0.0101
construction	1.014*	-35.99***	0.651	0.563	-0.196	construction	-0.721**	-1.546	-1.118**	0.247	-0.846*
services	-0.403	-0.277	-0.783	-0.734**	-0.555*	services	-0.105	-0.206	-0.308	0.0906	-0.303
fsize11to49	-0.837**	-1.407*	-1.341*	-0.402	-0.588*	fsize11to49	0.617**	-0.473	-0.212	-0.135	0.0901
fsize50plus	-1.280***	-2.588***	-1.129*	-0.623*	-0.552*	fsize50plus	0.423	-0.432	-1.876	0.284	0.277
N	1845	1845	1845	1845	1845	N	1097	1097	1097	1097	1097

Table 10: Multinomial Logit estimation results (2006 to 2008 Transitions) (continued)

	MNL 3: Transitions out of Formal-Self Employed						MNL 4: Transitions out of Informal-Self Employed				
	FSE to FS	FSE to IS	FSE to ISE	FSE to U	FSE to OLF		ISE to FS	ISE to IS	ISE to FSE	ISE to U	ISE to OLF
female	0.0102	27.16	3.407**	-11.65**	26.19***	female	-1.461	-0.784	-1.014	0.241	1.516***
age25to44	-0.685	-3.614***	-0.497	-4.103**	-0.0297	age25to44	0.0147	-0.755	0.471	0.979	-1.18
age45to64	-0.0946	-2.719	0.821	-3.170**	5.773*	age45to64	-0.999	-0.896	-0.254	0.578	1.415*
married	-0.248	-2.097*	-0.351	0.589	-0.357	married	0.331	0.966*	0.192	-0.543	-0.66
child	0.460	-1.995*	-0.388	-0.151	-0.411	child	-0.477	-0.391	-0.524*	0.131	0.128
hsize	-0.235	-1.327***	-0.0668	-1.081	-0.0482	hsize	-0.0608	0.163**	0.0965	-0.074	0.0309
nosch	-35.69***	-34.95***	0.204	2.892	0.982	nosch	-0.245	-0.101	-0.32	-0.484	-0.00912
secondarysch	0.0886	-36.23***	-0.253	1.136	0.826	secondarysch	0.308	-0.279	-0.44	0.376	-0.199
highsch	0.0414	-38.01***	-0.403	-34.40***	0.873	highsch	1.086**	-1.267**	0.169	-1.004	-0.527
universityup	0.774	1.380	-0.432	-33.81***	-38.75***	universityup	0.974	-0.606	0.513	-31.93***	0.0243
exper	-0.0569	0.758***	-0.0557	0.134	-0.441**	exper	-0.0172	-0.0215	0.013	-0.124*	-0.0718**
expersq	-0.000334	-0.0194***	0.000798	-0.00111	0.00785**	expersq	-0.0000594	-0.000838	-0.000484	0.00198	0.00131**
femX25to44	-28.78	-30.13***	-57.14	-49.65***	-40.39***	femX25to44	0.179	0.295	-0.515	-0.771	1.209
femX45to64	-41.54***	-47.79***	-32.69***	-30.42***	-17.09	femX45to64	-28.74***	0.101	-0.235	0.457	-0.959
femXmar	28.35	10.79	54.41	30.44***	16.49**	femXmar	-2.345	-1.237	-0.578	-1.561	0.143
agriculture	0.224	-1.551	-0.0644	-2.481	-2.705*	agriculture	-1.850***	-1.548***	-1.915***	-2.545***	-1.863***
construction	0.903	-32.77***	-37.09***	-35.76***	-39.14***	construction	-33.61***	0.078	-0.758	-0.484	-1.316
services	-0.363	-0.952	-0.765	-0.980	-1.219	services	-1.261*	-0.975*	-1.583***	-1.054	-1.444***
						fsize11to49	-30.98***	2.469**	-31.85***	-30.23***	0.369
N	329	329	329	329	329	N	1959	1959	1959	1959	1959

Table 10: Multinomial Logit estimation results (2006 to 2008 Transitions) (continued)

	MNL 5: Transitions out of Unemployed						MNL 6: Transitions out of Inactive				
	U to FS	U to IS	U to FSE	U to ISE	U to OLF		OLF to FS	OLF to IS	OLF to FSE	OLF to ISE	OLF to U
female	23.72***	23.03***	-10.57***	-15.72	25.56***	female	-1.729**	-1.554***	-34.26***	-1.808***	-1.725**
age25to44	-0.821	-0.248	1.374	0.0436	-0.668	age25to44	-1.805	-1.997**	-0.833	-4.151***	-2.155
age45to64	-36.75***	-1.191	0.866	-0.388	1.024	age45to64	-4.334***	-2.654***	-2.963	-4.630***	-3.783***
married	0.39	0.228	0.553	-0.365	0.465	married	0.29	0.819	4.095**	2.080*	0.516
child	-1.017*	-0.0756	-0.8	-0.0405	-0.702	child	0.125	0.614*	-0.86	0.255	0.369
hsize	0.148	0.043	-0.298	-0.23	-0.0434	hsize	0.0538	-0.15	-0.355	-0.186*	-0.285
nosch	-1.44	-0.247	0.11	-0.178	0.319	nosch	-0.94	0.22	-0.246	0.103	0.0362
secondarysch	0.272	-0.353	0.168	-0.702	-0.174	secondarysch	-0.86	-0.0283	0.525	-0.0705	-0.208
highsch	1.026*	-0.0639	0.159	-0.436	0.554	highsch	0.516	-0.713*	-33.20***	-0.678*	-0.11
universityup	2.171**	0.061	0.409	0.656	1.284	universityup	1.305*	-0.0523	-33.19***	-1.565*	-0.807
exper	0.0442	0.0334	-0.326**	-0.0226	-0.144*	exper	-0.0762	-0.00827	-0.353*	0.0546	0.117
expersq	-0.00071	-0.000793	0.00684*	0.00191	0.00411*	expersq	0.00146	0.000204	0.00646*	-0.000754	-0.00368*
femX25to44	-22.91	-23.41***	-23.74***	-4.491***	-23.48***	femX25to44	0.63	2.225**	1.126	3.724***	2.332
femX45to64	-1.679	-0.19	-2.309	-19.19***	-3.386*	femX45to64	1.888	1.4	2.711	3.748***	0.771
femXmar	0.0646	0.993	0.596	22.03***	0.787	femXmar	-1.154	-2.120**	-5.048***	-2.294*	-2.695*
N	414	414	414	414	414	N	1598	1598	1598	1598	1598

Source: Author's own calculations based on SILC 2006-2008 (Panel observations only).

Notes: [1] For variable definitions, see Appendix Table A.1. [2] FS: Formal-salaried IS: Informal-Salaried FSE: Formal Self-employed ISE: Informal Self-employed [3] The results are the marginal effects for the MNL model [4] Dependent variable Base category: MNL 1: Remaining in FS, For MNL 2:Remaining in IS, For MNL 3: Remaining in FSE, For MNL 4:Remaining if IS, MNL 5: Remaining in U, MNL 6: Remaining in N [5] Independent variable Base category: Male, Age 15-24, single, does not have a child, primary school graduate, industry sector, firm size 1-10.

Legend: * for p<.05, ** for p<.01, and *** for p<.001

Table 11: Multinomial Logit estimation results (2006 to 2009 Transitions)

	MNL 1: Transitions out of Formal-Salaried						MNL 2: Transitions out of Informal-Salaried				
	FS to IS	FS to FSE	FS to ISE	FS to U	FS to OLF		IS to FS	IS to FSE	IS to ISE	IS to U	IS to OLF
female	-38.73***	-38.79***	-23.01***	-0.820	1.069*	female	-0.553	-39.59***	0.473	0.537	2.197**
age25to44	-1.825**	-3.128*	-0.948	-0.665	-1.274*	age25to44	-0.337	-3.254***	0.672	-0.0472	-0.705
age45to64	-0.815	-36.23***	1.119	-0.685	1.283	age45to64	-1.577	-25.13***	-0.112	1.083	0.0567
married	-0.314	-1.089	-1.363*	-0.863	-1.596**	married	-0.455	1.500	-0.676	-0.954	-0.237
child	0.954	1.112	0.649	-0.383	-0.162	child	0.0926	-1.714**	0.262	-0.421	-0.541
hsize	-0.212	-0.871	-0.138	-0.0328	0.0226	hsize	0.0880	-0.259	0.0291	-0.0990	-0.0355
nosch	-42.23***	-36.59***	-0.691	-41.21***	-1.654	nosch	-2.925**	-42.81***	-0.537	-1.364*	-0.201
secondarysch	-0.981*	-1.355	-1.655*	-0.00280	-1.054*	secondarysch	-0.0477	0.0553	-1.535**	-0.802	-0.832
highsch	-1.014*	-0.773	-0.987	-0.609	-1.867***	highsch	0.518	0.492	-2.648*	0.221	-0.659
universityup	-1.939*	-38.83***	-2.711*	-0.757	-1.169*	universityup	1.013	-40.81***	-1.108	-1.871	-0.401
exper	-0.0472	0.517	-0.0299	-0.0210	0.0382	exper	-0.0148	0.135	-0.0928	0.0664	-0.0532
expersq	0.00249	-0.0222	-0.000821	0.00114	-0.000168	expersq	-0.000747	-0.00298	0.00294*	-0.00264	0.00255*
femX25to44	18.92	18.97	22.50	-0.662	-0.973	femX25to44	0.220	-19.79***	-0.843	0.187	-0.268
femX45to64	-20.56***	14.85***	-16.39***	-40.24***	-2.536*	femX45to64	0.321	43.81	-0.784	-2.117	-1.080
femXmar	20.20	21.13	-37.96***	0.922	2.424*	femXmar	0.177	19.39	0.895	0.967	1.029
agriculture	-39.99***	-37.77***	1.449	1.535	-41.43***	agriculture	-2.026*	-0.180	-0.350	-1.473*	-0.385
construction	1.572**	-36.57***	0.640	0.388	0.790	construction	0.0958	-0.305	-0.899	0.108	-0.997
services	-0.193	-0.237	-0.0721	-0.535	-1.078**	services	0.173	-0.339	-0.132	-0.439	-0.429
fsize11to49	-0.718	-2.153	-0.0618	0.107	-0.925*	fsize11to49	0.791*	-0.993	-0.616	0.123	-0.626
fsize50plus	-1.687***	-39.23***	-1.181*	-0.431	-0.173	fsize50plus	1.150*	0.710	-43.24***	1.082	-0.658
N	891	891	891	891	891	N	547	547	547	547	547

Table 11: Multinomial Logit estimation results (2006 to 2009 Transitions) (continued)

	MNL 3: Transitions out of Formal-Self Employed						MNL 4: Transitions out of Informal-Self Employed				
	FSE to FS	FSE to IS	FSE to ISE	FSE to U	FSE to OLF		ISE to FS	ISE to IS	ISE to FSE	ISE to U	ISE to OLF
female	-41.66***	-38.64***	-20.29***	26.04*	-3.302*	female	-1.770	0.189	-1.596	0.326	2.805***
age25to44	-1.429	0.187	-1.496	-29.65	-0.439	age25to44	-1.251	-0.292	0.680	-0.469	-0.741
age45to64	-2.276	4.180	-0.373	-76.28***	1.571	age45to64	-3.212*	-0.0205	-0.432	-1.642	1.924*
married	-0.726	-0.403	-0.551	21.61	-1.778	married	0.254	1.885**	0.595	0.252	-0.0108
child	0.0562	-1.317	0.483	9.919	-0.426	child	0.0424	-0.757	-0.361	-0.333	0.134
hsize	-0.493	0.222	-0.136	-23.86***	0.225	hsize	-0.136	0.206*	0.0404	-0.191	0.000877
nosch	-37.94***	-34.60***	0.124	10.56*	1.145	nosch	-34.97***	0.233	-0.805	-0.428	0.131
secondarysch	0.0919	2.764**	0.517	-72.19***	1.097	secondarysch	0.570	-0.139	-0.942	-0.363	-1.218*
highsch	-1.251	2.024	0.186	3.972*	-39.64***	highsch	0.407	-0.934	-0.164	-1.088	0.00641
universityup	0.989	-39.30***	1.003	-27.89***	0.115	universityup	1.183	-36.03***	0.565	-35.27***	0.780
exper	0.00863	0.0614	0.00195	-1.697	-0.00496	exper	0.0465	-0.0920	-0.0160	-0.0390	-0.0962**
expersq	-0.000980	-0.00751	0.000754	0.0479	0.000439	expersq	-0.000431	0.0000382	-0.00000844	0.000358	0.00168*
						femX25to44	-32.33***	-0.504	-0.377	-35.34***	0.506
femX45to64	23.21***	26.18***	22.66***	41.41***	22.56	femX45to64	-28.90***	-35.71***	-0.187	1.118	-1.641
femXmar	4.520	-1.629	21.65	-25.25	6.494	femXmar	-33.24***	-2.081*	-0.314	-1.790	-0.582
agriculture	0.760	-3.545	-0.266	56.43	-3.624*	agriculture	-1.595	-1.765**	-1.882**	-1.728	-2.529***
construction	35.07***	-8.639***	-8.380***	126.0***	-8.288***	construction	-36.51***	0.840	-0.232	2.043	-36.57***
services	1.884	-3.496*	-0.338	12.27**	-1.311	services	-1.051	-1.363*	-1.459*	-0.121	-1.901***
						fsize11to49	-34.80***	2.534**	-35.72***	-33.96***	0.584
N	157	157	157	157	157	N	889	889	889	889	889

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Table 11: Multinomial Logit estimation results (2006 to 2009 Transitions) (continued)

	MNL 5: Transitions out of Unemployed						MNL 6: Transitions out of Inactive				
	U to FS	U to IS	U to FSE	U to ISE	U to OLF		OLF to FS	OLF to IS	OLF to FSE	OLF to ISE	OLF to U
female	-1.961	-38.26***	-41.35***	-21.45***	1.270	female	-1.721*	-2.458*	-40.53***	-2.350***	-0.626
age25to44	-1.472	0.0728	0.206	-1.669	0.145	age25to44	-1.366	-0.707	-58.86***	-20.49***	-20.68***
age45to64	-39.05***	0.268	-34.30***	-0.877	1.399	age45to64	-2.209*	-1.454	-20.84	-21.85***	-21.91***
married	-0.984	-0.972	1.225	-0.492	-1.524	married	-1.347	0.753	22.41***	18.89***	21.11***
child	-0.0446	1.122	0.143	0.655	-0.0338	child	0.773	0.848*	0.189	0.127	0.919
hsize	0.0416	-0.157	-0.267	-0.138	-0.176	hsize	-0.194	-0.191	-0.291	-0.129	-1.086**
nosch	-0.709	-0.0446	-34.65***	-1.364	1.370	nosch	-39.57***	-0.843	-37.96***	0.276	-0.810
secondarysch	0.774	0.388	-0.121	0.244	-1.005	secondarysch	-0.283	-0.319	0.0739	0.487	0.222
highsch	1.058	0.522	1.441	-0.948	1.477*	highsch	0.765	0.247	-37.23***	-0.522	0.916
universityup	3.904*	-35.27***	3.017	0.670	1.342	universityup	0.781	-0.639	-37.92***	-1.842	-0.114
exper	0.186	0.0473	-0.346	0.154	-0.138	exper	0.0314	-0.122*	-0.329	0.0765	0.0439
expersq	-0.00497	-0.00309	0.00633	-0.00469	0.00491*	expersq	-0.00275	0.00261*	0.00486	-0.00108	-0.00310
femX25to44	-0.447	-0.582	19.39	0.128	-1.206	femX25to44	0.0703	0.799	59.13***	20.33	20.69***
femX45to64	34.96	36.16	53.35**	-0.356	34.19	femX45to64	0.294	0.152	21.89***	21.18***	21.16
femXmar	3.357*	2.525*	21.97	23.28	3.762*	femXmar	0.938	-0.989	-23.02***	-19.08***	-22.94***
N	189	189	189	189	189	N	729	729	729	729	729

Source: Author's own calculations based on SILC 2006-2009 (Panel observations only).

Notes: [1] For variable definitions, see Appendix Table A.1. [2] FS: Formal-salaried IS: Informal-Salaried FSE: Formal Self-employed ISE: Informal Self-employed [3] The results are the marginal effects for the MNL model [4] Dependent variable Base category: MNL 1: Remaining in FS, For MNL 2:Remaining in IS, For MNL 3: Remaining in FSE, For MNL 4:Remaining if IS, MNL 5: Remaining in U, MNL 6: Remaining in N [5] Independent variable Base category: Male, Age 15-24, single, does not have a child, primary school graduate, industry sector, firm size 1-10.

Legend: * for p<.05, ** for p<.01, and *** for p<0.001

Table A.1: List of Definitions

i. Definition of Labor Market States

Formal Salaried (FS)	Regular or casual employee who are wage employed AND registered to the Social Security Institution
Informal Salaried (IS)	Regular or casual employee who are wage employed AND not registered to the Social Security Institution
Formal Self-employed (FSE)	Self-employed or unpaid family worker AND registered to the Social Security Institution
Informal Self-employed (ISE)	Self-employed or unpaid family worker AND not registered to the Social Security Institution
Unemployed (U)	Those who do not work in the reference week BUT available for work AND actively searching
Inactive (N)	Those who do not work in the reference week, not available for work AND not actively searching

ii. Definition of Multinomial Logit Model Explanatory Variables

Gender
"male"	Male	(Base category)
"female"	Female	

Age
"age15to24"	Age 15-24	(Base category)
"age25to44"	Age 25-44	
"age45to64"	Age 45-64.	

Marital Status
"single"	not married	(Base category)
"married"	married	

Education
"nosch"	Illiterates and individuals who are literate but did not graduate from a school
"primarysch"	Primary school graduate (Base category)
"secondarysch"	Secondary school graduate
"highsch"	High school or vocational school graduate
"universityup"	University or higher graduate

Children
"nochild"	Does not have children (Base category)
"child"	Has children

Economic Sector
"agriculture"	Agriculture
"industry"	Mining, manufacturing and utilities (Base category)
"construction"	Construction
"services"	Trade, hotels and restaurants, transportation, financial intermediation, business services, public administration, education, health, others.

Firm Size
"fsize1to10"	Establishments with 1-10 employees (Base category)
"fsize11to49"	Establishments with 11-49 employees
"fsize50plus"	Establishments with50 or more employees

Household Size
"hsize"	Number of individuals in the household of the survey respondent excluding himself/herself.

Work Experience
"exper"	Total number of years a survey respondent has worked for.

Female-Age Interaction
"femX15to24"	Female AND aged 15-24 (Base category)
"femX25to44"	Female AND aged 25-44
"femX45to64"	Female AND aged 45-64

Female-Marital Interaction
"femXsing"	Female AND single	(Base category)
"femXmar"	Female AND married	

Table A.2: Intersectoral Transition Frequencies and Probabilities (Pij) (2006 to 2007)

	Sector 2007				
Sector 2006	Agriculture	Manufacturing	Construction	Services	Total
Agriculture	2,751	24	28	68	2,871
	95.82	0.84	0.98	2.37	100
Manufacturin	25	1,184	22	69	1,300
	1.92	91.08	1.69	5.31	100
Construction	20	15	387	28	450
	4.44	3.33	86	6.22	100
Services	54	68	27	3,119	3,268
	1.65	2.08	0.83	95.44	100
Total	2,850	1,291	464	3,284	7,889
	36.13	16.36	5.88	41.63	100

Table A.3: Intersectoral Transition Frequencies and Probabilities (Pij) (2007 to 2008)

	Sector 2008				
Sector 2007	Agriculture	Manufacturing	Construction	Services	Total
Agriculture	2,643	31	29	65	2,768
	95.48	1.12	1.05	2.35	100
Manufacturin	31	1,187	33	106	1,357
	2.28	87.47	2.43	7.81	100
Construction	16	24	418	52	510
	3.14	4.71	81.96	10.2	100
Services	49	93	59	3,336	3,537
	1.39	2.63	1.67	94.32	100
Total	2,739	1,335	539	3,559	8,172
	33.52	16.34	6.6	43.55	100

Table A.4: Intersectoral Transition Frequencies and Probabilities (Pij) (2008 to 2009)

	Sector 2009				
Sector 2008	Agriculture	Manufacturing	Construction	Services	Total
Agriculture	2,675	18	20	49	2,762
	96.85	0.65	0.72	1.77	100
Manufacturin	31	1,277	19	100	1,427
	2.17	89.49	1.33	7.01	100
Construction	45	13	456	46	560
	8.04	2.32	81.43	8.21	100
Services	60	58	31	3,795	3,944
	1.52	1.47	0.79	96.22	100
Total	2,811	1,366	526	3,990	8,693
	32.34	15.71	6.05	45.9	100