PERSISTENCE OF INFORMAL EMPLOYMENT IN TURKEY

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ABSTRACT

PERSISTENCE OF INFORMAL EMPLOYMENT
IN TURKEY

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The primary aim of this study is to examine the persistence of informal employment in Turkey and to test two hypotheses proposed by labor market segmentation theory (LMS) which suggest that there are persistent wage, security, working conditions, and control mechanisms differentials between the various segments of the labor market and the labor mobility between the segments is limited. In doing so, two data sets have been utilized: the Household Labor Force Survey (2006-2011) and the retrospective labor market history survey we have conducted. The findings of the three main essays, in addition to the one where the different conceptualizations of the informal sector have been discussed, confirm the segmented nature of the Turkish labor market. Specifically, by investigating the determinants of labor force participation decision and wage inequality in Turkey, the first essay provides clues on the segmentation between formal and informal employment due to the substantial wage differences between them. The second essay investigates the effect of variables over which one has no control on the degree of inequality of earnings in Turkey. The results reveal that gender accounts for the largest share of opportunity inequality. The last essay is devoted to analyze labor market transitions across four labor market states:

formal employment, informal employment, non-employment, and out of labor market/schooling. The existence of limited labor mobility between formal and informal employment is verified through the computation of transition probabilities of individuals and the estimation results of a multi-state multi-spell competing risks model.

Keywords: segmented labor market, inequality of opportunity, transitions in the labor market, informal employment, Turkey

ÖZ

TÜRKİYE'DE KAYIT DIŞI İSTİHDAMIN
SÜREKLİLİĞİ

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Bu çalışmanın temel amacı Türkiye'deki kayıt dışı istihdamın sürekliliğini, Katmanlaşmış İşgücü Piyasası (KİP) teorisinin iki hipotezi – katmanlar arası farklı ücret, güvenlik, çalışma koşulları, kontrol mekanizmalarının oluşu ve katmalar arası hareketlilik önünde engeller oluşu - ile incelemektir. Bu doğrultuda, iki veri seti kullanılmıştır: Hanehalkı İşgücü Anketi (2006-2011) ve bu tez çalışması kapsamında gerçekleşen kişilerin çalışma tarihine ilişkin anket çalışmasından elde edilen veri seti. Kayıt dışı sektörün farklı kavramsallaştırmalarının sunulduğu yazın taraması ve tartışmasının yapıldığı bölüme ek olarak tezde yer alan üç makalenin sonuçları, Türkiye'deki işgücü piyasasında katmanlaşmanın olduğunu doğrular niteliktedir. İşgücü piyasasına katılım kararı ve ücret eşitsizliğinin belirleyicilerinin araştırıldığı ilk makale, kayıtlı ve kayıt dışı istihdam biçimleri arasında önemli ücret farklılıklarının olduğunu tespit ederek işgücü piyasasında bir katmanlaşma olabileceğini göstermektedir. İkinci makalede, kişilerin kontrolü altınma olmayan değişkenlerin, ücretlerdeki fırsat eşitsizliği üzerindeki etkisini incelenmiştir. Sonuçlar, cinsiyetin fırsat eşitisizliğinde en büyük paya sahip olduğunu göstermektedir. Son makale, dört işgücü piyasası durumu (kayıtlı ve kayıt dışı istihdam, çalışmama, istihdamda olmama/okulda olma)

arasındaki geçişlerin analizlerine yöneliktir. Çok-durumlu çok-geçişli yarışan riskler modeli tahmin sonuçlarına ve tahmin edilen işgücü konumları arasındaki geçiş olasılıklarına göre kayıtlı ve kayıt dışı istihdam arasındaki geçişlerde önemli engeller olduğu anlaşılmaktadır.

Anahtar Kelimeler: katmanlaşmış işgücü piyasası, fırsat eşitsizliği, işgücü piyasasındaki geçişler, enformel istihdam, Türkiye

To workers who suffer from
labor market segmentation

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CHAPTER 1

INTRODUCTION

1.1 Motivation and Aims of the Study

Perceptions of the informal sector and expectations about its future have evolved over time. Early studies in the 1950s and 1960s predicted that informal sector would decline over time, and would eventually disappear with modernization and industrialization. However, the experiences in many developing as well as developed countries contradict these expectations. Saracoglu (2003: 2) states that "in developing countries (Africa, Central and South America, Asia) the size of the informal sector is between 35 percent and 44 percent of official GDP, in transition countries (former Soviet Union and Eastern Europe), between 21 percent and 35 percent" in the early 1990s based on the findings in Scheider and Enste (2000) and Loayza (1996). Even in OECD countries, the share of the informal sector is about 15 percent and it accounts to 39 percent of official GDP in Latin America, on average, for the early 1990s. In terms of employment figures, Charmes (2009: 32) indicates that

> [i]nformal employment accounts for more than 47 percent of total non-agricultural employment in West Asia and in North Africa, and more than 70 percent in sub-Saharan Africa, more than 50 percent in Latin America, nearly 70 percent in South and Southeast Asia and 24 percent in transition economies.

The picture does not seem to be better in the case of Turkey: according to the Household Labor Force Survey (HLFS) of 2004-2011, on average 46 percent of all employees and 34 percent of urban employees works informally.

Moreover, the persistence of informal sector had diverse interpretations through time:

> In the 1960s, social scientists took it as a given that the informal economy dominated a significant, if not an overwhelming, portion of labor and financial transactions in the peripheral zones of the world-economy. But recent studies have established that the informal economy is now also thriving at the core. This trend prompts some analysts to conclude that

> production and social relations in the core zones are becoming increasingly reminiscent of those we expect to find in the peripheral zones.
>
> (Broad, 2000: 23)

This quotation also remarks a crucial feature of informal sector: it is defined with respect to production and social relations that overlap with the approach of Castells and Portes (1989). More clearly, Castells and Portes (1989) view informalization as a process rather than an object, thus, they see the basic distinction between formal and informal activities not on the character of the final output, but on the manner in which it is produced and exchanged.

The approach of Castells and Portes (1989) needs to be complemented with the identification of target group in defining the process of informalization: Does it refer "[t]o the actors in the economic arena (individuals, firms, establishments, institutions), or the relations between them? Or to the mechanisms which regulate the relations among these and between each and the State?" (Tunalı, 1998: 33) where each of which falls into another aspect of informal sector, i.e. illegal, unreported, unrecorded, shadow, irregular, criminal, underground, black, hidden economy. Throughout this thesis, we perceive informalization as a process with a special emphasis on informal labor as a part of the employed labor force which is not officially registered under any social security coverage and whose earnings and working conditions differ from their formally employed counterparts.

In line with this classification (formal vs. informal employment), labor market segmentation (LMS) theory seems to offer an appropriate framework to analyze the dynamics of Turkish labor market.

The literature on LMS goes back to the late 1800s. It was first formulated as a criticism of the neoclassical labor market theory which assumes a competitive market for labor characterized by individual mobility. As stated by Thomson (2008), within the boundaries of neoclassical economics, earnings differentials, which are the results of differences in human capital endowments, should diminish. The distinguishing character of segmentationalist theory is the assumption that the division of labor force is inherent to the market mechanism. Vietorisz and Harrison (1973: 367) claim that "labor market segmentation is an instance of divergent development rather than of convergence to equilibrium". The writings of the American Institutionalists in the 1950s reveal two distinct and separate groups of workers in the labor market and their findings support the "Dual Labor Market" theory developed by Doeringer and Piore (1971). In Doeringer and Piore (1971; quoted by Cain, 1976), the

duality between primary and secondary jobs manifests itself in the manner that jobs in primary sector are the good jobs that are associated with stability, high wages, social security coverage, existence of promotional ladders whereas the opposite is true for the bad jobs in the secondary sector. Radical Marxists interpretations of LMS analysis have been constructed upon the studies by Gordon, Edwards, and Reich (referred to as GER from here onwards). The four segmentation processes (segmentation into primary and secondary markets, segmentation within the primary sector, segmentation by race and segmentation by sex) listed in GER's first joint publication (Reich et al., 1973) is the outcome of the combination of these three author's theses: Gordon's work on dual labor markets, Edwards' work on the hierarchical organization of the modern corporation, and Reich's work on the sources of economic differentials by race and/or sex (Bowles and Weisskopf, 1998). These authors differ from other researchers in the LMS literature due to their explanation of the existence of LMS where GER's approach to LMS is predominantly historical. They argue that "political and economic forces within American capitalism have given rise to and perpetuated segmented labor markets, and that is incorrect to view the sources of segmented markets as exogenous to the economic system" (Reich et al., 1973: 359).

Despite the methodological and theoretical distinctions in the application of LMS theory by different schools of economic thought, their analyses can be united around two core hypotheses: the persistence of wage, security, working conditions, control mechanisms differentials between the segments and limited labor mobility between the segments.

Parallel to these concerns, our analysis starts with a brief exposition of the evolution of the concept of "informal sector", including the early debates about the concept. The definitional conceptualizations are identified with reference to dualists, structuralist, legalist and Marxist labor market theories. We also link informalization to the LMS theory in that chapter. After that, the persistence of informal employment is examined through these two hypotheses proposed by the LMS theory. The existence of wage differentials and its possible determinants are questioned in Chapter 3 within the boundaries of human capital theory where wage differentials are explained in terms of worker heterogeneity rather than the differences between jobs. Since these analyses do not account for the variables over which one has no control (or pre labor market entry conditions), it is followed by a chapter (Chapter 4) focusing on inequality among groups where groups are identified on the grounds of gender, mothers' and fathers' education level, home ownership (during respondent's childhood) and region of birth. By partitioning the population by the common characteristics

of the groups, Chapter 4 provides the share of inequality associated with these conditions. In Chapter 5, we check the validity of the second hypothesis of labor market segmentation theory which is the existence of barriers that prevent mobility across sectors/jobs.

1.2 The Significance of the Study

There is a large literature on labor market segmentation[1] (LMS) in Turkey and some of them provide evidence in supporting at least one of LMS theory's hypotheses. These studies, most of which rely on the results of their field surveys, provide evidences on the existence of security, working conditions, and control mechanisms differentials between the segments in Turkish labor market (Nichols et al, 1998; Özar, 1998; Parlak, 1996; Demir and Suğur, 1999; Yücesan–Özdemir, 2000; Selçuk, 2002; Özdemir and Yücesan-Özdemir, 2004; Nichols and Suğur, 2005). On the other hand, the existence of limited labor mobility between the segments (where the segments are mostly defined due to two characteristics; registration status of the worker and the size of the establishment) has been proved in a variety of articles with reference to descriptive results from field surveys (Evcimen et al., 1991; Sugur, 1997; Güler-Müftüoğlu, 2000).

There are a number of studies on the informal labor market in Turkey emphasizing its link to poverty and income potentials, as well as the changes in macroeconomic indicators and global macroeconomic developments (Boratav et al. 2000; Onaran 2000 and 2003; Özar and Ercan, 2002; Taymaz, 1998; Köse and Öncü, 1998 and 2000; Şenses 1996, 2000 and 2001; Yeldan, 1994). These studies have important implications for the empirical studies as they offer a well-designed theoretical basis for empirical investigations of income inequality to be used in wage inequality studies.

Wage differentials in Turkey have been investigated empirically by several authors with its link to segmentation in the labor market (Tunalı and Ercan, 1997; Tansel, 1998a; Levent, Taştı and Sezer, 2004; Aydın et al., 2010). In line with these studies, in our analysis, we define five segments on the basis of employees' work status, employment status and social security registration status by using the Household Labor Force Survey (HLFS) data (2006-2011); formal and informal job, entrepreneur, self-employed and non-employment. A second

[1] For a detailed discussion of the articles mentioned below with their links to the LMS theory, see Başak (2005) while one can also refer to Chapter 2, Section 2.3 for a summary of the findings of these case studies.

division of two sectors are then applied to formal and informal jobs: formal and informal jobs in manufacturing and formal and informal jobs in services (see also Taymaz (2010b)). In order to identify the determinants of employment patterns and wages, a joint model of decision on labor market participation (via multinomial logit model) and determination of wages (via Mincerian wage regression) is used.

This is not the first study examining inequality of opportunity in Turkey. There are several studies dealing with the same issue considering earnings (Ferreira et al., 2010a and 2010b) and educational achievement differentials (Ferreira and Gignoux, 2010). However, as stated by these authors, "As in many other countries, there is a non-trivial data challenge associated with this approach to measuring inequality of opportunity in Turkey" (Ferreira et al., 2010b: 2). By using the data set from our field survey, we are able to circumvent the imperfect data problem in the available Turkish labor market surveys for analyzing inequality of opportunity. Moreover, our data set allows us to account for gender differences as opposed to the other studies mentioned above (previously mentioned studies use the DHS survey which contains information on ever-married women only). We employ both parametric and non-parametric techniques where gender, mothers' and fathers' education level, home ownership (during respondent's childhood) and region of birth are defined as circumstance variables.

Since having limited labor mobility between segments is one of the two core assumptions of labor market segmentation theory, it is necessary to test this hypothesis to validate the theory in a specific labor market. However, to the best of our knowledge, studies on transitions in Turkish labor market is very rare (Tasci and Tansel, 2005; Tansel and Kan, 2012), possibly due to inadequacy of data. To overcome this challenge, we employ our data set in identifying labor market dynamics. By distinguishing between four labor market states, formal employment, informal employment, non-employment and out of labor force/schooling, and simultaneously allowing for multiple failures, we aim to move labor mobility discussions to a multi-state multi-spell framework. A four-state independent semi-parametric competing risk model without unobserved heterogeneity is estimated after the computation of transition probabilities considering each origin and destination pairs. The findings reveal that the probabilities of remaining in the formal sector (i.e. a transition within the same state) are larger than those of remaining in the informal sector in total, even if we account for gender. It is more likely for a formal sector employee finding a job in the formal sector again whilst it is less likely for this person to work in the informal sector.

In brief, our analyses give the main characteristics of the persistence of informal employment to researchers by investigating its dynamics in relation to LMS theory and EOp literature. We believe that our findings are useful for those who are eager to be informed about the workers who suffer from segmentation and are trapped in informal employment.

1.3 Organization of the Study

This thesis is composed of six chapters. Following the introductory chapter, Chapter 2 can be perceived as a non-technical summary on the concept of informal sector where we decribe the evolution of the concept with an emphasis on its link to the LMS theory. Chapter 3, titled "Labor Force Participation and Wages Inequality", uses the Household Labor Force Survey (HLFS) between 2006 and 2011, to find out the role of informal employment in Turkey with a close examination of how it changes through time. Moreover, the impact of the 2008 crisis in Turkish labor market is investigated in each of the seven main parts of this chapter. The first part is devoted to the review of empirical literature on labor force participation decision and wage inequality in Turkey. In the second part, we introduce the data we use. In the next two parts, we provide detailed descriptive analyses on the patterns of employment growth, in terms of total employment and urban employment respectively. The fifth part consists of our model of labor force participation decisions of urban working age population among seven outcomes (formal and informal jobs in manufacturing and services, entrepreneur, self-employment and non-employment) where we run multinomial logit model to identify the effects of personal/family and socio-economic factors on each labor market outcome. In the sixth part, we estimate earnings equations through Mincerian wage regression. In order to correct a possible sample selection problem, Heckman's two step procedure is applied in the estimation of wage equations for females and males in formal and informal manufacture and services sectors. The final part concludes and discusses the main findings.

The analyses carried out in Chapter 4 are based on the data from our field survey. In this chapter, we investigate the degree and nature of inequality of opportunity for earnings in Turkey. The introduction part of Chapter 4 is followed by four parts. A descriptive clarification of the principle of equality of opportunity and the relevant concepts are provided in the second part. In the third part, recent evidence on inequality of opportunity is overviewed through subjective and objective manifestations. The methodology and the

econometric model are given in the fifth part with the information on the data set used. In this part, by defining inequality of opportunity as the between-group share of inequality, we utilize both parametric and non-parametric techniques. Results and discussions constitute the final part.

In Chapter 5, we investigate the determinants of labor market transitions among four labor market states (informal employment, formal employment, non-employment and out of labor force/schooling). In doing so, firstly, we review the empirical literature on mobility analyses, attempting to capture articles that make use of various data structures, methods and the approaches adopted in. It is followed by a section providing the basic descriptives of the data and the essential concepts (or basic terminology). The preliminary findings on labor market transitions presenting transition probabilities between these four labor market states are also presented in the same section. The following section is organized as three subsections, each of which corresponds to a different method in survival analysis: sequence analysis, non-parametric analysis, and semi-parametric analysis. The theoretical and econometric frameworks as well as the estimation results are provided for each analysis. The last section concludes with the main findings.

Chapter 6 provides the overall summary, conclusions and suggestions for further research.

CHAPTER 2

THE INFORMAL SECTOR

The aim of this chapter is to present a historical review of the concept of informal sector with an emphasis on its different conceptualizations. The definitional confusions are remarked with reference to dualist, structuralist, legalist and Marxist labor market theories. In doing so, the text starts with a non-technical summary on the evolution of the concept of informal sector in which we discuss the perceptions of the concept due to different schools of economic thought. Then we focus on the proposals of labor market segmentation (LMS) theory where we also provide brief information on the four techniques to test these proposals. It is followed by evidences from case studies conducted by different authors that are provided to help in questioning "how the dimensions of informality in the case of Turkey fit into the LMS theory". The chapter concludes with the description of the theoretical framework adopted in the rest of the study with the shortcomings of the data utilized in the subsequent chapters.[2]

2.1 Origin and Evolution of the Concept of Informality

The early literature on the informal sector during 1950s and 1960s expected that the informal sector would decline in the course of time and eventually it would disappear with modernization and industrialization. But, the experiences in many developing as well as developed countries do not confirm this expectation. The informal sector not only continues its existence, but also expands[3].

[2] This chapter is mainly a summary of the findings in the author's master's thesis, Başak (2005), titled "Explaining Informalization via Labor Market Segmentation Theory: Evidence from Turkey".

[3] The related figures are presented in Chapter 1, Section 1.1.

2.1.1 Conceptual Discussion on the Term of Informal Sector

Before going on with the origin and evolution of the concept of informal sector, it is meaningful to list several terms that are used as synonymous with informal sector despite their certain differentiating points. "Some of these terms are illegal, unreported, unrecorded, shadow, irregular, criminal, underground, black and hidden economy, among which the most popular ones are the first three: illegal, unreported, and unrecorded economy" (Başak, 2005: 3). The particular institutional rules arise as the main distinguishing feature between these three concepts and the informal economy:[4]

> *The Illegal Economy*: It consists of income produced by those economic activities pursued in violation of legal statutes defining the scope of legitimate forms of commerce. Production and distribution of prohibited goods and services are included in the illegal economy.
>
> *The Unreported Economy*: It consists of those economic activities that circumvent or evade the institutionally established fiscal rules as codified in the tax code. For the measure of unreported economy, the most common one is "tax gap" (the difference between the amount of tax revenues due to fiscal authority and the amount of tax revenue actually collected).
>
> *The Unrecorded Economy*: The unrecorded economic activities circumvent the institutional rules that define the reporting requirements of government statistical agencies. The amount of unrecorded income, which represents a discrepancy between the total income or output and the actual amount of income or output captured by the statistical accounting system, is used as the measurement of the unrecorded economy.
>
> *The Informal Economy*: It is comprised of those economic activities that circumvent the costs and are excluded from the benefits and rights incorporated in the laws and the administrative rules covering property relationships, commercial licensing, labor contracts, torts, financial credit and social security systems.

However, one cannot easily differentiate these concepts from each other in certain situations despite being aware of their definitions. This is because of the fact that there could be one activity falling into more than one heading; a confirming example has been provided by Tunalı (1998) as the organization of home and office cleaning services. On one side there are some cleaning companies that rely on hired labor and fulfill all legal obligations (which are included in the formal side of the economy) and on the other side there are some other companies that "[e]xploit the legal loopholes and duck the reporting obligations of formality by hiring the same workers under temporary contracts" (Tunalı, 1998: 33). In addition, there are domestic workers who are not employed in any company. Therefore, it seems that

[4] The definitions of illegal, unreported, unrecorded and informal economy are taken from Fiege's (1990: 991-993) article.

defining informality on the basis of the goods produced (or the service rendered) seems to be lacking. What is important in its definition turns out to be the thing it refers to:

> Does it refer "To the actors in the economic arena (individuals, firms, establishments, institutions), or the relations between them? Or to the mechanisms which regulate the relations among these and between each and the State?"
>
> (Tunalı, 1998: 33)

The answer of this question determines not only the target group of the studies (whether it is people or the activities which are being classified under the heading of informality (Moser, 1978)), but also the modified noun of the informal economy, such as informal employment, informal firms, informal credit and finance, informal building and settlement, informal institution and policy.

Along with the present study, as mentioned in Chapter 1, we prefer to follow the approach of Castells and Portes (1989), who are regarded as the proponents of the structuralist theory, in explaining informal sector. They view informalization as a process rather than an object, thus, they see the basic distinction between formal and informal activities not on the character of the final output, but on the manner in which it is produced and exchanged. By focusing on this conceptualization, we also determine our target group as the informal employment (labor) – once again - as a "part of the employed labor force which is not officially registered under any social security coverage and also is not entitled under the 'self-employed or employer' status[5] in the labor force statistics" (Boratav et al., 2000: 9). Therefore, from now on, we stick to "informal sector" and "informal employment" in referring to the informalization process.

Turning to the literature on informal sector, in the 1950s and 1960s, the dominant view in terms of the studies in labor markets is the dualistic approach in which economic activities and employment has been divided into two categories; "traditional" and "modern" sectors. In his seminal article titled "Economic Development with Unlimited Supplies of Labour", Lewis (1954) develops his theoretical model of economic development based on the assumption that there exists an unlimited supply of labor in most developing countries. He proposes that as industrialization proceeds (or in the latter stages of development), this unlimited supply of labor which had been absorbed by the "traditional sector" (which

[5] However, we do not seperate the employment status categories of self-employment and employer from the others in Chapter 5 because of the sample size limitation.

includes traditional peasant agriculture) will be transferred to the "modern sector" (which includes industrial production such as manufacturing and mining) and as a result of this transfer, wages tend to rise which – at the end - reduces income differentials. However, Breman (1976: 1871) argues that

> During the last few decades we have seen that expansion of industrial employment opportunities lags far behind the growth of the urban labour force. The urban dualism that is nowadays apparent in many developing countries is not due to the gradually disappearing contrast between a modern-dynamic growth pole and a traditional-static sector which has tenaciously survived in an urban environment, but rather to structural disturbances within the entire economy and society.[6]

Dualist thinking received a boost in the early 1970s with the presentation of Hart's work on urban Ghana (1971, published in 1973) in which the term informal sector has been first launched. By separating the economy into two sectors as formal and informal, Hart (1973) defines the informal sector as a part of the urban labor force which appears outside the organized labor market. Although Sethuraman (1976) emphasizes the significant aspect of Hart's study as his discovery of new income-generating activities in the unorganized sector of the economy, the same study has been criticized on the ground of not offering a clarifying explanation of the situation where the first ends and the second begins[7] (Losby et al., 2002; Tunalı, 1998).

In early 1970s, the term informal sector took place in the first ILO World Employment Mission which was to Kenya. Along with the dualist view of thinking, the distinctions between the formal and informal sector has been listed as follows (ILO, 1972: 6; quoted by Bromley, 1978: 1033):

> Informal activities are a way of doing things, characterized by-
> a) ease of entry;
> b) reliance on indigenous resources;
> c) family ownership of enterprises;
> d) small scale of operation;

[6] Besides, the very same article by Breman (1976: 1872) underlines the fact that "a great many of those who earn their living in the informal sector were either born in urban areas or have long resided there" which can be perceived as an opposition to the tendency to consider those informal workers as being the migrants. The findings of our field survey confirms Breman's statement since only 38 percent of the employees (who are working at the time of the survey) in the informal sector had been migrated whereas the majority of them (62 percent) were born in the urban areas of the cities where the survey took place.

[7] Where the first and second refers to organized (formal) and unorganized (informal) sectors, repectively.

e) labor-intensive and adapted technology;
f) skills acquired outside the formal school system and
g) unregulated and competitive markets.

The characteristics of formal sector activities are, namely-
a) difficult entry;
b) frequent reliance on overseas resources;
c) corporate ownership;
d) large scale of operation;
e) capital-intensive and often imported technology;
f) formally acquired skills, often expatriate, and
g) protected markets (through tariffs, quotas and trade licenses).

It is obvious that the classification of ILO is based on the characteristics of the enterprises rather than the individuals/employees and as Sethuraman (1976) remarks, "the characteristics of the enterprises are less relevant to the general case and the practical problems of distinguishing informal sector from formal sector enterprises still remains" (Başak, 2005: 11). Moreover, Tokman (1990: 94) has criticized the ILO report for its lack of conceptual framework to define the informal sector. Since the report uses dualistic approach as its theoretical framework, "the term informal sector refers to a dichotomy in which the characteristics of the two parts from each other's contrast" (Breman, 1976: 1870).

The late 1970s and early 1980s witness different theories of the informal sector; in addition to the advocates of the dualist school, the studies by the members of structuralist, legalist and voluntarist (with the 2000s) schools have been started to take place in the literature.

2.1.2 Dominant Approaches in Studying the Informal Sector

The three approaches to informal sector can be summarized as follows[8] (on the basis of Chen et al., 2002: 6; Carr and Chen, 2002: 5):

- Dualist School: The informal sector is a separate marginal sector – not directly linked to the formal sector, even defined as exactly opposite of the formal sector – providing income or a safety net for the poor. The informal sector exists (or persists) since economic growth (or industrial development) has failed to absorb those who work in the informal sector. This perspective overlaps with the one in the 1972 Kenya report by ILO. The logical result of this approach is that as soon as the modern sector begins to grow, the informal sector simultaneously disappears.
- Structuralist School: It "sees informal enterprises and informal wage workers as subordinated to the interests of large capitalist firms, supplying cheap goods and services. According to the

[8] Most of phrases in this summary part have been taken from Başak (2005: 12-13). The other sources are: "Policies & Programmes", 2013 and "The Informal Economy Debate: Four Dominant Schools of Thought", 2013.

structuralists, in marked contrast to the dualists, formal and informal modes of production are inextricably connected and interdependent".[9] The popular scholars of this school are Castells and Portes who argue that, privileged capitalists in the formal sector look forward to erode employment relations and subordinate petty producers and traders because they try to reduce their labor and input costs and, thereby, increase their competitiveness.

- Legalist School: Informal work arrangements are the rational responses by micro-enterprises to over-regulation by government bureaucracies. The legalists view the reason of the occurrence of the informal sector in the firms' intent to reduce their costs, time and effort involved in formal registration and to increase their wealth (de Soto, 1990).

Other than these three perspectives, "The Informal Economy Debate: Four Dominant Schools of Thought" (2013) defines "voluntary school" – overlaps with the "microenterprise approach" took place in Table 2.1 - whose pioneer scholar is William Maloney. With a focus on self-employed (mainly micro-entrepreneurs), this approach perceives informal sector as "voluntary" where micro-entrepreneurs choose to operate informally. Therefore, it does not agree on informal sector being a disadvantaged residual of segmented labor markets.

The United Nations' Regional Employment Program for Latin America (PREALC) is one of the international agencies that collect data on the informal sector. PREALC defines the informal sector as the sum of the self-employed – excluding professionals and technicians – and unremunerated family workers and domestic servants. This definition has been criticized by some authors (Portes and Sassen-Koob, 1987; Portes and Benton 1984; Tokman, 1990) in that such a definition make all wage workers be included in the formal sector which results in the underestimation of the sector. Portes and Sassen-Koob (1987) suggest an alternative definition that is based on the distinction between formal and informal wage workers and they conclude with the case that the estimates of the informal sector for Latin America considering the years of 1950 and 1980 increases to about two-thirds of the economically active urban population. Table 2.1 presents the comparison of the four major approaches took place in between 1984 and 1993 with respect to various dimensions some of which are not covered in the present text.

In brief, what distinguish one approach from another are its focus or target group as well as the underlying model of power or power relationships (Chen et al, 2002: 6; Carr and Chen, 2002: 5). The dualists focus on micro-entrepreneurs and the self-employed, rather than informal wage-workers while ignoring the existence of direct links between the formal and informal activities. On the other hand, the structuralists are aware of the relationships

[9] "Policies & Programmes", 2013: http://wiego.org/informal-economy/policies-programmes

between these two sectors since they assert that the formal economy exerts a dominant power relationship over the informal economy in its own interest. They choose their target group as the informal wage-workers, as well as petty producers and traders. The legalists view the informal economy as composed of entrepreneurs who engage in these activities voluntarily (like the case in voluntarist school). According to them, the entrepreneurs operate informally as a response to unreasonable bureaucratic controls in order to exercise their own power while being aware of the fact that powerful economic actors (entrepreneurs) may influence bureaucrats and politicians. In addition to the differences between the approaches mentioned, there are some notions shared by them. Moreover, one can find some studies that combine the arguments of one specific approach with the elements of other perspectives[10] which seems to be reasonable since

> Given the heterogeneity of the informal economy, there is merit to each of these perspectives as each school reflects one or another "slice of the (informal) pie." But the informal economy as a whole is more heterogeneous and complex than the sum of these perspectives would suggest.
>
> ("Policies & Programmes", 2013)

[10] For a detailed discussion of the similarities and differences between various approaches to informal sector, see Rakowski (1994: 31-50).

Table 2.1: Comparison of Selected Aspects of the Four Major Approaches, 1984-1993

DIMENSION	ILO-PREALC	UNDERGROUND*	LEGALIST	MICROENTERPRISE
1. Approach	1. Structuralist	1. Structuralist and legalist	1. Legalist	1. Mixed
2. Unit of study	2. Surveys, size + type of employment	2. Subcontracting, conditions of work not regulated, not legal, status of labor, form of management	2. Small firms, entrepreneurs	2. Entrepreneur group, community
3. Theoretical model and methods	3. Segmentation, case studies, surveys	3. Production chains, firm linkages	3. Neo-liberal	3. Atheoretical or neo-liberal, case study
4. Origin of sector	4. Nature of development	4. Nature of capitalism, informalization	4. Excessive legal cost, bureaucratization, poverty	4. Poverty
5. Nature of sector	5. Dualistic, marginal, heterogeneous	5. Subordinate, heterogeneous	5. Rational, moral, dualistic	5. Rational
6. Function	6. Survival strategy, absorb surplus labor	6. Keep labor cost low, competitiveness high	6. Survival strategy, avoid costs	6. Survival strategy
7. Focus	7. Nature of linkages, industrialization, labor market change	7. Nature of production economy	7. Cost of regulation, firm organization	7. The poor
8. Role of sector in development	8. Safety net for crisis, income for poor, capable of growth	8. Accumulate capital, impoverish workers, capable of growth	8. Create wealth, reduce costs, democratize	8. Create jobs and income, supply goods and services
9. Agenda	9. Social democratic reform, macroeconomic policy	9. Academic theory, empirical knowledge	9. Policy: legalize	9. Growth of firm + income, poverty alleviation, empower poor, massify programs
10. Role of state	10. Stimulate macro-economy, social welfare, support entrepreneurship	10. Application of labor standards	10. Reform institutions, promote small firm	10. Appropriate policy environment for massification, support NGO work

* This approach is not discussed in the text; for its discussion, see Rakowski (1994: 31-50).
Source: Rakowski (1994: 34)

2.2 The Labor Market Segmentation Theory

> Interacting with the literature on the dualistic structure of developing country economies and the formal-informal divide, there has been a surge of literature in developed country contexts, suggesting the structural segmentation of their labor markets into primary sectors with good jobs and secondary sectors with bad jobs.
>
> (Aydın et al., 2010: 4)

Good jobs are associated with stability, high wages, social security coverage, existence of promotional ladders whereas the opposite is true for the bad jobs. It implies that there are different labor markets, with different working conditions, different promotional opportunities, different wages, and different market institutions (Reich et al, 1973). Although the recognition of segmentation is not new (even it goes back to the writings of Adam Smith), its explanation of why noncompeting groups form and are sustained constitutes the original aspect of LMS theory. For such an explanation, the theory needs to consider the following three sets of questions remarked by Vietorisz and Harrison (1973: 366):

1) What explains the existence of LMS? What mechanisms bring about within the prevailing institutions?
2) What processes select and stabilize the institutions which lead to segmentation? What functions does segmentation perform within the prevailing social organization of production, and how are these functions changing over time?
3) What ensure the coherence of the labor market as a system-defining institution of a modern industrial market economy in the face of strong tendencies toward segmentation?

It has been argued that the radical theories of segmentation have common elements with (are similar to) dual labor market (DLM) theories of the early 1970s (Fine, 1998; Leontaridi, 1998) in pointing out institutional change and behavioral rules as the most important determinants of the nature of the labor market and labor process. "By the mid-1980s, neoclassical economics began to abandon its hostility to SLM[11] theory and to contribute a distinctive analysis of its own which has developed alongside and influenced the continuing radical tradition" (Fine, 1998: 117). Therefore, considering its beginning, the theory is heterodox, however, as time passes, it has been integrated in other traditions. Within the scope of this study, we will concentrate on the first, radical phase of the theory with a special

[11] SLM is the abbreviation for "segmented labor markets".

emphasis on the two different schools of DLM theory.[12] These two schools arise on the writings of Doeringer and Piore (DP) and Gordon, Edwards, and Reich (GER); the former of which is regarded as the more conventional one whereas the latter is the radical version within the Marxist tradition (Fine, 1998).

> DP "[d]efine a primary labor market as one composed of jobs in large firms and/or unionized jobs, which tend to be better jobs – higher paying, more promotion possibilities, better working conditions, and more stable work".
>
> (Cain, 1976: 1222)

The jobs in the secondary labor market reflect the opposite of the mentioned characteristics of the primary labor market jobs, and the main indicator of dual labor markets is the stability of the employment. "The introduction of career ladders and mobility chains, on-the-job training, pension schemes, rewards, discipline systems and the exercise of strict managerial control over the workforce" (Leontaridi, 1998: 70) appear as the other components of the polarization of jobs.

To explain the persistence of urban poverty, unemployment and income inequalities, Doeringer and Piore have linked their "Dual Labor Market" theory with the writings of Harrison and Bluestone. Their most important argument on the segmented labor market theory is that mobility between the two markets is limited, implying that excess demand pressures cannot compete away the wage differentials.

Where GER differ from DP is

> [i]n a view of the labour market based on a fundamental conflict between capital and labour, not only over wages and conditions of work, but also over the control of the production process itself.
>
> (Fine, 1998: 123-124)

This has been stated in Reich et al. (1973) alternatively as there being different labor markets with different working conditions, different promotional opportunities, different wages, and different market institutions. GER challenged the conventional assumption of a single labor market and argued instead for the recognition of deep historically-shaped divisions along racial, gender, and class lines. By examining the divisions and income inequalities in the

[12] Fine (1998: 107-201) discusses segmented labor market theory from various aspects that we do not focus on; such as within the context of the Cambridge school, neoclassical economics and capitalist class relations.

American working class with an emphasis on the evolution of American capitalism, GER offer four segmentation processes ongoing in the labor market (Reich et al., 1973: 359-360)[13]:

1) Segmentation into primary and secondary markets: These two segments are differentiated mainly by stability characteristics. "Primary jobs" are considered to be stable with high wages and existence of job ladders. Whereas "secondary jobs" are mostly temporary, wages are low and job ladders are few.
2) Segmentation within the primary sector: The primary jobs are divided into two parts/segments, namely "subordinate" and "independent" primary jobs. The working conditions constitute the difference between them. Subordinate primary jobs are routinized and encourage personality characteristics of dependability, discipline, responsiveness to rules and authority, and acceptance of a firm's goals. On the other hand, independent primary jobs encourage and require creative, problem-solving, self-initiating characteristics and often have professional standards for work.
3) Segmentation by race: Certain jobs are "race-typed", segregated by prejudice and by labor market institutions.
4) Segmentation by sex: Certain jobs have generally been restricted to men; and some others to women. Wages in the female segment are usually lower than in comparable male jobs. (Moreover, their working hours are not limited to regular hours in the case of home-based work and females are especially employed on the principle of "last-in, first-out", i.e., women are not considered and hired as the first employee choice among candidates, and also in sudden economic crises, they are the ones dismissed first from the firm.)

GER explain the emergence of labor market segmentation with the transition from a relatively competitive to a more monopolistic form of capitalism in the United States (Reich et al., 1973; Edwards et al., 1975; Cain, 1976; Leontaridi, 1998; Bowles and Weisskopf, 1998).

> The segmentation was associated with a growing wage gap between the rising monopolistic sector and the remaining competitive sector as well as with the development of hierarchy within the workforces of large corporations.
>
> (Bowles and Weisskopf, 1998: 157)

Parallel to this, for GER,

> [a] divided work-force is part and parcel of a capitalist strategy to sustain profitability, and various forms of workplace control make up the management techniques for achieving this.
>
> (Fine, 1998: 124)

Apart from the (historical) empirical evidence of labor market segmentation that we will provide in the next section for the case of Turkey and the theoretical discussions on the

[13] These statements are taken from Başak (2005: 65).

sources of segmentation, there is also a growing literature on testing the claims of the segmentation hypotheses.

> From the highly varied SLM literature, Ryan (1984) and Psacharopoulus (1978) outline three key propositions which form the basis of empirical tests of the segmentation hypothesşs. These are,
>
> 1) there are few, clearly identifiable segments in the labour market
> 2) mobility barriers exist preventing movement between segments
> 3) each segment has different employment and wage setting mechanisms
>
> (Thomson, 2008: 309)

The methods of analysis used for testing the validity of the above claims are human capital regression (given a priori segment determination), factor analysis, cluster analysis, switching regressions (with unknown regimes) or a combination of these (Leondariti, 1998; Thomson, 2008).

In what follows, there is a brief summary of the methods capturing their logic rather than providing detailed information about these four analyses[14].

- *Human capital models*

With its emphasis on worker heterogeneity rather than the differences among jobs, the human theory proposes heterogeneous workers as the primary cause of wage differentials. It implies that "low wage jobs consist of low productivity workers who are unable or unwilling to obtain necessary skills which would allow them to access higher paid jobs" (Leondariti, 1998: 80). However, the unit of segmentation in the SLM theory is mostly jobs where the division is based on the differences in wages, working conditions, stability of employment and promotional ladders.

The studies that use human capital theory as the underlying theoretical model for the analyses conducted predetermine the number of segments in the labor market in order to test directly the hypothesis of the existence of wage-setting mechanisms' differentials between the segments. In doing so, the wage equations are estimated separately for each segment via utilizing an augmented classic human capital earnings function, i.e. Mincerian wage

[14] For a comprehensive review of articles that use one of these four techniques and a detailed discussion on each technique, see Leontaridi (1998) and Thomson (2008).

equation[15]. The problems one may face with in using these models are truncation and sample selection biases.

- *Factor Analysis*

Factor analysis is a technique for testing strict industrial dualism and is used to identify the underlying patterns in the data. It is a statistical method to reduce the overall dimensions of a data set via identifying a relatively small number of factors that can be used to represent complex relationships among various sets of interrelated variables. If the data are consistent with a core/periphery type distinction, one can identify a common factor that separates individuals into these two distinct groupings (Leondariti, 1998; Thomson, 2008).

- *Cluster Analysis*

> Cluster analysis is a method of assigning occupations or employees into relatively homogeneous groups with respect to a given set of variables. It therefore provides a means for drawing together the full set of job characteristics that are presumed to define segment boundaries.
>
> (Leontaridi, 1998: 89)

In this analysis, one cannot test specific hypothesis since it is completely a statistical method. However, it has two major advantages, firstly, it can determine into how many clusters the observations naturally fall (as opposed to the human capital theory where the number of segments are predetermined and the data are forced into those segments), and secondly, cluster analysis can provide information on the distance between segments (Leontaridi, 1998; Thomson, 2008). This analysis also lets researcher present and measure the degree of earnings dispersion without necessarily forcing the results into a strict duality structure (Ryan, 1981; quoted by Leontaridi, 1998: 89).

[15] We make use of this technique in estimating the determinants of wage differentials among formal and informal employees (where a second division has also been considered on the basis of sectoral level) in Chapter 3.

- *Switching regressions*

The 'switching equations' model first employed by Dickens and Lang in 1985 has been regarded as an important step forward for the economics of segmented labor markets (Thomson, 2008). Up to that time, the common approach in testing for the validity of the LMS hypotheses have been the estimation of separate earnings equations for each labor market segment where the number of segments are a priori determined.

By emphasizing

> (…) empirical work contrasting dual market and human capital theory has suffered from two major drawbacks. The taxonomies that have been developed simultaneously bias the results in favor of the dual market hypothesis by the virtue of the selection criteria and are too gross to allow accurate testing of the hypothesis,
>
> (Dickens and Lang, 1985: 794, quoted by Thomson, 2008: 327)

Dickens and Lang (1985, quoted by Leontaridi, 1998) propose a new technique that allows one to estimate the wage equations for unobserved sectors; called as a switching regression model with unknown regimes.

> This technique enables one to derive the probability of sector attachments directly from the observed distribution of wages and worker attributes and thereby resolves the problem of attributing primary or secondary sector employment to everyone in a given industry or occupation.
>
> (Leontaridi, 1998: 91)

Since testing for the hypotheses of segmentation theory will be our main focus in the following chapters (Chapter 3 and Chapter 5), we now switch to the empirical evidences found via reviewing the existing literature on the Turkish market.

2.3 Evidences of Segmentation in the Turkish Labor Market

In this section we summarize the clues for the existence of segmentation in Turkish labor market found in the field surveys conducted by various scholars. In doing so, we classify these evidences with respect to the segmentation unit utilized in the analyses such as enterprise level (in which the segmentation unit is the firm size) and employee level (where the segmentation unit is mostly registration or employment status of the workers). The two core hypotheses of the LMS theory, which are the existence of wage, security, working

conditions, control mechanisms differentials between the segments and the existence of limited labor mobility between the segments[16], are questioned with the help of these evidences from Turkey.

2.3.1 Enterprise level: Segmentation among Firms

By employing the size of the enterprise[17] as the segmentation unit, large firms are thought to be associated with the primary sector and the small (subcontracting) firms with the secondary sector. The main focus in the studies that study segmentation from the aspect of enterprise level generally remark limited labor mobility between the segments.

In this approach, the segmentation arises in the labor market as well as the labor process[18]. As Reich et al. (1973) discuss, there are firms differing in size in the labor market, implying a division of the market into large and small firms' production. It can be argued that the main underlying reason for this division is the difference in these firms' capital accumulation levels: the small firms' accumulation is much less than the one in large firms which leads to difficulties in accessing to markets for small firms. Moreover, small firms do not play a role in price determination process since they are too small to be able to affect the market mechanism (due to neoclassical school of thought). The underlying production technologies in small firms result in their production of labor-intensive goods implying their capital-labor ratio is low. The expansion of subcontracting relationships intensifies the segmentation rather than narrowing the gap between small and large firms.

Paralleling these characteristics of the enterprises, what we have encountered with - via reviewing the articles on Turkish labor market that focus on the relationships between small and large firms - are:

[16] These two core hypotheses of the theory also overlap with the second and third propositions stated by Thomson (2008: 309).

[17] The firms' registration (status) for tax is also used as the segmentation unit.

[18] For more on the discussion in terms of the segmentation in the labor market and labor process, see Edwards et al. (1975). Moreover, in the present subsection, we only review the findings of articles in which a field survey takes place whereas the more technical (mainly employing the tools of econometrics) studies are considered in Chapter 3. In addition to the ones stated in Chapter 3, there is one more study by Taymaz (2009) in which the productivity differentials between formal and informal firms in Turkey has been considered (exactly overlaping with the nıtion of segmentation among firms).

- There exists any form of assistance from the large firm to the small one (Nichols and Sugur, 1996; Güler-Müftüoğlu, 2000; Kaytaz, 1994; Evcimen et al., 1991). Moreover, the small firms are not paid on time resulting in the fact that the capital formation of small firms' never reaches the amount needed to become an independent firm (Başak, 2005).
- As Sugur (1997: 97) remarks "[i]n a market, where lack of demand is considered to be the biggest problem, it is not surprising that the forms of co-operation and collaboration are unlikely to emerge among firms", the competition among small firms as well worsens their condition in the market.
- Correspondingly, the lower profit margins do not let these firms upgrade their technology which appears as the main barrier behind the mobility between segments. However, labor mobility can be experienced within the segments (Reich et al., 1973). Sugur (1997) investigates that most of the small employers at OSTIM had been once an employee of one of these small firms[19]: as soon as they save enough to open their own business, they abandon their jobs.
- Moreover, transitions from formal (large) firms to informal (small) firms are asymmetric; transition from the former to the latter is quite easy whilst the converse is not true. Evcimen et al. (1991) state that whenever small firms enter in subcontracting relations with the larger ones, it is very difficult to get rid of these ties because of the exploitative character of this type of relations.
- From the aspect of workers in these small firms, the story is more dramatic. Once an individual is employed in the informal sector, (s)he seems to lose almost all chances to become a worker in the formal sector. Güler-Müftüoğlu (2000) confirms this statement with her findings via the field survey took place in Gedikpaşa, Istanbul in the shoe industry as she "discovers the employers' unwillingness to employ informal wage workers in their factories because they identify low productivity, low-skills with the informal workers. That's why the informal work is considered to be a dead-end job"[20] (Başak, 2005: 120).
- On the contrary, the ransition from formal employment to informal employment is relatively easy which is validated in another study by Tansel (1998c, 2002). The

[19] These small firms are characterized as follows: they are not registered with municipal or tax authorities, their employees are temporary, they employ at most seven workers, and they are tied with subcontracting relations to the large firms (Sugur, 1997).

[20] Informal work being characterized as a dead end job will be questioned in Chapter 5, Section 5.4.3.2.2 through the estimations of transitions out of informal employment state.

author verifies that there were some workers who dismissed from cement plant due to the privatization became wage workers or self-employed in the informal sector.

The following subsection complements these findings on segmentation in the Turkish labor market from the aspect of employees.

2.3.2 Employee level: Segmentation among Workers/Jobs

By utilizing the registration or employment status of status as the unit of segmentation, formal and/or permanent/regular employees (good jobs) are thought to fall into the primary sector whereas informal and/or temporary/precarious/casual employees (bad jobs) are considered to be included in the secondary sector. Therefore, it seems that the differences in the working conditions[21] (i.e. working hours) and control mechanisms matter more in determining the segments.

Although the aim of the study by Nichols et al. (1998) is to investigate the effect of privatization on labor in the case of cement industry, the very same study reveals the occupational hierarchy within the firm. The employees' (categorized under four groups as managers, clerks, manual workers and tacherons) in the firm are asked to appraise the effects of privatization on aspects of their own work in considering pay, working conditions, job security, job satisfaction, and pressure. Thus, the responses of the employees' reflect their assessments of the process in comparison between pre- and post-privatization. Except managers, all other workers report that working conditions worsened with privatization process which can be perceived as a clue for the employers' implementation of different employment strategies to workers or segments. The most negatively affected category of employees is the tacherons and it holds for the case of job satisfaction as well.

Parlak (1996), in his study on the car industry at Tofaş, stresses that the works attached to temporary workers are extremely difficult. Since they may face with the risk of losing their jobs, temporary workers cannot resist these demands, yet permanent workers can. The conclusions reached in another study conducted by Demir and Sugur (1999) point out the same situation: more intensified work and less job security have been associated with the tacherons rather than contract workers. The increase in the work intensity and control

[21] Again, all these results reviewed here reflect the respondents subjective valuation of the processes under study.

mechanisms (revealed in Yücesan-Özdemir, 2000; Demir and Sugur, 1999; Nichols et al., 1998; Parlak, 1996) for the temporary workers who are not registered under any social security institution calls for the existence of control mechanisms differentials between segments.

2.4 Theoretical Underpinnings of the Analyses conducted in the Present Study

The findings of the literature review on the basis of field surveys conducted in the Turkish labor market confirm a possible explanation of informalization via LMS theory. However, the examples mentioned can be perceived as subjective evidences since the respondents are asked to assess their own working conditions. Therefore, there is a need to complement them by objective evidences. In line with this need, the following three chapters are devoted to question the two core hypothesis of segmentation theory (the existence of wage, security, working conditions, control mechanisms differentials between the segments and the existence of limited labor mobility between the segments) in the Turkish labor market where we focus on the segmentation among workers rather than firms.

The existence of wage differentials and its possible determinants are investigated in Chapter 3 where the segments are defined a priori with respect to respondent's work status, employment status and their social security registration status. Since these analyses do not account for the variables over which one has no control, the inequality among groups has been studied in the next chapter (Chapter 4) in which groups are determined on the basis of gender, mother and father education levels, home ownership when the respondent was 15 years old and birth region. Lastly, the second hypothesis of the LMS theory (existence of barriers against labor mobility) is tested in Chapter 5 via the tools of sequence and survival analysis.

Two different datasets have been utilized in the present study: the Household Labor Force Surveys (HLFS, 2006-2011; in Chapter 3) and the field survey which is a retrospective survey (i.e. event history data, İn Chapters 4 and 5).

The individual level data considering the demographic and current job related characteristics in the HLFS is very rich and allows us to find out the determinants of labor force participation decision and wage inequality. However, the information on family background

variables is limited in the sense that one can reach these variables if the subject lives with his/her family; i.e. it is not possible to obtain the education level of the father of the household head if he is not living with the household hold at the time of the survey. Moreover, the region of birth has recently been added (with the year of 2009) in the questionnaire of the HLFS although at some points it is still impossible to reach that information. That is because of the fact that the questions that can be related to this variable are as follows: the respondents are asked to report whether they were born in Turkey or abroad; whether they are living in the same city since they were born; if not, till when they have started to live in the present city; and whether the previous region of residence is in Turkey or abroad (and if it is center, district center, sub-district or village). With these questions, there is no way to find out where this person was born if he is not living in the same city he was born in. The reason why we point out the omission of these variables in the HLFS is that these two sets of information (on family background and region of birth) play an important role in the discussions of inequality of opportunity.

Regarding the analyses considered in testing the validity of barriers in front of labor mobility between segments, the data set provided by the HLFS turns out to be inadequate as it only provides (limited) information on the previous job held by the respondent (even the registration status in the previous job has not been asked). By utilizing the work history covered in the mentioned data set which is narrow, one can just account for the transitions between these two labor market states. However, there is a common practice in studying with this kind of data set which is called as matched files approach. Since the rotating panel structure of these surveys allow one to match the records for the same individuals across a number of consecutive periods or spells, one can enlarge the time period under study (being aware of the specific problems associated with the approach, such as sample attrition and misclassification errors).

Although with the help of our field survey data we are able to account for family background variables (even when the child does not live with the parents)[22] and entire working life history (from the time one is at the age of 15 till the time of the survey), there are some pitfalls in our survey as it is the case in any labor force survey data. These pitfalls can be listed as follows: since we concentrate on questions referring to an individual's previous

[22] Our dataset also allows us to account for some more variables (such as region of birth, mother tongue) that do not take place in the HLFS. For the descriptives of these variables, see Section B.4.2.2 in Appendix B.

labor market status (and the variables characterizing this status, i.e. duration, employment and registration status, type of activity, etc.), the information gathered tend to suffer from problems arising from both heterogeneous sample design and recall error bias. Recall error can occur in two specific cases: 1) one may not be able to accurately recall her labor market status at some specified time in the past, 2) there may be errors in reported (unemployment) duration (Artola and Louise-Bell, 2001: 5). On the other hand, the heterogeneous survey design problem does not seem to be the case in our survey since this problem results from the mismatch between the answers of the respondents and the opinion of the interviewer; more explicitly, through an example, "Labour market status, for example, is typically self-reported by individuals in the retrospective part of the questionnaire, whereas current labour market status is normally assigned by the interviewer on the basis of the interviewee's response to a series of questions regarding his contemporaneous labour market activity" (Artola and Louise-Bell, 2001: 6). By giving any discretionary power to the interviewers in filling the questionnaire based on their opinions, we seem to avoid this specific problem.

The main shortcoming of our field survey with regards to the missing information is the respondents' date of marriage. This information is crucial in analyzing the labor force participation decisions of spouses in a reciprocal way. In such a manner we could be able to account for the dependencies of spouses in deciding to enter in or exit from labor market.

CHAPTER 3

LABOR FORCE PARTICIPATION AND WAGES INEQUALITY

3.1 Introduction

The main characteristics of the Turkish labor market are rapid population growth and high rates of unemployment (see Table 3.1). Şenses (1996: 67-68) emphasizes the problem of the pace of employment creation which falls drastically short of the increase in labor supply (*labor force* in Table 3.1):

> Although participation rates have been falling as a result of the shift in the structure of population towards urban areas with lower participation rates and increased enrollment rates, labor supply has been increasing at a rapid pace, reflecting the still high rate of population growth.
>
> Şenses (1996: 67-68)

The severe crisis in 2001 has called for a dramatic change in the Turkish economy: despite rapid growth and a significant surge in exports, Turkish economy could not generate jobs at a desired rate. Therefore the post-2001 era was associated with low labor force participation and employment rates, along with some recovery periods till 2008 (when the global crisis hit Turkey). As the annual figures for 2013 have not been released by Turkstat yet, Table 3.1 presents the main labor market indicators for 2004-2012 in which unemployment rates are always two-digit (with the exception of 2012), and on average 10.7%. The highest unemployment rate occurred in 2009, right after the economic crisis in 2008. Youth unemployment (unemployed individuals aged between 15 and 24) rate is strikingly higher than the (total) unemployment rate, and again it reached its peak in 2009. When one also considers unemployment with underemployment,[23] the figures become more drastic.

[23] Underemployment appears to be very a comprehensive issue where one can link it to underutilization of skills, underuse of economic capacity and underuse of employed workers. One can also discuss this term with reference to "over qualification", "involuntary part-time work", and "labor hoarding" as well since it broadly refers to individuals who work in inferior, lesser or lower quality jobs relative to some standard.

Labor market and crisis relationship has been discussed in the literature by making use of two datasets: aggregate data or micro-level data. One way of analyzing this relationship with the aggregate data is employing business cycle theory: This approach investigates whether there exists procyclical or countercyclical movements in employment especially in times of recession (Bosch and Maloney, 2008; Dimova et al., 2005). Aggregate data can also be utilized in discussing the links between labor market and crisis within its relation to macroeconomic variables, exports, imports, current account deficit, etc. (Boratav, 2009; Gezici, 2010). On the other hand, the ones who employ micro-level data can investigate the impact of a crisis on the economic actors of interested. Making use of their field survey data, Özar et al. (2008) focus on the conditions of formal and informal wage earners, in addition to small and medium size establishments in the time of crisis. Bedirhanoğlu and Yalman (2009) conduct in-depth interviews with local capitalists to investigate their survival strategies in the face of crisis and to figure out how the financial crisis transmitted to capital-labor relations. A recent book published by ILO consisting of three studies (Yeldan, 2010; Ercan, 2010; Taymaz, 2010a) discusses the effects of global crisis with the evaluation of anti-crisis measures in terms of both macroeconomic indicators and their contribution to employment at the sectoral level.

Now being much more aware of the fact that the 2008 crisis had widespread impacts on the Turkish economy which cannot be reduced to labor market only, in the present chapter we will mainly focus on the labor market with reference to the changes experienced in informal employment. We refer to informal labor as a "part of the employed labor force which is not officially registered under any social security coverage and is not entitled under the 'self-employed or employer' status in the labor force statistics" (Boratav et al., 2000: 9). This conceptualization matches with the approach taken by Castells and Portes (1989) where they view informalization as process rather than an object, therefore they put the basic distinction between formal and informal activities as about not being the character of the final output, the manner in which it is produced and exchanged. Throughout our study, we investigate the role of and the reasons behind informal employment in Turkey. We also examine how informal employment changes through time, and to discuss how it is affected by personal/family and socio-economic factors. We use HLFS for the years between 2006 and 2011 to model labor force participation decisions among seven outcomes (formal and informal jobs in manufacturing and services, entrepreneur, self-employment and non-employment) through multinomial logit model and estimate earnings equations through

Mincerian wage regression[24]. In order to correct a possible sample selection problem, Heckman's two step procedure is applied in the estimation of wage equations for females and males in formal and informal manufacture and services sectors.

The following section of the present chapter summarizes empirical works on labor force participation decision and wage inequality in Turkey. The next section introduces our data. This is followed by two sections presenting detailed descriptive analyses on the patterns of employment growth. The sixth section has been devoted to the econometric analysis on labor market participation decision. Wage estimation is covered in the seventh section. The last section presents results and discussion.

[24] The analyses are performed in StataSE 12.

Table 3.1: Main Labor Market Indicators of Turkey, 2004-2012

	2004	*2005*	*2006*	*2007* *	*2008*	*2009*	*2010*	*2011*	*2012*
Non-institutional population (000)	70 556	71 611	68 133	68 901	69 724	70 542	71 343	72 376	73 604
Population 15 years old and over (000)	49 906	50 826	48 485	49 994	50 772	51 686	52 541	53 593	54 724
Labor force (000)	24 289	24 565	23 250	23 114	23 805	24 748	25 641	26 725	27 339
Employed (000)	21 791	22 046	20 954	20 738	21 194	21 277	22 594	24 110	24 821
Unemployed (000)	2 498	2 520	2 295	2 376	2 611	3 471	3 046	2 615	2 518
Labor force participation rate (%)	48.7	48.3	48.0	46.2	46.9	47.9	48.8	49.9	50
Employment rate (%)	43.7	43.4	43.2	41.5	41.7	41.2	43.0	45.0	45.4
Unemployment[25] rate (%)	10.3	10.3	9.9	10.3	11.0	14.0	11.9	9.8	9.2
Non-agricultural unemployment rate (%)	14.7	13.6	12.6	12.6	13.6	17.4	14.8	12.4	11.5
Youth unemployment rate[(1)] (%)	19.7	19.3	18.7	20.0	20.5	25.3	21.7	18.4	na
Underemployment[26] rate (%)	4.1	3.3	3.6	3.0	3.3	na	na	na	na
Underemployment rate of youth[(1)](%)	5.1	4.3	4.0	3.0	3.6	na	na	na	na
Not in the labor force (000)	25 616	26 260	25 235	26 879	26 967	26 938	26 901	26 867	27 385

(1) population within 15-24 age group
* The results of 2007 were revised according to the new population projection.
"na": not available because of the change in the definition that the institution make use of.
Source: Turkstat, 2003-2012

[25] "*Unemployed*" is defined as follows by Turkstat: individuals who were without employment in the reference period but were available for work, or who were looking for work, and had used at least one of the search channels to seek employment in the past six months. People who have already found a job or established their own business but for some reason have not yet started working and those who could start working within 15 days are considered to be unemployed.

[26] The definition of "*underemployment*" has been revised in order to measure it more accurately. The two new concepts introduced in its measurement are "*time-related underemployment*" and "*inadequate employment*", and data on these have been published since February 2009. "*Time-related underemployment*" consists of employed people in the reference week who actually worked less than 40 hours as total (in main and additional job/s) and were willing and available to work additional hours, whereas "*inadequate employment*" relates to people who are not in the above group and employed in the reference week but were also looking for a job to replace present job or as an additional job within last 4 weeks and were available to start in the case of finding a job.

3.2 Empirical Work on Labor Force Participation and Wage Inequality in Turkey

In general, participation decisions are followed by the investigation of earnings gaps based on the division in labor market outcomes. The literature on labor force participation and wage inequality is voluminous, and most of the time theories and methods partly overlap. However, it does not mean that they do not have special features. Since considering each of them is beyond the scope of this study, we need to determine the boundaries of this section: Firstly, we restrict ourselves to studies which are relatively recent (since mid-1990s); and secondly, we concentrate on studies making use of Turkish micro-level data.

One line of research in this area discusses labor market participation decisions and wage inequality in the context of labor market segmentation (LMS) theory. There are just a few studies exploring LMS in which segments has been defined with regards to their registration status (Tunalı and Ercan, 1997; Tansel, 1998a; Levent, Taştı and Sezer, 2004; Aydın et al., 2010).

To the best of our knowledge, Tunalı and Ercan's (1997) article is the first study on labor market segmentation for the case of Turkey. "Although its data source is outdated (the results of 1988 Household Labor Force Surveys), what it captures seems to be perpetual over time" (Başak, 2005: 116). The segments here are determined due to the size of the firm: large firms being associated with the primary sector whereas the small ones with the secondary sector. They investigate wage differentials via logarithmic wage regressions with multivariate variables in which they include the firm size variable ("large firm" dummy) as an explanatory variable to account for the effect of segmentation. The other explanatory variables are education, age, seniority, gender, temporary employment, rural, region, and sector. Their claim on the segmentation of Turkish labor market in terms of the size of the firms seems to be proved through their observations on labor market conditions for wage and salary workers:

- Based on the results of 1988 Household Labor Force Surveys, more than one fourth of the wage and salary earners are not registered to the social security system. This ratio is 16 percent in the large firms whereas it turns out to be 57 percent for the small ones.
- The hourly wage is 18-25 percent more in the large firms than the small ones.
- The difference in monthly income between small and large firms is 27 percent and it is 35 percent for annual income

(Tunalı and Ercan, 1997: 98).

Paralleling the emphasis of Başak (2005: 118), there are some criticisms to Tunalı and Ercan's (1997) work by Özar (1997) on three important grounds: The first asserts that not providing the reasons of their choice of not testing the core hypothesis of LMS approach – limits to labor mobility - is the big oversight of the article. Secondly, segmentation has only been considered in terms of the division between small and large firms. Özar (1997) states that in addition to the size of the firm, the characteristics of the firms can also be reflected through public vs. private and registered vs. unregistered. Finally, she mentions that any study on LMS should highlight the reasons behind the occurrence and continuity of segments. However, Tunalı and Ercan (1997) do not provide any reference to the historical, institutional, social and cultural dynamics of the country.

Tansel (1998a) aims the find out the answers of the following two questions, which are related to each other: 1) Are there differentials in employment sector selection and in wages between the covered and uncovered sectors (where covered sector is associated with its employees covered under the Social Security System)? 2) Are there gender differentials in the sector selection process? Using 1994 Household Expenditure Survey of SIS, she presents a joint model of sector choice and wage determination which is the same methodology we apply here. In doing so, she controls for observable characteristics and sample selection. The results suggest that education is an important determinant of employment choice and wage differentials. Moreover, she concludes that there exist substantial wage differences between covered and uncovered wage earners which imply segmentation in the labor market.

For another proof of formal and informal labor market segmentation in Turkey, one can look at Aydın et al.'s (2010) paper. Using Household Labor Force data for 1988 and 2007, the authors conclude that "the gradual erosion of the rural traditional agricultural versus the urban modern industrial divide has turned into a different type of segmentation of the modern formal versus modern informal sector, with an additional layer of gender segmentation" (Aydın et al., 2010: 22). They adopt a two-stage estimation and the Oaxaca decomposition method to find out the wage gap between these two sectors. As a support for the existence of LMS in terms of wages, they reach a significant wage gap between the two sectors and this has even doubled in the period under investigation.

Baskaya and Hulagu (2011) utilize two estimation methods in order to investigate the wage gap between formal and informal workers. The first one is the one we are very familiar with: Mincerian wage regressions. The second is semi-parametric techniques, particularly the

propensity score matching (PSM), "which do not require strong parametric assumptions on forms of earning functions and can give sensible estimates for formal-informal worker wage gap even when the distribution of individual characteristics differs across these groups" (Baskaya and Hulagu, 2011: 3). They find that wage gap in between these two sectors is robust to estimation methodology: two methods indicate a sizeable formal employment wage premium in Turkey.

There is also a literature on female labor force participation (Dayıoğlu and Kırdar, 2010; Uraz et al., 2010; Başlevent and Onaran, 2003; Dayıoğlu and Kasnakoğlu, 1997). While focusing on female labor supply decisions, the authors try to find out the determinants of labor force participation of women using cross-section data, namely HLFS data for various years. Dayıoğlu and Kırdar (2010) carry out multivariate analyses to investigate the determinants of women's labor force participation after describing the main features of it. The logistic regression they run show that participation increases with more schooling, age and region affect the participation probability of women, and as the number of children increases, women's participation decreases. These results are in the same line with the ones found by Dayıoğlu and Kasnakoğlu (1997). Uraz et al. (2010) examine the probability of working for women with the same econometric tool: multivariate analyses. Their contribution comes from making use of two different dependent variables in two probit regressions (the probability of "working"[27] for a woman and the probability of participating in the labor force) and their diving the sample into three (highly skilled women in urban areas, low skilled women in urban areas, and women in rural areas. In their 2003 article, Başlevent and Onaran (2003) examine whether married women in Turkey are more likely to become added or discouraged workers. Suspecting on the dependency of the labor force participation decisions of wives and the employment status of their husbands, they run bivariate probit regression, and find that these two decisions appear to be negatively correlated. Different from the reviewed literature on female labor supply decisions, İlkkaracan (2012) considers demand-side constraints in addition to supply-side ones and underlines the gendered labor division in the household. However, social conservatism[28] is found to be a more limiting constraint in women's participation in the labor force.

[27]They define "working" as a combination of two variables in DHS: "whether the woman has worked in the past month" and "if she usually works".

[28] There are some other studies that focus on conservatism as an explanation of the low labor market participation of women (Buğra and Yakut-Cakar, 2010; Göksel, 2013). Göksel (2013) points out that religion, social norms and conservatism have a negative effect on female employment in urban areas,

> Studies investigating the gender earnings gap were a natural extension of participation decisions. (…) The Oaxaca-Blinder type decomposition exercises employed in many such studies included that it is not the endowment differences that lead to wage gap but rather the higher market valuation of male traits.
>
> (Dayıoğlu and Kırdar, 2010: 8)

The Oaxaca decomposition method has been utilized to quantify the productivity differences versus unexplained differences in wage gaps. Using four distinct work states (wage labor, self-employed, unemployed and non-participation) for women whose husbands are employed in labor force participation modeling which is followed by wage estimations, Tunalı and Başlevent's (2001) results reveal striking observed and unobserved differences between samples. They also conclude that the wage labor option attracts the best workers in terms of observed productivity traits. Dayıoğlu and Başlevent (2006) find similar results, however they underline two important facts for women in Turkish labor market: not all employment categories are open to women, especially to those with low levels of education (which is revealed through their diversity analysis) and the impact of female earnings on household income inequality is equalizing in the bottom quintile. The same approach (Blinder and Oaxaca's approach) is employed by Kara (2006) to measure the effect of wage discrimination[29] in Turkey. He concludes that gender wage gap decreases with education, is less in the public sector, and varies across occupations, with the overall discriminatory wage gap being found as 30% after controlling for education, experience, occupation, region and selection effects.

With the help of individual-level data from the 1994 HES, Tansel (1998b) considers public-private wage differential in Turkey. She takes into account worker characteristics and the choice aspect of sector selection through a five-way (non-participation, public administration work, state-owned enterprises work, covered private sector work, and other employment) multinomial logit model. This is followed by the estimation of Mincerian sectoral wage equations and Oaxaca-Blinder decomposition of the wage differentials. She shows that there exists parity in wages between sexes in public administration, and there is a large gender gap

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whereas no significant effect is discovered in rural areas. Buğra and Yakut-Cakar (2010) discuss female employment in Turkey within a broader context: they consider the society-specific dynamics of structural change in employment patterns with labor market relations and the social policy environment. In discussing the social policy environment, they highlight one trade-off decision-makers face: a trade-off between continuing adherence to conservative patriarchal values and the objectives of increasing labor force participation.

[29] The other research line focuses on returns to schooling through its connection with earnings inequality. For the ones interested in this area, see Tansel (1994 and 1996).

in wages in the private sector in favor of men. Taymaz (2010b) uses the same methodology as Tansel (1998b), except the Oaxaca-Blinder type decomposition. His discussion on the mechanisms that link economic growth to poverty reduction through changes in labor market participation decisions and wage determined is complemented by the information on growth-employment link and the patterns of employment growth in Turkey. Economic growth and employment link has been built on GDP series whereas in estimations he uses 2000-2006 HLFS data. The core paper that we will follow in the present chapter is Taymaz's (2010b) work not only in terms of the methodology but also for the sake of comparison. What is included in his analysis, but not in ours is his categorization of "good jobs" which is defined as formal jobs for vocational school and university graduates.

3.3 Data

The source of data for our analysis is the Household Labor Force Surveys (HLFS) of Turkstat, which have conducted regularly since 1988 and been nationally representative dataset (since the results are weighted to estimate national aggregates by using population projections). The two major changes in the way the survey was conducted was the case in 2000 and 2005: Since 2000, data have been released quarterly, and starting with 2005, monthly surveys have been aggregated to quarterly series. The survey questionnaire has been modified to some extent over time (revisions took place in 2004 and 2009) and the sample has been widened to provide estimates for different levels of NUTS. The surveys are conducted continuously, using a rotating panel sample frame designed to yield quarterly estimates, and there has been a total of four times interviews in two subsequent quarters one year apart. These collect information on individuals' work status (if employed, job-related characteristics, such as sector, occupation, establishment size, etc.), earnings, unemployed and inactive periods, and work status one year before the survey in addition to demographic indicators. In the present chapter, we use micro-level data obtained from 2006-2011 HLFS.

3.4 Trends in Labor Force Participation

In this section, we try to find out the patterns of employment generation with detailed descriptive analyses in order to understand the dynamics of employment. In Tables 3.2 and 3.3, and Tables A.1-A.9, weighted values are presented.

3.4.1 Working Age Population by Work Status over Time

The data on the distribution of working age population by work status are presented in Table 3.2. Out of all employed, female share is 27 percent on average. Male employment is almost 2.7 times of female employment (73 percent, on average). The gap between male and female employment seems to get narrower at the expense of male employment. In terms of unemployment ratios, again the figures are lower for females in comparison to males'. However, since 2007, female share in total unemployment is increasing whereas male share is decreasing. Not surprisingly, a high percentage of the inactive population in Turkey is female.

Female employment and unemployment figures are close to each other up to the year 2009. Since then, female share in unemployment has started to increase. The employment and unemployment ratios for males are also approaching each other, although this trend this trend for males changed in 2009 as well: the decrease in the ratio of unemployed males is more dramatic than the one for employed males. This can be attributed to the 2008 crisis.

When one plots these figures in a line chart, it is easily recognized that figures for inactive males are close to the ones for employed female and unemployed female. It implies that the shares of females in employed and unemployed working age population merely equal to the share of males in inactive working age population.

Table 3.2: Distribution of Working Age Population by Work Status, 2006-2011 (percentage of total working age population)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Employed	0.257	0.258	0.264	0.276	0.284	0.289	*0.032*	*0.271*
Unemployed	0.283	0.278	0.281	0.283	0.316	0.339	*0.057*	*0.297*
Inactive	0.747	0.747	0.747	0.746	0.742	0.746	*-0.001*	*0.746*
MALE								
Employed	0.743	0.742	0.736	0.724	0.716	0.711	*-0.032*	*0.729*
Unemployed	0.717	0.722	0.719	0.717	0.684	0.661	*-0.057*	*0.703*
Inactive	0.253	0.253	0.253	0.254	0.258	0.254	*0.001*	*0.254*

*: 2011-2006

3.4.2 Distribution of Employment by Region

Table 3.3 shows the participation rates in rural and urban areas by sex as a percentage of total employment. Taymaz (2010b: 4-5) notes that "there is a substantial reallocation of labor from rural areas (mainly from agricultural activities) to urban areas (mainly towards industrial activities and services)" regarding the years between 2000 and 2006. This picture has changed a bit when we come to years given in Table 3.3. Though minor, there is an increase in the participation rates in rural areas among males and females together with a decrease in the participation rates in urban areas among males. The share of rural areas in total employment increased from 32.7 percent (11.5 percent female, 21.3 percent male) to 34.5 percent (12.5 percent female, 22.1 percent male). Since the alterations in regional distribution of employment through 2006-2011 are negligible, we cannot conclude that an opposite migration has started. It can be an immediate impact of the 2008 crisis and may disappear through time.

In addition to these, the gender participation gap is wider in urban areas; however it is getting narrower with the slight increases in women's participation over time.

Table 3.3: Distribution of Employment by Region, 2006-2011
(percentage of total employment)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
rural	0.115	0.113	0.113	0.119	0.113	0.125	*0.010*	*0.116*
urban	0.143	0.145	0.150	0.156	0.150	0.165	*0.022*	*0.151*
MALE								
rural	0.213	0.213	0.214	0.218	0.216	0.221	*0.008*	*0.216*
urban	0.530	0.530	0.523	0.507	0.500	0.490	*-0.039*	*0.513*

*: 2011-2006

3.4.3 Labor Force Participation Rates by Age over Time[30]

The age-participation profiles of men and women are hump-shaped (Table A.1). In other words, participation is low at young ages, begins to increase as one gets older up to middle-ages, and declines thereon. Almost half of the employees (on average 46.8% of total urban employment) are aged from 25 to 39.

The biggest change from 2006 to 2011 in the composition of total employment by age is experienced among 25-29 aged men: their labor force participation rate declined from 12.3 percent to 10.9 percent. Except the first two, in all age groups, female labor force participation rate increased from 2006 to 2011 which went hand in hand with the decrease in male labor force participation rates.

During the 2008 crisis, more females entered the labor force: their share in total employment increased from 26.4 in 2008, to 27.6 in 2009. In the same time interval, there has been a decrease in young and middle-aged males' participation shares which is partly offset by the slight increases in participation at older ages (The difference between 2008 and 2009 in the figures of labor force participation among men aged 15 to 39 amounted to -1.6 percentage points, with 0.5 percentage points attributed to men aged from 40 to 64).

3.4.4 Labor Force Participation Rates by Education Level over Time

The composition of employment by educational level is given in Table A.2. Since 2007, changes are minor compared to the major change that took place in between 2006 and 2007 where the share of illiterates in employment declined for men (from 1.3 to 1.1 percent) whereas it increased for women (from 1.3 to 3.0 percent). The most striking change has been observed in the share of primary school graduates. The share of primary graduates in employment for women declined sharply from 2006 to 2007 (from 32 percent to 9.2 percent). Between 2007 and 2008, it continued to decline, but since then it started to increase gradually. For men, the share of primary school graduates in employment is declining over time without any exceptional consecutive years. We observe a decline in secondary school graduates' share in employment for women through 2006- 2011, but the opposite holds for

[30] From this subsection to subsection 3.5.1 (where the distributions of employment by various variables are given as a percentage of urban employment), the related tables can be found in Appendix A.

men. This composition for 2006-2011 period overlaps with the one for 2000-2006 period which is mentioned in Taymaz's (2010b: 4) study:

> As a result of the law extending the duration of compulsory education to 8 years in 1997, we observe a rapid decline in the share of primary school level, and an increase in the share of secondary school level. However, in spite of these changes, primary school graduates still constitute the largest group of employees.

It is worth noting that we are faced with an opposite trend in terms of vocational school and university categories which is found in Taymaz's (2010b) article: The share of these both categories in employment increase over time (from 2000 to 2006) for both male and female employees whereas in between 2006 and 2011, vocational school graduates' shares for both gender decrease. University graduates' share has been increasing for men, but it is volatile for women.

3.4.5 Sectoral Composition of Employment over Time

The share of female employees in mining and quarrying is nil, and the ones in utilities (EGW) and construction are almost nil (Table A.3). The sector which absorbs the majority of the female employees is agriculture and fishing, and this sector's share in female employment continues to increase. As a note, it is critical to remember the fact that we are considering the distribution of employment by sector as the percentages of total employment; thus, we have rural areas in the dataset as well. Other services, and finance and real estate are the remaining sectors in which female employees' shares exhibit an increasing trend.

Though wholesale and retail trade, hotels and restaurants is a sector that employs mostly males, the share of male employees has been declining since 2006. Starting from 2008, there is a slight increase in agricultural employment which is followed by a decrease in the share of employment in manufacture for men. Taymaz (2010b) reveals that agriculture is the only sector with a decline in employment shares for both men and women considering the 2000-2006 period. Based on these, it can be said that the general picture of employment in Turkey has been changing.

3.4.6 Occupational Distribution of the Employed by Sex and Year

Until 2008, a decline in the share of skilled agricultural and fishery workers is observed (Table A.4). From 2008 on, there has been a slight increase in its share in line with the increase in the share of agriculture and fishing sector. Elementary occupations are associated with the highest growth rates in terms of employment among men and women. Between 2006 and 2011, a lot of plant and machine operators, and assemble workers lost their jobs gradually, however, there has been a rapid growth in the number of plant and machine operators and assemble workers in the 2000-2006 period (Taymaz, 2010b).

Though the magnitudes of changes are negligible, other than craft and related trade workers, and plant and machine operators, there is an increase in the shares of all other occupation categories for women. For men, the decrease in the share of employment has been experienced in legislators, senior officials and managers, professionals, technicians and market sale workers, as well as in service workers, craft and related trade workers, and machine operators. Among all, the highest growth in the distribution of employment by occupation is in elementary occupations whose employees are mostly female.

3.4.7 Distribution of Employment by Establishment Size over Time

The most significant change in terms of establishment size has occurred in micro establishments (the establishments whose employees are less than 10) (Table A.5). There is an increase in its share for female (2 percent) and a decrease for male (4.3 percent). In total, its share declined from 60 percent in 2006 to 57.7 percent in 2011. The changes in the shares of small- and medium-sized establishments are gradual and account for 0.4 percent and 1.9 percent, respectively. What is surprising is that through time, the share of female employees in larger establishments increases while the share of male employees decreases. We do not observe the rapid decline in the share of small establishments which was the case between 2000 and 2006 (Taymaz, 2010b).

3.4.8 Employment Status by Sex and Year

There is an increase in the share of female unpaid family workers between 2006 and 2011 (Table A.6)[31]. When this is analyzed together with the figures in Table A.5, we can conclude that these people are the ones who were employed in establishments with less than ten employees. This increase in unpaid family workers' share has declined since the decrease in male employment dominates the increase in female employment in that status.

The share of regular/casual employees has increased for both men (0.9 percent) and women (1.9 percent); the increase is 2.8 percent in total which is also the highest growth among the other employment status categories. There is a gradual increase in the share of regular/casual female employees while the upward trend of same share of male employees is halted by a decline in 2009.

Employer and self-employment shares decline throughout this period since the magnitude of the increases in female employees' shares are less than the ones seen as a decline in male employees' share.

3.4.9 Registration Status by Sex and Year

We define informal employment as the part of the employed labor force which is not officially registered under any social security coverage. Since 2008, there is an increase in the share of informal employment among women (though it is 1.3 percent between 2008 and 2011 and 0.5 percent in total, see Table A.7). This increase can be due to the increase in female unpaid family workers (Table A.6) most of which are informally employed. Informality among men exhibits a declining trend from 2006 to 2011, with a decrease of 5.5 percentage points.

There has been a gradual increase in the share of formal employment for both men and women. The total increase in the share of formal employment from 2006 to 2011 (5 percent) is higher than the total increase in the share of regular/casual employment for the same years

[31]TURKSTAT has combined regular and casual workers under the same category starting from 2009. This is the reason why we cannot compare our results with the ones obtained by Taymaz (2010b) who worked with separate employment status categories. He finds that there is a rapid increase in the share of regular employment together with a decline in the share of casual workers for men, an increase in the share of casual workers for women.

(2.8 percent). This is a very different picture from the one between 2000 and 2006: for that time period, Taymaz (2010b: 5-6) concludes that "(a)lthough the share of regular employment increased substantially, there is not a significant increase in the share of formal employment".

However, in spite of the decline in the share of informal employment, it still constitutes a substantial share in the total employment, accounting for 43 percent of total employment on average, which is simply impossible to ignore

The gender gap in terms of informality becomes clear in Table A.8. Out of total female employment, 58 percent is informal on average. This number is 37 percent for males.

3.4.10 Regional Composition of Employment over Time

Southeast and East Anatolia are the two regions that have the least male employees (Table A.9), while it is the Southeast Anatolia for females. We see that this picture of the two regions did not change much through time. Not surprisingly, most of the employees are located in the Marmara region.

In three regions, there seems to be an increase in female employees since 2008: Marmara, Aegean and Central Anatolia. However the increase in the share of female employees in Marmara region has been dominated by the decrease in the share of male employees in the same region. The share of female employees in Marmara region increased 0.8 percentage points from 2006 to 2011 and the share of male employees in the same region declined 1.8 percentage points for the same time period. In total, Black Sea is the region that lost the highest percentage of employees with Marmara following closely. The remaining regions have increased their share of employees gradually.

3.5 Urban Employment

In comparison with Taymaz (2010), the most striking difference between the periods of 2000-2006 and 2006-2011 according to our analysis is the decline in the reallocation of labor from rural to urban areas. Taymaz (2010b:5) states that the share of rural areas in total employment declined rapidly, from 48.1 percent (31.2 percent male, 16.9 percent female) to

41.4 percent (27.5 percent male, 13.9 percent female). What we face with in the period of 2006-2011 is an increase in the share of rural areas in total employment, as well (from 32.7 percent to 34.5 percent). This can be attributed to the 2008 crisis where people might have preferred to stay in their homeland (mostly the middle-aged labor force participant) rather than to migrate. The scarcity of new job opportunities in urban areas may be another explanation for this fact.

The analysis in the preceding section considers employment as the sum of employment in rural and urban areas. Not surprisingly, agriculture constitutes the majority of employment in rural areas: 60.6 percent of rural employment is associated agriculture, forestry, hunting and fishing in the pooled data of 2006-2011 HLFS. Most of the employees appear to be self-employed (41.5 percent of agriculture workers are self-employed) and unpaid family workers (47.7 percent of agricultural workers are unpaid family workers) in total employment since these two categories account for a very small part of employment in urban areas (just 16.5 percent). Thus, it would be meaningful to complement the analysis covered above by considering the dynamics of urban employment solely since the structure of labor market in rural areas is very different from the one in urban areas.

3.5.1 Distribution of Working Age Population by Work Status

The data on the distribution of working age population by work status in urban areas are presented in Table 3.4. Female share in total urban employment decreases to 26 percent on average (which is 27 percent out of total employment) and male employment in urban areas is 74 percent.

Since 2009, the increase in the share of female employees in urban areas is sharper than the one captured as a percentage of total employment. The decrease in the share of male unemployment is also more severe than the one observed in total employment case.

The gender gap in employment profiles started to decline especially from 2008 as a result of the increasing trend in female employment and the decreasing trend in male employment. Just like the case in total employment shares, inactive ratios for men are very close the female unemployment and employment shares.

Table 3.4: Distribution of Urban Working Age Population by Work Status, 2006-2011 (percentage of total urban working age population)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
Employed	0.212	0.215	0.223	0.235	0.244	0.251	0.039	*0.230*
Unemployed	0.299	0.303	0.303	0.304	0.340	0.370	0.071	*0.320*
Inactive	0.747	0.745	0.744	0.746	0.746	0.748	0.001	*0.746*
MALE								
Employed	0.788	0.785	0.777	0.765	0.756	0.749	-0.039	*0.770*
Unemployed	0.701	0.697	0.697	0.696	0.660	0.630	-0.071	*0.680*
Inactive	0.253	0.255	0.256	0.254	0.254	0.252	-0.001	*0.254*

[*]: 2011-2006

3.5.2 Age Profile

3.5.2.1 Age Composition of Urban Employment

On average 51.1 percent of total urban employment is composed of people aged from 25 to 39. As stated in Dayıoğlu and Kırdar (2010: 14), "in urban areas, the hump-shape participation profile of men strengthens as a result of faster exists from the labor market at older ages and delayed entry at younger ages owing to higher average schooling years in urban areas". Participation rates of urban women decline as they reach their 30s, and as they approach 40s, sharper declines are observed, however, this decline rate is still not as that for men in their 40s.

Although there are slight changes in labor force participation figures between 2006 and 2011, the general picture described does not alter much: there are more women in the labor market who are aged 25 to 49, somewhat at the expense of low male labor force participation rates (Table 3.5).

There has been a decrease in the participation rates of males aged 25-34 in between 2008 and 2009 (due to the crisis), which seems to be offset by new female entrants to the labor market aged 25-44.

Table 3.5: Age Composition of Urban Employment, 2006-2011 (percentage of total urban employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
15-19	0.016	0.016	0.015	0.015	0.015	0.014	-0.002	*0.015*
20-24	0.036	0.037	0.036	0.036	0.036	0.035	-0.001	*0.036*
25-29	0.042	0.043	0.045	0.047	0.047	0.046	0.004	*0.045*
30-34	0.034	0.036	0.038	0.041	0.042	0.044	0.010	*0.039*
35-39	0.032	0.032	0.034	0.035	0.037	0.038	0.006	*0.035*
40-44	0.023	0.024	0.025	0.028	0.032	0.034	0.011	*0.028*
45-49	0.015	0.015	0.016	0.017	0.018	0.021	0.006	*0.017*
50-54	0.008	0.008	0.009	0.010	0.010	0.011	0.003	*0.009*
55-59	0.004	0.003	0.004	0.004	0.005	0.005	0.002	*0.004*
60-64	0.002	0.002	0.002	0.002	0.002	0.002	0.001	*0.002*
TOTAL	*0.212*	*0.215*	*0.223*	*0.236*	*0.244*	*0.251*	0.039	*0.230*
MALE								
15-19	0.048	0.046	0.045	0.041	0.040	0.037	-0.011	*0.043*
20-24	0.080	0.077	0.074	0.069	0.065	0.068	-0.011	*0.072*
25-29	0.140	0.142	0.142	0.135	0.129	0.124	-0.016	*0.136*
30-34	0.137	0.136	0.134	0.135	0.139	0.137	0.000	*0.136*
35-39	0.122	0.122	0.122	0.120	0.118	0.117	-0.006	*0.120*
40-44	0.105	0.106	0.103	0.103	0.102	0.100	-0.005	*0.103*
45-49	0.078	0.077	0.077	0.080	0.079	0.078	0.000	*0.078*
50-54	0.045	0.046	0.046	0.047	0.048	0.050	0.004	*0.047*
55-59	0.022	0.022	0.023	0.024	0.025	0.027	0.004	*0.024*
60-64	0.010	0.010	0.011	0.012	0.012	0.012	0.002	*0.011*
TOTAL	*0.788*	*0.785*	*0.777*	*0.764*	*0.756*	*0.749*	-0.039	*0.770*

[*]: 2011-2006

3.5.2.2 Share of Formal Employment by Age Group

The share of formal employment by age group is presented in Table 3.6 which reveals that being registered is more common among men than it is among women. On average, except the first three age groups (15-19, 20-24, and 25-29); males' share is always higher. It is also found that the age groups in which more than 70 percent of the employees are formally employed is wider among men: on average, employed men aged from 25 to 49 are subject to social security coverage with at least 70 percent, whereas this can be stated for women aged from 25 to 34.

It is promising that, without any exception, the shares of formal employees for both genders have increased between 2006 and 2011 although we also see that these figures did not survive the 2008 crisis unscathed.

Table 3.6: Share of Formal Employment by age group, 2006-2011
(percentage of employment in urban areas by age group and gender)

age group	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
15-19	0.295	0.355	0.368	0.359	0.373	0.359	0.064	0.351
20-24	0.643	0.675	0.704	0.684	0.692	0.716	0.073	0.686
25-29	0.750	0.777	0.802	0.781	0.772	0.793	0.042	0.779
30-34	0.693	0.716	0.751	0.746	0.741	0.747	0.054	0.732
35-39	0.649	0.665	0.695	0.677	0.665	0.685	0.036	0.673
40-44	0.580	0.613	0.636	0.640	0.637	0.646	0.066	0.625
45-49	0.486	0.544	0.558	0.516	0.540	0.563	0.077	0.535
50-54	0.394	0.382	0.417	0.466	0.426	0.460	0.066	0.424
55-59	0.238	0.268	0.276	0.356	0.273	0.283	0.045	0.282
60-64	0.184	0.103	0.190	0.209	0.242	0.213	0.029	0.190
TOTAL	*0.608*	*0.639*	*0.668*	*0.656*	*0.651*	*0.663*	0.055	0.647
MALE								
15-19	0.238	0.259	0.304	0.263	0.290	0.285	0.047	0.273
20-24	0.554	0.584	0.642	0.613	0.622	0.656	0.102	0.612
25-29	0.694	0.731	0.767	0.758	0.778	0.786	0.092	0.752
30-34	0.754	0.777	0.791	0.805	0.812	0.823	0.068	0.794
35-39	0.757	0.772	0.787	0.798	0.813	0.832	0.075	0.793
40-44	0.768	0.781	0.790	0.793	0.798	0.816	0.048	0.791
45-49	0.694	0.674	0.702	0.719	0.735	0.748	0.053	0.712
50-54	0.552	0.555	0.571	0.581	0.594	0.616	0.063	0.578
55-59	0.455	0.398	0.438	0.469	0.441	0.493	0.038	0.449
60-64	0.369	0.299	0.316	0.357	0.379	0.377	0.008	0.349
TOTAL	*0.663*	*0.679*	*0.705*	*0.708*	*0.720*	*0.735*	0.072	0.702

[*]: 2011-2006

3.5.3 Education Level

3.5.3.1 Composition of Urban Employment by Education Level

Table 3.7 gives the distribution of urban working age population by gender and educational level. The highest decrease (6.2 percent) in the share of employees with respect to educational level is observed for male primary school graduates. This is an anticipated outcome of the new law that extended the duration of compulsory education to 8 years. That

decline is not the case among female employees due to their low enrollment rates. However, this does not change the general picture: most of the employees in urban areas are still primary school graduates (33.3 percent in total).

There is a continuous increase in the share of university graduates in urban employment (2.1 percentage points for women, 2.8 percentage points for men in 6 years). This was also the case between 2000 and 2006 (Taymaz, 2010b).

Except for being illiterate, the share of female employees in total urban employment is always lower than the share of males in all educational level categories. It is worth emphasizing that the gap between male and female labor force participation ratios for university graduates is less than the one for primary school graduates (5.6 and 21.9 percentage points, respectively).

Table 3.7: Composition of Urban Employment by Education Level, 2006-2011 (percentage of total urban employment)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Illiterate	0.009	0.008	0.008	0.008	0.009	0.009	0.000	*0.008*
No diploma	0.008	0.009	0.009	0.009	0.010	0.010	0.003	*0.009*
Primary school	0.057	0.053	0.053	0.058	0.062	0.062	0.006	*0.057*
Secondary education	0.020	0.022	0.021	0.024	0.028	0.031	0.010	*0.024*
General High School	0.031	0.033	0.034	0.032	0.030	0.031	0.000	*0.032*
Vocational High School	0.024	0.024	0.026	0.025	0.025	0.025	0.001	*0.025*
University	0.062	0.066	0.072	0.080	0.079	0.084	0.021	*0.074*
TOTAL	*0.212*	*0.215*	*0.223*	*0.236*	*0.244*	*0.251*	0.039	*0.230*
MALE								
Illiterate	0.009	0.007	0.008	0.008	0.007	0.008	-0.002	*0.008*
No diploma	0.020	0.020	0.019	0.019	0.020	0.022	0.001	*0.020*
Primary school	0.305	0.295	0.281	0.271	0.260	0.243	-0.062	*0.276*
Secondary education	0.130	0.133	0.135	0.135	0.143	0.145	0.015	*0.137*
General High School	0.108	0.106	0.104	0.099	0.094	0.094	-0.014	*0.101*
Vocational High School	0.099	0.103	0.102	0.098	0.094	0.093	-0.006	*0.098*
University	0.116	0.122	0.128	0.134	0.137	0.145	0.028	*0.130*
TOTAL	*0.788*	*0.785*	*0.777*	*0.764*	*0.756*	*0.749*	-0.039	*0.770*

*: 2011-2006

3.5.3.2 Share of Formal Employment by Education

The shares of formal employees increase between 2006 and 2011 in all educational categories (Table 3.8). The same was observed between 2000 and 2006 (Taymaz, 2010b).

Paraphrasing from Taymaz (2010b: 8):

> The share of formality and gender differentials depends monotonically on educational level. There seems to be no gender difference for high school, vocational school and college graduates, whereas there is a substantial formality differential between less educated women and men.

Except for university graduates, the share of formal males is higher than females. The difference in the share of formality is lowest among employees who are literate (but do not have any diploma) and highest among primary school graduates.

There is a decline in all shares of formal female employment (except illiterates) from 2008 to 2009. It can be perceived as an impact of the crisis in 2008. All the mentioned figures begin to increase gradually starting from 2009, reflecting the recovery from the crisis. The same decline occurred only in secondary and vocational high school graduates among men.

Table 3.8: Share of Formal Employment by Education, 2006-2011 (percentage of employment in urban areas by education and gender)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
Illiterate	0.088	0.076	0.087	0.103	0.097	0.103	0.015	*0.092*
No diploma	0.160	0.174	0.226	0.171	0.189	0.243	0.083	*0.194*
Primary school	0.321	0.354	0.395	0.381	0.380	0.394	0.072	*0.371*
Secondary education	0.461	0.485	0.480	0.469	0.496	0.513	0.051	*0.484*
General High Sch.	0.722	0.754	0.767	0.748	0.779	0.777	0.055	*0.758*
Vocational High Sch.	0.767	0.772	0.790	0.786	0.786	0.786	0.019	*0.781*
University	0.933	0.943	0.949	0.942	0.947	0.951	0.019	*0.944*
TOTAL	*0.608*	*0.639*	*0.668*	*0.656*	*0.651*	*0.663*	0.055	*0.647*
MALE								
Illiterate	0.184	0.174	0.196	0.244	0.261	0.258	0.074	*0.219*
No diploma	0.231	0.201	0.250	0.260	0.330	0.334	0.103	*0.268*
Primary school	0.577	0.601	0.630	0.636	0.650	0.660	0.083	*0.626*
Secondary education	0.585	0.597	0.618	0.608	0.615	0.635	0.050	*0.610*
General High Sch.	0.746	0.751	0.769	0.775	0.793	0.807	0.061	*0.773*
Vocational High Sch.	0.794	0.806	0.827	0.823	0.830	0.843	0.049	*0.821*
University	0.902	0.894	0.907	0.913	0.919	0.930	0.027	*0.911*
TOTAL	*0.663*	*0.679*	*0.705*	*0.708*	*0.720*	*0.735*	0.072	*0.702*

[*]: 2011-2006

3.5.4 Sectoral Composition

3.5.4.1 Sectoral Composition of Urban Employment

Table 3.9 gives the data on sectoral distribution in urban areas. The shares of female employees in utilities (EGW), and mining and quarrying out of total urban employment are null as is the case in total employment. The slight increase in female labor force participation is due to the decline in the number of male employees. The decline in male employees occurred mostly in manufacturing and trade; and the increase in the share of female employees in manufacturing is less than the decrease in the share of male employees in the same sector. Although there are no negative figures considering the difference between 2006 and 2011 in terms of the share of female employment in sectoral categories, the changes are minor. Finance and other services are the sectors in which female employment has increased the most. There have been constant declines in male employment in manufacturing, retail trade, hotels and restaurants, mining and other services starting from 2008. In all sectoral levels, the gender gap is very wide and is not narrowed throughout this period.

Table 3.9: Sectoral Composition of Urban Employment, 2006-2011 (percentage of total urban employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
Agriculture and fishing	0.019	0.017	0.018	0.017	0.021	0.022	0.003	*0.019*
Mining and quarrying	0.000	0.000	0.000	0.000	0.000	0.000	0.000	*0.000*
Manufacturing	0.052	0.052	0.051	0.053	0.056	0.055	0.003	*0.053*
EGW	0.000	0.000	0.000	0.000	0.001	0.001	0.000	*0.001*
Construction	0.003	0.002	0.003	0.003	0.004	0.003	0.001	*0.003*
Trade, H&R	0.042	0.044	0.046	0.048	0.047	0.049	0.007	*0.046*
Transportation	0.006	0.006	0.006	0.006	0.007	0.007	0.001	*0.006*
Finance, real estate	0.029	0.032	0.033	0.038	0.040	0.041	0.012	*0.035*
Other services	0.062	0.061	0.065	0.071	0.069	0.073	0.011	*0.067*
TOTAL	*0.212*	*0.215*	*0.223*	*0.236*	*0.244*	*0.251*	0.039	*0.230*
MALE								
Agriculture and fishing	0.025	0.023	0.025	0.023	0.024	0.026	0.001	*0.024*
Mining and quarrying	0.005	0.005	0.004	0.003	0.003	0.004	-0.001	*0.004*
Manufacturing	0.210	0.206	0.208	0.191	0.192	0.187	-0.022	*0.199*
EGW	0.005	0.006	0.005	0.004	0.008	0.010	0.005	*0.006*
Construction	0.067	0.068	0.065	0.065	0.071	0.074	0.007	*0.068*
Trade, H&R	0.231	0.229	0.224	0.224	0.201	0.194	-0.037	*0.217*
Transportation	0.059	0.059	0.055	0.056	0.059	0.057	-0.003	*0.058*
Finance, real estate	0.100	0.106	0.111	0.116	0.120	0.120	0.020	*0.112*
Other services	0.086	0.083	0.080	0.081	0.077	0.076	-0.010	*0.081*
TOTAL	*0.788*	*0.785*	*0.777*	*0.764*	*0.756*	*0.749*	-0.039	*0.770*

[*]: 2011-2006

3.5.4.2 Share of Formal Employment by Sector

"The share of formal employment (as a percentage of total employment) exhibits significant differences across sectors and gender" (Taymaz, 2010b: 6). The most striking result is, contrary to our expectations, more than 70 percent of the employees are registered on average, in other services (Table 3.10).

There are three sectors in which the share of formal female employment is higher than that of male employment: utilities, construction and transportation. This is not surprising considering that in these sectors female employment is very low: given that they work in one of these sectors, it is more likely for females to be formal.

Except the three sectors mentioned above, formalization appears to be more common among men compared to women. The gap is striking in manufacturing (20 percent on average).

During the crisis (from 2008 to 2009) the general trend seems to be the informalization of labor force (for the sectors in which the share of formal employment did not decrease, the changes appear to be negligible). After the crisis, there is a total increase in formalization (except other services for women, and mining and utilities for men) that offset the decreases related to the 2008 crisis, hence this period can be regarded as a recovery period.

Table 3.10: Share of Formal Employment in Urban Areas by Sector, 2006-2011 (percentage of sectoral employment by gender)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Agr. and fish.	0.027	0.028	0.027	0.047	0.055	0.059	0.032	0.041
Mining and quarry.	0.749	0.881	0.871	0.869	1.000	1.000	0.251	0.895
Manufacturing	0.529	0.577	0.633	0.572	0.566	0.592	0.063	0.578
EGW	0.979	1.000	0.976	1.000	0.605	0.646	-0.333	0.868
Construction	0.793	0.755	0.859	0.791	0.793	0.868	0.075	0.810
Trade, H&R	0.551	0.595	0.614	0.621	0.631	0.660	0.109	0.612
Transportation	0.856	0.843	0.896	0.882	0.889	0.893	0.036	0.876
Finance, real estate	0.882	0.900	0.913	0.894	0.878	0.882	0.000	0.892
Other services	0.728	0.732	0.760	0.735	0.746	0.745	0.016	0.741
TOTAL	0.608	0.639	0.668	0.656	0.651	0.663	0.055	0.647
MALE								
Agr. and fish.	0.320	0.290	0.277	0.277	0.288	0.320	0.000	0.295
Mining and quarry.	0.888	0.891	0.876	0.899	0.923	0.909	0.022	0.898
Manufacturing	0.714	0.743	0.784	0.779	0.789	0.804	0.090	0.769
EGW	0.961	0.991	0.983	0.981	0.643	0.617	-0.344	0.863
Construction	0.408	0.409	0.457	0.470	0.495	0.522	0.114	0.460
Trade, H&R	0.590	0.602	0.628	0.630	0.647	0.672	0.083	0.628
Transportation	0.608	0.645	0.654	0.651	0.663	0.689	0.080	0.651
Finance, real estate	0.911	0.911	0.915	0.922	0.927	0.932	0.021	0.920
Other services	0.758	0.758	0.763	0.781	0.797	0.806	0.048	0.777
TOTAL	0.663	0.679	0.705	0.708	0.720	0.735	0.072	0.702

*: 2011-2006

3.5.5 Occupation

3.5.5.1 Composition of Urban Employment by Occupation

The composition of urban employment by occupation is given in Table 3.11. Glancing the data suggests that there is not any job in which employment is intensified. In other words, the distribution of employment by occupation is highly diversified and the shares are close to

each other: on average 17.4 percent of total urban employees work as craft and trade related workers, 15.5 percent as service workers, and 13.8 percent in elementary occupations. It is followed by plant, machine operators and assemble workers, and legislators and managers in order, with shares of (on average) 12.8 percent and 10.8 percent, respectively. Since we consider only urban areas, the share of skilled agricultural and fishery workers is small. Although the ordering given above does not change much over time, there are some fluctuations in the occupation distribution of employment from 2006 to 2011: the largest change in between these years is associated with elementary occupations for women (1.3 percentage points increase), craft and trade related works for men (2 percentage points decrease). The impact of the 2008 crisis is reflected mostly on the composition of urban employment by occupation through increases in the share of female employment and decreases in the male share of employment.

Table 3.11: Distribution of Urban Employment by Occupation, 2006-2011 (percentage of total urban employment)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Legislators & managers	0.011	0.011	0.012	0.013	0.011	0.012	0.001	*0.012*
Professionals	0.034	0.034	0.034	0.039	0.039	0.040	0.006	*0.037*
Technicians	0.028	0.027	0.031	0.029	0.027	0.028	0.001	*0.028*
Clerks	0.034	0.038	0.039	0.040	0.042	0.043	0.009	*0.039*
Service workers	0.030	0.033	0.034	0.036	0.037	0.040	0.010	*0.035*
Skilled agr. & fish. work.	0.011	0.010	0.011	0.010	0.012	0.011	-0.001	*0.011*
Craft & rltd trade work.	0.019	0.017	0.016	0.020	0.021	0.019	0.001	*0.019*
Plant & mach. ope.	0.014	0.015	0.013	0.012	0.014	0.013	-0.001	*0.013*
Elementary occupations	0.031	0.031	0.034	0.037	0.041	0.044	0.013	*0.036*
TOTAL	*0.212*	*0.215*	*0.223*	*0.236*	*0.244*	*0.251*	0.039	*0.230*
MALE								
Legislators & managers	0.105	0.096	0.094	0.101	0.092	0.091	-0.014	*0.096*
Professionals	0.056	0.052	0.050	0.050	0.056	0.057	0.001	*0.053*
Technicians	0.058	0.062	0.063	0.057	0.054	0.055	-0.002	*0.058*
Clerks	0.051	0.049	0.051	0.051	0.052	0.052	0.001	*0.051*
Service workers	0.118	0.121	0.119	0.124	0.118	0.117	-0.001	*0.120*
Skilled agr. & fish. work.	0.021	0.019	0.020	0.018	0.019	0.019	-0.001	*0.019*
Craft & rltd trade work.	0.165	0.165	0.159	0.149	0.150	0.145	-0.020	*0.155*
Plant & mach. ope.	0.119	0.122	0.117	0.106	0.115	0.112	-0.007	*0.115*
Elementary occupations	0.097	0.100	0.104	0.108	0.100	0.100	0.004	*0.101*
TOTAL	*0.788*	*0.785*	*0.777*	*0.764*	*0.756*	*0.749*	-0.039	*0.770*

*: 2011-2006

3.5.5.2 Share of Formal Employees by Occupation

The extent of formality among urban employees by occupation is shown in Table 3.12. The very first 4 occupations are the ones where formal employment relationship is common for both men and women. As the skill level required for a job decreases, the probability of being formally employed decreases: elementary occupations[32] are associated with the second least formality shares (on average, 38.1 percent for women and 54.9 percent for men). As expected, working informally is more common among skilled agricultural and fishery workers, but since their share in total urban employment (see Table 3.11) is small.

Table 3.12: Share of Formal Employees by Occupation, 2006-2011
(percentage of employment in urban areas by occupation and gender)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Legislators & managers	0.802	0.834	0.850	0.861	0.868	0.886	*0.083*	0.850
Professionals	0.939	0.942	0.951	0.954	0.961	0.966	*0.027*	0.952
Technicians	0.867	0.874	0.909	0.881	0.896	0.896	*0.029*	0.887
Clerks	0.837	0.856	0.882	0.884	0.888	0.897	*0.060*	0.874
Service workers	0.408	0.450	0.491	0.472	0.507	0.514	*0.106*	0.474
Skilled agr. & fish. work.	0.020	0.016	0.032	0.045	0.040	0.045	*0.026*	0.033
Craft & rltd trade work.	0.305	0.338	0.331	0.282	0.259	0.291	*-0.014*	0.301
Plant & mach. ope.	0.550	0.569	0.647	0.615	0.670	0.669	*0.119*	0.620
Elementary occupations	0.319	0.370	0.406	0.402	0.390	0.401	*0.082*	0.381
TOTAL	*0.608*	*0.639*	*0.668*	*0.656*	*0.651*	*0.663*	*0.055*	0.647
MALE								
Legislators & managers	0.746	0.751	0.758	0.779	0.791	0.819	*0.073*	0.774
Professionals	0.922	0.916	0.932	0.935	0.950	0.954	*0.032*	0.935
Technicians	0.824	0.851	0.859	0.861	0.867	0.875	*0.051*	0.856
Clerks	0.854	0.862	0.881	0.881	0.886	0.903	*0.049*	0.878
Service workers	0.600	0.630	0.667	0.660	0.681	0.701	*0.101*	0.657
Skilled agr. & fish. work.	0.366	0.374	0.363	0.338	0.334	0.385	*0.019*	0.360
Craft & rltd trade work.	0.567	0.591	0.624	0.630	0.629	0.648	*0.081*	0.615
Plant & mach. ope.	0.687	0.705	0.743	0.729	0.756	0.772	*0.085*	0.732
Elementary occupations	0.504	0.522	0.553	0.580	0.573	0.564	*0.059*	0.549
TOTAL	*0.663*	*0.679*	*0.705*	*0.708*	*0.720*	*0.735*	*0.072*	0.702

*: 2011-2006

[32] For women, the extent of formality in being employed as craft and related trade workers is less than the one associated with elementary occupations; however it may be due to the fact that this occupation is male abundant.

3.5.6 Establishment Size

3.5.6.1 Distribution of Urban Employment by Establishment Size

On average 47 percent of all employees work in micro-establishments (those that employ less than 10 people) indicating that these firms provide the majority of employment in urban areas in terms of total employment (Table 3.13). Large establishments account for less than 30 percent, while it is 15 percent for firms that employ 25 to 49 people. Size distribution of employment could be considered as fairly stable from 2006 to 2011. It is worth noting that, starting from 2009, there is a slight increase in female employment in micro- and medium-sized establishments. In contrast, male employment in micro-establishments exhibits a steady decline throughout the period from 2006 to 2011.

Table 3.13: Composition of Urban Employment by Establishment Size, 2006-2011 (percentage of total urban employment)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Less than 10	0.087	0.086	0.086	0.096	0.104	0.107	0.020	*0.094*
10-24	0.025	0.024	0.025	0.026	0.026	0.028	0.003	*0.026*
25-49	0.033	0.036	0.041	0.042	0.042	0.043	0.010	*0.039*
50 or more	0.067	0.068	0.071	0.072	0.073	0.073	0.006	*0.071*
TOTAL	*0.212*	*0.215*	*0.223*	*0.236*	*0.244*	*0.251*	0.039	*0.230*
MALE								
Less than 10	0.402	0.389	0.374	0.370	0.357	0.347	-0.055	*0.373*
10-24	0.074	0.072	0.074	0.072	0.073	0.077	0.003	*0.074*
25-49	0.094	0.106	0.111	0.107	0.109	0.110	0.016	*0.106*
50 or more	0.217	0.218	0.219	0.216	0.216	0.215	-0.003	*0.217*
TOTAL	*0.788*	*0.785*	*0.777*	*0.764*	*0.756*	*0.749*	-0.039	*0.770*

*: 2011-2006

3.5.6.2 Share of Formal Employment by Establishment Size

Establishment size is found to be positively related to the rate of formal relationships: almost all employees in (94 percent for women, and 95 percent for men on average) large establishments are registered to a social security institution (Table 3.14). Like the case in the distribution out of total employment, the share of formal employees in micro-establishments

is very small. Moreover, the shares of formal employees in small and medium-sized establishments reveal that the extent of formality increases monotonically by establishment size regardless of gender. In Table 3.13, we see that there is an increase in female employment in micro-establishments, and combined with Table 3.14, we figure out that it has been the case at the expense of higher informality. These numbers begin to improve starting from the year 2011. The changes in formality in large establishments remain at low levels whereas small-sized establishments are detected as the most volatile in terms of its formality share. While the increase in the share of formal employment is less pronounced for large establishments, the effect of the 2008 crisis is still visible as the share of formal employment stagnates between 2008 and 2010.

Table 3.14: Share of Formal Employment by Establishment Size, 2006-2011 (percentage of employment in urban areas by establishment size and gender)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Less than 10	0.287	0.317	0.338	0.335	0.345	0.363	*0.076*	0.331
10-24	0.639	0.662	0.701	0.703	0.716	0.740	*0.101*	0.694
25-49	0.808	0.828	0.853	0.856	0.848	0.876	*0.069*	0.845
50 or more	0.918	0.936	0.950	0.949	0.950	0.951	*0.033*	0.943
TOTAL	*0.608*	*0.639*	*0.668*	*0.656*	*0.651*	*0.663*	*0.055*	0.647
MALE								
Less than 10	0.470	0.473	0.497	0.504	0.510	0.533	*0.063*	0.498
10-24	0.695	0.729	0.760	0.772	0.787	0.804	*0.109*	0.758
25-49	0.825	0.849	0.866	0.874	0.885	0.891	*0.066*	0.865
50 or more	0.940	0.947	0.958	0.955	0.960	0.958	*0.018*	0.953
TOTAL	*0.663*	*0.679*	*0.705*	*0.708*	*0.720*	*0.735*	*0.072*	0.702

*: 2011-2006

3.5.7 Employment Status

3.5.7.1 Distribution of Urban Employment by Employment Status

Urban employment consists mostly of regular and casual employment, averaging 76.4 percent of the total urban employment (Table 3.15). Consistent with their low labor force participation rates, females' share in regular/casual employment is only 18.6 percent which is one third of the males' share. With its 11 percent coming from male employment, self-

employment accounts for 13 percent of total urban employment. It is followed by employer and unpaid family worker, in order.

There are minor increases in the share of all employment status categories except employer due to the 2008 crisis (considering the change in between 2008 and 2009) It has turned out to be declines when one considers these shares for men, except the category of unpaid family worker.

Table 3.15: Distribution of Urban Employment by Employment Status, 2006-2011 (percentage of total urban employment)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Regular/casual emp.	0.172	0.179	0.185	0.189	0.192	0.200	*0.028*	*0.186*
Employer	0.004	0.005	0.005	0.005	0.005	0.005	*0.000*	*0.005*
Self-employed	0.018	0.014	0.016	0.023	0.027	0.025	*0.007*	*0.020*
Unpaid family work.	0.018	0.017	0.017	0.019	0.021	0.022	*0.004*	*0.019*
TOTAL	*0.212*	*0.215*	*0.223*	*0.236*	*0.244*	*0.251*	*0.039*	*0.230*
MALE								
Regular/casual emp.	0.571	0.581	0.582	0.575	0.580	0.580	*0.009*	*0.578*
Employer	0.067	0.067	0.068	0.067	0.062	0.061	*-0.006*	*0.065*
Self-employed	0.132	0.120	0.112	0.106	0.099	0.096	*-0.036*	*0.111*
Unpaid family work.	0.018	0.016	0.015	0.016	0.015	0.013	*-0.006*	*0.016*
TOTAL	*0.788*	*0.785*	*0.777*	*0.764*	*0.756*	*0.749*	*-0.039*	*0.770*

*: 2011-2006

3.5.7.2 Share of Formal Employment by Employment Status

As expected, regular/casual employee and employer categories are associated with the highest formality shares among the other employment status categories. It is interesting that the extent of formality increased among regular and casual employees during the 2008 crisis although it reflects very minor fluctuations (Table 3.16). In all categories, the share of formal employment is higher for men in comparison with women: the gender gap being the largest in the case of self-employment (on average it is 26.5 percentage points). Since 2009, all the trends tend to reverse; in other words, if the extent of formality declined during the crisis, and it began to increase in 2010.

Table 3.16: Share of Formal Employment by Employment Status, 2006-2011 (percentage of employment in urban areas by employment status and gender)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
Regular/casual emp.	0.701	0.724	0.758	0.765	0.758	0.774	*0.073*	0.747
Employer	0.711	0.777	0.757	0.735	0.757	0.824	*0.113*	0.760
Self-employed	0.213	0.199	0.200	0.149	0.200	0.168	*-0.045*	0.188
Unpaid family work.	0.089	0.074	0.092	0.170	0.092	0.166	*0.076*	0.114
TOTAL	*0.608*	*0.639*	*0.668*	*0.656*	*0.668*	*0.663*	*0.055*	0.650
MALE								
Regular/casual emp.	0.709	0.730	0.761	0.765	0.773	0.785	*0.076*	0.754
Employer	0.769	0.749	0.761	0.772	0.789	0.809	*0.040*	0.775
Self-employed	0.478	0.462	0.452	0.432	0.438	0.457	*-0.021*	0.453
Unpaid family work.	0.186	0.165	0.169	0.226	0.215	0.209	*0.023*	0.195
TOTAL	*0.663*	*0.679*	*0.705*	*0.708*	*0.720*	*0.735*	*0.072*	0.702

[*]: 2011-2006

3.5.8 Distribution of Urban Employment by Registration Status

Different from the case in total employment figures, we do not see a persistent increase in the share of informal employment among women in urban areas. What we see in Table 3.17 is a decline up to 2008 and a sharp increase in 2009 due to the 2008 crisis which does not reverse again until 2011. However, the share of females in formal employment increases consistently from 2006 to 2011. Male informal employment gradually declines within the same period while male formal employment exhibits volatility.

Considering the average figures, it does not come as a surprise that more males are employed formally: it is twice that of formal female employment. Informal jobs again seem to be filled with male employees (the average share of male in informal employment is 23 percent while it is 8 percent among females). These figures as a share of total urban employment are much less than the ones we encountered as a share of total employment; since in the latter, rural areas are included where unpaid family workers are more abundant.

Table 3.17: Composition of Urban Employment by Registration Status, 2006-2011 (percentage of total urban employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
informal	0.083	0.077	0.074	0.081	0.085	0.085	*0.002*	*0.081*
formal	0.129	0.137	0.149	0.155	0.159	0.167	*0.038*	*0.149*
TOTAL	*0.212*	*0.215*	*0.223*	*0.236*	*0.244*	*0.251*	*0.039*	*0.230*
MALE								
informal	0.265	0.252	0.229	0.223	0.212	0.198	*-0.067*	*0.230*
formal	0.523	0.533	0.547	0.541	0.544	0.550	*0.028*	*0.540*
TOTAL	*0.788*	*0.785*	*0.777*	*0.764*	*0.756*	*0.749*	*-0.039*	*0.770*

[*]: 2011-2006

Table 3.18 shows the shares of formal and informal employment for males and females, rather than in total. 35 percent of female employees work informally on average, whereas informal employment accounts to 30 percent for males. Taking females' low labor participation rates (Table 3.4) into account, the share of 35 percent is very striking. Women are less likely to find a job - if not educated- (Table 3.7), and to become self-employed (Table 3.15).

Table 3.18: Distribution of Urban Employment by Registration Status, 2006-2011 (percentage of gender specific total urban employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
informal	0.392	0.361	0.332	0.344	0.349	0.337	*-0.055*	*0.353*
formal	0.608	0.639	0.668	0.656	0.651	0.663	*0.055*	*0.647*
MALE								
informal	0.337	0.321	0.295	0.292	0.280	0.265	*-0.072*	*0.298*
formal	0.663	0.679	0.705	0.708	0.720	0.735	*0.072*	*0.702*

[*]: 2011-2006

3.5.9 Region

3.5.9.1 Distribution of Urban Employment by Region

The majority of the employees reside in the Marmara region, on average 42.5% of the total urban employment resided in this region between 2006 and 2011 (Table 3.19). Marmara is followed by Central Anatolia, Aegean and Mediterranean regions, in that order. Black Sea comes next, and the last two in the list are Southeast and East Anatolia regions. There is an increase in the shares of Southeast and East Anatolia from 2008 to 2009 both for men and women. These constitute the two of three regions (with Black Sea) where the share of male employees increase during the crisis whereas the share of female employees rises in all regions, though slight. The largest changes between 2006 and 2011 are associated with the Marmara region: From 2006 to 2011, the share of female employees residing in Marmara region increased from 9.5 to 11 percent; whilst the share of male employees declines from 33.2 to 31.7 percent.

Table 3.19: Distribution of Urban Employment by Region, 2006-2011 (percentage of total urban employment)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Marmara	0.095	0.096	0.100	0.101	0.104	0.110	*0.014*	*0.101*
Aegean	0.030	0.033	0.033	0.036	0.037	0.039	*0.009*	*0.034*
Mediterranean	0.028	0.027	0.026	0.028	0.032	0.033	*0.005*	*0.029*
Central Anatolia	0.031	0.032	0.035	0.038	0.039	0.039	*0.008*	*0.036*
Black Sea	0.017	0.017	0.018	0.018	0.017	0.017	*-0.001*	*0.017*
East Anatolia	0.005	0.006	0.006	0.007	0.007	0.007	*0.001*	*0.006*
Southeast Anatolia	0.005	0.004	0.006	0.008	0.010	0.008	*0.003*	*0.007*
TOTAL	*0.212*	*0.215*	*0.223*	*0.236*	*0.244*	*0.251*	*0.039*	*0.230*
MALE								
Marmara	0.332	0.330	0.331	0.318	0.314	0.317	*-0.015*	*0.324*
Aegean	0.100	0.102	0.098	0.096	0.097	0.097	*-0.003*	*0.098*
Mediterranean	0.091	0.091	0.088	0.088	0.089	0.087	*-0.004*	*0.089*
Central Anatolia	0.123	0.127	0.125	0.123	0.122	0.121	*-0.003*	*0.124*
Black Sea	0.054	0.051	0.051	0.049	0.045	0.042	*-0.012*	*0.049*
East Anatolia	0.034	0.033	0.033	0.034	0.031	0.030	*-0.004*	*0.032*
Southeast Anatolia	0.054	0.052	0.051	0.056	0.057	0.055	*0.001*	*0.054*
TOTAL	*0.788*	*0.785*	*0.777*	*0.764*	*0.756*	*0.749*	*-0.039*	*0.770*

*: 2011-2006

3.5.9.2 Share of Formal Employment by Region

Although there seems to be a sharp difference between regions of residence for women in terms of formality, it is hard to say this for men (Table 3.20). The extent of formality is found to be more than 60 percent for all 6 regions with the exception of Southeast Anatolia for men. However, for women, there are just three regions where the extent of formality is more than 60 percent on average: Marmara, Aegean, and Central Anatolia. Being formally employed is more common in Central Anatolia for men (on average 75.1 percent) whereas it is the Marmara region for women (on average, 70.9 percent). Black Sea and Marmara regions appear to be the two common regions between men and women where the extent of formality increases the most from 2006 and 2011. Central Anatolia, Black Sea, East and Southeast Anatolia experienced an increase in their shares of formal employment during the crisis (from 2008 to 2009) which might have occurred due to the change in the registration status of the existing employees (since there is not any evidence of that much employment creation in this period according to Table 3.20).

Table 3.20: Share of Formal Employment by Region, 2006-2011
(percentage of employment in urban areas by region and gender)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Marmara	0.655	0.694	0.753	0.721	0.707	0.724	*0.069*	0.709
Aegean	0.607	0.657	0.701	0.700	0.716	0.692	*0.085*	0.679
Mediterranean	0.462	0.488	0.496	0.475	0.479	0.492	*0.030*	0.482
Central Anatolia	0.695	0.707	0.692	0.704	0.689	0.683	*-0.012*	0.695
Black Sea	0.464	0.477	0.449	0.482	0.528	0.571	*0.107*	0.495
East Anatolia	0.557	0.539	0.534	0.556	0.517	0.600	*0.043*	0.550
Southeast Anatolia	0.578	0.519	0.430	0.510	0.504	0.540	*-0.037*	0.513
TOTAL	*0.608*	*0.639*	*0.668*	*0.656*	*0.651*	*0.663*	*0.055*	0.647
MALE								
Marmara	0.692	0.720	0.759	0.755	0.765	0.775	*0.083*	0.744
Aegean	0.691	0.717	0.752	0.745	0.765	0.760	*0.069*	0.738
Mediterranean	0.606	0.617	0.626	0.605	0.628	0.652	*0.046*	0.622
Central Anatolia	0.724	0.733	0.748	0.761	0.758	0.781	*0.057*	0.751
Black Sea	0.679	0.671	0.673	0.701	0.726	0.759	*0.081*	0.702
East Anatolia	0.597	0.574	0.599	0.634	0.609	0.623	*0.026*	0.606
Southeast Anatolia	0.418	0.393	0.391	0.472	0.506	0.536	*0.118*	0.453
TOTAL	*0.663*	*0.679*	*0.705*	*0.708*	*0.720*	*0.735*	*0.072*	0.702

*: 2011-2006

3.5.10 Household Characteristics

So far we have focused on the changes in employment patterns at the individual level. These analyses need to be complemented by those at the household level since household appears to be the unit in which consumption and labor market participation decisions are made.

3.5.10.1 Distribution of Urban Working Age Population by Household Size

The data on the composition of urban working age population by household size are given in Table 3.21. The majority of population lives in households with 3-5 people in urban areas (69.3 percent on average). This ratio decreases by 5 percentage points when we include rural areas. The shares of people living in small households (1-2 people) are about 13 percent on average regardless of the region (13.2 percent of urban population, 13.8 of total population). The rest is divided among three categories: households in which 6 people live, 7 to 9 and more than 10. As expected, the share of the last category is higher in total employment than its share in urban employment. Although the shares of population in household sizes do not change much within consecutive years, we observe slight differences considering the change between 2006 and 2011: the share of small households (1 to 3 people) increased by 3.4 percent, and the shares of middle-size households (4 to 6 people) and large households (7 and more people) declined (by 2.1 and 3.1 percentage points, respectively) from 2006 to 2011.

Table 3.21: Distribution of Urban Working Age Population by Household Size, 2006-2011 (percentage of total urban working age population)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
1	0.008	0.009	0.010	0.009	0.009	0.009	*0.001*	*0.009*
2	0.059	0.062	0.063	0.064	0.064	0.066	*0.007*	*0.063*
3	0.110	0.113	0.114	0.114	0.117	0.117	*0.008*	*0.114*
4	0.143	0.142	0.143	0.145	0.144	0.142	*-0.001*	*0.143*
5	0.084	0.081	0.079	0.083	0.083	0.081	*-0.003*	*0.082*
6	0.042	0.042	0.040	0.040	0.040	0.041	*-0.002*	*0.041*
"7-9"	0.041	0.037	0.037	0.037	0.035	0.037	*-0.004*	*0.037*
10 +	0.011	0.011	0.010	0.009	0.009	0.009	*-0.002*	*0.010*
TOTAL	*0.498*	*0.498*	*0.498*	*0.501*	*0.501*	*0.502*	*0.004*	*0.499*
MALE								
1	0.006	0.006	0.007	0.007	0.008	0.009	*0.003*	*0.007*
2	0.048	0.051	0.053	0.053	0.053	0.055	*0.007*	*0.052*
3	0.113	0.117	0.119	0.116	0.120	0.121	*0.008*	*0.118*
4	0.153	0.153	0.153	0.153	0.151	0.149	*-0.004*	*0.152*
5	0.088	0.086	0.084	0.085	0.085	0.081	*-0.007*	*0.085*
6	0.043	0.042	0.040	0.040	0.040	0.040	*-0.003*	*0.041*
"7-9"	0.041	0.037	0.036	0.036	0.034	0.036	*-0.005*	*0.037*
10 +	0.010	0.010	0.010	0.010	0.008	0.008	*-0.002*	*0.009*
TOTAL	*0.502*	*0.502*	*0.502*	*0.499*	*0.499*	*0.498*	*-0.004*	*0.501*

[*]: 2011-2006

3.5.10.2 Share of People Living in Households with Any Employment

Table 3.22 presents the data on the shares of people living in a household with at least one employed person. The pattern is very similar to the one revealed in between 2000 and 2006 (Taymaz, 2010b). The share of employed among women living alone is found to have the least share among all others, 30 percent on average, which also implies the most vulnerable group is these women, as the same share for men is 66 percent. As the number of people living in a household increases, the share of households with any employment increases. The crisis in 2008 led to an increase in the share of people living in households without any employment a rise about 8 percentage points occurred from 2004 to 2009. The share of people living in households without any employment was found to be about 5 percent from 2000 to 2003 by Taymaz (2010b) which was attributed to the 2001 crisis.

Table 3.22: Share of People Living in Households with Any Employment, 2006-2011 (percentage of population by gender and household size, total urban working age population)

	2006	2007	2008	2009	2010	2011	*change**	*Average*
FEMALE								
1	0.262	0.255	0.323	0.325	0.300	0.332	*0.071*	*0.300*
2	0.530	0.528	0.541	0.536	0.552	0.566	*0.036*	*0.542*
3	0.772	0.784	0.779	0.754	0.775	0.805	*0.033*	*0.778*
4	0.853	0.861	0.861	0.846	0.867	0.885	*0.032*	*0.862*
5	0.874	0.874	0.867	0.855	0.875	0.896	*0.022*	*0.873*
6	0.878	0.871	0.864	0.850	0.874	0.879	*0.001*	*0.869*
"7-9"	0.858	0.848	0.842	0.849	0.865	0.876	*0.018*	*0.856*
10 +	0.843	0.846	0.859	0.858	0.873	0.902	*0.059*	*0.864*
TOTAL	*0.793*	*0.792*	*0.791*	*0.778*	*0.797*	*0.815*	*0.022*	*0.794*
MALE								
1	0.608	0.671	0.661	0.661	0.679	0.682	*0.074*	*0.660*
2	0.628	0.627	0.641	0.623	0.636	0.654	*0.026*	*0.635*
3	0.814	0.821	0.816	0.795	0.814	0.841	*0.027*	*0.817*
4	0.879	0.882	0.879	0.862	0.884	0.899	*0.020*	*0.881*
5	0.896	0.895	0.885	0.867	0.890	0.917	*0.022*	*0.892*
6	0.901	0.891	0.885	0.863	0.896	0.903	*0.002*	*0.890*
"7-9"	0.885	0.873	0.866	0.876	0.887	0.902	*0.018*	*0.882*
10 +	0.874	0.878	0.877	0.886	0.898	0.927	*0.053*	*0.890*
TOTAL	*0.842*	*0.842*	*0.836*	*0.821*	*0.840*	*0.858*	*0.016*	*0.840*

*: 2011-2006

3.5.10.3 Share of People Living in Households with Any Formal Employment

The inverted-U type relationship between formality and household size suggested in Taymaz (2010) for the years 2000-2006 is again observed for years 2006-2011, with the peak occurring at households with 4 people (Table 3.23). Having at least one formal employee in the household is important, since all household members can benefit from social security coverage even it has been limited by age. The share of people living in households with at least one formal employment is very low in small households, and it is lower for females than males. About 60 percent of people living in households with 3 people have at least one formal employee in the household, and it is about 70 percent for a household with 4 members. As in the rate of employment, the 2008 financial crisis seems to coincide with stagnation (and in some cases a decline) in the share of people living in a household with at least one formal employee. By 2010, the positive trend seems to be reestablished.

Table 3.23: Share of People Living in Households with Any Formal Employment, 2006-2011 (percentage of population by gender and household size, total urban working age population)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
1	0.192	0.203	0.271	0.253	0.233	0.264	*0.072*	*0.236*
2	0.373	0.382	0.403	0.399	0.415	0.429	*0.055*	*0.400*
3	0.596	0.611	0.627	0.608	0.627	0.665	*0.069*	*0.622*
4	0.663	0.677	0.698	0.679	0.712	0.741	*0.078*	*0.695*
5	0.638	0.661	0.659	0.647	0.669	0.712	*0.074*	*0.664*
6	0.604	0.600	0.617	0.607	0.641	0.649	*0.045*	*0.620*
"7-9"	0.505	0.478	0.501	0.518	0.547	0.556	*0.051*	*0.517*
10 +	0.358	0.377	0.406	0.395	0.432	0.471	*0.113*	*0.407*
TOTAL	0.577	0.586	0.602	0.591	0.617	0.642	*0.065*	*0.603*
MALE								
1	0.472	0.513	0.531	0.532	0.549	0.567	*0.095*	*0.528*
2	0.452	0.462	0.485	0.468	0.479	0.507	*0.055*	*0.476*
3	0.630	0.640	0.657	0.642	0.656	0.695	*0.065*	*0.653*
4	0.686	0.695	0.713	0.692	0.726	0.751	*0.065*	*0.711*
5	0.647	0.673	0.671	0.660	0.687	0.734	*0.087*	*0.679*
6	0.628	0.614	0.623	0.612	0.653	0.665	*0.037*	*0.633*
"7-9"	0.511	0.481	0.514	0.532	0.562	0.573	*0.062*	*0.529*
10 +	0.384	0.400	0.426	0.399	0.455	0.480	*0.097*	*0.424*
TOTAL	0.616	0.624	0.639	0.625	0.652	0.680	*0.064*	*0.639*

[*]: 2011-2006

3.6 Modeling Labor Force Participation Decision

3.6.1 Methodology (the model and the variables)

After discussing the trends in labor force participation of males and females in the preceding section, we now attempt to clarify the determinants of the changes in employment patterns in the present section. In doing so, we will investigate the mechanisms underlying labor market participation decisions and the wage determination at the individual level with a joint model of decision on labor market participation (via multinomial logit model) and determination of wages (via Mincerian wage regression). A two-stage estimation suggested by Trost and Lee (1984) will be adopted to examine the wage differentials between formal and informal sectors in manufacturing and services for the years 2006-2011. We justify using two-stage modeling by recognizing the fact that the distribution of workers among the sectors is not random: the unobserved worker characteristics influence the sectoral allocation has an influence also on their wages. Therefore, following Heckman and Hotz (1986), we consider

a selectivity bias correcting term to control for unobserved heterogeneity among workers. This estimation strategy is very common in the literature and used in Taymaz's (2010b) article as well. We try to extend Taymaz's (2010b) analysis using his division of labor market outcomes in two ways: i) by including region (through dummies for region of residence), in terms of omitted variables; ii) by covering the period between 2006 and 2011, in terms of time span. All equations are estimated for urban-living males and females aged 15 to 65 for each labor market separately.

The seven labor market outcomes utilized in a multinomial logit model can be listed as follows:

- wage employment in formal manufacturing[33] (***fm***),
- wage employment in informal manufacturing (***im***),
- wage employment in formal services (***fs***),
- wage employment in informal services (***is***),
- employer (***e***),
- self-employed (***se***)
- non-employment (***non***) – as the base outcome -.

In regards to jobs, ***fm*** corresponds to formal jobs in manufacturing, ***im*** to informal jobs in manufacturing, ***fs*** to formal jobs in services, ***is*** to informal jobs in manufacturing. ***e*** stands for entrepreneur and for an employer w includes the profits as well while ***se*** is associated with self-employment. As expected from a rational individual, one will select the outcome at which his/her utility is maximized.

Table 3.24 presents the descriptive statistics on the variables used in estimating the labor market participation model.

- Child: *"Child"* dummy is generated by looking at the relation to the household head. It takes the value "1" if the person is a "daughter/son", "daughter-/son-in-law", "granddaughter/son" or "other relative/non relative" aged less than 30 and "0" otherwise. The reference category is associated with 0 which can be labeled as *"Parent"*. The relationship with the household head may be added to the regression

[33] "Manufacturing" includes manufacturing proper, mining, utilities, and construction. "Services" include trade, transportation and communications, finance and real estate, and other services.

by using another dummy as "being the household head" or "not" (Aydın, et al., 2010).

- Age: In order to allow for non-monotonic effects of the age variable, we add *log age* and *its square* as explanatory variables. What we expect is to see a U-shaped relationship between age and the probability of non-employment outcomes.

- Marital status: We use two dummy variables for marital status where *Single* stands for the never-married singles and *Divorced* for the divorced and widowed. The omitted variable is the *Married* category.

- The *Parent*household size* and *Child*household size* are added to the model to test for the impact of household size.

> The household size is measured by the (log) number of people in the household. It is interacted with the *Parent* and *Child* dummy variables because the effects of household size on parents and children are likely to differ. We expect that the *Parent*household size* variable may have a negative effect on the probability of non-employment for men, but it may have a positive effect on the probability of non-employment for women, because women are more likely to be involved in home production, and the need for home production will increase by the household size. In other words, the value of household production will increase for women by household size, whereas the need for workplace employment will increase for men.
>
> (Taymaz, 2010b: 11)

Adding the number of children (and decomposing it into two or more variables with respect to their ages) is another way of integrating household size to the model as explanatory variables (Dayıoğlu and Kırdar, 2010).

- *Unemployed household head* is a dummy variable for persons in a household whose "head" is unemployed. If a person whose household head is not employed, it takes the value "1", and "0" otherwise (This variable also takes the value 0 if the person is the household head since we test the effect for other household members). It is included as an explanatory variable since the incentives for entering the labor market for other members of the family may change if the household head is unemployed.

- *Any formal*:

> We use a dummy variable, any formal, to test if the availability of social security benefits provided by another formally employed person in the household increases the non-employment probability and decreases the formal employment probability of other persons in the household. We expect that if there is a formally employed person in the household, other members of the household are likely to benefit from social security coverage (health insurance, etc.) so that if they get a formal job, the value of additional non-wage benefits will be low. This may discourage other household members to get a (formal) job.
>
> (Taymaz, 2010b: 11)[34]

- Educational level: There are five dummy variables for educational level. We had to merge two categories ("literate without any diploma" and "primary school diploma") for the first dummy variable related to educational level, *primary school*, since the number of people in the former category is very low. The other dummy variables are as follows: *secondary school* for secondary school graduates, *general high school* for general high school graduates, *and vocational high school* for vocational high school graduates and *university* for 2- and 4-year higher education graduates. The reference category is "*Illiterate*".

- Regions: Regional dummies indicate whether the respondent resides in that region. We define six dummy variables for regional effects: *Aegean, Mediterranean, Central Anatolia, Black Sea, East Anatolia*, and *South East Anatolia*. *Marmara* region is used as the omitted variable.

[34] "Although the employment decision, as discussed here, is likely to be made at the household level, we model it at the individual level because of the lack of panel dimension in our data." (Taymaz, 2010b: 11).

Table 3.24: Descriptive statistics on variables used in the lmp* model

	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*Average*
FEMALE							
Child	0.297	0.296	0.294	0.300	0.303	0.304	*0.299*
Age (log)	3.482	3.487	3.490	3.494	3.499	3.505	*3.493*
Education level							
Primary school	0.470	0.462	0.452	0.438	0.434	0.419	*0.446*
Secondary school	0.136	0.141	0.149	0.163	0.171	0.175	*0.156*
General high school	0.122	0.127	0.123	0.119	0.116	0.117	*0.121*
Vocational high school	0.070	0.072	0.072	0.072	0.070	0.072	*0.071*
University	0.085	0.091	0.100	0.108	0.112	0.121	*0.103*
Marital status							
Single	0.255	0.256	0.252	0.256	0.255	0.255	*0.255*
Divorced	0.063	0.066	0.066	0.069	0.069	0.072	*0.067*
Household characteristics							
*Parent*hh size*	0.899	0.889	0.887	0.880	0.873	0.868	*0.883*
*Child*hh size*	0.465	0.461	0.457	0.464	0.465	0.468	*0.463*
Any formal	0.923	0.923	0.921	0.917	0.915	0.916	*0.919*
Unemployed hh head	0.329	0.330	0.335	0.357	0.342	0.322	*0.336*
Region							
Aegean	0.127	0.129	0.130	0.130	0.130	0.128	*0.129*
Mediterranean	0.119	0.119	0.118	0.117	0.119	0.119	*0.119*
Central Anatolia	0.161	0.160	0.161	0.160	0.161	0.162	*0.161*
Black Sea	0.069	0.065	0.063	0.062	0.061	0.058	*0.063*
East Anatolia	0.048	0.047	0.047	0.046	0.043	0.042	*0.046*
Southeast Anatolia	0.080	0.080	0.079	0.081	0.084	0.085	*0.081*
MALE							
Child	0.359	0.359	0.356	0.356	0.358	0.361	*0.358*
Age (log)	3.473	3.479	3.483	3.493	3.499	3.506	*3.489*
Education level							
Primary school	0.390	0.380	0.369	0.365	0.358	0.344	*0.368*
Secondary school	0.202	0.203	0.211	0.221	0.230	0.233	*0.217*
General high school	0.153	0.155	0.151	0.141	0.138	0.135	*0.146*
Vocational high school	0.113	0.117	0.115	0.113	0.110	0.111	*0.113*
University	0.123	0.128	0.136	0.141	0.148	0.160	*0.139*
Marital status							
Single	0.331	0.329	0.328	0.327	0.327	0.328	*0.329*
Divorced	0.011	0.013	0.014	0.015	0.017	0.018	*0.014*
Household characteristics							
*Parent*hh size*	0.837	0.828	0.824	0.822	0.814	0.806	*0.822*
*Child*hh size*	0.550	0.544	0.539	0.540	0.538	0.540	*0.542*
Any formal	0.512	0.516	0.530	0.543	0.535	0.535	*0.528*
Unemployed hh head	0.185	0.189	0.192	0.200	0.199	0.195	*0.193*
Region							
Aegean	0.128	0.129	0.128	0.127	0.129	0.127	*0.128*
Mediterranean	0.116	0.115	0.114	0.116	0.117	0.116	*0.115*
Central Anatolia	0.158	0.159	0.160	0.159	0.159	0.160	*0.159*
Black Sea	0.067	0.066	0.063	0.060	0.059	0.057	*0.062*
East Anatolia	0.046	0.046	0.046	0.045	0.043	0.042	*0.045*
Southeast Anatolia	0.079	0.078	0.078	0.081	0.082	0.083	*0.080*

* lmp: labor market participation.

Weighted values are used; presenting the mean values, urban areas, working age population.

3.6.2 Findings

In interpreting results, the remarks by Taymaz (2010b: 12) have been followed:

> The estimated coefficients from the multinomial logit model are difficult to interpret quantitatively. Thus, we calculated the marginal effects of each variable on labor market outcomes. For continuous explanatory variables, the marginal effect is the change in the probability of the relevant outcome's realization in response to a slight change in the dependent variable, i.e. the marginal effect is defined as $\partial Pr(j)/\partial x_k$ where Pr(j) is the probability that the labor market outcome j will be chosen, and x_k is the k^{th} explanatory variable. For the dummy variables, the marginal effect shows the change in the probability, Pr(j), included when the dummy variable changes from 0 to 1.

Sample sizes for each outcome are presented in Table 3.25.

Table 3.26[35] presents estimated labor market probabilities for all 7 outcomes for an average illiterate married parent without any formal employee in the household living in the Marmara region where the household head is unemployed. The probabilities of non-employment, employer and self-employment differ too much between men and women. The probability of non-employment is extremely high for women though it experiences slight decreases over time: Starting from 95.9 percent in 2006, it decreases to 93.9 percent in 2011.The increase in the non-employment probability for men in 2009 is worth noting since it coincides with the 2008 crisis: the crisis lead to more non-employed male in the labor market. However, it is followed by a significant decrease in 2010 and continues to decrease in 2011 as well.

The probability of having a job in informal manufacturing seems to be stable for women throughout the years 2006-2011 whilst the probability of informal wage employment in services decreases during the crisis. There is a steady decrease in the probability of informal wage employment (in both manufacturing and services) until 2010 for men. Starting from 2010, the probability of informal wage employment in manufacturing starts to recover and stays the same in 2011 whereas with a slight recovery in 2010, the probability of informal wage employment in services for men continues to decrease. It is worth mentioning that what we expected is different from the figures revealed here: our expectation was to see increases in the probabilities of informal wage employment for males and females whereas we found just one case confirming our expectation, the probability of informal services

[35] For the actual labor market probabilities, see Table A.10.

employment for women. This may imply that either labor market has been narrowed to a point where it was impossible to create new jobs in the informal sector or that the effect of the crisis was overwhelming such that it could not been offset by new jobs in the informal sector.

Formal wage employment probability tends to increase during the crisis in services for both genders. However, the decrease in the probability of formal manufacturing employment from 2008 and 2009 is higher for men than the one for women.

Since the probability of becoming an employer is very low for a woman, it stays the same throughout the years without any impact of the crisis. On the other hand, there is a slight increase in their probability of being a self-employed with the crisis. Finally, there is a steady decline in the probabilities of employer and self-employment for men from 2005 on.

The effects of the variables considered in the estimation on labor market outcomes will be covered under three headings:

- The effects of education
- The effects of household characteristics
- The effects of the remaining variables (child, age, marital status and regional residence)

3.6.2.1 The effects of education on labor market outcomes

The major differences between men and women in terms of the effects of education on labor market outcomes are reported in Table 3.27. As it was the case in the period of 2000-2006 (captured by Taymaz, 2010b), primary schooling has insignificant effect on the employment probability for women while its effect for men is quite important (on average 7.9 percent for women, 28.3 percent for men). For secondary school graduates, the gender gap in the probability of being employed appears to diminish by time: the difference narrows from 13.3 percentage points in favor of men in 2006 to 2.7 percentage points in 2011. Moreover, the impact of education higher than secondary school is higher on women's employability than that of men's. This is partly due to the main characteristics of the Turkish labor market: uneducated woman has less chance to be employed. The probability of being employed for a university graduate female is two times that of the university graduate males (on average,

80.9 percent vs. 38 percent). During the crisis (from 2008 to 2009), the impact of education on employability generally declines with three exceptions: the marginal effect of primary education for women, the marginal effect of general high school for men, and the marginal effect of university for men.

Throughout the tables 3.28-3.33, we present the effects of education on various labor market outcomes separately for both men and women.

Education (with the exception of primary and secondary school) deteriorates women's employability in informal jobs in manufacturing whereas it is the case for all education categories among men (Table 3.28). In addition to their negligible effects on women's employability (on average 3 percentage points for primary school, 1 percentage point for secondary school), the positive effects of primary and secondary school are not very significant. This supports our intuition that more educated women do not accept informal jobs in manufacturing whilst men do not prefer to work in these jobs regardless of educational level (however, the effects become more severe as they become more educated, i.e., on average 22 percentage points among primary school graduates, 47 for secondary school, 63 for general high school, 58 for vocational high school, and 72 for university graduates). During 2008 and 2009, through the impact of crisis, the employability in informal jobs in manufacturing improves slightly for primary and secondary school graduates among women, and this improvement is seen in men's employment for each educational category. In other words, with the crisis, more people start to work in informal manufacturing sector. However, from 2009 on, this practice reverses.

Table 3.29 presents the marginal effect of schooling on informal services employment probability. Different from the case in informal manufacturing employment probability, women's employability in informal services raises in all education levels, except university. Like the case in its effect on informal manufacturing employment, the marginal effect of schooling on informal services is negative for male graduates. However, this time the effects seem to be stronger. The impacts of the 2008 crisis are more severe on the informal services employment probability for men by their educational categories in comparison to the employment probability in informal manufacturing.

Like the case between 2000 and 2006 (Taymaz, 2010b), the effect of education is stronger in formal jobs in manufacturing, and, especially in services (Table 3.30 and 3.31). For some

educational level categories, their effects are found to be insignificant for men's employability in formal manufacturing which is not the case among women. Other than general high school and university graduates among men, there is deterioration in the effect of schooling in formal employment probability in 2008 and 2009, due to the crisis. These declines are compensated by the increase in the informal manufacturing and service sector.

Table 3.31 shows that educated men and women are likely to have a formal job: all education levels have significant effects on the formal services employment probability for men and women; i.e., on average, for women 4.6 percent for primary school, 18.9 percent for secondary school, 39.8 percent for general high school, 52.1 percent for vocational high school, and 78.3 percent for university; while the corresponding figures for men are 18.6, 30.2, 38.8, 36.1, and 54.8 percent, respectively. Education beyond secondary school has a higher impact on women's employability in formal sector jobs than on men's employability, and the gender gap is the highest among university graduate women and men.

> Education beyond secondary school for women has a positive impact on the probability of being an employer. The impact is similar for men but the magnitude of marginal effects are relatively higher for men than for women. It is interesting that the marginal effect of vocational education on the probability of being an employer is slightly lower than the marginal effect of high school education. It seems that vocational education is better suited to enhance the probability for wage labor.
>
> (Taymaz, 2010b: 13)

Taymaz's interpretation for 2000-2006 Turkish labor market (using HLFS) holds true also for 2006-2011, with higher magnitudes (Table 3.32). The probability of being an employer for men decreases from 2008 to 2009 whereas it is exactly opposite for women. This suggests that, the crisis helped women in becoming employers.

The effect of education on the probability of self-employment for men is found to be a monotonic negative relationship, i.e. as one gets more educated, he becomes less likely to be self-employed. This relationship is positive for women; however there is no clear ordering of education levels in terms of the magnitude of the effects. It is also worth noting that the effects are significant in Table 3.33 (self-employment probability) for women whereas the corresponding effects in Table 3.32 are not (probability of being an employer).

3.6.2.2 The effects of household characteristics on labor market outcomes

The effects of household size on the employment probability of parents and children (in Table 3.34) match with the ones stated by Taymaz (2010b:13) for the period of 2000-2006:

> As may be expected, the effect of household size on the employment probability of female parents is negative possibly because of the bigger need for home production in larger households. The household size has a very small positive impact on the employment probability of female children. Men, both parents and children, in larger households have a stronger tendency to participate in the labor market. These findings indicate that parent women are either more productive in home production than men, or there are cultural factors that consider home production as a feminine activity, so that parent women tend to be involved in home production (tend to stay at home) in large households.

Whenever the household head is not employed, the probability of employment unexpectedly declines, with 2.3 percent for females and 10.5 percent for males on average. Taymaz (2010b) suggests the role of social networks in finding a job in Turkey as a possible explanation for this observation.

The impact of the presence of a formal employee in the household on the employment probability for men and women is very large and close to each other (on average 65.4 and 67.6 percent, respectively). Since it is always negative, one can argue that having at least one formally employed person in the house makes the others uneager to work. This is not surprising because the opportunity of taking advantage of a family member's social security coverage may reduce the utility of being employed. In Tables A.11 through A.16, we see that the highest negative impact of the presence of a formal employee in the household is found be to be on the probability on formal and informal service employment for females (on average 20.6 percent and 20.2 percent, respectively). In the case of men, its highest negative impacts are associated with formal service employment and self-employment (on average 18.4 percent and 12.1 percent, respectively).

3.6.2.3 The effects of the remaining variables (child, age, marital status and regional residence) on labor market outcomes

The effects of region of residence on labor market decisions are summarized in Table 3.35 with the effects of child, age and marital status. The effect of the region of residence on the employment probability is negative for women, and especially for men. This is not surprising as the omitted category is the Marmara region, where the employment ratio is the

highest among all regions. The largest negative impact on the probability of employment is associated with Southeast Anatolia for both genders (on average 3.7 percent for women, 29 percent for men).

In the case of marital status, we find opposite effects on males' and females' employment probability: being single or divorced has a positive effect on the employment probability for women whereas it is negative for men. This could be due to the gendered labor division at home: men being the breadwinner, women being responsible for cleaning and child care.

The effects of being the children in the household, and age on employment probability confirm our expectations: a child is less likely to be employed and as age increases, the probability of being employed rises.

For the differences between men and women in terms of marginal effects of child, age, marital status and regional residence on labor market outcomes see Appendix A, Table A.17-Table A.22.

Table 3.25: Sample sizes for each outcome in labor market participation modeling

	2006		*2007*		*2008*		*2009*		*2010*		*2011*	
	male	***female***	***male***	***female***	***male***	***female***	***male***	***female***	***male***	***female***	***male***	***female***
non-employment	42,189	97,080	41,499	95,956	42,325	96,745	46,949	100,482	47,959	104,819	46,541	104,594
IM WE	6,384	1,441	6,037	1,323	5,402	1,089	5,257	1,190	5,942	1,359	6,191	1,353
IS WE	6,892	2,522	6,697	2,459	6,324	2,383	6,476	2,378	6,930	2,530	6,716	2,922
FM WE	12,832	2,270	13,371	2,545	14,361	2,804	13,483	2,589	15,529	2,987	17,154	3,248
FS WE	21,005	7,750	21,832	8,309	22,891	9,099	24,522	9,815	27,633	11,200	29,663	12,633
Emp	5,376	349	5,538	369	5,724	392	5,854	425	6,120	464	6,374	495
Self-emp	10,937	1,262	9,962	1,068	9,279	1,253	9,156	2,103	9,305	2,607	9,285	2,522
Total	***105,615***	***112,674***	***104,936***	***112,029***	***106,306***	***113,765***	***111,697***	***118,982***	***119,418***	***125,966***	***121,924***	***127,767***

** not weighted*

Table 3.26: Estimated labor market probabilities at mean values (percentage)
(for an average illiterate married parent without any formal employee in the household living in the Marmara Region where household head is unemployed)

	2006	***2007***	***2008***	***2009***	***2010***	***2011***	***Average***
Female							
Non-employment	0.959	0.957	0.952	0.950	0.939	0.927	0.947
Informal manufacturing	0.004	0.004	0.004	0.004	0.005	0.005	0.004
Informal services	0.012	0.013	0.012	0.011	0.013	0.016	0.013
Formal manufacturing	0.006	0.006	0.009	0.008	0.009	0.010	0.008
Formal services	0.013	0.015	0.016	0.018	0.022	0.029	0.019
Employer	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Self-employed	0.005	0.004	0.006	0.009	0.011	0.011	0.008
Male							
Non-employment	0.332	0.319	0.327	0.368	0.337	0.310	0.332
Informal manufacturing	0.067	0.064	0.056	0.050	0.054	0.054	0.058
Informal services	0.094	0.092	0.083	0.076	0.081	0.074	0.083
Formal manufacturing	0.132	0.136	0.143	0.122	0.138	0.155	0.137
Formal services	0.210	0.227	0.239	0.240	0.254	0.269	0.240
Employer	0.046	0.051	0.055	0.052	0.050	0.050	0.050
Self-employed	0.119	0.111	0.098	0.092	0.087	0.087	0.099

Table 3.27: Marginal effects of schooling on employment probability (base: illiterate)

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Primary school	0.045	***	0.050	***	0.080	***	0.084	***	0.095	***	0.120	***	0.079
Secondary school	0.192	***	0.203	***	0.238	***	0.235	***	0.307	***	0.335	***	0.252
General high school	0.348	***	0.363	***	0.479	***	0.442	***	0.504	***	0.501	***	0.440
Vocational high school	0.508	***	0.489	***	0.600	***	0.580	***	0.621	***	0.614	***	0.569
University	0.791	***	0.774	***	0.828	***	0.817	***	0.828	***	0.814	***	0.809
Male													
Primary school	0.285	***	0.318	***	0.289	***	0.239	***	0.267	***	0.300	***	0.283
Secondary school	0.325	***	0.345	***	0.327	***	0.313	***	0.343	***	0.362	***	0.336
General high school	0.322	***	0.330	***	0.310	***	0.315	***	0.312	***	0.315	***	0.317
Vocational high school	0.343	***	0.344	***	0.343	***	0.338	***	0.335	***	0.333	***	0.339
University	0.375	***	0.372	***	0.371	***	0.396	***	0.386	***	0.378	***	0.380

* p < 0.05, ** p < 0.01, *** p < 0.001 (also holds for Table 3.28)

Table 3.28: Marginal effects of schooling on informal manufacturing employment probability (base: illiterate)

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Primary school	0.002	***	0.001	**	0.003	***	0.004	***	0.002	***	0.004	***	0.003
Secondary school	0.000		0.000		0.000		0.002	*	0.000		0.002	*	0.001
General high school	-0.001	***	-0.002	***	-0.001	***	-0.001	*	-0.003	***	-0.003	***	-0.002
Vocational high school	-0.001	***	-0.002	***	-0.001	**	-0.001	**	-0.002	***	-0.002	**	-0.002
University	-0.003	***	-0.003	***	-0.003	***	-0.003	***	-0.004	***	-0.004	***	-0.003
Male													
Primary school	-0.022	***	-0.028	***	-0.022	***	-0.016	***	-0.021	***	-0.025	***	-0.022
Secondary school	-0.056	***	-0.057	***	-0.044	***	-0.037	***	-0.041	***	-0.045	***	-0.047
General high school	-0.075	***	-0.074	***	-0.062	***	-0.051	***	-0.058	***	-0.059	***	-0.063
Vocational high school	-0.066	***	-0.069	***	-0.057	***	-0.048	***	-0.052	***	-0.055	***	-0.058
University	-0.082	***	-0.080	***	-0.069	***	-0.060	***	-0.068	***	-0.072	***	-0.072

Table 3.29: Marginal effects of schooling on informal services employment probability (base: illiterate)

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Primary school	0.006	***	0.008	***	0.011	***	0.014	***	0.007	***	0.013	***	0.010
Secondary school	0.009	***	0.011	***	0.014	***	0.022	***	0.011	***	0.016	***	0.014
General high school	0.007	***	0.009	***	0.008	**	0.015	***	0.001		0.004		0.007
Vocational high school	0.007	**	0.010	***	0.006	*	0.016	***	0.002		0.003		0.007
University	-0.001		-0.003	*	-0.003	*	0.000		-0.007	***	-0.007	***	-0.004
Male													
Primary school	-0.020	**	-0.036	***	-0.020	**	-0.009		-0.007		-0.022	**	-0.019
Secondary school	-0.050	***	-0.061	***	-0.041	***	-0.028	***	-0.023	**	-0.036	***	-0.040
General high school	-0.071	***	-0.079	***	-0.062	***	-0.047	***	-0.052	***	-0.060	***	-0.062
Vocational high school	-0.072	***	-0.078	***	-0.064	***	-0.048	***	-0.050	***	-0.057	***	-0.062
University	-0.090	***	-0.091	***	-0.079	***	-0.071	***	-0.073	***	-0.074	***	-0.080

* p < 0.05, ** p < 0.01, *** p < 0.001 (also holds for Table 3.30)

Table 3.30: Marginal effects of schooling on formal manufacturing employment probability (base: illiterate)

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Primary school	0.009	***	0.012	***	0.013	***	0.012	***	0.013	***	0.017	***	0.013
Secondary school	0.023	***	0.033	***	0.026	***	0.021	***	0.022	***	0.030	***	0.026
General high school	0.018	***	0.025	***	0.016	***	0.015	***	0.011	**	0.015	***	0.017
Vocational high school	0.024	***	0.040	***	0.023	***	0.020	***	0.016	**	0.022	***	0.024
University	0.015	***	0.022	***	0.009	*	0.009	**	0.007	*	0.012	**	0.012
Male													
Primary school	0.075	***	0.064	**	0.079	***	0.052	***	0.059	***	0.050	**	0.063
Secondary school	0.038	*	0.021		0.048	*	0.041	*	0.040	*	0.021		0.035
General high school	-0.015		-0.041	*	-0.018		-0.013		-0.033	*	-0.057	***	-0.030
Vocational high school	0.066	**	0.040		0.085	**	0.070	**	0.053	*	0.018		0.055
University	-0.039	**	-0.055	***	-0.036	*	-0.028	*	-0.041	***	-0.062	***	-0.044

Table 3.31: Marginal effects of schooling on formal services employment probability (base: illiterate)

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Primary school	0.022	***	0.025	***	0.048	***	0.046	***	0.062	***	0.075	***	0.046
Secondary school	0.133	***	0.135	***	0.188	***	0.172	***	0.245	***	0.261	***	0.189
General high school	0.297	***	0.305	***	0.448	***	0.398	***	0.471	***	0.471	***	0.398
Vocational high school	0.457	***	0.414	***	0.565	***	0.535	***	0.578	***	0.578	***	0.521
University	0.745	***	0.723	***	0.821	***	0.797	***	0.807	***	0.804	***	0.783
Male													
Primary school	0.237	***	0.192	***	0.164	***	0.148	***	0.149	***	0.227	***	0.186
Secondary school	0.407	***	0.284	***	0.263	***	0.263	***	0.246	***	0.350	***	0.302
General high school	0.501	***	0.364	***	0.350	***	0.362	***	0.332	***	0.419	***	0.388
Vocational high school	0.474	***	0.336	***	0.321	***	0.341	***	0.306	***	0.389	***	0.361
University	0.657	***	0.489	***	0.501	***	0.545	***	0.512	***	0.581	***	0.548

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$ (also holds for Table 3.32)

Table 3.32: Marginal effects of schooling on employer probability (base: illiterate)

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Primary school	0.002	*	0.002		0.000		0.002	**	0.004		0.002	*	0.002
Secondary school	0.018		0.019		0.004	*	0.011	*	0.022		0.012	*	0.014
General high school	0.023		0.024		0.004	*	0.013	*	0.025		0.013		0.017
Vocational high school	0.018		0.023		0.003	*	0.008		0.028		0.013		0.016
University	0.032		0.033		0.004	*	0.016	*	0.031		0.013	*	0.022
Male													
Primary school	0.043	***	0.170	**	0.121	***	0.082	***	0.117	***	0.105	***	0.106
Secondary school	0.049	**	0.229	**	0.157	***	0.107	***	0.168	***	0.125	***	0.139
General high school	0.057	**	0.243	**	0.173	**	0.120	***	0.185	***	0.140	**	0.153
Vocational high school	0.027		0.202	*	0.131	**	0.084	**	0.141	**	0.105	**	0.115
University	0.031	*	0.213	*	0.146	**	0.091	**	0.137	**	0.093	**	0.119

Table 3.33: Marginal effects of schooling on self-employment probability (base: illiterate)

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Primary school	0.004	***	0.002	***	0.005	***	0.006	***	0.007	***	0.009	***	0.006
Secondary school	0.009	***	0.005	***	0.006	***	0.007	***	0.007	***	0.014	***	0.008
General high school	0.004	**	0.002	*	0.004	**	0.002	*	-0.001		0.001		0.002
Vocational high school	0.003	*	0.004	**	0.004	**	0.002		-0.001		0.000		0.002
University	0.003	*	0.002		0.000		-0.002	*	-0.006	***	-0.004	***	-0.001
Male													
Primary school	-0.028	***	-0.044	***	-0.033	***	-0.018	**	-0.030	***	-0.035	***	-0.031
Secondary school	-0.063	***	-0.071	***	-0.056	***	-0.033	***	-0.047	***	-0.053	***	-0.054
General high school	-0.075	***	-0.083	***	-0.071	***	-0.056	***	-0.062	***	-0.068	***	-0.069
Vocational high school	-0.086	***	-0.087	***	-0.073	***	-0.061	***	-0.063	***	-0.067	***	-0.073
University	-0.102	***	-0.104	***	-0.092	***	-0.081	***	-0.081	***	-0.088	***	-0.091

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 3.34: Marginal effects of household characteristics on employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
*Parent*hh size*	-0.009	***	-0.010	***	-0.014	***	-0.011	***	-0.012	***	-0.012	***	-0.011
*Child*hh size*	0.013	***	0.015	***	0.012	***	0.016	***	0.020	***	0.025	***	0.017
Unemployed hh head	-0.016	***	-0.017	***	-0.021	***	-0.026	***	-0.026	***	-0.032	***	-0.023
Any formal	-0.676	***	-0.679	***	-0.672	***	-0.694	***	-0.664	***	-0.671	***	-0.676
Male													
*Parent*hh size*	0.102	***	0.112	***	0.098	***	0.084	***	0.119	***	0.112	***	0.105
*Child*hh size*	0.103	***	0.123	***	0.119	***	0.128	***	0.161	***	0.155	***	0.132
Unemployed hh head	-0.086	***	-0.095	***	-0.110	***	-0.122	***	-0.108	***	-0.111	***	-0.105
Any formal	-0.678	***	-0.671	***	-0.657	***	-0.678	***	-0.645	***	-0.596	***	-0.654

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 3.35: Marginal effects of child, age, marital status and regional residence on employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Child	-0.022	***	-0.029	***	-0.029	***	-0.027	***	-0.037	***	-0.038	***	-0.030
Age (log)	1.409	***	1.514	***	1.640	***	1.754	***	2.100	***	2.584	***	1.834
Age (log square)	-0.201	***	-0.217	***	-0.235	***	-0.251	***	-0.300	***	-0.368	***	-0.262
Single	0.031	***	0.043	***	0.034	***	0.025	***	0.027	***	0.034	***	0.032
Divorced	0.004	***	0.010	***	0.011	***	0.007	***	0.012	***	0.012	***	0.009
Aegean	-0.008	***	-0.006	***	-0.008	***	-0.007	***	-0.008	***	-0.005	***	-0.007
Mediterranean	-0.016	***	-0.013	***	-0.017	***	-0.015	***	-0.021	***	-0.024	***	-0.018
Central Anatolia	-0.017	***	-0.017	***	-0.012	***	-0.011	***	-0.014	***	-0.021	***	-0.015
Black Sea	-0.015	***	-0.015	***	-0.020	***	-0.018	***	-0.024	***	-0.023	***	-0.019
East Anatolia	-0.027	***	-0.027	***	-0.030	***	-0.031	***	-0.044	***	-0.039	***	-0.033
Southeast Anatolia	-0.031	***	-0.033	***	-0.038	***	-0.032	***	-0.036	***	-0.049	***	-0.037
Male													
Child	-0.046	***	-0.060	***	-0.046	***	-0.082	***	-0.117	***	-0.102	***	-0.076
Age (log)	8.740	***	9.066	***	9.182	***	9.445	***	9.646	***	9.856	***	9.323
Age (log square)	-1.273	***	-1.322	***	-1.337	***	-1.369	***	-1.399	***	-1.429	***	-1.355
Single	-0.111	***	-0.105	***	-0.115	***	-0.113	***	-0.117	***	-0.127	***	-0.115
Divorced	-0.113	***	-0.081	***	-0.113	***	-0.110	***	-0.068	***	-0.072	***	-0.093
Aegean	-0.084	***	-0.067	***	-0.071	***	-0.051	***	-0.032	***	-0.029	***	-0.056
Mediterranean	-0.187	***	-0.171	***	-0.183	***	-0.146	***	-0.138	***	-0.154	***	-0.163
Central Anatolia	-0.109	***	-0.082	***	-0.094	***	-0.058	***	-0.061	***	-0.075	***	-0.080
Black Sea	-0.124	***	-0.117	***	-0.138	***	-0.096	***	-0.102	***	-0.117	***	-0.116
East Anatolia	-0.246	***	-0.264	***	-0.275	***	-0.213	***	-0.230	***	-0.201	***	-0.238
Southeast Anatolia	-0.295	***	-0.336	***	-0.347	***	-0.261	***	-0.249	***	-0.252	***	-0.290

* p < 0.05, ** p < 0.01, *** p < 0.001

Note: Omitted categories: "married", and "Marmara region"

3.7 Wage Estimation

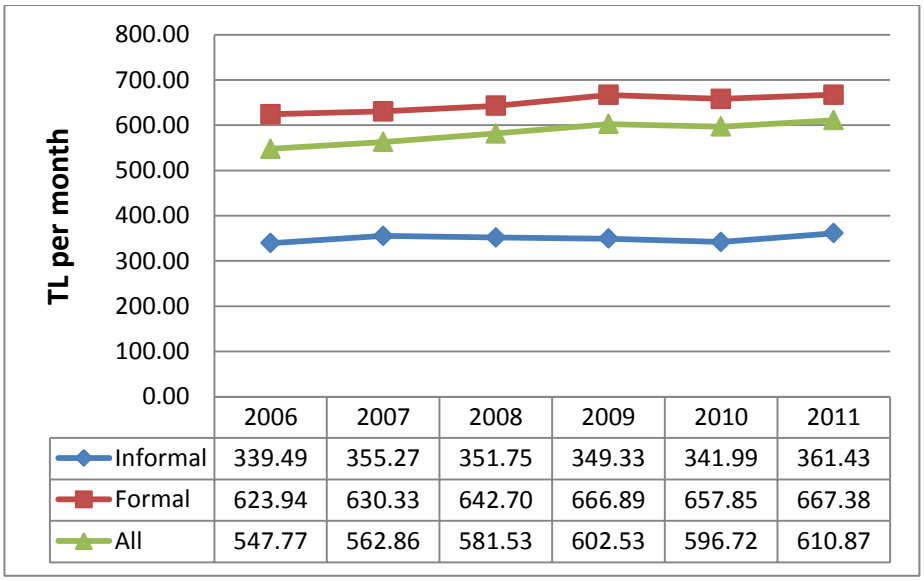
3.7.1 Wages and Earnings: A General Look, 2006-2011

Before proceeding to the estimation of wages for formal and informal manufacture and service workers, it is worth considering the wages from a general point of view. In doing so, firstly we investigate the wage gap between formal and informal employment, and secondly, we repeat the same exercise for working hours via considering non-agricultural employment in urban areas.

Figure 1 gives the average monthly earnings[36] in formal employment in comparison to informal employment by year. Monthly earnings of formal wage earners have been on rise whereas there have been declines in informal wages between 2007 and 2011. As the improvements in the formal wages are higher than the decreases in the formal wages, there seems to be an increasing trend in total: In comparison to 2006, monthly earnings were up by almost 12% in 2011 (in 2003 prices). Comparison of wages in 2008 with the ones in 2009 indicates that the crisis has impacted the informal sector more severely: monthly earnings for informal workers in 2009 declined by 2% in comparison to 2008 whilst formal wage earners have experienced a rise of 4%, though. They were later subject to a decline in 2010.

As expected, monthly earnings in the formal non-agricultural sector are substantially higher (nearly two times) than earnings reported in the informal non-agricultural sector in urban areas of Turkey. The gap has reached its peak in 2009, possibly due to the crisis.

[36]This includes earnings from main job only. In the questionnaire of HLFS, respondents are asked their monthly net income from their main job and this question is directed only to wage or salary workers. Earnings are corrected for inflation using CPI as repoted by Turkstat and the base year is 2003 in this subsection.

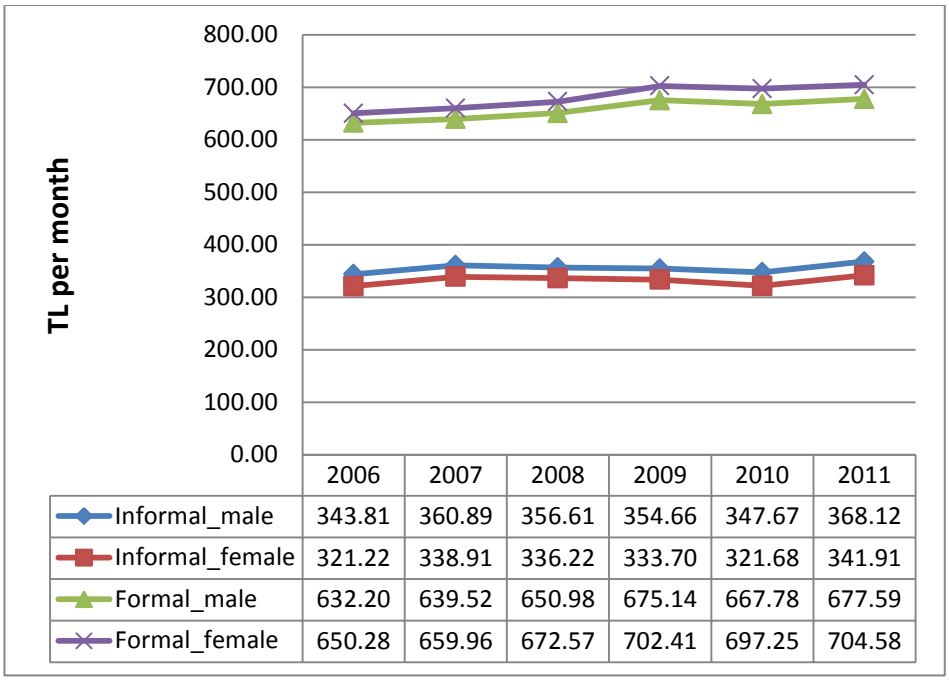


	2006	2007	2008	2009	2010	2011
Informal	339.49	355.27	351.75	349.33	341.99	361.43
Formal	623.94	630.33	642.70	666.89	657.85	667.38
All	547.77	562.86	581.53	602.53	596.72	610.87

Figure 1: Average monthly earning by year, formal vs. informal
Source: HLFS micro-level data, 2006-2011
Note: Data covers individuals aged 15-65, wages exclude agriculture and zeros, and only urban areas considered while figures are all weighted.

The trends in the monthly earnings of formal sector male and female workers are the same: the average monthly earnings for both groups increased over time including the crisis years of 2008 and 2009 and it is followed by slight declines in 2010 which were recovered in 2011 while preserving male-female wage differential. In general, the figures for male and female workers in the informal sector follow similar paths, however, the declines over 2007-2010 have been more severe for female informal wage earners.

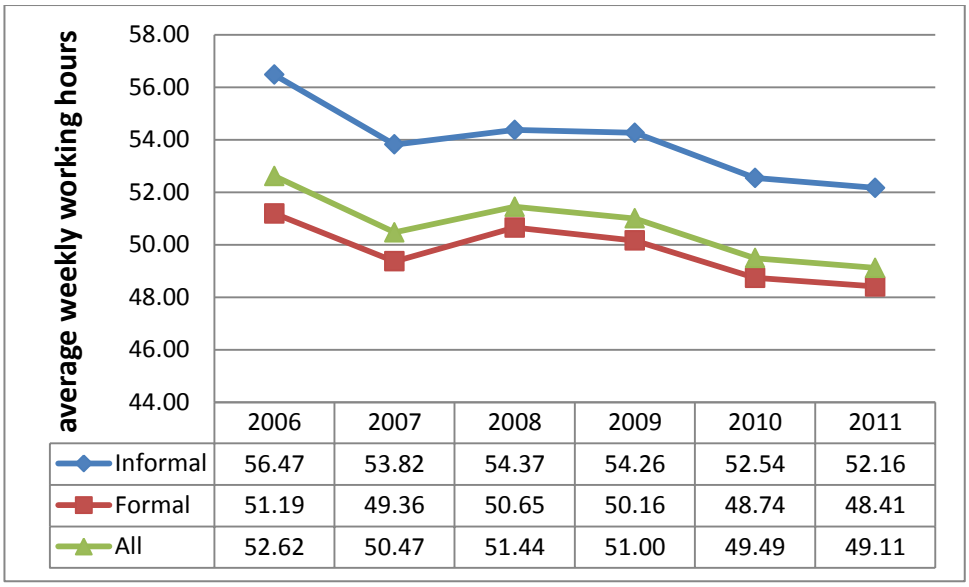
Although earnings in the informal sector are about a half of earnings in formal sector, there does not seem to be a large gender wage gap (figure 2). In the informal sector, men earn more than women whereas this is reversed for the case of formal sector. Women being paid more than men in the formal sector can be due to their occupational categories and the skill levels associated with the jobs: it is worth remembering that women are less likely to find a job than men, and the set of women that have jobs are mostly higher educated ones. Supporting evidence for this has been provided in Table 3.7, and Table 3.11.



	2006	2007	2008	2009	2010	2011
Informal_male	343.81	360.89	356.61	354.66	347.67	368.12
Informal_female	321.22	338.91	336.22	333.70	321.68	341.91
Formal_male	632.20	639.52	650.98	675.14	667.78	677.59
Formal_female	650.28	659.96	672.57	702.41	697.25	704.58

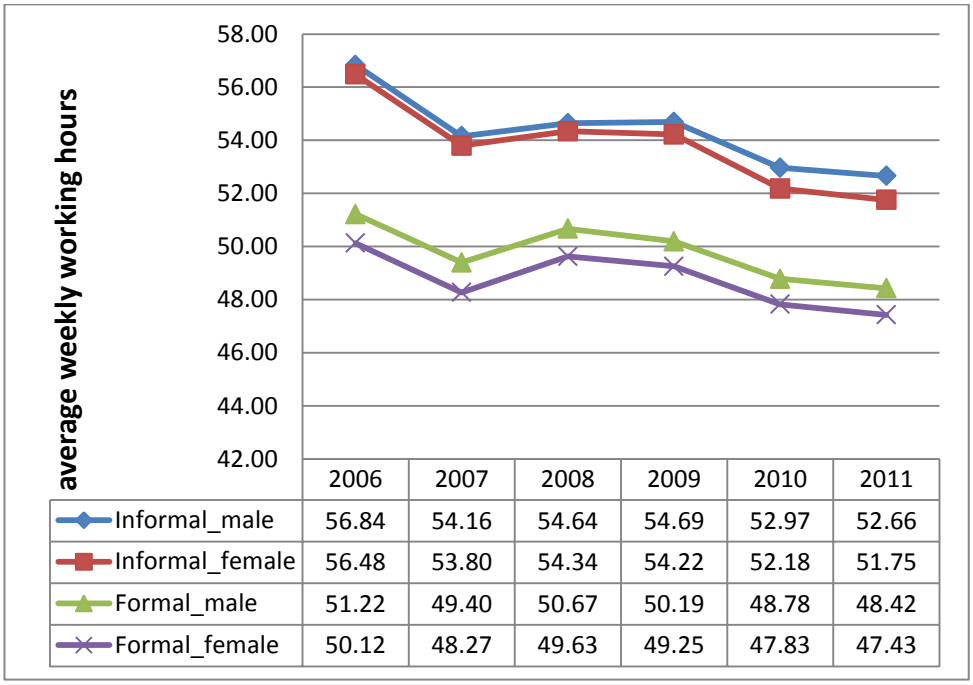
Figure 2: Average monthly earnings by year and sex, formal vs. informal
Source: HLFS micro-level data, 2006-2011
Note: Data covers individuals aged 15-65, wages exclude agriculture and zeros, and only urban areas considered while figures are all weighted.

To figure out whether absence of gender wage gap has been the case at the expense of long working hours for women, we consider average weekly working hours, as shown in Figure 3 and 4. According to Figure 3, there have been differences in the working hours between formal and informal employees: informally employed work more hours than the formally employed. However, while the gap stays almost the same over time, the actual working hours decrease from 56 hours in 2006 to 52 hours in 2011 for informal wage earners. The corresponding figures formal wage earners were 51 and 48 hours, respectively. Thus, one can conclude that the formal-informal divide in the case of average monthly earnings holds for average weekly working hours as well. But, what about the gender gap in the case of hours worked? Figure 4 shows average weekly working hours by year and sex, revealing that the working hours for female informal workers are close to the male working hours in informal sector. The figures are also similar in terms of formal sector. This leads us to reject the idea that longer working hours for women diminish the female-male wage gap in (in)formal sector. In fact, it seems that women are treated equally with men whenever they enter the labor market and their hourly wages are almost the same.



	2006	2007	2008	2009	2010	2011
Informal	56.47	53.82	54.37	54.26	52.54	52.16
Formal	51.19	49.36	50.65	50.16	48.74	48.41
All	52.62	50.47	51.44	51.00	49.49	49.11

Figure 3: Average weekly hours by year, formal vs. informal
Source: HLFS micro-level data, 2006-2011



	2006	2007	2008	2009	2010	2011
Informal_male	56.84	54.16	54.64	54.69	52.97	52.66
Informal_female	56.48	53.80	54.34	54.22	52.18	51.75
Formal_male	51.22	49.40	50.67	50.19	48.78	48.42
Formal_female	50.12	48.27	49.63	49.25	47.83	47.43

Figure 4: Average weekly hours by year and sex, formal vs. informal
Source: HLFS micro-level data, 2006-2011

3.7.2 Methodology (the model and the variables)

After calculating the marginal effects of explanatory variables on various labor market outcome probabilities, we obtain some clues on the existence of wage differential between formal and informal sector within the raw data. To find out the determinants of earnings, we now estimate Mincerian wage equations. We make use of multinomial logit sample selection model to eliminate the selection bias in estimating the wage equations. In doing this, we use SELMLOG command written by Bourguignon, et al. (2002) in Stata. Wage equations are defined for four categories of wage employment (*fm, fs, im,* and *is*) from 2006 to 2011, and for men and women separately. In addition to the sample correction terms, the following variables are included into the model as explanatory variables[37]:

- The *(log) age* and *its square*: The effects of age/experience on wages are captured through these variables.
- The effect of education on wages is captured via dummies that are defined for different educational levels: *primary school, secondary school, general high school, vocational high school and university*. Again, *illiterate* category is used as the reference category.
- Firm size dummies: *10-24 employees (small), 25-49 employees (medium-sized), and 50 or more employees (large)*. The omitted variable is *micro-firms (less than 10 employees)*. The reasons of adding firm size among explanatory variables are well explained by Taymaz (2010b: 14):

> The firm size is included in the model as a proxy for unobserved labor and product market conditions. For example, workers in large firms are more likely to be organized in trade unions, and bargain for higher wages, i.e. firm size could be a proxy for unionization. Moreover, large firms are more likely to have stronger market power, and if they share their higher profits with their workers as a result of (Nash) bargaining, we would expect a positive correlation between firm size and wages.

[37] It can be argued that wages are mainly determined by the demand for labor and wage determination process turns out to be more complicated with the existence of reserve army of labor. Throughout the analyses performed here, we control for demand side variables partially via the inclusion of the variables labeled as *any formal* and *unemployed hh head* (in labor force participation decision modeling and in wage determination process through sample correction term). Moreover, the inclusion of regional dummies can be perceived as proxies for regional unemployment levels. The estimation of all wage equations separately for each year (in between 2006 and 2011) also allows us to account for the different characteristics of the Turkish labor market over years.

- To control for working time and employment type, we include the *(log) working time* per week and dummy for *full time* job, respectively.[38]
- To control for occupations, we add dummies associated with each occupational category as *managers, professionals, technicians, clerks, service workers, skilled agricultural workers, craft workers,* and *machine operators*. The omitted variable is the *elementary occupations* category.
- We again use regional dummies (*Aegean, Mediterranean, Central Anatolia, Black Sea, East Anatolia,* and *South East Anatolia)* to capture the effect of region of residence on wages. *Marmara* region category is the omitted variable.

3.7.3 Findings

The descriptive statistics for each outcome is presented separately in Appendix A, Tables A.23-A.30. Since the dependent variable, the wage rate, is defined in log form, the coefficients of explanatory variables show the percentage change in the wage rate when a dummy explanatory variable changes from 0 to 1. Determinants of urban wages in 4 outcomes (formal and informal manufacturing and services) by year and sex are presented in Tables 3.36-3.43.

There is an inverted U-shape relationship between wages and age[39]: up to a certain age wage rate increases, and begins to decline thereafter.

There does not seem to be a significant wage differential between illiterates and primary and secondary school graduates after controlling for the selection (labor market participation) effect, with a few exceptions in the case of formal services.

The formal services sector is found to be the one which is associated with more significant results in educational categories whereas almost all educational categories appear unimportant in the determination of informal manufacturing wages. Vocational high school

[38]Since the working time and firm size variables seem to be endogenous, we have estimated the wage models with different combinations (dropping them as well). There is not a substantial qualittative change in the estimation results for other explanatory variables.

[39]The exceptions to this relationship is mostly associated with year 2007 (informal manufacture sector for female, formal manufacture and service sector for male) which makes us question the reliablity of the data. Taymaz (2010b: 14) also found that there exists an unexpected U-shape relationship in formal service sector for men between wages and age via 2006 HLFS data.

graduates[40] earn much higher wages than literates, and primary and secondary school graduates, and, even in many cases, even high school graduates who are employed in formal services. Though university graduation accounts for being paid more in all four labor market outcomes, it is not significant in the informal sector.

There is a monotonic increase in the wage rate by firm size in services and in formal manufacturing sector. Both in manufacturing and services, micro-firms pay lower wages, irrespective of male and female employees. Firm-size differential between small, medium-sized and large firms is negligible for women with the exception of formal services. In formal services sector, the gap between medium-sized and large firms starts to expand in comparison to the other sectors; however the differential between small and medium-sized firms seems more or less the same as the cases in other sectors for women. Firm-size differential between small and medium-sized firms is the highest in informal services sector for men whereas formal services sector again is found to be associated with the highest firm-size differential between medium-sized and large firms.

There is an increase in the coefficients of firm-size variables for women from 2008 and 2009 whereas formal manufacture sector is revealed as the only sector where this has been the case for men. For the other sectors, the coefficients tend to decrease from 2008 to 2009, as a clue for the impact of the 2008 crisis. Looking at the figures in 2011, one can think that there has been a recovery period during 2010 and 2011.

Those who work full time receive higher wages, and this accounts more in formal manufacturing sector for both male and females. But, as the case in Taymaz's (2010b) analyses, the effect of working time, after controlling for the full time status is ambiguous. In some cases of formal sector employment, those who work longer hours get lower wages. It is surprising since one expects this in informal sector employment where the payment rules are more arbitrary.

One may expect that the occupations associated with more prestige or status account for higher payments than elementary occupations. This logic holds in the formal sector whilst it

[40] We repeated the described regressions omitting occupation variables on the right hand side. This resulted in increases in the estimated returns to education. As stated by Taymaz (2010), this is an expected outcome since more educated people are employed in occupations paying high wage, like managers, professionals, and technicians. Due to space considerations, these tables are not presented in this study, but they will be provided upon request.

is not that obvious in the informal sector, though there is an implicit ranking of occupations in the results. The wages in all regions are less than the ones paid in the Marmara region and the effect of region on wages are found to be the most severe in East and Southeast Anatolia.

Correcting for selection appears to be worth considering when one compares the estimation results with selection control (Tables 3.36-3.43) with the OLS estimates without any selection control (in Appendix A, Tables A.31 – A.38). Although there is a monotonic increase in the wage rate with respect to education (and significant returns to almost all levels, especially for men), it is more obvious in occupation considering the OLS results. However, once we control for the selection effect, the positive effect of primary and secondary education on wage disappears, i.e. having no significant effect on the wages in the informal sector. There has been a similar story in the case of occupation as well. Based on these, one can argue that the estimation of the wage equation without selection correction tends to overestimate returns to education and occupation.

Table 3.36: Determinants of urban informal manufacturing wages, 2006-2011, female (multinomial logit selection model)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	0.991		-0.071		4.742	**	3.365	*	1.498		-1.376	
Age (log square)	-0.142		0.020		-0.685	**	-0.506	*	-0.191		0.24	
Primary school	-0.029		0.097		0.035		-0.119		-0.096		-0.030	
Secondary school	-0.097		0.056		0.048		-0.083		-0.002		0.000	
General high school	-0.070		0.106		0.344	*	0.228		0.094		0.178	
Vocational high school	-0.183		0.061		0.184		0.117		-0.047		0.018	
University	-0.210		0.248		0.481		0.382		0.128		0.459	
"10-24"	0.342	***	0.254	***	0.220	***	0.363	***	0.337	***	0.263	***
"25-49"	0.347	***	0.305	***	0.235	***	0.341	***	0.298	***	0.198	***
"50 or more"	0.358	***	0.272	***	0.216	***	0.401	***	0.353	***	0.228	***
Working time (log)	0.264	***	0.282	***	0.636	***	0.497	***	0.306	***	0.273	***
Full time	0.647	***	0.787	***	0.416	***	0.537	***	0.728	***	0.897	***
Managers	0.484		1.255	***	1.549	***	1.292	***	1.712	***	0.909	***
Professionals	0.422	*	0.537	**	0.781	**	0.438		0.701	**	0.811	**
Technicians	0.211	**	0.113		0.117		0.295	**	0.287	**	0.093	
Clerks	0.196	**	0.202	*	0.085		0.095		0.221	*	0.225	**
Service workers	0.167		0.114		0.299	**	0.044		0.344	***	0.148	
Skilled agr workers	(omit.)		(omit.)		(omit.)		(omit.)		(omit.)		-0.451	
Craft workers	-0.091	*	-0.086	*	-0.148	**	-0.144	**	-0.129	**	-0.119	**
Machine operators	0.159	***	0.119	**	0.110	*	0.143	**	0.162	**	0.155	**
Aegean	-0.155	***	-0.205	***	-0.026		-0.032		-0.083		-0.109	
Mediterranean	-0.242	**	-0.086		-0.214	*	-0.279	**	-0.248	**	-0.301	***
Central Anatolia	0.026		-0.129		-0.270	***	-0.298	***	-0.318	***	-0.319	***
Black Sea	-0.367	***	-0.303	***	-0.294	***	-0.187	*	-0.259	**	-0.340	***
East Anatolia	-0.366	*	0.018		-0.507	***	-0.430	**	-0.524	**	-0.460	***
Southeast Anatolia	-0.307	**	-0.505	***	-0.602	***	-0.252	*	-0.402	***	-0.276	**
n obs	1232		1086		907		962		1073		1105	
R-squared	0.5056		0.5405		0.5519		0.602		0.5841		0.6611	

Omitted categories: "illiterate", "firm size less than 10", "elementary occupations", "Marmara region"+ constant term & selection variables. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 3.37: Determinants of urban informal manufacturing wages, 2006-2011, male (multinomial logit selection model)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	3.496	***	3.339	***	4.44	***	3.205	**	5.210	***	3.710	***
Age (log square)	-0.461	***	-0.438	**	-0.579	***	-0.415	**	-0.703	***	-0.481	**
Primary school	0.015		-0.029		-0.049		0.029		-0.001		-0.079	
Secondary school	-0.080		-0.086		-0.082		-0.021		-0.035		-0.136	*
General high school	-0.042		-0.004		-0.058		0.011		0.047		-0.041	
Vocational high school	-0.057		-0.057		-0.095		0.023		-0.006		-0.142	*
University	-0.040		-0.068		0.156		-0.032		0.081		-0.111	
"10-24"	0.108	***	0.111	***	0.137	***	0.065	**	0.099	***	0.121	***
"25-49"	0.151	***	0.105	***	0.116	***	0.132	***	0.112	***	0.117	***
"50 or more"	0.174	***	0.171	***	0.185	***	0.19	***	0.179	***	0.175	***
Working time (log)	0.311	***	0.266	***	0.218	***	0.359	***	0.192	***	0.148	***
Full time	0.238	***	0.278	***	0.513	***	0.308	***	0.521	***	0.520	***
Managers	0.708	***	0.848	***	0.252	**	0.475	***	0.685	***	0.449	***
Professionals	0.697	***	0.775	***	0.717	***	0.828	***	0.813	***	0.633	***
Technicians	0.191	***	0.373	***	0.312	***	0.206	***	0.277	***	0.346	***
Clerks	0.033		0.091		0.055		0.047		-0.008		-0.046	
Service workers	-0.069		-0.028		0.042		0.026		-0.070		0.017	
Skilled agr workers	-0.504		-0.119		-2.668	***	0.156		-0.103		-0.128	
Craft workers	0.053	***	0.068	***	0.065	***	0.080	***	0.098	***	0.064	***
Machine operators	0.093	***	0.085	***	0.057	*	0.123	***	0.075	**	0.035	
Aegean	-0.162	***	-0.199	***	-0.148	***	-0.138	***	-0.115	***	-0.098	***
Mediterranean	-0.349	***	-0.300	***	-0.297	***	-0.277	***	-0.214	***	-0.184	***
Central Anatolia	-0.176	***	-0.125	***	-0.194	***	-0.133	***	-0.095	**	-0.090	***
Black Sea	-0.223	***	-0.169	***	-0.116	**	-0.174	***	-0.115	**	-0.139	***
East Anatolia	-0.120	*	-0.033		0.035		-0.084		0.008		0.071	
Southeast Anatolia	-0.255	***	-0.234	***	-0.216	***	-0.222	***	-0.180	***	-0.104	**
n obs	5620		5187		4516		4046		4608		4763	
R-squared	0.3067		0.3098		0.3578		0.3521		0.3669		0.3225	

*Omitted categories: "illiterate", "firm size less than 10", "elementary occupations", "Marmara region"+ constant term & selection variables. * p < 0.05, ** p < 0.01, *** p < 0.001*

Table 3.38: Determinants of urban informal services wages, 2006-2011, female (multinomial logit selection model)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	2.512	**	4.049	***	4.809	***	2.000	*	3.178	***	4.494	***
Age (log square)	-0.327	**	-0.545	***	-0.654	***	-0.242		-0.406	**	-0.588	***
Primary school	0.084		0.008		0.065		-0.004		0.024		0.020	
Secondary school	0.046		0.041		0.156	*	0.030		0.055		0.098	
General high school	0.196	*	0.108		0.263	**	0.074		0.130		0.213	*
Vocational high school	0.216	*	0.098		0.288	**	0.064		0.025		0.237	**
University	0.313	*	0.245		0.434	**	0.182		0.177		0.349	*
"10-24"	0.133	**	0.190	***	0.120	**	0.230	***	0.200	***	0.134	***
"25-49"	0.185	***	0.168	***	0.232	***	0.261	***	0.154	***	0.174	***
"50 or more"	0.278	***	0.209	***	0.214	***	0.244	***	0.231	***	0.212	***
Working time (log)	0.406	***	0.332	***	0.462	***	0.468	***	0.332	***	0.313	***
Full time	0.213	***	0.238	***	0.058		0.110	*	0.321	***	0.299	***
Managers	0.248	*	0.390	**	0.299		0.452	***	0.560	***	0.365	***
Professionals	0.407	***	0.414	***	0.408	***	0.455	***	0.561	***	0.302	***
Technicians	0.050		0.236	***	0.188	**	0.135	*	0.321	***	0.095	
Clerks	-0.004		0.086	*	-0.042		0.000		0.126	**	0.063	
Service workers	-0.104	***	-0.028		-0.065	*	-0.098	**	-0.032		-0.025	
Skilled agr workers	(omit.)		(omit.)		(omit.)		0.269		(omit.)		0.091	
Craft workers	-0.224	**	-0.254	**	-0.131		-0.404	***	-0.201	**	0.002	
Machine operators	-0.107		-0.190		-0.109		0.069		0.159		0.086	
Aegean	-0.157	***	-0.187	***	-0.236	***	-0.160	***	-0.125	**	-0.093	**
Mediterranean	-0.395	***	-0.421	***	-0.323	***	-0.256	***	-0.204	***	-0.183	***
Central Anatolia	-0.212	***	-0.235	***	-0.178	***	-0.200	***	-0.182	***	-0.071	*
Black Sea	-0.437	***	-0.397	***	-0.280	***	-0.253	***	-0.173	***	-0.189	***
East Anatolia	-0.329	***	-0.322	***	-0.389	***	-0.215	**	-0.171	*	-0.105	
Southeast Anatolia	-0.372	***	-0.386	***	-0.227	**	-0.240	***	-0.265	***	-0.142	*
n obs	2265		2185		2084		2099		2186		2544	
R-squared	0.4005		0.3565		0.3853		0.4261		0.4167		0.3794	

Omitted categories: "illiterate", "firm size less than 10", "elementary occupations", "Marmara region"+ constant term & selection variables. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 3.39: Determinants of urban informal services wages, 2006-2011, male (multinomial logit selection model)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	5.309	***	5.298	***	6.565	***	6.463	***	5.935	***	5.916	***
Age (log square)	-0.722	***	-0.707	***	-0.884	***	-0.894	***	-0.774	***	-0.781	***
Primary school	0.066		-0.038		-0.052		-0.053		-0.014		-0.181	**
Secondary school	-0.008		-0.034		-0.059		-0.071		0.001		-0.179	**
General high school	0.101		0.086		0.065		-0.016		0.105		-0.124	
Vocational high school	0.074		-0.002		-0.071		-0.016		-0.005		-0.140	
University	0.147		0.203	*	0.155		0.071		0.220	*	-0.094	
"10-24"	0.134	***	0.156	***	0.170	***	0.150	***	0.201	***	0.172	***
"25-49"	0.142	***	0.228	***	0.198	***	0.197	***	0.195	***	0.158	***
"50 or more"	0.284	***	0.283	***	0.297	***	0.248	***	0.244	***	0.265	***
Working time (log)	0.347	***	0.284	***	0.308	***	0.268	***	0.228	***	0.234	***
Full time	0.167	***	0.332	***	0.246	***	0.290	***	0.407	***	0.399	***
Managers	0.301	***	0.272	***	0.226	***	0.193	***	0.206	***	0.236	***
Professionals	0.497	***	0.568	***	0.709	***	0.448	***	0.457	***	0.499	***
Technicians	0.293	***	0.302	***	0.265	***	0.233	***	0.242	***	0.237	***
Clerks	0.144	***	0.108	***	0.116	***	0.032		0.058		0.072	*
Service workers	0.096	***	0.106	***	0.114	***	0.066	***	0.059	**	0.089	***
Skilled agr workers	0.160		0.086		0.133		-0.147		0.136		-0.023	
Craft workers	0.108	***	0.094	***	0.079	**	0.030		0.027		0.057	*
Machine operators	0.245	***	0.198	***	0.247	***	0.176	***	0.204	***	0.200	***
Aegean	-0.134	***	-0.106	***	-0.080	**	-0.160	***	-0.096	***	-0.127	***
Mediterranean	-0.250	***	-0.221	***	-0.199	***	-0.290	***	-0.159	***	-0.159	***
Central Anatolia	-0.160	***	-0.156	***	-0.105	***	-0.174	***	-0.102	***	-0.124	***
Black Sea	-0.223	***	-0.106	**	-0.102	**	-0.226	***	-0.093	**	-0.223	***
East Anatolia	-0.206	***	-0.046		-0.028		-0.217	***	0.044		-0.057	
Southeast Anatolia	-0.218	***	-0.165	***	-0.138	***	-0.253	***	-0.159	***	-0.144	***
n obs	6335		6122		5735		5836		6161		5866	
R-squared	0.3408		0.3603		0.3755		0.3552		0.3851		0.3724	

Omitted categories: "illiterate", "firm size less than 10", "elementary occupations", "Marmara region"+ constant term & selection variables. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 3.40: Determinants of urban formal manufacturing wages, 2006-2011, female (multinomial logit selection model)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	2.392	**	3.178	***	2.515	***	2.38	***	1.853	**	2.095	***
Age (log square)	-0.300	**	-0.412	***	-0.336	***	-0.313	**	-0.228	*	-0.253	**
Primary school	0.133	*	0.095		0.014		0.063		0.064		0.025	
Secondary school	0.182	*	0.123		0.039		0.119		0.149	*	0.145	*
General high school	0.388	***	0.315	***	0.199	**	0.23	**	0.239	**	0.242	**
Vocational high school	0.408	***	0.308	**	0.197	*	0.283	**	0.222	**	0.267	***
University	0.725	***	0.668	***	0.477	***	0.4	***	0.342	**	0.484	***
"10-24"	0.119	**	0.052		0.041		0.041		0.082	**	0.025	
"25-49"	0.115	**	0.071	*	0.057		0.095	**	0.113	***	0.073	**
"50 or more"	0.172	***	0.099	***	0.089	**	0.134	***	0.134	***	0.08	***
Working time (log)	0.078		-0.018		-0.098	*	0.006		-0.048	*	-0.072	**
Full time	0.777	***	0.801	***	0.767	***	0.588	***	0.757	***	0.832	***
Managers	0.633	***	0.751	***	0.675	***	0.731	***	0.797	***	0.842	***
Professionals	0.470	***	0.516	***	0.604	***	0.572	***	0.508	***	0.526	***
Technicians	0.224	***	0.283	***	0.21	***	0.222	***	0.192	***	0.175	***
Clerks	0.156	***	0.153	***	0.14	***	0.183	***	0.163	***	0.128	***
Service workers	0.106	*	0.067		0.105	**	0.062		0.056		0.027	
Skilled agr workers	0.202		(omit.)		-0.115		(omit.)		0.102		-0.113	
Craft workers	0.046		0.053	*	0.022		0.034		0.055	*	0.023	
Machine operators	0.058	*	0.052	*	0.034		0.036		0.049	**	0.036	*
Aegean	-0.062	**	-0.066	***	-0.072	***	-0.031		-0.026		-0.044	*
Mediterranean	-0.041		-0.062		-0.102	**	-0.082	*	-0.098	**	-0.069	*
Central Anatolia	0.049		0.031		-0.029		0.06	*	0.069	**	-0.007	
Black Sea	-0.098	**	-0.037		-0.092	**	-0.053		-0.194	***	-0.162	***
East Anatolia	0.203	*	-0.088		-0.305	***	-0.034		-0.231	**	-0.062	
Southeast Anatolia	-0.009		0.278	*	-0.057		-0.085		-0.119	*	-0.092	
n obs	2171		2437		2716		2481		2823		3059	
R-squared	0.4902		0.5061		0.4943		0.4891		0.4898		0.5479	

Omitted categories: "illiterate", "firm size less than 10", "elementary occupations", "Marmara region"+ constant term & selection variables. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 3.41: Determinants of urban formal manufacturing wages, 2006-2011, male (multinomial logit selection model)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	-1.839	**	-2.244	***	-2.239	***	1.041		2.135	***	0.896	
Age (log square)	0.344	***	0.413	***	0.409	***	-0.069		-0.242	**	-0.052	
Primary school	0.211	***	-0.094		-0.059		0.006		-0.009		-0.019	
Secondary school	0.220	***	-0.03		-0.036		0.077		0.000		-0.001	
General high school	0.325	***	0.059		0.005		0.129	*	0.077		0.034	
Vocational high school	0.330	***	0.11		0.013		0.157	**	0.115	*	0.094	*
University	0.407	***	0.13		0.033		0.278	***	0.284	***	0.151	**
"10-24"	0.065	***	0.025		0.032	*	0.056	***	0.023	*	0.013	
"25-49"	0.067	***	0.025	*	0.039	**	0.059	***	0.030	**	0.016	
"50 or more"	0.155	***	0.111	***	0.124	***	0.124	***	0.090	***	0.052	***
Working time (log)	-0.106	***	0.018		-0.003		0.016		-0.027	**	-0.026	**
Full time	0.944	***	0.662	***	0.375	***	0.648	***	0.880	***	0.834	***
Managers	0.727	***	0.741	***	0.666	***	0.704	***	0.664	***	0.784	***
Professionals	0.518	***	0.684	***	0.654	***	0.58	***	0.685	***	0.678	***
Technicians	0.294	***	0.316	***	0.311	***	0.297	***	0.286	***	0.293	***
Clerks	0.237	***	0.201	***	0.168	***	0.149	***	0.160	***	0.177	***
Service workers	0.138	***	0.11	***	0.135	***	0.089	***	0.071	***	0.093	***
Skilled agr workers	0.237	*	-0.024		0.078		-0.042		-0.006		0.063	
Craft workers	0.146	***	0.153	***	0.159	***	0.095	***	0.115	***	0.125	***
Machine operators	0.116	***	0.101	***	0.107	***	0.059	***	0.083	***	0.088	***
Aegean	-0.070	***	-0.005		-0.089	***	-0.053	***	-0.078	***	-0.073	***
Mediterranean	-0.020		0.042	**	-0.042	**	-0.081	***	-0.053	***	-0.011	
Central Anatolia	-0.049	***	-0.034	**	-0.065	***	-0.065	***	-0.029	**	-0.029	***
Black Sea	0.028		0.049	**	0.015		-0.001		0.049	**	-0.025	*
East Anatolia	0.100	**	0.149	***	0.004		0.128	***	0.148	***	0.099	***
Southeast Anatolia	0.067	*	0.007		0.042		-0.043	*	-0.089	***	-0.083	***
n obs	12487		12957		13913		12981		14906		16408	
R-squared	0.3917		0.3851		0.3827		0.3911		0.4123		0.4463	

Omitted categories: "illiterate", "firm size less than 10", "elementary occupations", "Marmara region"+ constant term & selection variables. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 3.42: Determinants of urban formal services wages, 2006-2011, female (multinomial logit selection model)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	5.744	***	7.574	***	6.536	***	5.23	***	7.360	***	6.349	***
Age (log square)	-0.763	***	-1.03	***	-0.875	***	-0.682	***	-0.986	***	-0.84	***
Primary school	0.124		0.192	**	0.171		0.067		0.265	**	0.258	***
Secondary school	0.205	**	0.353	***	0.321	**	0.176	*	0.458	***	0.428	***
General high school	0.402	***	0.466	***	0.458	***	0.374	***	0.655	***	0.614	***
Vocational high school	0.455	***	0.553	***	0.499	***	0.41	***	0.719	***	0.672	***
University	0.611	***	0.732	***	0.694	***	0.582	***	0.965	***	0.876	***
"10-24"	0.111	***	0.107	***	0.078	***	0.099	***	0.085	***	0.116	***
"25-49"	0.125	***	0.099	***	0.092	***	0.13	***	0.097	***	0.116	***
"50 or more"	0.235	***	0.223	***	0.2	***	0.248	***	0.198	***	0.182	***
Working time (log)	-0.017		0.035	*	0.01		0.056	**	0.014		-0.021	*
Full time	0.332	***	0.233	***	0.259	***	0.261	***	0.353	***	0.386	***
Managers	0.679	***	0.745	***	0.725	***	0.663	***	0.623	***	0.645	***
Professionals	0.432	***	0.542	***	0.52	***	0.51	***	0.483	***	0.488	***
Technicians	0.419	***	0.435	***	0.414	***	0.382	***	0.369	***	0.275	***
Clerks	0.244	***	0.277	***	0.244	***	0.201	***	0.193	***	0.188	***
Service workers	0.197	***	0.224	***	0.213	***	0.175	***	0.169	***	0.15	***
Skilled agr workers	(omit.)		(omit.)		0.572	**	0.494		0.068		0.219	
Craft workers	0.149	*	0.234	***	0.136	*	0.088		0.120	*	0.148	**
Machine operators	0.169	*	0.089		0.038		0.044		0.139	*	0.167	**
Aegean	-0.141	***	-0.151	***	-0.115	***	-0.099	***	-0.079	***	-0.046	***
Mediterranean	-0.224	***	-0.303	***	-0.246	***	-0.206	***	-0.313	***	-0.252	***
Central Anatolia	-0.160	***	-0.222	***	-0.138	***	-0.092	***	-0.174	***	-0.12	***
Black Sea	-0.194	***	-0.248	***	-0.166	***	-0.152	***	-0.240	***	-0.17	***
East Anatolia	-0.303	***	-0.439	***	-0.278	***	-0.214	***	-0.303	***	-0.194	***
Southeast Anatolia	-0.291	***	-0.463	***	-0.279	***	-0.152	***	-0.259	***	-0.174	***
n obs	7319		7856		8544		9123		10229		11552	
R-squared	0.4978		0.5406		0.5392		0.5478		0.5678		0.5692	

Omitted categories: "illiterate", "firm size less than 10", "elementary occupations", "Marmara region"+ constant term & selection variables. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 3.43: Determinants of urban formal services wages, 2006-2011, male (multinomial logit selection model)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	-0.246		-0.106		0.824		0.648		0.616		1.995	***
Age (log square)	0.104		0.094		-0.038		-0.021		-0.019		-0.211	***
Primary school	0.016		0.077		-0.023		-0.091	*	-0.110	*	-0.104	*
Secondary school	0.052		0.164	*	0.048		-0.042		-0.062		-0.066	
General high school	0.167	**	0.3	***	0.173	**	0.038		0.022		-0.004	
Vocational high school	0.115		0.246	***	0.109		0.046		0.026		0.048	
University	0.348	***	0.473	***	0.389	***	0.254	***	0.260	***	0.217	***
"10-24"	0.113	***	0.119	***	0.104	***	0.099	***	0.107	***	0.095	***
"25-49"	0.144	***	0.133	***	0.141	***	0.141	***	0.135	***	0.127	***
"50 or more"	0.274	***	0.265	***	0.256	***	0.269	***	0.271	***	0.247	***
Working time (log)	-0.071	***	-0.013		-0.097	***	-0.115	***	-0.076	***	-0.068	***
Full time	0.345	***	0.262	***	0.262	***	0.336	***	0.438	***	0.498	***
Managers	0.487	***	0.502	***	0.506	***	0.516	***	0.492	***	0.489	***
Professionals	0.398	***	0.464	***	0.436	***	0.425	***	0.482	***	0.467	***
Technicians	0.293	***	0.313	***	0.295	***	0.294	***	0.304	***	0.27	***
Clerks	0.188	***	0.197	***	0.189	***	0.179	***	0.192	***	0.166	***
Service workers	0.199	***	0.198	***	0.198	***	0.201	***	0.196	***	0.209	***
Skilled agr workers	0.055		0.009		0.045		0.042		-0.026		0.041	
Craft workers	0.241	***	0.249	***	0.239	***	0.222	***	0.213	***	0.219	***
Machine operators	0.178	***	0.178	***	0.191	***	0.179	***	0.182	***	0.189	***
Aegean	-0.013		-0.028	**	-0.071	***	-0.072	***	-0.026	**	-0.055	***
Mediterranean	0.074	***	0.018		-0.03	*	-0.063	***	0.000		-0.043	**
Central Anatolia	0.006		-0.007		-0.023	*	-0.053	***	-0.003		-0.016	
Black Sea	0.046	**	-0.006		-0.001		-0.009		0.026		-0.072	***
East Anatolia	0.212	***	0.145	***	0.122	***	0.088	**	0.112	***	0.052	*
Southeast Anatolia	0.158	***	0.042		0.016		0.038		0.037	*	-0.006	
n obs	20381		21122		22077		23622		26434		28320	
R-squared	0.4694		0.494		0.5062		0.5432		0.5557		0.5643	

Omitted categories: "illiterate", "firm size less than 10", "elementary occupations", "Marmara region"+ constant term & selection variables. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

3.8 Results and Discussion

Exploring the HLFS data in Turkey from 2006 to 2011, we present detailed descriptive analysis on the patterns of employment growth which is followed by the investigation of the changes in labor market participation decisions due to the 2008 crisis and wage determination. The estimated labor market probabilities for seven outcomes (for an average illiterate married parent without any formal employee in the household living in the Marmara region where household head is unemployed) show that the probabilities of non-employment, employer and self-employment differ tremendously between men and women. For women, the probability of non-employment is extremely high with small improvements in this figure over time, whereas the probability of being an employer is very low. A minor increase in the probability of women being a self-employed is associated with the 2008 crisis. There is a steady decline in the probabilities of employer and self-employment for men from 2005 on. Besides, schooling has remarkable effects on employment probability. Again, the effects of schooling on employment probability vary not only from one outcome to the other, but also between men and women. Although insignificant for determining the employment probability for women, primary schooling for men is quite important. The gender gap in terms of being employed is narrow among the secondary school graduates whereas education higher than secondary school ends up with a higher impact on women's employability than that of men's. During the crisis (2008-2009), the impact of education on employability generally declines. It is also found that the effect of household size on the employment probability of female parents is negative whilst men, both parents and children, in larger households have a stronger tendency to participate in the labor market. The impact of the presence of a formal employee in the household on the employment probability for men and women is very large and close to each other and as expected, always negative.

The figures for average monthly earnings (Figures 1 and 2) and average weekly working hours (Figures 3 and 4) show that there is segmentation in Turkish labor market via diving the labor market into formal and informal sector and accepting this division as the unit of analysis. However, we do not conclude with the existence of gender wage gap: in each sector average wages as well as the average weekly working hours are similar to each other for men and women. Yet, this does not imply the absence of gender discrimination in the labor market. What it asserts is that males and females are treated equally in terms of earnings and working hours when they are employed. On the other hand, as mentioned (based on the results of labor market participation decision models), the employment probabilities for men

and women are very different from each other, which call for investigation on pre labor market entry conditions over which one has no control, and the share of inequality associated with these conditions or variables. This way of thinking establishes the main motive of the next chapter.

CHAPTER 4

INEQUALITY OF OPPORTUNITY IN EARNINGS: EVIDENCE FROM FIELD SURVEY DATA

4.1 Introduction

We have started this dissertation with the aim of investigating the underlying reasons for the persistence of informal employment in Turkey. Accordingly, we examined how it changed through time and figured out how it was affected by personal, family and socio-economic factors in the previous chapter. However, "Numerous issues arise in defining inequality: Inequality among whom? Inequality of what? And inequality over what time period?" (Stewart, 2009: 315). As a reply to these questions proposed by Stewart (2009), we focused on inequality among individuals in earnings between 2006 and 2011. Therefore, we concentrated on vertical rather than horizontal inequality. On the other side, horizontal inequality is concerned with the inequality among groups where groups are identified on the grounds of race, ethnic group, religion, region, etc.[41] As this is the case, the kind of analyses we performed can be criticized for being group-blind. As a response to this criticism, we devote this chapter to group inequality.

Examination of previous literature on grouping individuals according to common characteristics leads us to two concepts - each with their own distinct and the literate grown upon them: intergenerational mobility and equality of opportunity (EOp). An important note is although these two concepts are closely related; one should realize that they are not the same, so we will start by defining them precisely.

[41]In regard to the inequality among groups in the United States, Loury (1989: 268) asks "Why should we care about group inequality? Is not the historical and moral imperative of such concern self-evident? Most not those who value the pursuit of justice be intensely concerned about economic disparities among groups of persons?" and states that "The most obvious answer to the title question would seem, then, to be: 'we should care because such inequality is the external manifestation of the oppression of individuals on the basis of their group identity".

According to EOp literature, not all of the sources of income inequality are equally objectionable. "One reasonable distinction is that inequality in the opportunities available to people – their basic life chances – is more objectionable than inequalities in which arise because of the differential application of individual effort" (Bourguignon et al., 2002: 585). In the line with this argument, John Roemer (1998) suggested a formalization of the concept of unequal opportunities[42] which became dominant in measuring the extent of inequality of opportunity:

> The basic idea of this theory is that individuals' outcomes are causally determined by (i) variables beyond the individuals' responsibility (called circumstances), and (ii) variables belonging to the sphere of individuals' responsibility (either effort or responsibility characteristics); and that only inequalities arising from the former are considered to be ethically unacceptable, while inequalities determined by responsibility characteristics are fair.
>
> (Peragine, 2011: 138)

Circumstance variables can include gender, race, family background (education level of parents and their occupation), place of birth, etc. which are economically exogenous to the person. And the outcomes (or advantages) should be distributed independently of circumstances. In brief, "when a share of unequal outcomes can be attributed to circumstance, it reflects inequality of opportunity in a society. In an ideal world, inequality in outcomes should reflect only differences in effort and choices' individuals make, as well as luck and talent" (de Barros et al., 2009: 41).

Inclusion of family background as a key circumstance variable (and a key determinant of unequal outcomes) links the EOp studies to intergenerational mobility literature. But there still exists differences between these two literatures documented by Bourguignon, et al. (2007: 590):

> While the literature on intergenerational mobility and the more recent papers on inequality of opportunity are clearly related – because family background is a key determinant of opportunities – they are not perfect substitutes. The former seeks to measure the transmission of one specific economic indicator (generally earnings and income). To this end, it actually seeks to separate out the effect of other circumstances, such as race, gender or geography. The latter seeks to measure the aggregate effect of all observed circumstances, including but not exclusively family background, on current inequalities. Whether or not parental background is the most important circumstance determining opportunities must vary across countries and time periods, and cannot be determined ex-ante.

[42]However, it is crucial to remember that this reflects only one of the conceptions of equality of opportunity among others that will be covered in the following section.

In what follows, we investigate the degree and nature of inequality of opportunity for earnings[43] in Turkey. Following the main proposals in EOp literature (Roemer, 1998; Ferreira and Gignoux, 2008; Bourguignon et al., 2007), inequality of opportunity is defined as the between-group share of inequality. In terms of its measurement, we utilize both parametric and non-parametric techniques. The non-parametric approach provides inequality of opportunity indexes referring to between-group inequalities, whereas the parametric approach reveals the estimation results of the effects of "circumstance" variables on earnings outcome[44]. Circumstance variables considered in the analyses are gender, mothers' and fathers' education level, home ownership (during respondent's childhood) and region of birth. Log of earnings is chosen as the "outcome/advantage" variable.

This is not the first study examining opportunity inequality in Turkey. There are several studies dealing with the same issue considering earnings (Ferreira et al., 2010a and 2010b) and educational achievement differentials (Ferreira and Gignoux, 2010). However, as stated by these authors, "as in many other countries, there is a non-trivial data challenge associated with this approach to measuring inequality of opportunity in Turkey" (Ferreira et al., 2010b: 2): one can find information on the family background of today adults in one survey (which is the Demographic and Health Survey – *DHS*) and the outcome variable exists in another survey (the Household Budget Survey – *HBS*). This imperfect data problem lead us to propose a new data set gathered through a field survey in urban areas of Turkey including 1703 households in 34 provinces. By using this data set, we are able to circumvent the mismatch problem in the available Turkish labor market surveys in analyzing inequality of opportunity. In other words, our field survey data saves us from dealing with the statistical methods in order to merge two different surveys[45].

Another advantage of using our data is that it allows us to account for gender differences as opposed to the other studies mentioned above (since the DHS survey contains information on ever-married women only). Adding gender as a circumstance variable among others reveals that it is associated with the largest share of inequality of opportunity in earnings.

[43]Though we are aware of multidimensionality of the (group) inequality problem, we will point out group inequality in one dimension - economic inequality - because of the time and dataset constraints.

[44] The analyses are performed in StataSE 12.

[45] Though there is no doubt on the reliability of the methods in their works in order to extract information from two different surveys (where the samples are not the same), it is obvious that using a single survey for all information needed is superior to these approaches.

This brief introduction will be followed by a descriptive clarification of the principle of equality of opportunity and the relevant concepts. Because of its multidimensional and interrelated nature, we need to be skeptical of the usage of the terms linked to inequality. The recent evidence on inequality of opportunity in Turkey is overviewed in the subsequent section through subjective and objective manifestations. A formal explanation of the framework and the data used follow. The chapter concludes with a discussion on the findings and future research.

4.2 Descriptive Clarification

Although there seems to be an agreement on the meaning of "Equal Opportunity" in the literature, authors emphasize different aspects of the concept. As a result it is hard to define the concept in general. Another concept that suffers from heterogeneity of conceptualization is the "informal sector" –with which we are very familiar - .

While defining informal sector, Hernando de Soto (1989; quoted by Mead and Morrisson, 1996: 1611) writes: "The informal sector is like an elephant: we may not be able to define it precisely, but we know it when we see it". Adapting de Soto's metaphor to "Equal Opportunity" case appears to fit well in the sense that one can realize that a(n) (ongoing) practice is against equality of opportunity instantly, even if one cannot define the concept exactly.

The main reasons for the difficulty in defining a concept are the concept's usage in various ways and other concepts that are closely related. In addition to these, the literature on EOp has grown on a substantial amount of debate in political philosophy as well as economics over time. Since an intellectual inquiry on EOp within philosophy[46] is far beyond our knowledge in the discipline, we will attempt to elaborate on its meaning by utilizing the theory of EOp as it is translated in formal economic models by Roemer (1998). This choice seems to be adequate for the framework employed in the present chapter as our aim is to measure EOp.

[46] Those interested in this literature can refer to Rawls (1971), Dworkin (1981), Arneson (1989), and Cohen (1989), all of which are quoted by de Barros et al. (2009). Halliday's (2008) article on "Roemers's Synthesis" asses the contribution proposed by Roemer within the context of political philosophy. Moreover, Bourguignon's 2006 lecture on "Distribution, Equity, and Development" is an excellent reference for the discussion on the links between inequality, inequity, and poverty and with references to the 2006 World Development Report entitled "Equity and Development".

Roemer (1998) argues that individuals' outcomes are determined by two set of variables, those which are subject to individual choice (called *efforts*), and those that lie outside the control of the individuals (called *circumstances*). Whenever the distribution of an outcome of interest is independent of circumstances, equality of opportunity is established. This understanding also implies that inequalities that arise from the former (efforts) can be acceptable. "Equal opportunity levels the playing field, and everybody has, in principle, the potential to achieve the outcomes of their choosing" (de Barros et al., 2009: 29). However, as stressed by Peragine (2011), within this framework, the problem in the measurement of equal opportunity lies in the identification of unfair inequality. This becomes more clear when one considers policy implementations of the theory.

"*Meritocracy*" requires that people with identical levels of effort and choice enjoy identical outcomes, whereas "*egalitarianism*" requires the distribution of outcomes be stochastically independent of any circumstances - the latter matches with Roemerian explanation of EOp - [47]. To clarify the distinction de Barros et al. (2009) use an example; i.e. a country in which there is no discrimination against indigenous people in the labor market, however indigenous students consistently attain lower education levels because of language barriers, cultural differences, different types of schools attended (including the quality of education in these schools), or differentiated treatment within schools. "The labor market rewards education, and indigenous workers earn less than nonindigenous workers; for the sake of the argument assume that the lower earnings are entirely due to the educational differences resulting from a choice made by the individual" (de Barros et al., 2009: 31). Due to the meritocratic definition, inequality of opportunity does not take place in this society because education is considered in the choice set of the individual. On the other hand, the egalitarian scholars view this society as opportunity unequal since outcomes are not independent of ethnicity[48]. Thus, in the discussions of meritocracy, the equalitarian view questions where the merit comes from: if it is attributable to circumstances, it is not "true" merit (de Barros et al., 2009: 32).

[47] In other words, a meritocratic society encourages nondiscrimination at the competition stage whereas an egalitarian society (in Roemerian approach) implies leveling the playing field before any competition takes place (de Barros et al., 2009).

[48] The determinants of inequality in the United States and a special attention to the role of race and IQ have been the subject of Arrow et al. (2000). In their book *Unequal Chances*, Bowles et al. (2005) reveal that intergenerational inertia, poor education quality and social networks account for persistent inequality.

The two other conceptions of EOp are "*formal equality of opportunity*" and "*substantive equality of opportunity*". Formal equality opportunity refers to equal opportunity when one applies to a job; thus, it overlaps more with meritocracy since nondiscrimination comes to order at the competition stage. "Formal equality of opportunity requires that positions and posts that confer superior advantages should be open to all applicants" (Arneson, 2008). This perception of EOp has been criticized by Chang (2010) on the basis of its scope: he asserts that equality of opportunity is not enough for a fair society. He emphasizes the need for equality in basic capabilities in order to accept the outcome of a competitive process as fair and adds "the fact that no one is allowed to have a head start does not make the race fair if some contestants have only one leg".

Substantive Equality of Opportunity, frequently mentioned together with "*affirmative action*" programs, targets the disadvantaged people and concentrates on fairness before a competition begins. Mason (2010) asserts that the slogan of formal (and to some extent substantive) approach is "careers open to talents" and adds that although formal approach

> [i]s a necessary condition of equal opportunity, it cannot be a sufficient condition. For if it were, equality of opportunity would permit differences in people's social circumstances, such as the economic class, family, or culture into which they were born, to have too deep an impact on their prospects.
>
> (Mason, 2010: 452)

Since he stresses the importance of fair access to qualifications in addition to open competition for advantaged social positions, Mason seems to be a defender of "*fair equality of opportunity*".

Equality of fair opportunity (EFO) is a variant of substantive equality of opportunity which was offered by John Rawls (1999) which "[i]s satisfied in a society just in case any individuals who have the same native talent and the same ambition will have the same prospects of success in competitions that determine who gets positions that generate superior benefits for their occupants" (Arneson, 2008). Thus, this idea suggests an ideal of "classless" society.

Lastly, Gardner (1984:48)'s lines of reasoning for his critiques to formal approach is worth mentioning as these are applicable to other conceptions of EOp as well. He legitimizes his critiques to formal approach to EOp as follows:

1) It was argued that inequalities of opportunities will *always* exist and that we are deceiving ourselves in our attempts to erase them.
2) It was charged that those who espouse equality of opportunity content themselves with the hope that everyone can be brought fairly to the starting line, and then they wash their hands of the destructive competitiveness that follows in which some reap fantastic rewards while others starve.
3) It was asserted that even if we could achieve equality of opportunity, it would simply open the way to new inequalities of outcome based on the incidents of talent – which are no more fair, so the argument goes, than inequalities based on aristocratic family names. It is not even fair to base differential rewards on qualities of character, according to this school of thought, since those are also allegedly based on the accident of good family background.

4.3 Overview of the Recent Evidence on Inequality of Opportunity

4.3.1 Manifestations of Inequality (of Opportunity)

After the section on descriptive clarification, we will now investigate how inequality is perceived by people. In doing so, we will mention the surveys conducted in different regions of the world in order to reveal subjective evidence on inequality of opportunity.

Inequality has many dimensions[49]. Reducing inequality to an economic concept for simplification purposes is very dangerous since one can easily lose the link to its other dimensions. Thus, it is important to refer to the multidimensional aspect of (horizontal[50]) inequality (HI) via listing the various ways in which it is manifested:

- Economic HIs: include inequalities in access to and ownership of assets – financial, human, natural resource-based and social. In addition, they comprise inequalities in income levels and employment opportunities, which depend on such assets and the general conditions of the economy.
- Social HIs: include inequalities in access to a range of services, such as education, health care and housing, as well as in educational and health status.
- Political HIs: include inequalities in the distribution of political opportunities and power among groups, including control over the presidency, the cabinet, parliamentary assemblies, the bureaucracy, local and regional governments, the army and the police. They also encompass inequalities in people's capabilities to participate politically and to express their needs.
- Cultural status HIs: include disparities in the recognition and standing of different groups' languages, customs, norms and practices.

(Stewart et al., 2010:11)

[49] Some of these dimensions can be listed as follows: social exclusion, poverty, informality, and discrimination. Since all these phenomena are related to each other, they have nuances between them. However, discussing these distinctions is beyond the scope of the chapter.

[50] In its simplest form, inequality among individuals in a society is defined as "vertical inequality" whereas inequalities among groups in a society are captured in "horizontal inequality".

Adaman and Keyder (2006) reveal the fact that different types of exclusion do trigger/strengthen one another. Since this is the case for inequality as well, it seems to be convenient to use their arguments in discussion of inequality. Thus, we rewrite one of their arguments to describe the nature of inequality: there is a self-sustaining vicious cycle in inequality processes due to interactions between different dimensions of inequality. Though being aware of the multidimensional character of almost all concepts (here, inequality), we need to focus on one aspect which is discussed mostly in "equality of opportunity" literature: "economic inequality" as the "outcome of unequal opportunities". In other words, we will try to find out whether inequality of opportunity can be considered as one of the reasons for income inequality. We will focus mainly on two articles (by Jencks and Tach, 2005, and Ferreira et al., 2010) in which two different survey data are used.

The data in Jenks and Tach (2005) paper was collected by the International Social Justice Project (ISJP) in 1991 and the project was conducted in Japan, West Germany, Great Britain and the United States. The three conclusions the authors (2005: 3) reach are as follows (see Table 4.1):

- Most adults in rich democracies reject the proposition that distributing income is the fairest option. This is especially true in the United States *(-51 for the United States)*[51].
- Most adults in rich democracies feel that workers deserve to earn more if they are "more intelligent or more skillful than others." This is especially true in the United States *(again)* and Britain *(-66 for the United States and -56 for Britain)*.
- Almost all adults in West Germany, Britain, and the United States agree that economic inequality is fair, "but only if there are equal opportunities" *(72, 71 and 74, respectively)*.

The last remark indicates that "equality of opportunity" argument has a counterpart in real life (in the minds of people) though what people understand from "equal opportunities" differs from one person to the other. Yet, Jenks and Tach (2005:4) have a clear definition: by citing the legislative record from 1960 to 2000 in America, they assert that equality of opportunity has two components for lawmakers: employers should not reward workers for characteristics that do not affect their job performance (in the line with "meritocracy") and every child should have an equal chance to develop the traits that employers value (can be labeled as "equal educational opportunity").

[51] Phrases in italics are added by the author of the present study (where the negative numbers point out disagreement with statements and the positives with agreement).

Table 4.1: Percentage of Adults who Agreed minus the Percentage who Disagreed with Five Statements about Distributive Justice: Japan, West Germany, Great Britain, and the United States in 1991

Question	*Japan*	*West Germany*	*Great Britain*	*United States*
"The fairest way of distributing wealth and income would be to give everyone equal shares."	-39	-37	-32	-51
"It is just luck if some people are more intelligent or more skillful than others, so they do not deserve to earn more money."	-37	-27	-56	-66
"People who work hard deserve more money than those who do not."	86	89	93	89
"People are entitled to keep what they have earned even if this means some people will be wealthier than others."	56	83	72	88
"It is fair if people have more money and wealth, but only if there are equal opportunities."	40	72	71	74

Source: International Social Justice Project, as reported in Marshall, Swift, and Roberts (1997:246); quoted by Jencks and Tach (2005:44).

For the case of Turkey,[52] Ferreira et al. (2010b: 3-4) wonder whether Turks are inequality averse using "the Life in Transition Survey (LiTS)" which was conducted in 2006. The authors prepare a very well designed table (see Table 4.2) in order to capture Turkish attitudes towards economic inequality.

The following are the most interesting statements taken from their interpretation of figures:

- 85.4% of the people either agree or strongly disagree that the gap between rich and poor in Turkey should be reduced.
- There is almost a consensus that there is a clear role for state-led distribution: 92% of respondents argue that the State should be "strongly involved" in reducing the gap between rich and poor.

[52] There are two more studies that focus on the explanations for poverty based on the field survey data in Turkey: Buz, et al. (2012) remark that 70.9% of the participants agree on inequality of opportunity as being the prime reason for poverty. Although there is no explicit reference to "equal opportunity" in the second study (Morcol, 1997), it provides some clues for its validity in explaining poverty.

- When asked what would be the "main reason why there are some people in need in our country", 63% of respondents choose "injustice in society". 24.4% of respondents attribute poverty to "laziness and lack of will power" of the poor themselves.[53]
- *At the first sight the share of population attributing poverty to laziness and lack of will power (24.4 %) does not seem that much since it is a common practice that people have negative perceptions about the poor. But, whenever we think that percentage with the answers of the fourth question – what "factors are most important to succeed in life in this country?" -, the scenery turns out to be more dramatic:* Whereas three quarters of the sample attributed poverty to factors other than a person's "laziness" and "will power", only 22.2% attribute economic success to "political connections" or "criminal or corrupt ties". Just over 75% feel, instead, that success is due to effort and hard work (48.4%) or intelligence and skills (27.2%).

However, the authors are somewhat optimistic about the final point listed just above. They add that the role of effort and hard work in determining economic success declines with actual economic and educational achievement. For us, that picture is not so promising since 69.4 % of the population (in the LiTS) either had no degree or had not graduated from primary school. It turns out to be 53.5 % of the working age population (in terms of 2006-2011 HLFS data) who were at most primary school graduates. Though it is less than the one given in the article reviewed above, the share of at most primary school graduates is still more than the half of working age population.

The findings listed here show that "equal opportunity" has a basis in world, till now subjectively. For its objective basis, we need further analysis which will be covered in the following section. The questions we try to answer are exactly the same questions proposed by Ferreira et al. (2010b:4):

- "What is the *objective* evidence on the relative importance of "effort and hard work", vis-à-vis predetermined circumstances, in accounting for economic status in Turkey?
- What share of the inequality observed in Turkey is due to unequal opportunities, and what share to personal responsibility and effort?"

In the next section, we will review some applications of inequality of opportunity where the same questions have been proposed in different country settings.

[53] That implies 24.4% of respondents blame the poor for their poverty; in other words, about one fourth of the sample thinks that the poor should be responsible for their condition. Phrases in italics are added by the author of the present study.

4.3.2 Objective Evidence on Inequality of Opportunity

Almost all literature on empirical applications of inequality of opportunity uses the formalization provided by John Roemer (1998) – the playing field: decomposition of sample into circumstance and effort variables with the utilization of an outcome (or advantage) variable. They have one more thing in common: adopting an ex-ante approach to opportunity inequality in exploring parametric and/or non-parametric methodology. Other than these, there are some studies in which stochastic dominance tools (specifically, Lorenz and generalized Lorenz dominance) and the related statistical tests are utilized to determine the ranking of groups/types.

In estimating the share of observed inequality that can be attributed to inequality of opportunity, Bourguignon et al. (2007) consider the correlation between circumstances and effort[54]. Although the correlation between these two has always been mentioned in all related studies, it has been ignored in measurement: thus, "after controlling for the direct effect of circumstances, all the residual variability is attributed to effort" (Peragine, 2011: 142). However, Bourguignon et al. (2007) take this indirect effect into account and consider the other earnings determinants to be endogenous. The five circumstance variables they consider are race, father's and mother's schooling, region of birth, and father's occupational status. Unlike other studies (that will be reviewed below), they specify effort variables as years of schooling, a migration dummy and labor market status. The sample has been divided into seven 5-year birth cohorts. Estimation of the earnings equation including all these variables as dependent variables is followed by the estimation of another regression in which only circumstance variables are included. The coefficients coming from the latter estimation captures both the direct effect of observed circumstances and the indirect effect through efforts on earnings, and they are the coefficients for counterfactual earnings distributions. The coefficients estimated with all mentioned variables are for factual (observed) distributions. The difference in inequality in factual and counterfactual earnings distributions are then regarded as inequality of opportunity through indirect channels. They conclude that five circumstance variables listed above accounts for between 10 and 37 percent of the total earnings inequality in Brazil within cohorts. "On average, 60 percent of this impact operates through the direct on earnings" (Bourguignon et al. 2007: 585). The dominant circumstance variable is found to be parental schooling.

[54] The correlation between circumstances and effort is captured by equation 4.1 and 4.2 in section 4.4.1.

The study by Ferreira and Gignoux (2008) is the most referred one among the others given in Table 4.3; not only because of its application to five countries, but also its very well documented conceptual framework. It is the main reason why we also build our methodological discussion (in section 4.4.1) on this study.

Using the data driven from different surveys for five Latin American countries, Ferreira and Gignoux (2008) estimate three members of the relative scalar indices of inequality of opportunity, two of which are non-parametric and one is parametric estimate. These indices are calculated for the distributions of earnings, and per capita household income and consumption as well. They conclude that "(…) differences in observed opportunity account for 20% of total earnings inequality in Columbia, 21% in Peru, 25% in Panama, 26% in Ecuador, 29% in Guatemala and 35% in Brazil" (Ferreira and Gignoux, 2008: 18). Concerning the lower-bound (parametric) estimates[55] of the opportunity share of composition inequality additionally, they state that inequality of opportunity accounts for a considerable share of observed economic inequality in Latin America. Family background variables are found to be the major source of inequality of earnings opportunity in all countries, accounting for 9% to 12% of total inequality for mother's education. Which is so surprising is the effect of gender: it is associated with 0-1% in Panama and Columbia, 5% in Guatemala, 3-4% in Brazil and Ecuador of overall inequality. The figures are similar in the case of unequal opportunity with regards to consumption.

[55] The meaning of "lower-bound" estimates will be clarified in section 4.4.

Table 4.2: Perceptions of the Magnitude and Nature of Inequality in Turkey

		Overall	By type of area			By native language		By level of education				By level of expenditures		
			Metropol	Urban	Rural	Turkish	Other	No degree	Prim.	Secon.	Prof. or higher	Poor	Interm.	Rich
"The gap between the rich and the poor today in this country should be reduced".	*Strongly disagree*	2,5	3,5	3,1	0,8	3,0	0,6	1,0	2,2	3,6	5,5	2,3	2,9	2,4
	Disagree	3,4	3,7	2,4	4,0	3,8	1,7	2,8	4,4	1,2	5,2	2,6	3,0	4,4
	Neither disagree nor agree	6,3	5,6	4,3	9,3	6,7	4,8	8,7	5,8	5,6	4,9	8,7	3,7	6,7
	Agree	18,2	16,3	19,8	18,5	18,1	18,2	24,0	16,2	20,2	7,0	23,9	16,7	14,7
	Strongly agree	67,2	69,0	67,8	64,7	66,0	72,8	59,6	69,0	68,3	76,1	58,9	71,5	70,4
"Should the state be involved in reducing the gap between the rich and the poor?"	*Not involved*	1,9	3,5	1,5	0,6	2,2	0,6	1,9	2,2	1,4	1,5	1,2	2,2	2,3
	Moderately involved	6,2	4,8	5,3	8,5	7,5	0,3	6,6	7,2	3,2	6,9	8,2	7,0	3,7
	Strongly involved	91,9	91,7	93,2	90,9	90,3	99,1	91,5	90,5	95,4	91,6	90,6	90,9	94,1
"In your opinion, what is the main reason why there are some people in need in our country today?"	*Unlucky*	7,5	9,4	5,3	7,6	6,7	10,9	12,7	7,3	3,5	4,3	11,2	7,2	4,6
	Laziness and lack of willpower	24,4	21,8	29,1	22,5	26,3	15,9	21,2	28,3	17,8	29,3	22,6	27,2	23,4
	Injustice in society	62,9	64,1	60,1	64,5	61,4	69,7	63,9	58,9	70,5	61,9	61,4	60,9	66,0
	Inevitable part of modern life	2,6	2,6	3,5	1,5	3,0	0,6	0,3	2,5	4,6	3,7	2,1	0,8	4,5
"Which of the factors in this list is the most important to succeed in life in this country?"	*Effort and hard work*	48,4	46,7	52,1	46,6	50,2	40,9	54,5	49,5	43,2	39,4	50,1	51,2	44,5
	Intelligence and skills	27,2	23,2	22,3	36,8	25,7	33,8	30,9	30,2	20,0	20,1	31,9	23,0	27,1
	Political connections	11,4	17,0	8,6	8,1	10,4	15,9	8,0	9,4	13,1	27,3	8,2	12,4	13,2
	Criminal/corrupt ties	10,8	11,8	12,9	7,7	11,4	8,4	5,4	9,4	19,5	11,3	8,9	10,6	12,7
Distribution of the population			35,2	32,8	32,0	81,4	18,7	23,5	45,9	22,2	8,4	30,5	33,1	36,4

Source: Tabulations from the Life in Transition Survey for Turkey, 2006; quoted by Ferreira et al. (2010b)

Peragine's (2011: 137) remark on the study of de Barros et al. (2009) is a good summary of the authors' book: "(…) its contribution is not only empirical; it is also an important step forward in the conceptualization of opportunity inequality and in the reflection on the methodology to measure it". De Barros et al (2009) introduce a new measure of social progress, the human opportunity index, to measure differences in opportunity among children. This proposition is so crucial not only for policy makers, but also for the ones who study inequality of opportunity. They offer such an index with

> (…) the recognition that as long as some children in a country do not have access to specific basic services that are crucial for future advancement in life, such as primary education or running water, and as long as that access is influenced by circumstances, inequality of opportunity will prevail.
>
> (de Barros et al., 2009: 2)

Discussion on the empirical results and policy applications of this index is followed by the measurement of inequality of opportunity in two different domains: education and economic success. To obtain the extent of inequality of economic opportunity, analyses have been repeated for three outcome variables: labor earnings, household income, and household consumption.

When individual earnings are considered, Brazil has the highest estimate at 34 percent, and Colombia the lowest at 20 percent. If household income is analyzed, the inequality of opportunity ranges from 20 percent in Mexico to 37 percent in Guatemala. When they use household consumption per capita, the share of total inequality is found to be one-quarter in Colombia and Mexico, and one-half of overall inequality in Guatemala. The outcome variable turns out to be educational achievement that is recorded in the PISA data and gender, mother's and father's education, father's occupation and school location are the circumstance variables. Among all, mother's education and father's education have been found to have the largest impact.

To measure inequality of opportunity in Italy, Checchi and Peragine (2005, 2010) use a non-parametric approach. Instead of using the common terminology such as "circumstance" and "effort" in differentiating the variables on which the individual has control, they employ "ethically offensive" and "ethically acceptable". Without utilizing any functional form, they base their work on utilitarian version of the ex-ante ("types") approach although they calculate an alternative (again) non-parametric approach to it, ex-post ("tranche") approach.

As summarized in Checchi and Peragine (2010: 434), in ex-ante approach,[56] the sample is divided into groups according to identical circumstances of individuals. This approach is neutral with respect to inequality within types; instead it identifies inequality between types as the inequality of opportunity. On the contrary, the ex-post approach gathers individuals under the same group if they exercise identical levels of efforts. At this time, the inequalities within the same group are regarded as unequal opportunity. Thus, there is equality of opportunity if all the types have the same mean income due to the ex-ante approach whereas there is equality of opportunity if all those who exerted the same degree of effort have the same outcome in the ex-post approach. Inequality of opportunity indexes computed by two alternative approaches reveals that the "types" approach (14.78 percent) leads to an underestimation of opportunity inequality in comparison to the "tranche" approach (17.44 percent).

Checchi and Peragine (2005) follow the two approaches mentioned above to calculate the non-parametric estimates of inequality of opportunity in Italy. This time, they display two applications of the proposed decomposition of inequality, considering the distribution of labor earnings (which is the same application in Checchi and Peragine (2010)) and the distribution of cognitive skills.

Distinguishing between ex-ante and ex-post opportunity inequality, Checchi et al. (2010) this time figure out the determinants of inequality of opportunity in 25 European countries. Labor earnings are used as the outcome variable, and among others the most important circumstance variables are selected as gender, nationality and geographical location. Their results point out the difference between ex-ante and ex-post approaches: "these approaches do capture different aspects of opportunity inequality and are associated to different sets of institutions, corresponding to pre- and post-labour market entry" (Checchi et al., 2010:4). Non-parametric analyses captured in the work show that the ex-post values for inequality of opportunity are higher than the ex-ante ones. The authors also add that although ex-ante and ex-post measures are highly correlated, they produce different rankings of the countries under analysis. Thus, they confirm the need of utilizing both concepts in measuring unequal opportunities. Moreover, public expenditure in education (*union presence and fiscal*

[56] Using ex-ante approach is the common practice in measuring inequality of opportunity. Therefore all the articles under review here can be regarded as conducting ex-ante approach unless otherwise specified.

redistribution) has been found to be positively correlated with equality of opportunity in the ex-ante (*ex-post*) version.

Contrary to Checchi and Peragine (2010) study, Lefranc et al. (2008) utilize a non-utilitarian ex-ante approach to measure inequality of opportunity. Thus, the comparisons between types are based on dominance conditions rather than on the types mean. Defining social origin on the basis of parental education and occupation, the authors discuss the rankings of the countries referring to the results of Lorenz dominance tests. They work with two measures of individual income: gross pre-fisc annual household income and net disposable annual household income in order to capture the impact of fiscal redistribution on inequality of outcomes and opportunity. The stochastic dominance rankings reveal the following: there are strong disparities in the degree of equality of opportunity across countries and there is a strong correlation between inequality of outcomes and inequality of opportunity. In terms of case studies, they find out the U.S. and Italy to be the most unequal countries in terms of both outcome and opportunity whereas Scandinavian countries to be the opposite (even before any redistributive policies). However, it is worth noting that stochastic dominance analyses are considered to be lacking because they do not give any information on how far the groups (defined with respect to the common circumstance variables) are from each other.

Table 4.3: Empirical Applications of Inequality of Opportunity

Author/Date	Data	Region	Time	Dependent (adv.) variable	Independent (cir.) variables	Approach
Bourguignon et al. (2007)	the Brazilian PNAD*	Brazil	1996	Labor earnings	Father's and mother's education, father's occupation, race, and region of birth	Parametric analysis
Ferreira and Gignoux (2008)	the Brazilian PNAD*, the Colombian ECV*, the Ecuadorian ECV*, the Guatemalan ENCOVI*, the Panamian ENV*, and the Peruvian ENAHO*	Brazil, Colombia, Ecuador, Guatemala, Panama, Peru	1996 for Brazil, 2003 for Colombia, 2006 for Ecuador, 2000 for Guatemala, 2003 for Panama, and 2001 for Peru	Labor earnings, and per capita household income and consumption, separately	Gender, ethnicity, father's occupation, father's education, mother's education, birth region (depending on data availability)	Parametric and non-parametric analyses
de Barros et al. (2009)	the Brazilian PNAD*, the Colombian ECV*, the Ecuadorian ECV*, the Guatemalan ENCOVI*, the MxFLS*, the Panamian ENV*, and the Peruvian ENAHO*	Brazil, Colombia, Ecuador, Guatemala, Mexico, Panama, Peru	1996 for Brazil, 2003 for Colombia, 2006 for Ecuador, 2000 for Guatemala, 2002 for Mexico, 2003 for Panama, and 2001 for Peru	Labor earnings, household income, and household consumption, separately (depending on data availability)	Gender, race or ethnicity, birthplace, the educational attainment of the mother, the educational attainment of the father, and the main occupation of the father (depending on data availability)	Parametric analysis

*: the Pesquisa Nacionalpor Amostra de Domicilios (PNAD), the Encuesta de Calidad de Vida (ECV), , the Encuesta Nacionalsobre Condiciones de Vida (ENCOVI), the Encuesta de Niveles de Vida (ENV), and the Encuesta Nacional de Hogares (ENAHO), the Mexican Encuesta Nacionalsobre de Vida de los Hogares (MxFLS).

Table 4.3 Empirical Applications of Inequality of Opportunity (continued)

Author/Date	Data	Region	Time	Dependent (adv.) variable	Independent (cir.) variables	Approach
Checchi and Peragine (2005)	the Survey on Income and Wealth of Italian Households (SHIW), and the Program for International Student Assessment (PISA), separately	Italy	1993, 1995, 1998, and 2000 waves of SHIW, and 2000 for PISA	Labor earnings, and cognitive skills (specifically reading literacy), separately	Parent's education (whereas subpopulation defined by gender and region)	Stochastic dominance using non-parametric statistical tests
Checchi and Peragine (2010)	the Survey on Income and Wealth of Italian Households (SHIW)	Italy	1993, 1995, 1998, and 2000	Labor earnings	Parent's education (whereas subpopulation defined by gender and region)	Stochastic dominance using non-parametric statistical tests
Checchi et al. (2010)	the European Survey on Income and Living Conditions (EUSILC)	25 European countries	2005	Labor earnings	Gender, nationality, and geographical location	Stochastic dominance using non-parametric statistical tests
Lefranc et al. (2008)	the household surveys and micro-economic administrative data for nine countries	Belgium, France, West Germany, Great Britain, Italy, the Netherlands, Norway, Sweden, and the U.S.	1991 for Great Britain, Sweden and the U.S., 1992 for Belgium, 1993 for Italy, 1994 for France and West Germany, 1995 for Netherlands and Norway	Gross pre-fisc annual household income and net disposable annual household income, separately	Social origin (measured by parental education and occupation)	Stochastic dominance using non-parametric statistical tests

Table 4.3 Empirical Applications of Inequality of Opportunity (continued)

Author/Date	Data	Region	Time	Dependent (adv.) variable	Independent (cir.) variables	Approach
Lefranc et al. (2009)	the BdF*	France	1979, 1984, 1989, 1994 and 2000 waves	Primary income and disposable income, separately	Social origin (measured by parental education and occupation)	Stochastic dominance using non-parametric statistical tests
Singh (2012)	the IHDS*	India	2004-05	Logarithm of earnings (household per capita) and consumption expenditures (household per capita), separately	Father's education (in non-parametric analysis) Father's education, father's occupation, caste, religion, and geographic region of residence (in parametric analysis)	Parametric and non-parametric analyses
Ferreira et al. (2010a)	the DHS* and the HBS*	Turkey	2003 DHS, 2003 HBS	"wealth index" and imputed per capita consumption, separately	Type of area (rural vs. urban), birth region, mother's education, father's education, mother tongue, and number of siblings	Parametric and non-parametric analyses
Ferreira et al. (2010b)	the DHS* and the HBS*	Turkey	2003 DHS, 2006 HBS	"household asset index"	Type of area (rural vs. urban), birth region, mother's education, father's education, mother tongue, and number of siblings	Parametric and non-parametric analyses
Ferreira, F. H. G. and Gignoux, J. (2010)	the DHS* and the HBS*, and the PISA*	Turkey	2003 DHS, 2006 HBS, and 2006 PISA	Test scores (for reading, mathematics, and science, separately)	Gender, father's education, mother's education, father's occupation, type of area of residence, region of residence[57], number of books, owned durables, and cultural possessions	Parametric analysis

*: the French household survey "Budget des Familles" (BdF), the India Human Development Survey (IHDS), the Demographic and Health Survey (DHS), Household Budget Survey (HBS), the Program for International Student Assessment (PISA).

[57] "In the absence of infromation on region of birth, region of residence is taken as a proxy for region of birth" (Singh, 2012: 90).

Sharing the same theoretical and methodological backgrounds as Lefranc et al. (2008), Lefranc et al. (2009) now consider France. They wonder whether income distributions in France (1979-2000) condition on social origin (again defined in terms of parental education and occupation) are equal or exhibit stochastic dominance patterns. Though it has been done for all available waves of the dataset, they only report the results of the tests of equality and stochastic dominance fir the initial and terminal waves (1979 and 2000):

> Three main conclusions emerge from this analysis. First, equality of opportunity is not satisfied: for most pair-wise comparisons of types, we find evidence of stochastic dominance relationships; over-all, a clear hierarchy of the different groups of social origin emerges. Second, the pattern of inequality of opportunity is stable over time: the relative ranking of types remains almost constant across the period 1979–2000. Third, the degree of inequality of opportunity decreases over time: while the ranking of types is unchanged, the income distributions of the different types come closer together over the period.
>
> (Lefranc et al., 2009: 1198)

Singh (2012) divides the samples in urban and rural areas into 4 different age based cohorts, namely 21-30, 31-40, 41-50 and 51-65 year-old men to account for the differences across cohorts. He conducts both parametric and non-parametric analyses for urban and rural areas separately. Applying the approach proposed by Checchi and Peragine (2010) and Bourguignon et al. (2007), he asserts that the opportunity share of earnings inequality (consumption expenditure inequality) in 2005-05 was 11-19 percent (10-19 percent) for urban India and 5-8 percent (5-9 percent) for rural India as a result of non-parametric analysis. The parametric estimates of earnings inequality vary from 18 to 26 percent for urban India, and from 16 to 21 percent for rural India while the same figures for consumption expenditure inequality are similar as well.

The following two studies use the data drawn from the same surveys in the case of Turkey: the Demographic and Health Survey (DHS) and Household Budget Survey (HBS). Since the sample of DHS is restricted to ever-married women, the results show the share of inequality among ever-married Turkish women that can be attributed to unequal opportunities.

In Turkey, it is hard to find circumstance and advantage variables in the same data set. There are some circumstance variables gathered in one survey and advantage variable(s) in the other. This is the difficulty Ferreira et al. (2010a, 2010b) and Ferreira and Gignoux (2010) face with in the case of Turkey: in DHS, there is very limited information on earnings and consumption while a comprehensive set of circumstance variables can be found. On the

other hand, HBS lacks information on a number of circumstance variables while contains very detailed information on the distribution of household consumption expenditures.

Ferreira et al. (2010a) try to overcome the inadequacy in the data via combining the related information from two different data sets. In doing so, they create a wealth index on the basis of the information coming from DHS (asset ownership, housing quality, and access to services). As an alternative to that method, they merge information on circumstances from DHS with information on consumption from the HBS. Thus, they use two different dependent (advantage) variables in order to estimate inequality of opportunity, namely "wealth index" and "imputed consumption". After calculating parametric and non-parametric estimates for both methods, the authors indicate that the parametric approach yields preferable lower-bound measures. They conclude that "[i]n an application (…) to the sample of ever-married women aged 30-49 in Turkey, we found that inequality of opportunity accounts for at least 26% of total inequality in predicted consumption and 31% of total inequality in the wealth index". Birth area (urban vs. rural) and parental education[58] are found to be the main correlates of future consumption.

In their other study, Ferreira et al. (2010b) only focus on the asset indicators as an outcome variable in arguing inequality of opportunity among Turkish women, excluding imputed consumption as another outcome variable covered in Ferreira et al. (2010a). They follow the same procedures in order to deal with the missing data problem for measuring unequal opportunities. This time they report the results for the full sample of ever-married women aged 15-49 and the restricted sample of ever-married women aged 30-49, as well. Using a path-independent variance decomposition to calculate the opportunity share of inequality, they reach the following results (Ferreira et al. 2010b: 13)[59]:

- The standard non-parametric estimates of this share for Turkey are 35% for the full sample, and turns out to be 37% when they consider a more restricted age range.
- 31% and 32% are the parametric estimates on the observed circumstances respectively.
- The largest component of inequality of opportunity in Turkey is the rural or urban status of a woman's birthplace – a third of the overall opportunity share.
- Father's education, mother's education, mother tongue and number of siblings follow rural status in that order of importance.

[58] Father's education is found to be more important than the education of mother in determining the future economic advantage.

[59] In Ferreira et al. (2010a, 2010b), the authors also give opportunity-deprivation profiles for each group in Turkey. For detailed information on its calculation, see Ferreira and Gignoux, 2008: 23-28.

Ferreira and Gignoux (2010) study inequality of opportunity in another domain: education. It has been covered in de Barros et al. (2009) as well. They decompose overall inequality into effort and opportunity inequality considering the inequality of opportunity for educational achievement. In doing so, they keep the differences in the quantity (attainment) and the quality (achievement) of schooling in mind. These differences are tried to be captured in circumstance variables. Parametric estimation conducted for each of the three distribution of test scores (reading, mathematics, and science) reveal the dominant source of inequality of opportunity for educational achievement in Turkey is family background (namely, father's and mother's education level, fathers' always leading mothers').

With some exceptions, most of the literature on inequality of opportunity suffers from an explicit policy agenda. To the best of our knowledge, among all, de Barros et al.'s (2009) work is the most critical one in terms of its policy links though being criticized by Peragine (2011: 137) as "[i]t does not propose policy interventions aimed to pursue equality of opportunity, but it does provide a clear guide on how to make proper use of the available information"[60].

The present study is based on ex-ante approach with the framework proposed by Ferreira and Gignoux (2008). In doing so, we use Roemer's "the level playing field" argument as the notion of "equality of opportunity", although we mostly do agree with the critics of this conceptualization reviewed in section 4.2, "*descriptive clarification*". The reasons for this are twofold: Firstly, we want to compare our results with the existing literature[61], and, secondly, equality of fair opportunity is fairly challenging to analyze in a theoretical setting. We also utilize parametric and non-parametric methods in order to measure the extent of opportunity inequality. In this context, the next section provides the outline of the framework and the data description.

[60]Beyond these studies reviewed here, there has been another set of studies assessing specific policies with respect to their opportunity-equalizing impact (Betts and Roemer, 1999; Page and Roemer, 2001where both are reviewed in Bourgiugnon et al., 2007: 587; and Bowles et al., 2007) and a more normative literature on affirmative policies (Loury, 1989 and 2002; Coate and Loury, 1993). Since we seek to quantify inequality of opportunity itself, we choose to give theoretical and empirical literature related to its measurement rather than discussiong the concept with its all aspects.

[61] The literature on equality of opportunity shows that the definition used in measuring is mostly the Roemerian explanation, thus using his notion will make our study be comparable to others.

4.4 Measurement of Inequality of Opportunity

In providing a conceptual framework for the analysis, we refer to Ferreira and Gignoux (2008) study not only in terms of the derivation of the measures of inequality of opportunity, but also all notations and the basic outline as well. Thus, since the framework has been totally drawn from them, we do not take any credit for it: what we do is applying their method to the Turkish case with a new set of data.

In doing so, what we try to end up with is "a class of scalar indices that measure inequality of opportunity as the share (or level) of overall inequality in a given population which exists between social groups defined by different initial circumstances (rather than within groups)" (Ferreira and Gignoux, 2008: 28).

4.4.1 Conceptual Framework

Using the distinction between "circumstance" and "effort" variables expressed by Roemer (1998), Ferreira and Gignoux (2008:6) define a "model of advantage" of the general form:

$$y = f(C, E; u) \tag{4.1}$$

where y denotes the outcome of interest ("advantage"), C denotes a vector of circumstance variables, over which the individual has no control over, E denotes a vector of effort variables, which can be affected by individual decisions, and u denotes pure luck or other random/purely idiosyncratic factors.

Since Roemer's theory explicitly

- requires that circumstances be economically exogenous (in the sense that the individual has no control over them),
- allows for the fact that efforts may be endogenous to circumstances (i.e. one cannot change one's race, or the family one is born into, but those factors can and do affect one's educational and work choices);

we can rewrite (4.1) as:

$$y = f[C, E(C, v), u] \tag{4.2}$$

As stated in Ferreira and Gignoux (2008:6), Roemer's definition of equality of opportunity requires$F(y|C) = F(y)$, which in turn implies three conditions:

(i) $\frac{\partial f(C,E,u)}{\partial C} = 0, \forall C$, i.e. no circumstance variable should have a direct casual impact on y;
(ii) $G(E|C) = G(E), \forall E, \forall C$, each effort variable should be distributed independently from all circumstances;
(iii) $H(u|C) = H(u)$, i.e. random factors and luck are also independent from circumstances (the random term is orthogonal to circumstances)

(where F, G and H denote cumulative distributions).

Therefore, measuring inequality of opportunity turns out to be measuring the extent to which $F(y|C) \neq F(y)$. The question now is that how to measure this difference. The authors suggest two ways (or steps) to test for the existence of inequality of opportunity, the second of which is somewhat complementary to the first and mentioned as one of the originalities of their study.

1) Examining whether the conditional distributions $F(y|C)$ differ across the elements of C:

This can be done using stochastic dominance concepts and the associated statistical tests. Lefranc et al.'s (2008, 2009) works are just two examples of these analyses, among others. By using this approach, though one can obtain a (partial) ranking of types, (s)he cannot reach any information on how far the groups (defined with respect to the common circumstance variables) are from each other. In that sense, this method "(…) does not really allow for a ranking of inequality of opportunity across countries, beyond a binary classification into 'equal' or 'unequal'" (Ferreira and Gignoux, 2008: 7).

2) Constructing scalar indices of inequality of opportunity through partitioning the population by circumstance categories:

A complementary approach has been proposed by Ferreira and Gignoux (2008: 7) which is based on deriving scalar indices of inequality of opportunity. This approach is divided into methodologically – namely, non-parametric and parametric.

After the agreement on a particular vector of circumstance variables C, define $\{y_i^k\}$ as a partition of the distribution such that
$C_i^k = C^k \Leftrightarrow i \in k, k = 1, \dots, K$ ($K \leq N$, where N is the size of the population).

$\{y_i^k\}$ is then a partition of the population in K groups, such that the members of each group are identical with respect to all circumstances in the vector C. Therefore, the set of individuals $T_i: i|i \in k$ is simply what Roemer would refer to as type k.

Assuming that the agreements on a vector C and on the specific partitioning within each variable have been achieved, it is now time to capture the degree of inequality of opportunity in the partition using a scalar measure, $\Theta: \{y_i^k\} \rightarrow R_+$.

If $IB(\{y_i^k\})$ denotes the between-group component of inequality over the partition of the population, for any meaningful definition of between-group inequality, stochastic independence implies[62]:

$$F(y|C) = F(y) => IB(\{y_i^k\}) = 0 \quad (4.3)$$

Then, the authors conclude with two natural candidates for $\Theta: \{y_i^k\} \rightarrow R_+$ would be indices of the form:

$$\Theta: \{y_i^k\} = IB(\{y_i^k\}) \quad (4.4)$$

or

$$\Theta: \{y_i^k\} = \frac{IB(\{y_i^k\})}{I(F(y))} \quad (4.5)$$

[62] As reported by Ferreira and Gignoux (2008: 8) in footnote 11 the converse statement does not hold since the inexistence of between-group inequality is a much weaker condition than stochastic independence.

Equation (4.4) defines the *absolute* level of the inequality between groups in a population whereas equation (4.5) defines a measure of inequality of opportunity as the same between-group inequality, *relative* to overall inequality in the population, I(F(y)). Thus, the latter one is a mapping $\Theta: \{y_i^k\} \rightarrow [0,1]$ for any decomposable inequality index I( ).

Though the authors emphasize that both absolute and relative measures are useful and should be seen as complementary, they prefer to focus on relative – Θ measure[63] of inequality of opportunity, or relative – Θ class in short.

For a given partition $\{y_i^k\}$, it is also noted that there are three criteria to classify $\Theta(\{y_i^k\})$: (These three criteria are also the three reasons for estimates of between-group inequality to vary).

a) the specific (decomposable) inequality index, I( );
   It can simply be defined as a choice of decomposable measure among members of Generalized Entropy, and Atkinson families or Gini coefficient.

b) the path of decomposition;
   One should also decide on which distribution to work with: will it be a smoothed or a standardized distribution?

c) the procedure of decomposition.
   Parametric or non-parametric decomposition also changes the results.

Now we will elaborate a bit more on each criterion in order to clarify 4 alternative members of the relative – Θ class specified in Ferreira and Gignoux (2008), used in Ferreira and Gignoux (2010a, 2010b) as well.

a) the specific (decomposable) inequality index, I( ):

"The decomposition of inequality by population subgroup for a given distribution and partition will differ across different members of the Generalized Entropy or Atkinson

[63] Focusing on between-group inequality has also been preferred in the existing literature (Ferreira et al., 2010a and 2010b) on opportunity equality in Turkey.

families" (Ferreira and Gignoux, 2008: 9). In Generalized Entropy class, the mean log deviation (E(0)) and the Theil entropy index (E(1)) are the most popular additively decomposable measures. However, "the Gini coefficient is not additively decomposable in the same way" (ibid).

The additive subgroup decomposability is needed since the outcome variable will be decomposed into within- and between-group components.

The mean log deviation, E(0), has been used in most of the empirical studies on inequality of opportunity because it is the only measure which satisfies the four standard axioms (Singh, 2012: 86) of

- anonymity or symmetry,
- population replication or replication invariance,
- mean independence or scale invariance, and
- the Pigou-Dalton principle of transfers[64].

It satisfies the additive subgroup decomposability and path independence (which will be clear when we discuss "the path of decomposition") as well.

b) the path of decomposition:

Assuming that one chooses to use E(0) as the inequality index, , I( ), and decompose the interested advantage variable into groups, now the question is replacing y_i^k with what.

Following Foster and Shneyerov (2000) and Checchi and Peragine (2005), (quoted by Ferreira and Gignoux, 2008: 9), one can talk about two paths of decomposition, specifically a smoothed distribution and a standardized distribution.

- A *smoothed distribution* $\{\mu_i^k\}$, corresponding to a particular partition $\{y_i^k\}$, as the distribution that arises from replacing y_i^k with the group-specific mean μ^k.

[64] See Foster and Shneyerov (2000) for a detailed discussion on the Pigou-Dalton transfer axiom.

Since a smoothed distribution eliminates all within-group inequality by construction, a first member of the relative – Θ class immediately suggests itself as:

$$\Theta_d = \frac{I(\{\mu_i^k\})}{I(\{y_i^k\})}$$

where Θ_d is simply the ratio of inequality in the smoothed distribution to the inequality in the original distribution.Thus, it summarizes between-group inequality in the partition *directly*.

- A *standardized distribution* $\{v_i^k\}$, corresponding to a particular partition $\{y_i^k\}$, as the distribution that arises from replacing y_i^k with $y_i^k \frac{\mu}{\mu^k}$ (where μ is the grand mean).

A standardized distribution suppresses all between-group inequality, leaving only inequality within-groups.

$$\Theta_r = 1 - \frac{I(\{v_i^k\})}{I(\{y_i^k\})}$$

Θ_r, one minus the ratio of inequality in the standardized distribution to the inequality in the original distribution, is another perfectly plausible measure of inequality of opportunity.It computes the between-group inequality in the partition *residually*.

Decomposition of overall outcome inequality into two components as within- and between-group inequalities matches with the idea of top-down approach stated by de Barros et al. (2009). De Barros et al (2009: 42) state that as soon as the population has been partitioned into the cells in which any person have identical circumstances, then all the inequality between the cells is due to the differences in circumstances while the inequality within a cell is due to the residual component. The two ways of applying the top-down approach in order to measure the extent of inequality of opportunity mentioned by de Barros et al. (2009) are the exactly the same as the ones applied by Ferreira and Gignoux (2008): either directly estimate between-group inequality or estimate within-group inequality and subtract that from the total. It is also mentioned that these two alternative paths do not yield the same responses for most inequality indexes.

> The technical reason for this path-dependence is that when the differences within groups are eliminated first, the weights used to aggregate within-group inequality across all groups are not changed. For most inequality measures, however, when the differences between groups are eliminated first (by rescaling group means, or "standardizing the distribution"), the weights change.[65]
>
> (de Barros et al., 2009: 42)

However, there is one decomposable measure of inequality which is path-independent in this sense, the mean log deviation (E(0)). It assures $\Theta_d = \Theta_r$.

c) the procedure of decomposition:

Ferreira and Gignoux (2008:11-12) report that if one is interested only in an overall estimate of $\Theta: \{y_i^k\} = \frac{IB(\{y_i^k\})}{I(F(y))}$, and if one's sample is sufficiently large relative to the number of cells in the partition $\{y_i^k\}$, then we need go no further: the between-group share of inequality for E(0)[66] gives the single scalar estimate of a lower bound[67] for inequality of opportunity.

On the other hand, whenever people have more information on circumstances, they want to include them in the partition. This causes cell numbers to increase and cell sizes to diminish, leading to the classical problem of data insufficiency for non-parametric estimation. Because of this insufficiency, parametric alternatives to the estimation of Θ_d and Θ_r have been introduced.

- Parametrically analogous to the standardized distribution $\{\tilde{y}_i\}$:

A *parametrically standardized distribution* $\{\tilde{y}_i\}$, corresponding to $F(y, C)$, defines a distribution that arises from replacing y_i with $\tilde{y}_i = f[\bar{C}, E(\bar{C}, v_i), u_i]$, where the upper bar on the vector C denotes the vector of sample mean circumstances.

[65] For a mathematical representation of this, see Ferreira and Gignoux (2008: 10).

[66] It is the non-parametric estimation of inequality of opportunity which avoids the arbitrary choice of a specific functional form on the relationship between outcome, circumstances and effort (de Barros et al., 2009).

[67] Because not all relevant circumstances are observed, the indices provide a lower-bound estimate of inequality of opportunity.

It gives each and every individual the same circumstance variables and thus eliminates any inequality between groups that are associated with circumstances.

To obtain this counterfactual distribution

(i) a specific model of (4.2) must be estimated,

(ii) after that $\{\widetilde{y_i}\}$ should be obtained simply by replacing the circumstance values in (4.2) with the sample average for each circumstance variable.

Bourguignon et al. (2007) use a log-linear specification[68] of the form:

$$\ln y = C\alpha + E\beta + u$$
$$E = BC + v \qquad (4.6)$$

The reduced form of (6) is:
$\ln y = C(\alpha + \beta B) + v\beta + u$, which can be estimated by OLS as

$$\ln y = C\Psi + \varepsilon \qquad (4.7)$$

Under these functional form assumptions, the parametrically standardized distribution is estimated by

$$\widehat{\widetilde{y_i}} = \exp\left[\bar{C}_i\,\widehat{\Psi} + \widehat{\varepsilon_i}\right].$$

- Parametrically analogous to the smoothed distribution $\{\widetilde{z_i}\}$:

A *parametrically smootheddistribution*$\{\widetilde{z_i}\}$, corresponding to F(y, C), defines a distribution that arises from replacing y_i with $\widetilde{z_i} = f[C, E(C)]$, where the error term is suppressed.

[68]Ferreira et al. also use log-linear regression model in their 2010a article while utilizing a linear specification in another article, Ferreira et al. (2010b).

This counterfactual distribution is also obtained by

(i) estimating a specific parametric model for (4.2), and
(ii) suppressing within-group inequality by replacing y_i with its prediction, given the vector of circumstances.

Lastly, in a reduced-form framework, and under the functional form assumptions above, the parametrically smoothed distribution is estimated by $\widehat{\widetilde{z_i}} = \exp\left[C_i\widehat{\Psi}\right]$.

Finally we are left with four alternative member of relative – Θ class that can be estimated:

- In terms of smoothed distribution:

$$\Theta_d^N = \frac{I(\{\mu_i^k\})}{I(\{y_i^k\})}$$

$$\Theta_d^P = \frac{I(\{\widetilde{z_i}\})}{I(\{y_i^k\})}$$

- In terms of standardized distribution:

$$\Theta_r^N = 1 - \frac{I(\{v_i^k\})}{I(\{y_i^k\})}$$

$$\Theta_r^P = 1 - \frac{I(\{\widetilde{y_i}\})}{I(\{y_i^k\})}$$

"In addition to the possible sample-size insufficiency for non-parametric estimation, there is another reason why the costs of such a parametric approximation may be worth bearing" (Ferreira and Gignoux. 2008: 12): Partial effects of circumstances on outcome, other things being constant, can be calculated in parametric models, by constructing alternative counterfactual distributions, such as:

$$\widehat{\widetilde{y_i^J}} = \exp\left[\overline{C_i^J}\widehat{\Psi^J} + C^{i\neq J}\Psi^{i\neq J} + \hat{u}_i\right]$$

in the case of a parametrically standardized decomposition.

This allows us to compute circumstance J-specific inequality shares:

$$\Theta_r^J = 1 - \frac{I\left(\left\{\tilde{y}_i^J\right\}\right)}{I\left(\left\{y_i^k\right\}\right)} \tag{4.8}$$

Before giving details about the data, it is crucial to repeat one final methodological consideration pointed out by Ferreira et al. (2008: 12-13). This will also clarify the meaning of "lower-bound estimates". For a "true" measure of inequality of opportunity, it is necessary to include all relevant circumstance variables in the vector C. This is not possible because of the limitations of the data. In the case of Ferreira et al. (2008), they do not even attain the same circumstance variables[69] in each data set for the six countries. Therefore, the authors note that the empirical estimates defined in their paper – whether direct or residual, and parametric or not – should be interpreted as lower-bound estimates of inequality of opportunity: including an additional element in vector C causes each and every cell in the partition $\{y_i^k\}$to be further subdivided (into at least another two cells) which will not lower the between-group inequality share and, unless the additional element is orthogonal to the measure of advantage, will raise it. Besides, the partitioning of the population into categories within each circumstance variable in C matters in terms of lower-bound estimates: further subdivision of these categories within each circumstance will not reduce for sure, but might increase the extent of inequality of opportunity.

Likewise in the parametric case, if one adds another element of the vector C to the specification given by equation (4.7), this will cause a decrease in the variance of the residual and an increase in the variance (or any other inequality measure) accounted for by the set of observed circumstances (Ferreira and Gignoux, 2008: 13)[70].

In the remainder of this chapter, we will apply the methodology of Ferreira and Gignoux (2008) to our dataset coming from our field survey. After briefly describing the dataset, we will present three of the four members of the relative – Θ class, $\Theta_d^N, \Theta_r^N \; and \; \Theta_r^P$ for the distributions of earnings in Turkey. We will be focusing on E(0) as the decomposable

[69] It is also possible that one can think of a circumstance variable but cannot find any information on it in the data.

[70] For a full understanding of the case in parametric approach, see footnote 19 in Ferreira and Gignoux (2008).

inequality index while giving the results of non-parametric and parametric estimates of opportunity inequality in earnings.

4.4.2 Dataset

4.4.2.1 Basic Descriptives of the Data

The main reason for conducting a field survey is the absence of available Turkish labor market data to measure inequality of opportunity. Ferreira et al. (2008: 2) put this shortcoming of the data sets as follows: "There is no single survey that contains satisfactory information both on household income or consumption, on the one hand, and on key pre-determined circumstances on the other". To overcome this data challenge, they employ some statistical methods in combining two different labor market surveys. In our analysis, we do not need to struggle with this problem since we gather advantage and circumstance variables from the same data set.

This study is based on data from our field survey in which households are chosen in order to make the dataset be representative nationally. The following are the basic descriptives[71] of the data:

- The field survey captures 1703 households (6563 individuals) in 34 provinces in urban areas of Turkey.
- It took place between January 2011 and April 2011, and carried on by the research firm, called Ipsos KMG.
- The method used in sample selection is "Stratified Simple Random Sampling" where clusters (provinces) are determined based on NUTS 1 level. SES, the size of the household, age and education level of the household head are used for calculating the weights.
- Based on these sample selection criteria, 39.9% of our sample comes from Marmara Region. The rest 60.1 % is distributed as follows: 17.6% from Central Anatolia, 12.3% from Eastern and South Eastern Anatolia, 11.7% from Mediterranean, 11.5% from Aegean, and, and the remaining 7% from Black Sea.

[71]See "Appendix B" for a detailed account of our field survey and the questionnnaire itself.

Table 4.4 shows that out of 6563 people, 4881 are aged between 15 and 65. Because of two reasons, we cannot be able to include all these 4881 people in inequality of opportunity analysis:

1) Among these 4881 people, most were inactive and some were unemployed at the time of the survey. 55% of the working age population (2678 individuals) was inactive whereas 7% of the working age population (330 individuals) was unemployed. Since our dependent variable in our estimation is earnings, we have to work with the sample that had labor income. Thus, we are left with 1873 people who were employed at the time of the survey (38% of the working age).
2) It was also the case that we confront missing data: some respondents did not give information on the independent variables in reduced form estimation (and/or circumstance variables in EOP analysis). Therefore, we have 1417 people who were working at the time of the survey, aged between 15 and 65, and without any missing data.

Table 4.4 also gives sample sizes depending on the criteria listed above with the distribution of sample due to birth cohorts. We estimate opportunity inequality in labor earnings with two more age intervals[72] (aged 20-60 and 25-60) in addition to aged 15-65. This allows us to eliminate some of the life-cycle inequality, which is arguably purely transitory in nature (Ferreira et al., 2010b: 8).Besides, moving from one to the other sample narrows the size through excluding some magnitude of youth employment (5-year in each).

[72] The same exercise has been done for the employed aged 30-50 as well. Since the results do not differ much from the sample of aged 25-60, it is preferred not to be presented here. To refer the samples included here, we use Model A for the sample aged 15-65, B for 20-60 and C for 25-60.

Table 4.4: Distribution of the Sample for Inequality of Opportunity Analysis

Sample selection criteria	Sample size		
	Total	**Female**	**Male**
whole sample (without any restrictions)	6563	3397	3166
aged between 15 and 65	4881	2594	2287
(with regard to current employment status)			
who were employed at the time of the survey	1873	445	1428
who were unemployed at the time of the survey	330	203	127
who were inactive at the time of the survey	2678	1946	732
(with regard to current employment status and age)			
excluding observations with missing data who were employed and aged between 15 and 65	1417	319	1098
excluding observations with missing data who were employed and aged between 20 and 60	1344	300	1044
excluding observations with missing data who were employed and aged between 25 and 60	1237	263	974

Source: Field survey, 2011

A final remark about our dataset refers to its shortcoming: we do not distinguish wage earners from employers and self-employed because of sample size limitations. In other words, our sample consists of all employed people who earn income in return for working.

4.4.2.2 The Circumstance Variables and their Categories

Our vector of circumstances consists of information on gender, mother's and father's levels of education, ownership of a house by the family during the respondent's childhood, and region of birth which are exogenous to individual. Parental education variables are coded in two categories for mother and three for father. Mother's education level divided into two: "no education or unknown" and "at least primary education". Primary education and higher education levels are merged together for mothers because the number of the people in the former category was too low. The three categories for father's education are "no education or unknown", "primary school" and "secondary and higher". The ownership of a house during the respondent's childhood is captured by a dummy variable, indicating yes and no. Region of birth is recorded into two broad categories: East and West[73].

[73] We also experimented with three regions of birth and the type of area of birth (rural vs. urban). Because of our sample size, we lost a huge amount of our data since proportions of groups with fewer

Our inclusion of family background variables, i.e. *the education levels of mother and father*, is so straightforward since their impact on the child's welfare through intergenerational transmissions is obvious. *Region of birth* matters because there are regional gaps in basic services, like education and health. Our choice of "*home ownership*" as another circumstance variable is based on the link stated by Açıkalın (2008: 135) with reference to Güvenç and Işık (1996: 42): owning a house has an effect on the household income and by this, it determines the consumption patterns. Thereby it also influences investment on human capital, especially education expenses for the child. Besides, having a house serves as a security factor for the future.

The discrete categories for each variable and the distribution of population across them can be found in Table 4.5. The last row of the Table 4.5 reports the mean and standard deviation of the economic variable. Since we use economic variable as the dependent (advantage) variable in the regression, all circumstance variables are for *present-day income earners* – "present day" standing for the time of the survey.

The sample has been partitioned into groups (or cells), so that all individuals in any cell have exactly the same combinations of circumstances. Thus, the difference in the outcome between cells is due to the inequality of opportunity whereas the difference within cells can be attributed to effort or luck. Once again, the index for inequality measure used here is the mean log deviation, E(0) since it is decomposable and path independent.

"Partitioning the sample into many cells can lead to sample-size restrictions common to most non-parametric methods"[74] (de Barros et al., 2009: 126). Hence, the number of categories for each circumstance variable has been restricted to three or fewer. In that way,

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than 5 observations are high. Therefore we ended up with two categories for region of birth which were identified based on Nuts1 level: West capturing Istanbul, West and East Marmara, Aegean, West Anatolia, and West Black Sea; East capturing East Black Sea, Mediterranean, Central, North East, Middle East, and South East Anatolia.

[74] This is the major reason why we end up with the circumstance variables listed below. We also run all estimations in which number of siblings, mother tongue and father's occupation were considered as circumstance variables. Since father's occupation is highly correlated with father's education level, we do not hesitate on removing it. Our sample is not heterogeneous in terms of mother tongue: 95% of the respondents report their mother tongue as Turkish. When we add number of siblings, we reach the same results but now with a higher proportion of cells with fewer than five observations, besides it is always insignificant in the reduced-form regression with all combinations of circumstance variables. Multicollinearity does not seem to be a problem in the case of our final data set since the test statistics appears to be in the limits.

we reduce the number of "circumstance group" cells with zero or very few observations. If not so, we will end up with large sampling variances in mean estimation. "This greater sampling variance might artificially inflate the estimated inequality between groups, thereby inducing an over-estimation of inequality of opportunity" (Ferreira and Gignoux, 2008: 15). Table 4.6 presents the maximum number of cells, the number of cells actually observed, the mean cell size and the proportion of cells with fewer than five observations for each age interval. We have over 25% of cells have fewer than five observations in the earnings analysis. Though it is a high amount, this percentage is still less than the ones observed by Ferreira and Gignoux (2008) for Ecuador (33%), Guatemala (41%) and Panama (44%) in earnings analysis. As stressed by the same authors, these large magnitudes reflect the limited sample sizes of surveys, and underscore the importance of the parametric estimates in validating (or refuting) the non-parametric results.

Table 4.5: Partition of the Population by Circumstances

	(A)	(B)	(C)
	15-65 year-old	**20-60 year-old**	**25-60 year-old**
Characteristics	**Population share (percent)**	**Population share (percent)**	**Population share (percent)**
Gender			
Female	22.51	22.32	21.26
Male	77.49	77.68	78.74
Mother's education			
No education or unknown	42.63	43.97	46.65
At least primary education	57.37	56.03	53.35
Father's education			
No education or unknown	16.52	16.67	17.38
Primary education	60.69	60.64	61.68
Secondary and higher education	22.79	22.69	20.94
Home ownership			
Yes	66.90	67.34	66.86
No	33.10	32.66	33.14
Region of birth			
East	46.58	47.10	48.10
West	53.42	52.90	51.90
Individual earnings *(Income as the economic outcome)*	1269.219* [860.4063**]	1300.151* [859.2075**]	1337.627* [877.3048**]
Observations	1417	1344	1237

Sample of non-zero income earners aged 15-65, 20-60 and 25-60.

* Mean and ** standard deviation for economic outcome.

Income, used as economic outcome, shows the monthly earning (wage or salary – if employee, profit – if employer and/or self-employed) of the respondent.

Table 4.6: Description of the Disaggregation of the Population into Circumstances Cells

	(A)	(B)	(C)
	15-65 year-old	**20-60 year-old**	**25-60 year-old**
Maximum number of groups	48	48	48
Actual number of groups	48	48	48
Mean number of observations per group	29.52	28	25.77
Proportion of groups with fewer than 5 observations	0.19	0.21	0.21

4.4.3 Analysis

Earnings have been operationalized as the advantage variable and measured on individual basis as monthly earnings from the main job.

Table 4.7 reports the results of regression (7). Since this is a reduced-form regression, coefficients should not be interpreted causally: they reflect partial correlations between individual circumstance variables and earnings; and capture both the partial direct effects of C on y, and indirect effects through E (Ferreira and Gignoux, 2008, Ferreira et al., 2010b). However, the regression is informative.

Circumstance variables have the expected effect on earnings, except for "mother's at least primary education" in 15-65 age interval. The share of explained variance, R-squared, is 11.3%, 13.1%, and 14.4% for model A, B, C, respectively where models are differentiated according to their sample whose ages vary. Being male is always significantly associated with subsequent earnings. The estimated effect of birth region on individual earnings is again always positive, and highly significant. So are having at least secondary school educated father and owning a house, as an asset. But once these other circumstances are controlled for, there is no significant association between mother's education level and future earnings. The same is true for having primary school educated father.

Table 4.7: Reduced-Form OLS Regression of Earnings on Observed Circumstances

	(A)	(B)	(C)
circumstance variable	**15-65 year-old**	**20-60 year-old**	**25-60 year-old**
Male	0.482***	0.514***	0.529***
	(0.0401)	(0.0392)	(0.0415)
birth in the West region	0.0965***	0.0960***	0.0982***
	(0.0344)	(0.0335)	(0.0348)
mother's at least primary educ.	-0.0429	0.00469	0.0223
	(0.0370)	(0.0360)	(0.0371)
father's primary educ.	0.0634	0.0684	0.0685
	(0.0477)	(0.0464)	(0.0476)
father's at least secondary edu.	0.255***	0.242***	0.294***
	(0.0578)	(0.0564)	(0.0590)
home ownership	0.115***	0.0898***	0.105***
	(0.0352)	(0.0345)	(0.0358)
Constant	6.371***	6.373***	6.357***
	(0.0610)	(0.0593)	(0.0613)
Observations	1417	1344	1237
R-squared	0.1130	0.1309	0.1437
Adj. R-squared	0.1093	0.1270	0.1396

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Samples of 15-65, 20-60, and 25-60 year-old currently-employed people.
Omitted categories are: female, mother and father with no education or unknown, father's other occupations, no ownership of home, and birth in the West region.

The opportunity share of inequality in earnings for four different age intervals are reported in Table 4.8. All these measures make use of the mean log deviation, E(0), as the inequality index. The first row of the table reports the estimates of overall earnings inequality in each model: it varies from 0.183 to 0.196.

The next two rows report the non-parametric and parametric estimates of between-group inequality. The non-parametric estimate has been derived by using equation (4.5). Since we focus on E(0), $\Theta_d^N = \Theta_r^N$. The parametric analogue is the R2 of equation (4.7) which is Θ_r^P.

It has been stated that whenever the circumstance variables are the same in parametric and non-parametric analyses, and the parametric analysis uses a linear specification at the same time, then there will not be a large difference between the estimates of the overall opportunity share of earnings inequality obtained from the non-parametric and the parametric analysis (Checchi et al., 2010). This is the case in our study: the non-parametric estimates being consistently higher than the parametric ones and the diversity being

negligible (i.e. the difference is the least in the sample of individuals aged 25-60). "These systematic differences are consistent with the expectation that the large sampling variance within cells with very few observations may cause an upward bias in the non-parametric estimates" (Ferreira and Gignoux, 2008: 19).

Table 4.8: Inequality of Opportunity Indices for Earnings

	(A)	(B)	(C)
	15-65 year-old	**20-60 year-old**	**25-60 year-old**
Total share of inequality of opportunity	0.196	0.183	0.188
Non-parametric	0.133	0.147	0.157
Parametric	0.113	0.131	0.144
Partial shares ass. with circumstances			
Gender	0.102	0.120	0.122
Mother's education	0.000	0.000	0.000
Father's education	0.017	0.016	0.023
Home ownership	0.007	0.004	0.006
Birth region	0.006	0.006	0.005

The non-parametric estimates of the opportunity share of inequality are 13%, 15%, and 16% the model A, B, and C respectively. Alternatively, differences in observed opportunity account for 16% of the total earnings inequality for the sample of individuals aged 25-60. It also implies that a fairly coarse partition of the sample by five circumstance variables accounts for at least between one-sixth and one-eighth of total earnings inequality.

It is interesting to note that the ranking of the opportunity share of inequality may differ from the ranking of overall earnings inequality: The sample aged 15-65 has the highest earnings inequality, but the smallest opportunity share of that inequality.

The parametric estimates of opportunity inequality are 11%, 13%, and 14% for the models named in columns of Table 4.8. The partial shares, Θ_r^J, are also calculated on the basis of equation (4.8). Gender appears to be the most powerful circumstance variable accounting for the inequality of opportunity in earnings. Almost the entire overall (lower-bound) opportunity share of inequality is accounted for gender. Roughly one fifth of the same share

is explained by the rest of circumstance variables taken together. Overlapping with the case given in Table 4.7, we do not find any evidence for the relative shares of inequalities associated with mother's education level. Inequality of opportunity related to father's education is 2% for models A, B and C whereas it is barely 1% for home ownership and birth region for all age intervals.

4.5 Results and Discussion

The investigation of the inequality among individuals carried out in the previous chapter has been complemented with the analyses conducted here via focusing on the inequality among groups. In that sense, this chapter can be perceived as an attempt to go beyond group-blind analyses which constitutes the main critics of Stewart (2009). In measuring inequality of opportunity itself in earnings we make use of our data set that comes from the field survey took place between January-April 2011. Our study differs from the related literature in Turkey (Ferreira et al. 2010a and 2010b) in terms of the originality of the data set which allows us to use a single survey to quantify opportunity inequality in Turkey: we are able to extract the information needed from one data set. Besides, our data let us include gender among circumstance variables where it is found to have the largest impact on inequality of opportunity in earnings in Turkey[75].

The chapter presents the degree and nature of inequality of opportunity for earnings in Turkey. Following the ex-ante approach of Roemer (1998), inequality of opportunity is operationalized as the between-group share of inequality. The three inequality indices, $\Theta_d^N, \Theta_r^N \; and \; \Theta_r^P$, have been calculated on the basis of parametric and non-parametric estimates of our path-independent measure of opportunity inequality, E(0). Before dividing the sample into groups based on the circumstance variables (namely, gender, mother's and father's education level, home ownership and region of birth), the sample is divided into different age intervals: 15-65, 20-60 and 25-60. This allows us to account for the role of inequality of opportunity in samples differing due to its coverage of youth employment. Log of earnings is used as the outcome variable.

[75] It would be better if one remembers the criticisms onto the concept while reading this section. Briefly, the main problem with the concept from our point of view is that it legitimizes inequality to some extent and attributes the responsibility to the individuals themselves. In this regard, the concept has nothing to do with the structure of the labor market and is lacking since it is silent about the demand side of the labor market.

Before going on with the discussion of results, there are a few things left to be covered about methods used. After deciding on which approach to EOp one will follow (either ex-ante of ex-post), a choice among the different methods (stochastic dominance, parametric and non-parametric) in its measurement will come to scenery. Built on the Roemerian definition of EOp, and combining this with ex-ante approach, the literature on its measurement has relied primarily on decompositions of overall outcome inequality into two components: within- and between-groups. Measurement (through parametric and non-parametric analyses) comes after its investigation (i.e. testing for inequality of opportunity via stochastic dominance tools). However, each approach has its own pros and cons.

- Stochastic dominance tools vs. parametric and non-parametric methods:

  Stochastic dominance concepts and the associated statistical tests are used to test for dominance across cumulative distribution functions for different types. As opposed to other methods, it does not permit a quantification of how far those groups are from one another. In other words, it does not really allow for a ranking of inequality of opportunity across countries (based on how group is defined), beyond a binary classification into "equal" or "unequal" (Ferreira and Gignoux, 2008: 7).

- Parametric vs. non-parametric methods:

  Ferreira and Gignoux (2008: 12) summarize the distinction btw non-parametric and parametric methods as "non-parametric decompositions being more flexible (with no functional form assumptions) but more data intensive, while the parametric approach is less data intensive but relies on (potentially restrictive) functional form assumptions". Even though the functional form on the relation between outcome, circumstances and effort considered in parametric models (not the case in non-parametric ones) is an arbitrary choice, it allows to study partial effects of circumstances on outcome, other things constant (Peragine, 2011: 139).

Having these distinctions in mind, it is recommended that one should consider "their comparative performance on the same dataset, and the possibility that the methods may usefully complement each other" (Ferreira and Gignoux, 2008: 12) rather than using them as alternatives.

"A country where a smaller share of total inequality is associated with differences in opportunity is likely to be a fairer society, where individual choices and effort (and luck) play a greater role in determining outcomes than family origin, race and gender". (Ferreira and Gignoux, 2008: 23). In our case, society seems to be fairer when we just consider the sample of currently employed 15-65 aged where the opportunity share of total earnings inequality is the smallest (13.3% from non-parametric, 11.3% from parametric estimation, see Table 4.8). It is interesting that the same sample is also associated with the highest (overall) earnings inequality. The largest opportunity share, implying undesirable condition in EOp discussions where unfairness in the society more striking, is among the 25-60 aged employed people. Thus, one can argue that as the age interval gets narrower, the society seems fairer.

As is the case in Ferreira and Gignoux (2008:14), the differences between the non-parametric and parametric estimates $(\Theta_r^N \; and \; \Theta_r^P)$ are found to be quite small in our case, indicating that our-path independent estimates of inequality of opportunity are methodologically robust to the choice of estimation procedure. Alternatively, we conclude with the parametric and non-parametric estimation results being very close, which reinforces our confidence in the estimates (de Barros et al., 2009: 127).

It does not seem to be appropriate to compare the estimates of the present study with the estimates of earlier papers in the case of Turkey (Ferreira et al., 2010a and 2010b) since the circumstance variables covered are different from each other. Besides, there is also a methodological difference since by obtaining all information from a single survey; we do not need to cover the statistical methods applied in them. However, we can still place our results into some context because the underlying logic in measurement inequality of opportunity is identical.

The partition of our sample by five circumstance variables accounts for (at least) between one-sixth and one-eighth of total earnings inequality. However, although partitioned by six variables, the same figure is at least one-third (one-fourth) of overall wealth (imputed consumption) inequality in Ferreira et al. (more or less the same in two articles: 2010a and 2010b). Even though it is not realistic to expect to find out an exact match of our results with the ones in the literature, ours are one-half that of found previously. This can be due to the scope of the surveys: it is obvious that these authors work with more heterogeneous samples

(DNS and HBS) than ours since we are limited by our budget and urban areas, which are also centers. And, it is also important to remember that they are "lower-bound" estimates.

On the other hand, we can claim that our results are more comprehensive in the sense that we are able to account for earnings differentials due to gender. Besides, it appears to constitute the largest share of inequality of opportunity. Gender is followed by father's education, home ownership and region of birth, listed in the order of importance. The counterparts of these are rural/birth area, followed by father's education, mother tongue, mother's education, and number of siblings, in order, in Ferreira et al. (2010b). It is striking is that we do not find any evidence on the impact of mother's education on earnings (analogous to the reduced-form estimations). Based on the previous empirical evidence emphasized by Tansel (2012) - which is "child's educational attainment does depend more on father's education than mother's education" - , our finding does not seem to be so surprising. The shares of the two categories in mother's education level being almost the same may also account for its insignificance in the estimations.

In terms of the shortcomings of the present chapter, we need to emphasize that we estimate the share of observed inequality in current earnings at the expense of the formal/informal divide. In order to show the magnitude of inequality of opportunity, we are obliged to leave formal and informal employment distinction behind although it was covered in quantifying inequality among individuals. We are obliged to do this because of our sample size. However, dividing the sample into two, i.e. formally vs. informally employed people, at the very beginning could have been followed by estimating opportunity inequality in each sample and comparing the results between them can be one way to account for formal/informal divide. We could not apply this method because of the problems that may arise in the case of non-parametric estimation of inequality of opportunity. Another way to capture this division may be the one applied by Bourguignon et al. (2007): including labor market status, namely formal employee and employer, informal employee, and self-employed, in "efforts" estimation.

Besides, the analysis here adds group awareness to our broad discussion on the persistence of inequality in Turkey. Our results suggest that gender is the most powerful circumstance variable accounting for the inequality of opportunity in earnings which coincides with the gender gap in labor force participation decision and wages found in Chapter 3. Moreover, by

including family background variables in earnings estimation, we are able to capture the dynamic structure of inequality to some extent with regards to intergenerational aspects.

In questioning the opportunity-equalizing policies, Bowles et al. (2007: 5) conclude that

> There are conditions under which group inequality will persist indefinitely in the presence of equal economic opportunity. While this does not imply that group-redistributive policies should be adopted, it does mean that a failure to adopt them may result in persistent divergence across groups in economic outcomes. If group equality is a policy goal, equal opportunity may not be enough to secure it.

[w]henever group inequality is persistent and the disadvantaged group is large (ibid). In the light of this conclusion, we focus on the persistence of inequality via barriers that prevent mobility across sectors, i.e. formal and informal sectors. In other words, in what follows, we look for evidence on whether equal opportunity means more mobility in a society which seems to be fair[76]. In doing so, we utilize our data set with its sample of all ever-worked individuals aged 15 to 65 based on their work history information. This will also cover past discrimination practices (if it was the case) since we work with event history data.

[76] The opportunity share of total earnings equality is found to be ranging between 13.3 % and 15.7% (non-parametrically) in Turkey based on our data set. These figures are smaller than the ones calculated for the other countries (reviewed above) and even less than the ones measured for Turkey previously. What we know from the principle of equal opportunity is that if this share is small, it implies a fairer society.

CHAPTER 5

MOBILITY BETWEEN FORMAL AND INFORMAL SECTORS

5.1 Introduction

Having substantiated the existence of segmentation in Turkish labor market in the case of earnings in Chapter 3, and identifying variables over which one has no control (especially gender) that account for inequality of opportunity, this chapter is devoted to question the validity of LMS by focusing on one of its core hypotheses: the existence of limited labor mobility between the segments. Moreover, investigation of mobility in the labor market overlaps with the literature on EOp where it is claimed that equal opportunity goes hand in hand with more mobility.

To the best of our knowledge, studies on transitions in the Turkish labor market is very rare (Tasci and Tansel, 2005; Tansel and Kan, 2012), possibly due to inadequacy of data. To overcome this challenge, we employ our data set, which has the information on the respondents' entire working life history, in identifying labor market dynamics. Therefore, the data we use is an event history data coming from our retrospective survey that also allows for multiple failures and repeated events. Different from the criteria employed in Chapter 3 to define segments, we only use registration and work statuses of individuals in order to assign them to one of the four distinct labor market states: formal employment, informal employment, non-employment, and out of labor market/schooling.

Our aim is to investigate the determinants of labor transition behavior between these four states, to see if light can be shed on the problem of informal employment persistence. In doing so we concentrate on two issues: first, is there any evidence of an informality trap? Secondly, what is the effect of job-related characteristics on mobility between formal and informal employment?

In the present chapter, we utilize a semi-parametric Cox proportional hazards model with competing risks with the latent (cause-specific) approach in the estimates for 1st formal and informal jobs.[77] However, for the transitions among four states (allowing for 8 flows), we estimate a four-state independent semi-parametric competing risk model without unobserved heterogeneity in a multi-state multi-spell framework after the computation of transition probabilities due to each origin and destination pairs.[78] In semi-parametric estimation, we control for personal/family characteristics (the number of children, education level, father's and mother's education levels) and employment characteristics of the individual (ever worked in formal sector, ever worked in informal sector, firm size, sector of economic activity, occupation, job permanency, employment status, job property, full-time, region of job, and training) and models are run separately for males and females. The years of crises are also captured by a dummy variable.

This chapter proceeds as follows: in the next section, we review the empirical literature on mobility analyses, attempting to capture articles that make use of various data structures, methods and the approaches adopted. The basic descriptives of the data and the essential concepts (or basic terminology) are provided in the third section. The third section also presents preliminary findings on labor market transitions, reporting transition probabilities between these four labor market states. We divide the fourth section into three subsections, each of which corresponds to a different method in survival analysis: sequence analysis, non-parametric analysis, and semi-parametric analysis. The theoretical and econometric frameworks as well as the estimation results are provided for each analysis. The last section concludes with the main findings.

5.2 Literature Review

Empirical literature on mobility analyses over identifying labor market transitions is very widespread. The studies differ from each other with respect to the data and its structure employed, approach and the method utilized in.

The most common data structures in causal modeling are *cross-sectional data*, *panel data* and *event history data*. Considering the extent of detail about the process of change

[77] The analyses are performed in StataSE 12.

[78] The analyses are performed in R, the R project for statistical computing.

embedded in the data, one may also distinguish between *event count data* and *event sequence data*[79]- we do not focus on this distinction in our discussion. The variables of interest are represented in a cross-sectional study by one single point in time, i.e. the approach we followed in chapter 3 using HLFS; a person's labor market state at the time of the survey. Thus, "a cross-sectional sample is only a "snapshot" of the substantive process being studied" (Blossfeld et al., 2007: 5). Referring to Coleman (1981), Blossfeld et al. (2007: 5-6) state that

> [o]ne must be cautious in drawing inferences about the effects of explanatory variables in logit models on the basis of cross-sectional data because, implicitly or explicitly, social researchers have to assume that the substantive process under study is in some kind of statistical equilibrium. Statistical equilibrium, steady-state, or the stability of the process means that although individuals (or any other unit of analysis) may change their states over time, the state probabilities are fairly trendless or stable. Therefore an equilibrium of the process requires that the inflows to and the outflows from each of the discrete states be equal over time to a large extent. (…) Even if the assumption of a steady state is justified in a particular application, the effect of a causal variable in a logit and/or log-linear model should not be taken as evidence that it has a particular effect on the substantive process.

In order to clarify the importance of process stability assumption in cross-section data, the authors give an example of a process with two states: "being unemployed (UE)" and "being employed (E)". They assume that the covariate "educational attainment" increases the probability of movement from UE to E and increases the probability of movement from E to UE for each individual. The estimated coefficient for "educational attainment" only tells the net effect of both directional effects where the probability of being employed is the dependent variable in a cross-sectional logistic regression analysis. If one is faced with a zero effect of a covariate in a cross-sectional logistic regression, it could mean two different things: "that there is no effect at all of the respective covariate on UE → E and on E → UE, or that the directional effects on UE → E and on E → UE offset each other" (Blossfeld et al., 2007: 7). If effect was found to be positive, the alternative scenarios would become more complicated[80].

[79]In the present chapter we do not treat event count data which simply record the number of different types of events for each unit, and event sequence data which document sequences of states occupied by each unit (Blossfeld et al., 2007). However, we will give references to the information these type of data include in subsections 5.3.3 and 5.4.1 since our data set, which can be typically classified under event history data, covers the characteristics of the former data structures mentioned.

[80] The four possible scenarios associated with the result of the positive net effect of "educational attainment" on the probability of becoming employed are: 1) the positive effect on UE → E is greater than the positive effect on E → UE, 2) the negative effect on UE → E is smaller than the negative effect on E → UE, 3) there is only a positive effect on UE → E and no effect on E → UE, 4) there is no effect on UE → E and only a negative effect on E → UE. Beyond the stability assumption,

The superiority of panel data over cross-sectional data is its inclusion of more information - since in panel studies the same persons are re-interviewed at a series of discrete points in time. Because panel data contains information on the variables of interest over time, the use this type of data is more common in studies on labor market transitions. If one uses a four-wave panel, it means that the variables of interest were detected at four different points in time. However, as Blossfeld et al. (2007: 13) remark, "there is only information on states of the units at pre-determined survey points, but the course of the events between the survey points remains unknown" which means that if it was a yearly survey, the information on labor market status would point out a person's yearly working status regardless of the change in it throughout the year. Moreover, the quality of the data is subject to well-known distortions, such as panel bias, attrition of the sample, fallacy of period centrism, and misclassification errors (Blossfeld et al., 2007, Artola and Louise-Bell, 2001).

"The major advantage of event history data is that they provide the *most complete data possible on changes in qualitative variables that may occur at any point in time*" (Blossfeld et al., 2002: 19). The data mostly come from retrospective surveys, like life history studies that cover the whole life course of individuals. The works on individual labor market transitions generally adopt one of the following two approaches listed by Artola and Louise-Bell (2001: 3): i) the set of retrospective questions, or ii) exploiting the sample design of the survey, which allows for the construction of panels of short duration; where the latter has also been named as *the matched files approach*. The matched files approach is followed with cross-sectional or panel data since the rotating panel structure of the surveys allow one to match the records for the same individual across a number of consecutive periods or panels. The specific problems associated with the matched files approach are sample attrition and misclassification errors. Event history data (via retrospective surveys) have their own limitations and problems as well, namely recall errors and heterogeneous survey design plus unknown factors, misrepresentation of specific populations.

Lastly, the methods utilized in each study differ from one another depending on the interests of the authors. However, most of the time researchers do not have an option to use the data they need since there may not be such data for their region of interest in the first place. In these situations, what one can do reduces to being aware of the inferential limitations and

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Blossfeld et al. (2007: 8-13) list a number of inferential limitations with regard to causal modeling in using cross-sectional data, related to direction of causality, age and cohort effects, variability in state dependence.

methodological problems associated with the data and realizing the potential pitfalls to avoid when trying to identify labor market dynamics. One should also remember that each data structure and method has its own advantages and disadvantages.

The structure of the data, the approach adopted and the method followed in each article reviewed are given in separate columns in Table 5.1 since these three characteristics has important consequences for causal modeling itself and its interpretations. Besides, we restrict ourselves to empirical studies considering single countries[81] and relatively recent articles on the subject since reviewing all the literature on labor mobility is beyond the scope of the present chapter. In doing so, we try to choose works which are different from each other in some aspects, i.e. country setting, data structure, method, etc.

In his seminal article titled "Does Informality Imply Segmentation in Urban Labor Markets? Evidence from Sectoral Transitions in Mexico", Maloney (1999) characterizes mobility patterns among six states including formal salaried, informal salaried, self-employed, contract workers, out of labor force and unemployed. He finds little evidence in favor of the dualistic view as opposed to the articles that are reviewed below. Tests of labor market segmentation within the boundaries of human capital theory (where earning differentials are taken as the evidence for segmentation) are followed by the examination of worker transition patterns since he states that "given the difficulty of quantifying the unobservables, earnings differentials are unlikely ever to be convincing tests" (Maloney, 1999: 287). Patterns of mobility have been considered with the results of transition matrices and multinomial logit model for formal salaried, informal salaried, self-employed, and contract workers. He concludes with the statement that there exists an integrated labor market structure rather than a segmented one.

Utilizing Mexico's Urban Employment Survey (Encuesta Nacional de Empleo Urbano) for five Mexican cities among the whole 32 cities in the data, Gong et al. (2004) investigate labor mobility. The three labor market states they determine are working in the formal sector, working in the informal sector, and not working. They use two separate five-wave panels (the first associated with a period of rapid economic growth and the second with a

[81] For cross-country analyses, see Bosch and Maloney (2010) conidering Argentina, Brazil and Mexico; Pagés and Stampini (2009) for the case of six countries (Argentina, Mexico, Venezuela, Albania, Georgia, and Ukranie); Duryea et al. (2006) for nine countries (Albania, Georgia, Hungary, Poland, Russia, Ukranie, Argentina, Mexico and Venezuela).

period of recession) to clarify the dynamics of labor transition in the times of crisis. The sample probabilities of individuals' transitions among the three labor market states have been prepared according to two "size" and "job-type" definitions[82]. Based upon the firm size classification, they show that finding an informal job has a larger probability than finding a formal job for the non-workers; and this gap increases during the recession. However, for the ones who already had a job, the probabilities of remaining in the formal sector are larger than those of remaining in the informal sector. As the authors stress, this does not necessarily mean that jobs in the formal sector are more stable than the ones in the informal sector since the data they make use of do not allow them to account for the switch in the same sector (i.e. they do not see whether people change jobs or not, implying that they cannot distinguish one who leaves a job in the formal sector and finds another formal sector job from the other who stays in the same formal sector job). The general patterns of the transitions probabilities do not change much when Gong et al. (2004) employ "job-type" definition with the exception that the transition rates into the formal sector are larger than those according to the "firm-size" definition. The dynamic multinomial logit panel data model with random effects where age, education, gender, ethnicity, region and previous labor market state are included as covariates point out that as education level increases, the probability of formal sector employment increases. The results also indicate that the level of income of other family members and the probability of working in the informal sector are negatively related whereas it turns out to be a positive relationship in the case of the probability of not working.

To investigate the degree of flexibility in Bosnia and Herzegovina labor market and the mobility between formal and informal jobs, Kristić and Sanfey (2007) define four labor market states which are; informal employment (composed of informal employees, informal self-employed, farmers on own farm and unpaid family workers), formal employment (consisting of formal wage employees and formal self-employed), unemployed and inactive. They use the Living Standards Measurement Studies (LSMS) in 2001 and 2004 to obtain the transition probabilities across labor force states. Based on the computed transition

[82] In "size" definition, informal sector is composed of employers and employees working in firms fewer than six workers who are neither professionals nor unpaid family workers, whereas formal sector involves professionals and those in enterprises of more than five workers. Due to "job type" definition, informality has been associated with those who "work for their own account", piece-workers and those who are the head of firms with zero employees; while wage and cooperative workers, employers (with at least one employee), and independent professionals are classified under formal sector. Unpaid family workers are excluded in both definitions.

probabilities and the estimates of probit regression[83], they reach four main conclusions: i) education appears to be the key factor in explaining movements from informal to formal sector jobs; ii) informally employed people are found to be much more likely to suffer from poverty than formally employed ones; iii) earnings inequality is more problematic in the informal sector than elsewhere; iv) most of the informally employed people are not satisfied with their lives. Hence, the authors assert that "However, many formal workers did not choose to move into informal employment to increase earnings and wellbeing, but rather as a ''survival strategy'' in the absence of formal opportunities" (Kristić and Sanfey, 2007: 324).

Bernabé and Stampini (2009), like Gong et al. (2004), question the hypothesis of labor market segmentation, but for the case of Georgia rather than Mexico. With the identification of six labor market statuses (formal wage employment, informal wage employment, self-employment, farming, unemployment and inactivity), they focus on labor mobility in Georgia during economic transition via the quarterly data from the Labor Force Survey (LFS) and the Survey of Georgian Households (SGH) for 1998 and 1999. In order to validate the existence of segmentation in the labor market, one needs to determine whether the transition from one labor market status to another makes the worker worse off. Since the authors do not have information on the reasons of the transition, they employ four analytical tools – namely, turnover rates, shares of temporary mobility, transition tendencies, and the effect of negative exogenous shocks on mobility - to look for signs of preference for some statuses over others. These have been followed by six multinomial regressions for each transition conditional on the status of departure where age, gender and education are found to be significant determinants of labor mobility. Consistent with the findings of Gong et al. (2004), Bernabé and Stampini (2009) find evidence in favor of labor market segmentation: formal employment is superior to informal employment, "unemployment, which is almost exclusively in urban areas, acts as a queuing device for individuals with higher education waiting for formal jobs" (Bernabé and Stampini, 2009: 379). However, the evidence on self-employment is mixed, mostly due to its highly heterogeneous nature.

[83] The dependent variable in the probit model takes the value "one" if an individual was in informal employment in 2001 and in formal employment in 2004; and "zero" if (s)he stayed in informal employment. Among a large number of demographic and educational characteristics of the worker in addition to the characteristics of the household and the sector of economic activity being chosen as covariates, educational level, service sector, remaining in the same job and residential status dummies are found to be significant in the model.

Canavire-Bacarreza and Soria (2007) analyze labor mobility in Argentina from 1998 to 2005 with a special emphasis on the identification of unemployment duration. In doing so, they use the information in the household survey in Argentina and apply three methods to investigate the evolution of unemployment duration: i) stochastic dominance (generalized Lorenz curves), ii) count models, iii) hazard models. For the latter two models, educational level, gender, household head, age groups, the number of children in the household, regional dummy and another dummy for poverty considering the poverty line index are included in explanatory variables. In order to account for labor mobility, three distinct labor market states are considered: formal sector, informal sector and unemployment and the computation of transition matrices has been followed by multinomial logit regression models. The transition matrices reveal high mobility among formal workers towards unemployment, mainly during the crisis. What is more striking is the result of their multinomial logit regression models:

> During the crisis period the result shows that it became more difficult to enter informal markets for individuals with higher educational levels, but it also became easier for people with lower educational levels to enter the formal market; this shows the relative inflexibility of Argentinean labor market.
>
> (Canavire-Bacarreza and Soria, 2007: 18)

The next five studies (Booth et al., 2000; Bernardi, 1999; Arranz and Cantó, 2010; Bradley et al., 2003; Tunalı and Assaad, 1992) employ the methods special to survival analysis.

To analyze the dynamics of temporary jobs in comparison to permanent work, Booth et al. (2000) disaggregate temporary work into seasonal or casual jobs and fixed term contract jobs. The first seven waves (1991-1997) of the British Household Panel Survey (BHPS) are used to carry out the analyses separately for men and women in employment. Multinomial logit regressions are run to find out who gets a temporary job. This is followed by three more regressions considering three aspects of temporary and permanent works (job satisfaction, on-the-job-training, current wages) with the aim of answering the question of "what are temporary jobs worth?" The results reveal that, on average, temporary workers report lower levels of job satisfaction, receive less work-related training, and are less well-paid than their counterparts in permanent employment. To include job duration in their discussion of temporary work dynamics, they obtain Kaplan-Meier estimates of job duration in addition to their discrete-time proportional hazard model estimation for the transition from a temporary work into a permanent work. The authors consider two different specifications of baseline

hazard, the first of which is a parametric specification with Weibull distribution, whereas the second is a semi-parametric specification. Their results confirm the case of temporary workers being a stepping stone to permanent work.

> Moreover, the wage growth penalty associated with experience of seasonal jobs is quite high, and it is likely that workers experiencing such jobs early in their working lives will never catch up. But experience of fixed-term contracts may lead to high wage growth if the workers move to permanent full-time jobs.
>
> (Booth et al., 2000: 1)

Bernardi (1999) analyzes transitions from employment to housework status and from housework status to employment with the data from the Second National Survey on Fertility Control and Expectation (INF-2) which was carried out between the end of 1995 and the beginning of 1996. Using the sample of only married couples, the author uses piecewise constant exponential model to investigate the transitions out of the labor market and into the labor market. It is found that as the educational level and status of the occupation increases, the likelihood of a wife becoming a housewife decreases. However, not surprisingly, the same likelihood increases in two periods of life: before marriage and during pregnancy. The results also reveal that the risk of exit from the labor market also depends on the spouses' resources: "the higher the husband's occupational status, the greater the likelihood of his wife leaving the labor market" (Bradley, 1999: 293). It is interesting that the positive effect of husband's resources on the wife's employment exit disappears in the homogamous couples[84] due to the opposing effect of the wife's individual resources. Although the effect of age is not found to be significant for the transition out of the labor market, it is significant in the transition into the labor market, implying that it is more difficult to quit housework for older women.

The analysis of poverty dynamics is undertaken through the effect of spell recurrence by Arranz and Cantó (2010) through multiple poverty and non-poverty spells. In doing so, they use longitudinal data for Spain, for the period of 1994-2001. The literature on poverty dynamics growing on the assumption of a single exit and re-entry hazard rate independent of the number of poverty spells has been challenged by the authors via their allowance for past poverty episodes having an effect on future poverty. This leads them to estimate a mixed proportional hazard model with multiple states and multiple spells controlling for

[84] If married couples show a high level of homogamy with respect to market resources, they are called as homogamous couples whilst heterogamous couples are the ones where the husband's resources are higher than the wife's.

unobserved heterogeneity where the states are poverty exit and re-entry. They conclude that the effects of spell accumulation and the duration of past spells in addition to personal and household characteristics vary between poverty exit and re-entry rates. Moreover, the effect of duration dependence is found to be significant, and even turns out to differ with respect to spell order.

Using the methods in survival analysis, Bradley et al. (2003) investigate the determinants of worker transition behavior between the five labor market states: high-, intermediate- and low-skilled employment, unemployment and out of the labor force. The first seven waves of the British Household panel survey are used in investigating these determinants in a multi-state multi-spell framework where they utilize semi-parametric competing risk model with unobserved heterogeneity. In addition to personal and family characteristics of the individual and labor market experience, contract type and firm-level characteristics are included in the model. Other covariates captured in the model are measures of local labor market conditions, i.e. the unemployment rate, the number vacancies, and a set of year dummies. The estimates for each origin-destination pairing coming from an independent competing risk model (conducted separately for males and females) show that

> Workers at the upper end of the labour market are trapped in a 'virtuous' circle of recurrent employment in good jobs, whereas there is evidence of social exclusion for workers at the lower end of the occupational hierarchy. In particular, the unskilled appear to be trapped in a vicious circle of employment in the low-skilled sector, unemployment and periods out of the labour force. This effect is reinforced by contract type, so that workers who are a part of the so-called flexible workforce are more exposed to the risk of exclusion.
>
> (Bradley at al., 2003: 676)

Different from the studies reviewed above, Tunalı and Assaad (1992) focus on only one sector, construction sector, in Egypt to investigate the links between market structure and spells of employment and unemployment within the sector. They employ an augmented job search model in which the influence of demand-side forces obtained from transition analysis. Using the Construction Workers Survey (CWS) in 1988, Weibull, log-logistic and generalized gamma parameterizations of the hazard rate are utilized in a two-state (employment and unemployment) framework. They find that regional differences are quite pronounced and as durations increase, the hazard of transition to unemployment decreases. They also state that the average full-time blue-collar construction worker is unemployed 36 percent of the time, involuntary based on the results from Weibull parameterization

indicating the unemployment spell of the average worker lasting 23 days (Tunalı and Assaad, 1992:360).

The literature on transitions in labor market in Turkey is very limited due to the lack of adequate data. Using two different datasets, Tasci and Tansel (2005) and Tansel and Kan (2012) investigate the labor mobility patterns in the Turkish case.

Transitions in the Turkish labor market are analyzed by using the Household Labor Force Survey (HLFS) panel data of 2000 and 2001 by Tasci and Tansel (2005). Annual transition probabilities between labor market states of employment, unemployment and out-of-labor force under Markovian assumptions by gender, rural-urban residence and marital status reveal that "for non-married individuals, the most important factor explaining their higher unemployment rates are that they are less likely to enter the labor market successfully than the married individuals, and they are more likely to leave (quit or lose) their jobs for unemployment" (Tasci and Tansel, 2005: 31). Furthermore, the authors discover that urban women are more likely to exit employment for unemployment and less likely to exit unemployment for a job, which results in urban women having higher unemployment rates than urban men. The gender-specific multinomial logit models are estimated to determine the impact of individual and job-related characteristics on transition probabilities across labor market states. Their findings support that there is a significant difference between the education groups in the probability of becoming unemployed from employment for both men and women; and two-year university graduates and over are found to be more likely to find employment compared to non-graduates. Besides, age mostly matters in the transition from unemployment to employment where older individuals are likely to find a job from unemployment, and younger individuals are associated with higher probabilities of losing a job.

To investigate the labor mobility between formal and informal sectors, Tansel and Kan (2012) distinguish six labor market states of formal salaried, informal salaried, formal self-employed, informal self-employed, unemployed and inactive. They conduct transitions analysis separately for two, three and four year panels of the novel Income and Living Conditions Survey (SILC), corresponding to 2006-2007, 2006-2008 and 2006-2009 transitions where they conclude that mobility patterns are fairly similar across different time spans. One of the main findings of the authors is the probability of remaining in the origin state being higher than the probability of transition into another state for all labor market

states, except for unemployment which points out the static nature of Turkish labor market. The very limited mobility found in the formal-salaried state is perceived as an evidence for the validation of traditional dualistic theory by the authors in the case of Turkey. Informal self-employment appears to display minimal mobility into salaried employment which could be taken as its distinguishing feature, being mostly involuntary. To account for the impact of individual characteristics (i.e. gender, age, education level, work experience, sector, firm size, household size, having/not having children, urban/rural) for each transition, Tansel and Kan (2012) estimate six multinomial logit models where the dependent variable takes the value "0" if a person stays in the origin state from 2006 to 2007 (2008, 2009). Gender, education and sector of economic activity are found to be the key determinants of labor market transitions.

Table 5.1: Empirical Literature on Labor Market Transitions

Author/Date	Data	Region	Data structure	Time	Labor market states	Method	Approach
Maloney (1999)	The National Urban Employment Survey and Micro-Enterprises Survey	Mexico	Panel data	1990-1992	Formal salaried, informal salaried, self-employed, contract workers, out of labor force and unemployed	Multinomial logit model	The matched files approach
Gong et al. (2004)	the National Urban Employment Survey	Mexico	Panel data	1992-93 and 1994-95	Non-employment, informal sector employment and formal sector employment	Reduced form dynamic multinomial panel logit model with random effects	The matched files approach
Kristić and Sanfey (2007)	the Livings Standards Measurement Studies (LSMS)	Bosnia and Herzegovina	Panel data	2001-2004	Informal employment, formal employment, unemployed and inactive	A probit model	The matched files approach
Bernabé and Stampini (2009)	the Labor Force Survey (LFS) and the Survey of Georgian Households (SGH)	Georgia	Panel data	1998-1999	Inactivity, unemployment, formal and informal wage employment, self-employment and farming	Six multinomial regressions for each transition conditional on the status of departure	The matched files approach
Canavire-Bacarreza and Soria (2007)	The Permanent Household Survey (PHS)	Argentina	Cross-sectional data	1998 -2005	Formal sector, informal sector and unemployment	Multinomial logit regression models	The matched files approach
Booth et al. (2000)	the British Household Panel Survey (BHPS)	UK	Panel data	1991-1997	Permanent jobs, seasonal or casual jobs and fixed term contract jobs	The parametric (Weibull) and semi-parametric discrete-time proportional hazard models	The matched files approach

Table 5.1: Empirical Literature on Labor Market Transitions (continued)

Author/Date	Data	Region	Data structure	Time	Labor market states	Method	Approach
Bernardi (1999)	the Second National Survey on Fertility Control and Expectation (INF-2)	Italy	Even history data	1995	Housework status and employment	Exponential piecewise constant (parametric) model	The retrospective information approach
Arranz and Cantó (2010)	the European Community Household Panel Survey (ECHP)	Spain	Panel data	1994-2001	Poverty exit and re-entry	A mixed proportional hazard model	The matched files approach
Bradley et al. (2003)	the British Household Panel Survey (BHPS)	UK	Panel data	1991-1997	High skilled employment, intermediate skilled employment, low skilled employment, unemployment and out-of-the-labor market	A multi-state multi-spell (semi-parametric) competing risks model	The matched files approach
Tunalı and Assaad (1992)	the Construction Workers Survey (CWS)	Egypt	Event history data	1988	Employment and unemployment	Weibull, log-logistic and generalized gamma parameterizations of the hazard rate	The retrospective information approach
Tasci and Tansel (2005)	the Household Labor Force Survey (HLFS)	Turkey	Cross-sectional data (used as panel data)	2000-2001	Employment, unemployment and out-of-the labor force	Multinomial logit regressions	The matched files approach
Tansel and Kan (2012)	the novel Income and Living Conditions Survey (SILC)	Turkey	Panel data	2006-2007, 2006-2008, 2006-2009	Formal salaried, informal salaried, formal self-employed, informal self-employed, unemployed and inactive	Multinomial logit regressions	The matched files approach

5.3 Data

5.3.1 Basic Descriptives of the Data

The "Income and Living Conditions Survey (SILC)" and "Household Labor Force Survey (HLFS)" are the two surveys that are nationally representative and have been used in studies on labor market transitions in Turkey (Tasci and Tansel, 2005; Tansel and Kan, 2012). However, neither SILC nor HLFS provide entire labor market history of the respondents. To overcome this data challenge, we conducted a field survey, i.e. the dataset we make use of is composed of event history or longitudinal data that have been gathered through a retrospective survey and the unit of selection is the households. The following are the basic descriptives[85] of the data:

- The field survey captures 1703 households (6563 individuals) in 34 provinces in urban areas of Turkey.
- It took place between January 2011 and April 2011, and carried on by the research firm, called Ipsos KMG.
- The method used in sample selection is "Stratified Simple Random Sampling" where clusters (provinces) are determined based on NUTS 1 level. SES, the size of the household, age and education level of the household head are used for calculating the weights.
- Based on these sample selection criteria, 39.9 percent of our sample comes from Marmara Region. The rest 60.1 percent is distributed as follows: 17.6 percent from Central Anatolia, 12.3 percent from Eastern and South Eastern Anatolia, 11.7 percent from Mediterranean, 11.5 percent from Aegean, and, and the remaining 7 percent from Black Sea.

Although we reach to 6563 individuals in 1703 households, 1682 of them are under the age of 15 or older than age-65. Out of the remaining 4881 people, 3171 individuals report their work history information since they were 15. Individuals are asked to document their labor market histories, including the timing of spells of employment, unemployment and periods out of the labor market. Since we have the start and end years of each spell in addition to the information on how long they stayed in each spell in months, we are able to develop a measure of length of time each individual spends in a particular labor market state at each

[85]See "Appendix B" for a detailed account of our field survey and the parts of questionnnaire itself.

point of their work history. Because they state their registration status in their respective jobs, we are able to disaggregate employment states into two, namely formal and informal employment. However, people who are/were unemployed and not in the labor force (inactive) are merged under the name of "non-employment"[86] in order to avoid misclassification problems our survey might be subject to.

In addition to personal and family characteristics of the individual, job-related information (such as sector, the size of establishment, occupation, employment status, etc.) is available in our dataset. For unemployment spells, respondents report their enrollment to a training program, unemployment insurance payment, and if they received this payment, for how long they were paid. Whenever the individual was out of the labor market, they were supposed to declare whether they attended to a training program during that period.

5.3.2 Essential Concepts/Basic Terminology

Survival and *event history analysis*, as Mills (2011: 1) defines, is "an umbrella term for a collection of statistical methods that focus on questions relating to timing and duration until the occurrence of an event". Since these analyses are highly interdisciplinary, there are different names for the same analyses. *Survival analysis* (length of time survived) is the term mostly used in biostatistics and *event history analysis* in sociology, psychology, and political science. They are called *duration analysis* within economics. They match with *failure time analysis* (length of time to failure of an item such as a light bulb or a machine part) in operations research, *life table analysis* in demography and actuarial studies (where leaving a state corresponds to death), and *hazard analysis* in insurance and accident theory. In the social science applications include recidivism, length of marriages, and inter-election duration[87] (Cleves et al., 2008: 573).

Throughout this chapter, we will be using event history analysis, survival analysis and duration analysis interchangeably. In the two succeeding subsections, we clarify our

[86] Although we tried to be very clear about the difference between "being unemployed" and "being inactive", there is still a possibility that it may not be perceived correctly. Besides, in doing so, we also eliminate recall errors which appears to be a serious problem in retrospective surveys: one can prefer to report that she was inactive in the related spell although she was looking for a job at that time or vice versa. For a detailed discussion of misclassification and recall error problems, see Artola and Louise-Bell (2001).

[87] For more examples from a wide variety of social research fields, see Blossfeld et al. (2007: 1-2).

definition of event occurrence and the beginning of time before embarking on a survival analysis.

5.3.2.1 Defining the states, spells, transitions and event occurrence

A *state* is a classification of an individual identity at a point in time, whereas *transition* is movement from one state to another, and a *spell* length (*duration*) is the time spent in a given state (Cameron and Trivedi, 2005). An *event* is defined as a change in a variable, representing an individual's transition from one state to another state. Therefore, it overlaps with the definition of transition.

"In a population at risk of experiencing a sequence of events, each person's history can be divided into spells; each ending when the corresponding event in the sequence occurs" (Willett and Singer, 1995: 42). Throughout the methods described and applied here, we investigate the determinants of transition behavior of people, who are aged between 15 and 65, in a multi-state multi-spell framework. We distinguish between four labor market states, all of which are transient[88]. Thus, labor market transition appears to be a semi-Markov process with individuals moving between four states.

The four origin states, $j = 1,2,3,4$, are:

$j = 1$ Formal employment (for the ones who are/were registered in a social security institution-FE)
$j = 2$ Informal employment (for the ones who are/were not registered in a social security institution-IE)
$j = 3$ Non-employment (NON)
$j = 4$ Out of labor force/schooling (OUT/SCH)

In order to distinguish the first non-employment spell from the other non-employment spells, we define the fourth state for the ones who were non-employed at the beginning of our analysis time (at the age of 15). We define this spell as "out of labor force/school", in short "OUT/SCH", to allow the 1st exit from non-employment to be different from the others

[88] A state *j* is said to be transient if, given that we start in state *j*, there is a non-zero probability that we will never return to *j*. On the other hand, a state *j* is called absorbing if it is impossible to leave this state, i.e. death.

having in mind that the majority of the respondents in the 1st non-employment state were most probably students.

These origins are mutually exclusive (non-overlapping) and exhaustive (of all possible states). An individual may leave a labor market state j for one of the several destination states where the destination states are the same as the origin states, i.e. $k = 1,2,3,4$. Since we do not allow "OUT/SCH" state appear after the 1st transition, the transitions from $j = 1,2,3,4$ to $k = 4$ are not possible. Moreover, we cannot model the transition for $j = 3, k = 3$, and $j = 4, k = 3$. Therefore, we end up with 10 flows among 4 states, 8 of which are associated with changes of states (FE→IE, FE→NON, IE→FE, IE→NON, NON→FE, NON→IE, OUT/SCH→FE, OUT/SCH→IE) whereas the rest 2 are the transitions in the same states (FE→FE, IE→IE)[89].

5.3.2.2 Identifying the *beginning of time* and *analysis time* with a specification of *metric for time*

Paraphrasing Graham et al. (2012: 332), "*beginning of time*" refers to the moment when everyone in the population occupies one, and only one, of the possible states. We choose the year of the age of 15 as the beginning of time since individuals are only "at risk" of experiencing a change in labor market status when they are at the age of 15 – where 15 is the minimum legal age that a person can be employed. In other words, the particular value of t to be labeled $t = 0$ is the age of 15 which denotes the onset of risk. In doing so, we are left with the sample of ever-employed individuals aged between 15 and 65,[90] which eliminates left censoring as well.

The "*analysis time*", t, - the unit in which its path is recorded- employed here is defined in terms of years. Years also specify our metric for time which makes us utilize discrete-time[91] methods in survival analysis.

[89] In semi-parametric analysis, we do not account for transitions within the same state. Therefore, we end up with 8 possible transitions to states that are different from the originating state: FE→IE, FE→NON, IE→FE, IE→NON, NON→FE, NON→IE, OUT/SCH→FE, OUT/SCH→IE.

[90] Age 65 is chosen as the upper limit since it is the retirement age in Turkey.

[91] If the data are recorded in narrow precise units (i.e. seconds, hours, days), it is called continuous-time data. Whenever they are recorded in wider intervals (i.e. months, years), it refers to discrete-time data. As emphasized by Graham et al. (2012: 332), "almost every feature of survival analysis-

The following subsection presents some preliminary findings on labor market transitions in our data set that are gained by counting method where we simply count labor market transitions irrespective of the duration associated with each state.

5.3.3 Preliminary Findings on Labor Market Transitions

Table 5.2 presents the composition of our data according to the number of spells, right-censored[92] observations, and their distributions by sex. The first column gives the spells numbers and the second one shows how many people are associated with this number of spells; i.e. there is only one individual who has 13 spells (and 12 transitions[93]) in his working life since he was at the age of 15. Anyone who begins a later spell must have completed all earlier spells where the end of a spell can be due to any of 8 labor market transitions mentioned above. Thus, progression through spells is conditional; 3080 people (in the 3rd row and 2nd column of Table 5.2) are associated with 2 spells, implying that they have experienced a first and a second spell. As expected, all members of our sample (3171 individuals) have experienced at least one spell whereas 2326 of them are subject to a first, a second and a third spell and finally 1499 people have experienced four spells. The total number of spells/records is 12386 that are utilized for transition analysis.

The third and fourth columns of Table 5.2 give the gender composition of each spell: our sample consists of 1887 males and 1284 females who had experienced at least one event/transition (2nd row and 3rd column). Among the ones who experienced a first and second spell, 1817 are men, 1263 are women. The gender gap in spells seems to get narrower as the spell number gets higher: 230 male and 119 female had experienced 7 labor market transitions in their working lives till the end of the survey.

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parameter definition, model construction, estimation, and testing-depends on the metric of time". However, discrete- and continuous-time methods give nearly the same results; therefore, it is argued that discrete-time models can be used to approximate continuous-time models (Mills, 2011).

[92] Right censoring has been the case when one runs a study for a pre-specified length of time, and by the end of that time, the failure event has not occurred for some subjects. As noted by Blossfeld et al. (2007: 41), this type of censoring occurs in life course studies at the time of the retrospective survey, like the one we have here. On the other hand, observations are defined as left-censored if the event occurred at some time when the subject was not under observation.

[93] The last spell of each respondent is right-censored due to the structure of the data; therefore 13 spells imply that this individual has experienced 12 transitions, either between states or within the same state.

Fifth column of the same table shows the number of right-censored observations. 91 of 3171 people enter labor market in one of the origin states specified before and do not change it until the time of the survey; i.e. they started to work informally at their ages of 15 and at the time of the survey they were still in the same job, as an informal labor. Some sample members may experience the same situation at their second spell; in other words, they stuck to their second labor market status. Out of 3080 people who experienced first and second spell, 754 completed their sequence of events; therefore, we are left with 2326 people (=3080-754) located at the third spell (4^{th} row and 2^{nd} column). It is also worth emphasizing that our sample mostly consists of people who had two or three spells, 754 and 851 people, respectively. The ratios of the right-censored observations to the people located in the respective spells can be seen in the last column of Table 5.2. According to this, 2.87 percent of our sample is still at their 1^{st} labor market state without any transition, and almost one fourth of the ones who had two spells did not experience any labor market transition after their 2^{nd} spell, and so on.

Table 5.2: Spell Numbers and Right-Censored Observations

Spell number	**Our study yield data on (total) (A)**	**Our study yield data on (male)**	**Our study yield data on (female)**	**# of people who experienced only … spell(s) (B)**	**% of people who had only … spell(s) (B/A)*100**
1st spell	3171	1887	1284	91	2.87
2nd spell	3080	1817	1263	754	24.48
3rd spell	2326	1372	954	827	35.55
4th spell	1499	985	514	527	35.16
5th spell	972	628	344	389	40.02
6th spell	583	389	194	234	40.14
7th spell	349	230	119	150	42.98
8th spell	199	138	61	83	41.71
9th spell	116	83	33	55	47.41
10th spell	61	43	18	33	54.10
11th spell	28	18	10	27	96.43
13th spell	1*	1	0	1	100.00
TOTAL	***12385****	***7591***	***4794***	***3171***	

* Since the person who has 13 spells also has a record for the 12^{th} spell, the total number of records amount to 12386.

Table 5.3 gives the sample composition of our entire Person-Spell-period data set. The distribution of our sample in the first spell by age and labor market status is presented in Panel A: out of 3171 people, 309 started their age of 15 in a formal job, 364 employed as informally, and the rest was non-employed (the 5th row of Table 5.3). At first sight, non-employment figures appear to be unexpectedly high; however, considering that these figures reflect the respondents' work status when they were at the age of 15 (the "beginning of time" in our analysis), it is expected. The gender gap in employment figures is lower in informal jobs (30% of informal employment in the first spell has been occupied by females and it is 21% in formal employment) in comparison to formal jobs.

91 observations that have been detected as right-censored in the first spell in Table 5.2 (5th column, 2nd row) are also presented in Table 5.3 in the 11th row: out of these 91 observations, 43 were formal employment (43 people began to work in a formal job at the age of 15 and did not change it till the time of the survey) and 48 were informal employment, where these constitute 13.92 percent and 13.19 percent of the people whose first spell was formal employment and informal employment, respectively. Other than these 91 people, we can detect the first and the last spells of our sample.

Panel B of Table 5.3 gives the transition probabilities between the labor market states. However, one should be careful in interpreting the figures here since they only reflect the transition probabilities considering the first and the last spell, irrespective of the events that have happened in between the first and the last spell. In other words, if a woman experienced three spells, the transition is considered as from her labor market status in the first spell to the one in her third spell, regardless of the one in the second spell.

According to Table 5.3, Panel B, 47.57 percent of people (147 individuals) whose first spell was formal employment report their last labor market status as formal employment. It is followed by a transition to non-employment with a probability of 30.10 (93 individuals). 13.92 percent of the people whose were formally employed at the age of 15 are still at their first (the same) job. The last state being informal employment for the ones whose first spell was formal employment is found to be the rarest case: 8.41 percent.

35.71 percent of people who were informal employees at age 15 work formally at the time of the survey. This may correspond to the experience that one started to work in an informal job while attending school and whenever the barrier to work (here, education) has disappeared;

she has found a formal job. 29.67 percent of those who started their working life with an informal job are out of the labor force (non-employed) at the time the survey is conducted. Since these figures do not reflect any time dimension, it is possible that some of them are retirees. Ending up with an informal job is not found to be that scarce in the case of firstly informally employed ones compared to firstly formally employed counterparts: 21.43 percent of firstly informally employed people are still in informal sector. The right censored observations' share in the related transition is 13.19 percent.

Most of the individuals who were non-employed at the age of 15 declare their latest labor market status to be formal employment (50.32%) whilst being employed as informally is found to be the least common (13.25%).

In sum, just looking at the first and the last spells of our sample, one can claim that informal employment is mostly associated with the individuals whose first spell was informal employment as well. However, note once again that this interpretation does not take into account the events occurred in between the first and last spell, and also any time metric (i.e. age, duration, etc.).

Table 5.3: Sample Composition

PANEL A	***# of individuals whose 1st spell is***		
	Formal employment	Informal employment	Out of LF/Sch.
Male	243 (78.64%)	255 (70.05%)	1389 (55.60%)
Female	66 (21.36%)	109 (29.95%)	1109 (44.40%)
TOTAL	309	364	2498
PANEL B			
# of individuals whose last spell is			
Formal employment, %	147 (47.57%)	130 (35.71%)	1257 (50.32%)
Informal employment, %	26 (8.41%)	78 (21.43%)	331 (13.25%)
Non-employment, %	93 (30.10%)	108 (29.67%)	910 (36.43%)
# of individuals whose 1st spell is right-censored, %	43 (13.92%)	48 (13.19%)	0
TOTAL	309	364	2498

Transition probabilities between four labor market states considering all of the events happened in the course of an individual's working life are presented in Table 5.4, irrespective of gender, and for males and females, separately. In total, 1577 formal employment spells are found to be right-censored, implying that, we see formal employment as the latest labor market state (where the previous one was also formal employment) 1577 times, regardless of the spell number at which it has been experienced (i.e. one may stay at formal employment status after his third spell whilst it has been the case for another person at the seventh spell). 1257 of 1577 records belong to men and only 320 records are associated with women. The right-censored informal employment spells amount to 483, 251 times for men and 232 times for women. A large share of right-censored non-employment spells belongs to women (732 spells out of 1111). Based on this, one can claim that women are more likely to get stuck in non-employment; if not, it is more probable that they end up with an informal job.

Excluding right-censored observations from our sample (since they are not subject to more transitions-assuming that if any happened before), we are left with 9215 records in total, which is 3171 less than the entire number of records (12386).

The probabilities of remaining in the formal sector (i.e. a transition within the same state) are larger than those of remaining in the informal sector in total, even if we account for gender. They are 50.55 percent and 24.70 percent in total figures, in order. Not surprisingly, the probability of a transition in the formal employment state for women is less that of men, 38.40 percent for females vs. 56.40 percent for males whereas the figures for remaining in the informal sector are close to each other.

It is more likely for a formal sector employee finding a job in the formal sector again whilst it is less likely for this person to work in the informal sector. This case holds in total figures and for males. For females, a spell originating from formal employment ends more likely in non-employment with 55.30 percent. This may be due to the fact that females' working life are interrupted by various events, as revealed in Bernandi (1999), before marriage, during pregnancy and childcare, etc. If it is not the case, they have a larger probability to work in formal sector than in informal sector, 38.40 percent for FE→FE and 6.30 percent for FE→IE. Overall, mobility between formal employment and informal employment (whose origin state is formal employment) is found to be the least likely case in the scope of our data set.

On the other hand, there does not seem to be that many barriers that prevent mobility between formal and informal sector if the origin state was informal employment[94], IE→FE accounts for 25.90 percent in total figures, 35.20 percent for males and 14.61 percent for females. For whom this is the case will be clarified with semi-parametric analysis in section 5.4.3 where we control for individual, family and job characteristics. However, for both males and females (as well as in total), informal workers have a larger probability to get out of the labor market than to continue on working in any sector unless their spell is right-censored.

It is striking that if an individual whose previous state was informal employment is still in the labor market, the probabilities of that person being employed in formal and informal sector are almost the same.

However, if one starts with being non-employed, it is more probable that he/she finds a formal job (69.46 percent, in total figures) and this is the case for both males and females. The ones whose restriction to participate in the labor market has been removed can be included in this category, i.e. completion of school, birth leave, military service, etc. 30.54 percent of the spells originated from non-employed ends with informal employment which is even less than the half of the one that is for formal employment. However, for females, the difference in the probability of a transition between NON→FE and NON→IE is much less than that of for males, 1.68 and 56.52 percentage points, respectively.

Regarding the transition from the 1st non-employment spell, OUT/SCH→FE and OUT/SCH →IE, there is a high probability of finding a formal job (68.86 percent) compared to finding an informal job (31.14 percent). It is the same for both males and females with the exception that the figures for being employed formally and informally are so very close to each other for females (OUT/SCH→FE with the probability of 59.42 and OUT/SCH→IE with that of 40.58).

[94] These figures are still higher than the ones associated with the same mobility at which the origin state is formal employment; they are less than the ones for other possible transition probabilities.

Table 5.4: Transition probabilities between four labor market states, number of spells and %

ALL SAMPLE	***# of spells that are right-censored***			
	FE	IE	NON	OUT/SCH
	1577	483	1111	0
	# of spells started in (t)			
	FE	IE	NON	OUT/SCH
# of spells ended in (t+1)				
FE	1850 (50.55%)	455 (25.90%)	903 (69.46%)	1720 (68.86%)
IE	267 (7.29%)	434 (24.70%)	397 (30.54%)	778 (31.14%)
NON	1543 (42.16%)	868 (49.40%)	0 (0.00%)	0
OUT/SCH	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
TOTAL	3660	1757	1300	2498
TOTAL considering right-censored as well	5237	2240	2411	2498
MALE	***# of spells that are right-censored***			
	FE	IE	NON	OUT/SCH
	1257	251	379	0
	# of spells started in (t)			
	FE	IE	NON	OUT/SCH
# of spells ended in (t+1)				
FE	1393 (56.40%)	339 (35.20%)	691 (78.26%)	1061(76.39%)
IE	192 (7.77%)	247 (25.65%)	192 (21.74%)	328 (23.61%)
NON	885 (35.83%)	377 (39.15)	0 (0.00%)	0 (0.00%)
OUT/SCH	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
TOTAL	2470	963	883	1389
TOTAL considering right-censored as well	3727	1214	1262	1389
FEMALE	***# of spells that are right-censored***			
	FE	IE	NON	OUT/SCH
	320	232	732	0
	# of spells started in (t)			
	FE	IE	NON	OUT/SCH
# of spells ended in (t+1)				
FE	457 (38.40%)	116 (14.61%)	212 (50.84%)	659 (59.42%)
IE	75 (6.30%)	187 (23.55%)	205 (49.16%)	450 (40.58%)
NON	658 (55.30%)	491 (61.84)	0 (0.00%)	0 (0.00%)
OUT/SCH	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
TOTAL	1190	794	417	1109
TOTAL considering right-censored as well	1510	1026	1149	1109

In summary, the dataset we have has the common features with:

- *Repeated events*: where the subject experiences the same type of event more than once (coinciding with multi-episode data where multiple or recurrent transitions take place);
- *Multiple-states*: where the subject is at risk for more than one kind of event and this event can occur more than once;
- *Multiple types of events (competing risks)*: where a subject can experience the occurrence of an event for a number of reasons (sometimes also referred to as multiple destination models).

Explicitly, a complete description of our data overlaps with the one proposed by Blossfeld et al. (2007: 39):

> If one has a sample of $i = 1, \ldots\ldots, N$ multi-state multi-episode data, a complete description of the data is given by
>
> $$(u_i, m_i, o_i, d_i, s_i, t_i, x_i) \qquad i = 1, \ldots\ldots N$$
>
> where u_i is the identification number of the individual or any other unit of analysis the ith episode belongs to; m_i is the serial number of the episode; o_i is the origin state, the state held during the episode until the ending time; d_i is the destination state defined as the state reached at the ending time of the episode; and s_i and t_i are the starting and ending times, respectively. In addition, there is a covariate vector x_i vector associated with the episode.

5.4 Analysis[95]

In survival and event history analysis, the *dependent variable* (response or outcome) is the hazard rate which is the conditional probability that an event occurs at a particular time interval (t). In order to obtain statistical estimates of the effects on time to an *event*, most hazard rate results need to be transformed. Therefore, the dependent variable is a rate (Mills, 2011). Alternatively, if the dependent variable is discrete and can change its state at any time, then the transition rate framework offers a time-point-related representation for the causal effect (Blossfeld et al., 2007).

[95] The theoretical discussions and the functional representation of the analyses undertaken in the present chapter are mainly based on the related chapters in Blossfeld et al. (2007), Cleves et al. (2008) and Mills (2011).

In order to define survivor and hazard functions[96], we first need to introduce a nonnegative random variable, T, denoting the time to a failure event (i.e. it represents the duration, beginning at t_0, until a change in the dependent variable, that is, a transition from (origin) state j to (destination) state k, occurs.

Then, the probability that an event occurs in the time interval from t to $t + \Delta t$, given that no event (transition) has occurred before, that is, in the interval 0 to t (assuming $t_0 = 0$) is defined as:

$$Pr(t + \Delta t > T > t | T > t) \tag{5.1}$$

However, as the length of time interval approaches zero, the concept of change in the dependent variable would simply disappear because the probability that a change takes place in an interval of zero length is zero:

$$\lim_{\Delta t \to 0} Pr(t + \Delta t > T > t | T > t) = 0 \tag{5.2}$$

In order to avoid this, the *ratio* of the transition probability to the length of time interval is used to present the probability of future changes in the dependent variable per unit of time (Coleman, 1968; quoted by Blossfeld et al.: 32):

$$Pr(t + \Delta t > T > t | T > t)/\Delta t \tag{5.3}$$

This let us define the limit:

$$r(t) = \lim_{\Delta t \to 0} \frac{Pr(t + \Delta t > T > t | T > t)}{\Delta t} \tag{5.4}$$

The equation (5.4) brings us to the central concept of *transition rate*. "Because of the various origins of transition rate framework in the different disciplines, the transition rate is also called the hazard rate, intensity rate, failure rate, transition intensity, risk function, or mortality rate" (Blossfeld et al, 2007: 33).

[96] Although the terminology is common among the authors studying survival analysis, the notations differ. In the present chapter, we follow the notation in Cleves et al (2008).

From now on, we will refer to $r(t)$ as $h(t)$ which denotes hazard rate (or function). Thus, the hazard rate, $h(t)$, is the (limiting) probability that the failure event occurs in a given interval, conditional upon the subject having survived to the beginning of that interval, divided by the width of the interval.

The survivor function, $S(t)$, can be derived simply through cumulative distribution function of T, $F(t) = \Pr(T \leq t)$:

$$S(t) = 1 - F(t) = \Pr(T > t) \tag{5.5}$$

The survivor function reports the probability of surviving beyond time t, or, it is the probability that there is no failure event prior to t. The equation is equal to 1 at $t = 0$ and decreases toward zero as t goes to infinity. Hence, the hazard function focuses on failing (i.e. experiencing the event) whereas the survival function considers surviving (i.e. not experiencing the event) (Mills, 2011: 9).

The density function, $f(t)$, can be obtained as easily from $S(t)$ as it can from $F(t)$:

$$f(t) = \frac{dF(t)}{dt} = \frac{d}{dt}\{1 - S(T)\} = -\mathrm{S}'(\mathrm{t}) \tag{5.6}$$

which can also be defined in a similar way in (5.4):

$$f(t) = \lim_{\Delta t \to 0} \frac{F(t + \Delta t) - F(t)}{\Delta t} = \lim_{\Delta t \to 0} \frac{Pr(t + \Delta t > T > t)}{\Delta t} \tag{5.7}$$

Therefore, (5.4) can also be written as:

$$h(t) = \frac{f(t)}{S(t)} \tag{5.8}$$

Lastly, the cumulative hazard function, $H(t)$, is defined by

$$H(t) = \int_0^t h(u)du \tag{5.9}$$

and thus

$$H(t) = \int_0^t \frac{f(u)}{S(u)} du = -\int_0^t \frac{1}{S(u)} \left\{ \frac{d}{du} S(u) \right\} du = -ln\{S(t)\} \quad (5.10)$$

It measures the total amount of risk that has been accumulated up to time t.

The models in survival analysis examine the hazard rate in order to find out how long it takes until the event of interest occurs. These models differ from each other with respect to their assumptions about the form of survivor function and how the survival experience is affected by covariates. This brief description on the distribution of failure times will be followed by two of these different types of models in survival analysis, namely, non-parametric, and semi-parametric. Besides these two, parametric methods also appear to be the most frequently utilized technique in survival analysis. However, each method has its own advantages and disadvantages that have been well-documented by Mills (2010: 12-13) and presented here in Table 5.5.

Non-parametric approach follows the philosophy of "letting the dataset speak for itself" without any assumptions about the distribution of the failure times and how covariates serve to shift or otherwise change the survival experience (Cleves et al., 2008). Kaplan and Meier (1958) or Nelson (1972) and Aaalen (1978) can be used to calculate the probability of survival past a certain time, in addition to life tables.

Semi-parametric modeling allows the inclusion of multiple covariates, x, while it does not require assumptions about the distribution of failure times. Time matters, however it plays no role other than ordering the observations. Therefore, "as far as time is concerned, these methods are non-parametric, but because we are still parameterizing the effect of x, there exists a parametric component to the analysis" (Cleves et al., 2008:5). The parametric methods consist of models such as the exponential, Weibull, Gamma, Gompertz and others (Table 5.5). The basic distinction between semi-parametric and parametric models is the need to decide the shape of the hazard function in the latter.

More information on the methodological differences between these models helps one in deciding which model to utilize:

> Semi-parametric analysis is simply a combination of separate binary-outcome analyses, one per failure time, while parametric analysis is a combination of several analyses at *all* possible failure times. In parametric analysis, if no failures occur over a particular interval, that is informative. In semi-parametric analysis, such periods are not informative. On the one hand, semi-parametric analysis is advantageous in that it does not concern itself with the intervening analysis, yet parametric analysis will be more efficient if the proper distributional assumptions are made concerning those times when no failures are observed. When no covariates are present, we hope that semi-parametric methods such as Cox regression will produce estimates of relevant quantities (such as the probability of survival past a certain time) that are identical to the non-parametric estimates, and in fact, they do. When the covariates are qualitative, parametric and semi-parametric methods should yield more efficient tests and comparisons of the group determined by the covariates than non-parametric methods, and these tests should agree. Test disagreement would indicate that some of the assumptions made by the parametric or semi-parametric models are incorrect.
>
> (Cleves et al., 2008:6).

In addition to the methods in survival analysis, sequence analysis is worth employing since it is better than survival analysis in visualizing the sequence of events. With its superiority in mind, the results based on sequence analysis will be given in the preceding section which will be followed by non- and semi-parametric methods to investigate the mobility between labor market states.

Table 5.5: Summary of survival and event history models

Class/type of model	Description	Advantages	Disadvantages
Non-parametric - Life table estimates - Kaplan-Meier (product limit) estimator - *Nelson-Aalen estimator*[97]	- Makes no assumption about: * shape of hazard function * how covariates affect the shape of hazard function - Effects of covariates shown by stratifying data into groups	- Good method to understand the basics and produce descriptive results - Life table: good for large data and crude measurement of event times - KM: good for smaller data and precisely measured event times	- Can only compare limited number of groups - Does not allow inclusion of multiple covariates and multivariate controls
Semi-parametric - Cox model - Piecewise constant exponential model	- Makes no assumption about shape of hazard function - Makes strong assumption about how covariates affect shape of hazard function by assuming proportional hazard between groups over time - Partial-likelihood estimation	- Flexible model, often initially explanatory choice in analyses - Allows inclusion of multiple covariates, multivariate analysis - Results often similar to parametric models, but without (often) restrictive assumptions	- Less appropriate for testing hypotheses about time-dependence (i.e. how hazard varies over time) - Less precise than parametric models - Sometimes called "overfitted"
Parametric - Exponential, Weibull, logistic, Gamma, Gaussian, complementary log-log, log-logistic, log-normal, Gompertz, Makeham, extreme value, Rayleigh and others	- Researcher needs to decide in advance shape of the hazard function and how covariates impact the hazard function - Maximum likelihood estimation - Preferred when researcher wants to study the nature of time dependence and when time is meaningful in an independent variable - Continuous and discrete-time models	- More precise parameter estimates (if correct model assumptions) - Allows multivariate analysis - Allows analysis of discrete and continuous explanatory variables - Specifies the shape of the hazard function, allowing for predictive modeling	- If the hazard-function shape is incorrectly specified, parameter estimates can be seriously biased - Needs preliminary work to first define shape of hazard function and understand how covariates affect the hazard function - Very sensitive to included or omitted covariates

Source: Mills (2011: 12)

[97] This estimator does not take place in the original table prepared by Mills (2011) and has been added by the author.

Table 5.5: Summary of survival and event history models (continued)

Class/type of model	Description	Advantages	Disadvantages
Multilevel, frailty or recurrent event models - Recurrent events or multiple episode models - Frailty models, conditional frailty models (sometimes also referred to as multilevel models, random effect models)	- Some objects are more likely to experience repeated event due to unmeasured cause (unobserved heterogeneity) - Understanding how covariate affects change across episodes - Frailty: model as random effect - Conditional frailty: modifies frailty model to adjust for event dependence, stratifies cases by event number	- Goes beyond single-episode models that only compare effects between covariates to examine how covariate effects change across episodes - By estimating frailty as cause of unobserved heterogeneity as a random effect, coefficients for measured variables are less biased	- Frailty models may be badly biased if frailty is correlated with the covariates or the wrong distribution is assumed
Competing risk models - Competing risk and multiple destination models: use one of the models described above (e.g. Cox) and make adjustments to risk group depending on whether risks are independent of one another	- Episode can end in two or more different outcomes - Central assumption is often conditional independence of the risks under analysis	- Considers more complex destination states - Treats different reasons as different events, allowing comparison of hazard functions across competing risks	- Problem if competing risks are not properly identified - Hard to cope with assumption of conditional independence of the risks under analysis
Multistate models - Multistate models (also overlaps with competing risk, recurrent event and alternating state models)	- Model for a stochastic process, which at any time point occupies one set of discrete states - Specify state structure and form of hazard function for each transition	- Appropriate for event-related dependence	- Considers states, not events (problem for recurrent events) - All data considered longitudinal; less useful for repeated measurements
Sequence analysis - Discrete Markov models and optimal-matching-based clustering	-Obtain a matrix of proximities between sequences via optimal matching (or other metric) and cluster sequences via multidimensional scaling methods	- Provides a holistic view of entire event history - Derives prominent characteristics of complete trajectories	- Remains highly descriptive if clusters not used as predictors in regression model

Source: Mills (2011: 13)

5.4.1 Sequence analysis

We benefit from sequence[98] analysis for dealing with the sequential character of our data without reducing it to single events. The main task of sequence analysis is the comparison of the sequences which are captured neither in non-parametric nor in semi-parametric analyses. In order to do so, we first need to structure our (multi-) spell data for sequence analysis. As pointed out in Halpin (2010), the easiest way of doing it is to represent elements while ignoring duration. In this way, we can reach a visual inspection where we can compare the sequences irrespective of the time spent in each spell. In what follows, we refer to some "simple descriptive indicators for specific characteristics of the whole sequence – such as the length of the sequence, the number of episode changes within a sequence, or the number different elements in the sequence" (Brzinsky-Fay and Kohler, 2010: 360).

5.4.1.1 Notes on Sequence Analysis

The most frequent technique for comparing sequences is optimal matching (OM). It has been developed by biologists with the aim of comparing DNA sequences in order to investigate to what extent two DNA strands are homologous to each other. Later on, it has been applied in different disciplines[99] where one needs to handle datasets with large numbers of individuals in order to find out similarities within and between the sequences they have. OM technique is characterized by computing the substitution and indel costs[100] in measuring the distance between different sequences. These are the costs for the basic operations used to transform one sequence into the other. The two major drawbacks of OM have been summarized by Brzinsky-Fay and Kohler (2010: 361):

[98] By sequence, like Abbott (1995), we mean an ordered list of elements.

[99] "The increasing number of applications led to a deepened discussion about the potential and limitations of sequence analysis methods" (Brzinsky-Fay and Kohler, 2010: 360). The applications took place in the 1980s and early 1990s started to be named as the first wave of optimal matching applications whereas new applications and techniques for the implementation of "old ideas" came to scenery with the criticisms of the first wave of sequence analysis. See Abbott and Tsay (2000), Wu (2000), Abbott (2000), Aisenbrey and Fasang (2010), and Halphin (2010) for more on these criticims.

[100] OM technique provides distance measures to compare the sequences using the operations "substitution" (changing one element into another element), "insertion" (insert an element at a specific position), or "deletion" (delete an element at a specific poisiton) (Brzinsky-Fay and Kohler, 2010). "Indel" is a combination of "insertion" and "deletion".

1) The costs applied in the comparison of sequences in order to obtain distance measures are defined ex ante by the researcher. This results in the definitions being "subjective" and "arbitrary".
2) OM allows for one-dimension of the categories or elements, which the sequences were composed of. "The analysis of parallel or multiple sequences – for example, employment career and family formation at the same time – has been a serious handicap for the method".

There has been close connections between sequence analysis and event history analysis, the main reason for which is the same type of data they are directed (Aisenbrey and Fasang, 2010; Brzinsky-Fay and Kohler, 2010). However, looking at the methods reveals the fundamental differences between them (Table 5.6). Theoretically, sequence analysis has a "holistic perspective on how patterns of life course ''trajectories'' as a whole change in the succession of cohorts and across nation states" (Aisenbrey and Fasang, 2010: 424) whereas event history analysis are based on examining the timing and frequency of durations in comparison of "transitions". In doing so, sequences are treated as a whole without any assumptions about the data although in event history analysis it is assumed that the data are stochastically generated from point to point. Related to the theoretical difference between sequence and event history analyses, the objective in the former appears to be the identification of patterns (i.e. sequential equivalence) whilst it turns out to be modeling the probability of transitions (utilizing covariates in semi-parametric and parametric methods) in the latter. In other words, as put by Brzinsky-Fay and Kohler (2010: 361), "the main objective of sequence analysis is exploration and measurement of the dissimilarity of sequences, whereas event history analysis aims at the probabilistic inferences of causal mechanisms between covariates and single elements of longitudinal information". Since these two analyses come from different statistical traditions (or "cultures"), it appears to use the make that matches more with the interests of the researcher.

Table 5.6: Event History vs. Sequence Analysis

	Event history analysis[101]	Sequence analysis
Theoretical concept	Transition/duration	Trajectory
Objective to identify …	Probability of single transitions/durations	Temporal patterns of sequential equivalence
Scientific tradition	Stochastic data modeling culture	Algorithmic modeling culture
Assumptions about data	Generated by stochastic process	None/"black box"

Source: Aisenbrey and Fasang (2010: 424)

[101] For a more comprehensive discussion of event history analysis with the methods associated with it, see Table 5.5.

Emphasized by Aisenberg and Fasang (2010: 421-422), some substantial theoretical questions cannot be addressed with discrete transitions or durations which makes sequence analysis to be considered, such as "the identification of holistic life course patterns or toward irregular ''outlier'' careers that cannot be modeled by focusing on single transitions without prior knowledge of their irregularity". Rosenfeld (1992: 57, quoted by Aisenberg and Fasang, 2010: 424) stresses the same point alternatively: ''there is a need to continue to examine complete working histories. A problem with much of the work on job shifts is that one loses sight of complete career lines.'' Therefore, combining sequence and event history analysis seems to be an appropriate strategy, as a way of complementing each other, rather than competing with each other. Having this in mind, in the following subsection we focus on description (via tabulation of sequences and calculation of indicators for the characteristics of each sequence) and visualization of sequences (through sequence index plots and parallel-coordinates plots) whose methods are borrowed from sequence analysis. However, we will not consider further steps in sequence analysis, such as comparison of the sequences, grouping them due to their similarities and applications where one can use grouped sequences. The main underlying reason of not utilizing sequence analysis in further estimations is the duration-sensitive algorithm[102] is a new research area in sequence analysis; therefore the applications of it are still rare.

5.4.1.2 Sequence Analysis - Application

We use our field survey data on the employment status of 3171 individuals, where the time starts at their age of 15 and ends with the date of the (retrospective) survey conducted. The longest spell corresponds to 13.

The listing below shows the positions 1-5 of the three respondents with id 3, 23 and 170. The sequence starts with being non-employed (NON)[103], changes to FE, is followed by NON, shifts to FE and ends with FE at the 5th position for the person with id 3. Although the other two individuals have the same number of spells, the sequences differ from each other:

[102]Halpin (2010) proposes a duration-sensitive algorithm with the tools of sequence analysis and concludes that it produces nearly the same pattern of distances as the ones in standard OM when all sequences in the data consist of few long spells.

[103] In this section of sequence analysis, we do not distinguish the 1st non-employment spell from the others; in other words, all non-employment spells are considered under the same label of "NON".

for the one with id 23, it is NON →IE→IE→FE→FE, whereas it turns out to be IE→IE→NON→FE→FE for the individual with id 170.

id	***origin1***	***origin2***	***origin3***	***origin4***	***origin3***
3	NON	FE	NON	FE	IE
23	NON	IE	IE	FE	FE
170	IE	IE	NON	FE	FE

Among all sequence of events, NON→FE appears to be the most frequent one which has been the case for 467 people (seen in Table 5.7 where the 10 most frequent sequences are listed). In other words, a transition from non-employment to formal employment has been repeated 467 times in our data set. The repetition of NON→FE for 467 times points out a large share since 754 people have been associated with only two spells (Table 5.2). The sequence of NON→FE→NON follows this one with the frequency of 316. For 191 people, we face with the sequence of NON→IE→NON. All frequent sequences starting with non-employment is not a coincidence; instead, it reveals the case that a considerable amount of people were non-workers at the age of 15.

When we investigate sequence of events separately for males and females, the most frequent sequences differ for females whilst the first two are the same (as the ones found in total figures) for males. Among females, the most frequent transitions are NON→FE→NON (191 times), NON→IE→NON (162 times), and NON→FE (157 times). This shows that women are more likely to work for a while in a job and whenever they stop working (due to pregnancy, marriage, child or elder care, or retirement), they remain in that position. NON→FE (NON→FE→NON) sequence has been repeated for 310 (125) times among males, whereas the frequency of experiencing the sequence of NON→FE→NON→FE is 91 (where the second non-employment spell most probably overlaps with the times of their military service). There are many sequences that are observed only once, which are called as unique sequences.

Table 5.7: Frequency of Sequences

ALL SAMPLE		MALE		FEMALE	
sequence patterns	**freq.**	**sequence patterns**	**freq.**	**sequence patterns**	**freq.**
31	467	31	310	313	191
313	316	313	125	323	162
323	191	3131	91	31	157
32	142	311	90	32	90
311	122	3111	67	23	35
3131	111	32	52	311	32
3111	80	31311	41	3113	32
3113	54	1	40	3223	23
2	48	131	35	13	21
31311	48	11	31	3131	20
				31313	20
				322	20
				32323	20
Total	1579		882		823

Note: In sequence patterns "1" matches with "FE", "2" with "IE" and "3" with "NON".

By utilizing sequence analysis tools, we can also reach information about the concentration and diversification of sequences (Table 5.8): in its limiting cases, when all (no) respondents share the same sequence, there is a high (low) concentration of sequences. 3171 observed sequences involving three different elements (FE, IE, and NON) with a maximum sequence length of 13 can generate 1594323 producible sequences (3^{13}=1594323; Panel A of Table 5.8). The reason for us not having that many of sequences is that our data set is subject to right-censored observations (i.e. 1594323 theoretically producible sequences overlaps with the case that all individuals have had 13 spells). Within the boundaries of our data set, among the 3171 observed sequences, there are 527 different sequences. Again, "[i]n the limiting case when all observed sequences were unique (no concentration), the division of the number of different sequences by the number of observed sequences would be 1, whereby this number would converge to zero when all observed sequences were equal (high concentration)" (Brzinsky-Fay et al., 2006: 441). In our case, the measure of concentration is 16.62 percent, pointing out the diversity of sequences rather than concentration. By breaking down these concentration measures (Panel B of Table 5.8 presents this break down for the first 10 elements of whole sample, males and females), we find that three hundred forty of the 527 observed sequences are unique (10.72 percent of the 3171 observed sequences); 67 further sequences (2.11 percent) are shared by two persons, etc. For males (females), the measure of concentration is found to be 20.88 (18.46) percent with 253 (152) of 394 (237)

observed sequences being unique. All these reflect that we encounter with very different working life experiences of people in terms of the sequence of events occurred.

Table 5.8: Concentration of Sequences

PANEL A			
	All sample	**Male**	**Female**
# of observed sequences	3171	1887	1284
overall # of obs. elements	3	3	3
max sequence length	13	13	11
# of producible sequences	1594323	1594323	177147

PANEL B								
All sample			**Male**			**Female**		
Obs.	*Seq.*	*% of obs.*	*Obs.*	*Seq.*	*% of obs.*	*Obs.*	*Seq.*	*% of obs.*
1	340	10.72	1	253	13.41	1	152	11.84
2	67	2.11	2	48	2.54	2	36	2.80
3	31	0.98	3	28	1.48	3	14	1.09
4	12	0.38	4	10	0.53	4	2	0.16
5	8	0.25	5	5	0.26	5	1	0.08
6	6	0.19	6	6	0.32	6	6	0.47
7	7	0.22	7	4	0.21	7	4	0.31
8	1	0.03	8	6	0.32	8	1	0.08
9	7	0.22	9	4	0.21	10	1	0.08
10	3	0.09	10	2	0.11	11	1	0.08
TOTAL	527	16.62		394	20.88		237	18.46

In addition to the computation of frequency and concentration of sequences, we can also obtain sequence-specific descriptions of our sample by employing sequence analysis tools; such as the length of the sequences, the number of episode changes within a sequence, and the number of different elements in the sequences. We have 3171 sequences, with a length of minimum 1 and maximum 13: the mean length is 4 (since the spell number is not constant among individuals).

Some of the sequences contain the element 1 (formal employment), and there is at least one sequence where 10 positions/spells contain this element. On average only two positions/spells are occupied by formal employment, however. Moreover, there is at least

one sequence where 8 spells contain the element 2 (informal employment), and on average, only one position is occupied by informal job. In the case of non-employment, we detect at least one sequence where 6 positions contain NON, and again, only two spells are associated with non-employment on average.

The number of elements in all sequences is at least 1, and there are some sequences that contain all three possible elements. The maximum number of episodes is even higher, implying that some sequences oscillate between elements.

These figures do vary by gender: the mean values associated with 1887 sequences of men are higher than the ones associated with 1284 sequences of women considering the length of sequence, the length of episodes of element 1 (formal employment), and the number of different elements in the sequence. It implies that men are more mobile, formal jobs are more common for them, and they are more likely to move among the three labor market status.

Lastly, we visualize sequence data to capture the frequent sequences. In doing so, we refer to "sequence index plots" and "parallel-coordinates plots". Sequence index plots are offered by Scherer (2001, quoted by Brzinsky-Fay et al., 2006) with the idea of drawing a horizontal line for each sequence and separating the elements with different colors. In figures 5-7, the length of sequences (number of spells) is displayed on the x-axis, number of individuals on the y-axis.

Figure 5 shows the sequence of events for each individual where each spell has been remarked by different colors representing its labor market status. Figures 6 and 7 are prepared in the same manner separately for males and females. Therefore, these three figures provide the whole picture of our data set with all transitions involved in it. We have white areas in all these three figures because of right-censored observations. In figure 5, the number of individuals are 3171 (or observed sequences amount to 3171) whereas it decreases to 1887 in considering only males (Figure 6) and 1284 in considering only females (1284). Max sequence length equals to 13[104] for the whole sample, therefore we can see that sequence in Figures 5 and 6, but not in Figure 7; indicating that the person who has 13 spells is a male.

[104] These can be confirmed by looking at Panel A of Table 5.8 as well.

The first spell being associated with non-employment is very common and it does not vary much between males and females; however it seems while formally employed individuals are generally males (Figures 5-6). Working in an informal job in the second spell is more common among females in comparison to males, and the reverse is true for working formally. Overall, green areas which represent the positions occupied by non-employment are more widespread in Figure 7 and the blue areas (formal employment) are relatively less than the ones seen in Figure 6, especially in the later spells. Although the associated lengths of spells are not as long as the ones shown in Figure 6, informal employment seems to be more frequent for females (Figure 7).

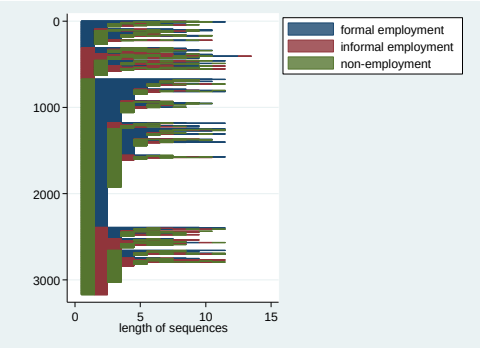

Figure 5: Sequence index plot for the whole sample

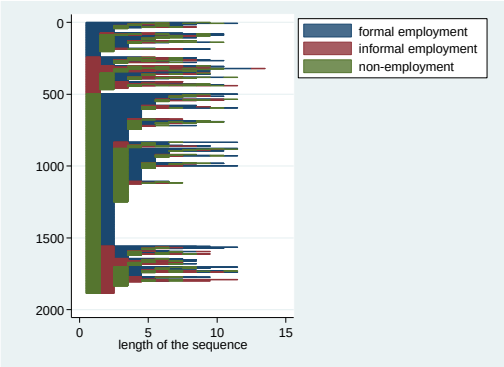

Figure 6: Sequence index plot for males

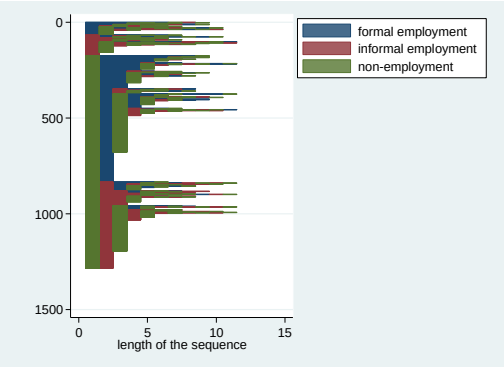

Figure 7: Sequence index plot for females

Different from sequence index plots, parallel-coordinates plots display the elements of sequences along the vertical axis and the position along the horizontal axis. “The sequences are drawn with a line that connects the elements in position order. (…) Generally, the thicker the line, the more frequent the sequence” (Brzinsky-Fay et al., 2006: 446). In this sense, it appears to be a graphical illustration of the figures presented in Table 5.7. Figure 8 shows that the sequence of “non-employment and formal employment” is the most frequent sequence, followed by “non-employment, formal employment and non-employment again”. The less thick line is associated with NON→IE→NON. In Figure 9, we find the most frequent sequences for males as NON→FE and NON→FE→NON. It is more likely for females that an episode of non-employment being followed by either formal or informal employment which results in non-employment (Figure 10).

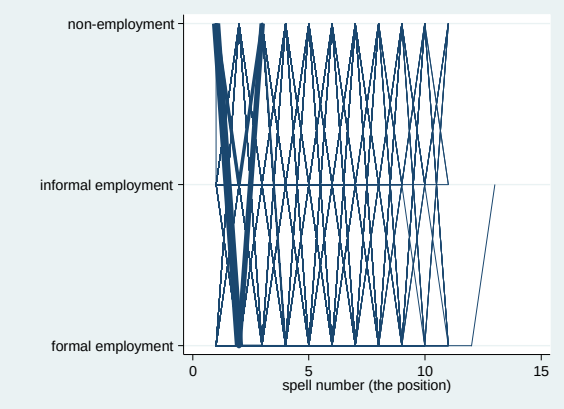

Figure 8: Parallel-coordinates plot for the whole sample

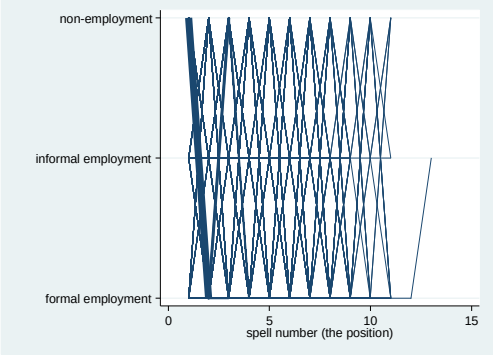

Figure 9: Parallel-coordinates plot for males

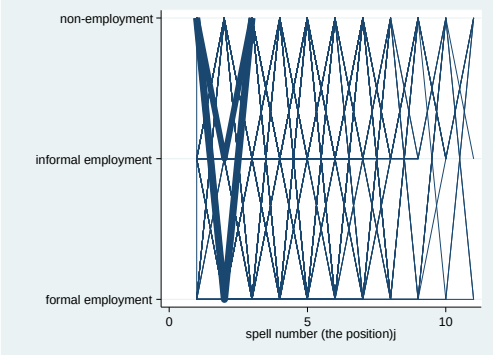

Figure 10: Parallel-coordinates plot for females

5.4.2 Non-Parametric Estimation

Non-parametric methods consist of the calculation of life tables, Kaplan-Meier (KM) and Nelson-Aalen (NA) estimates. These techniques supply visual plots of the survivor function (with their transformations) and the transition rate.

The life table is a classic method (or a traditional procedure) and has been employed in the case of large data sets to obtain survivor, cumulative failure and hazard functions. The major drawback of this method is that one needs to specify discrete-time intervals; therefore, the results depend more or less on these arbitrarily defined time intervals. Since, it is not necessary to group the episode durations in KM method, it seems to be more advantageous. Instead, in KM method, a risk set at every point in time is calculated where at least one event occurred (Blossfeld et al, 2007). The choice between KM and NA is based on what one wants to see: if the researcher wants to estimate the cumulative hazard function, $H(t)$, NA method seems to be more appropriate while if it is the survivor function, $S(t)$, one should proceed with KM estimation. In what follows, we will compute S(t) via utilizing KM method in the case of our data.

5.4.2.1 Notes on Kaplan-Meier (KM) Estimation

The estimator of Kaplan-Meier (1958) is a non-parametric estimate of the survivor function $S(t)$, which is the probability of survival past time *t* or, equivalently, the probability of failing after *t*. For a dataset with observed failure times, $t_1, \dots, t_k$, where k is the number of distinct failure times observed in the data, the KM estimate (also known as the product limit estimate of $S(t)$ at any time *t* is given by

$$\hat{S}(t) = \prod_{j|t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right) \tag{5.11}$$

where n_j is the number of individuals at risk at t_j and d_j is the number of failures at time t_j. The product is over all observed failure times less than or equal to *t*.

The standard error reported for the KM estimate is that given by Greenwood's (1926) formula:

$$\widehat{Var}\{\hat{S}(t)\} = \widehat{S^2}(t) \sum_{j|t_j \le t} \frac{d_j}{n_j(n_j - d_j)} \tag{5.12}$$

These standard errors, however, are not used for confidence intervals. Instead, the asymptotic variance of $ln\{-ln\hat{S}(t)\}$,

$$\hat{\sigma}^2(t) = \frac{\sum \frac{d_j}{n_j(n_j - d_j)}}{\left\{\sum \ln\left(\frac{n_j - d_j}{d_j}\right)\right\}^2} \tag{5.13}$$

is used, where the sums are calculated over $j|t_j \le t$. The confidence bounds are then calculated as $\hat{S}(t)$ raised to the power $exp\left\{\pm z_{\alpha/2}\hat{\sigma}(t)\right\}$, where $z_{\alpha/2}$ is the $\left(1 - \alpha/2\right)$ quantile of the standard normal distribution (Cleves et al., 2008: 93-96).

5.4.2.2 The Kaplan-Meier Estimation - Application

In the following sections, we provide the results of non-parametric survival analysis by using Kaplan-Meier (K-M henceforth) approach for the respondents' first (in)formal jobs and their first transition from a formal job to an informal one and, vice versa.

5.4.2.2.1 First (in)formal job

- *Entrance to formal employment (job):*

The probability of surviving beyond 5 years (overlapping with the age of 20) is around 65 percent and it decreases to 25 percent in the next 5 years (when the individual is 25 years old). In early middle ages (overlapping with the analysis time between 10 and 25), the transition still continues (although it has been completed for most of the sample) and with late 20s and early 30s (which are associated with the ages between 35 and 45), the K-M survivor function becomes almost smooth, implying no transition (Figure 11). The survivor

functions under gender, father's and mother's education level for the same transition (OUT/SCH→FE) are shown in Figures 12, 13 and 14. A striking observation in Figure 12 is that males exit from out of labor force/schooling state (which the 1st non-employment state) more quickly than females: although their labor market experiences seem to be same till 8 analysis time, they differ from each other beyond time period 15. Moreover, women still exit from out of labor force/schooling state at their middle 30s (with the analysis time of 20) while all men appear to find a formal job before that time. Those individuals whose parents are more educated appear to have more advantage in finding a formal work after their "OUT/SCH" state (Figures 13 and 14): this is more obvious in between the analysis time of 8 and 20.

- *Entrance to informal employment (job):*

In figures 15-18, we show K-M survivor estimates for the 1st informal job, by gender and by father's and mother's education levels. Although we find that the probability of surviving beyond 10 units of analysis time for finding a formal job is 0.25, it is 0.60 in finding an informal job. This implies that exit from the 1st non-employment state for an informal job is not as common as that for a formal job. However, at older ages, it is still probable that one enters the labor market in an informal job. These people can be considered as "discouraged workers" who stay unemployed/inactive with the hope of finding a formal job; but since they cannot find one, they involuntarily accept an informal job (Figure 15). Females exit out of labor force/schooling state more quickly than males with a destination state of informal employment which confirms their vulnerable position in labor market as well (Figure 16). Since the shapes of the functions for the whole sample and for females are almost the same, one can claim that females occupy the majority of the (1st) informal jobs. The advantage of having educated parents in entering a formal job disappears when the destination state turns out to be informal employment (Figures 17 and 18); however the individuals whose parents are illiterate are still disadvantaged.

5.4.2.2.2 First transition from a formal (an informal) to an informal (a formal) job

We do not provide K-M survival estimates for the 1st transitions by parents' education level as different levels of parental education do not seem to have remarkable impacts on the changes in transition probabilities. Before elaborating on the estimates provided in Figures

19-22, we consider log-rank test results[105] to clarify the statement in the previous sentence. The equality of the survivor functions, for two or more groups, can be discussed by using the log-rank test where the null hypothesis is that the hazards of groups are the same; $H_0: h_1(t) = h_2(t) = \cdots = h_r(t)$, where there are r groups. This test basically compares estimates of hazard functions of the groups at each observed event time. In Table 5.9, we provide the test results for different groups that are considered in Figures 11-22. According to this table, equality of the survivor functions for males and females is rejected for all four transitions (OUT/SCH→FE and OUT/SCH→IE, and 1st FE→IE and 1st IE→FE). Moreover, the null hypothesis of equality of survivor functions for different parental educational levels is rejected for the first formal job. In the case of the entrance to labor market with an informal job, the distributions of survival with respect to father's education level seem to be the same (therefore the null has been rejected). The null hypothesis has also been rejected for both father's and mother's education levels in the case of the first transition from formal to informal employment/job. Equality of survivor function for father's education level is rejected in considering first transition from informal to formal employment/job whereas it cannot be rejected for mother's education levels. Now, we can turn back to K-M survival estimates for the 1st formal and informal employment transitions.

- *First transition from formal to informal employment (job):*

At the first glance, one can state that formal employment is associated with long durations. In other words, the probability of surviving in a formal job is very high and is not even less than or equal to 0.5. Moreover, the function seems to have a constant slope, suggesting that the exit from a formal job which is followed by an informal job is constant over ages (Figure 19). The probability of this transition is higher for males than females, but this transition is still not very likely to happen (Figure 20).

[105] To test the equality of survivor functions, there are several available non-parametric test, the log-rank (the one we make use of), Wilcoxon, Tarone-Ware, Peto-Peto-Prentice and generalized Fleming-Harrington.

> These tests do not test the equality of the survivor functions at a specific time point. Instead, they are global tests in the sense that they compare the overall survivor functions. These tests work by comparing (at each failure time) the expected versus the observed number of failures for each group and then combining these comparisons over all observed failure times.
>
> (Cleves et al., 2008: 122)

- *First transition from informal to formal employment (job):*

We further observe that the probability of surviving beyond 10 analysis time (the age of 25) is about 80 percent for 1st IE→FE where it is 90 percent for 1st FE→IE. Although these two functions (Figure 19 and 21) are very similar to each other, the latter is associated with faster exits at early ages. One of the following three possibilities could have been the case for the individuals who do not exit from their origin states: i) they might have stayed in their origin states, ii) they might have experienced a transition within the state, or iii) they might be non-employed. In terms of gender differentials, like the case in the 1st IE→FE transition, males exit from their origin state more quickly than females.

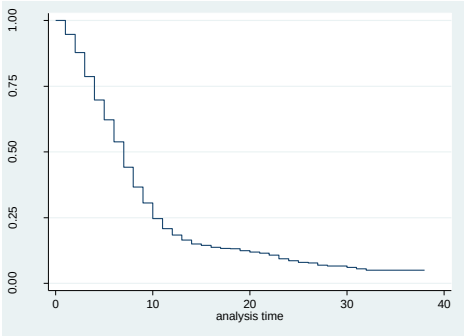

Figure 11: K-M survival estimate for the 1st formal job

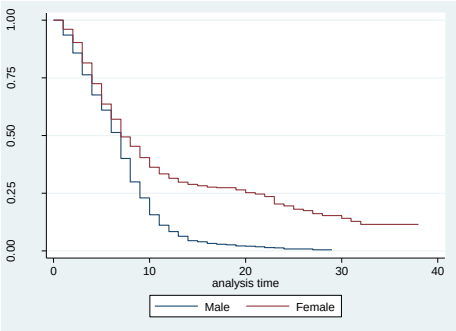

Figure 12: K-M survival estimate for the 1st formal job by gender

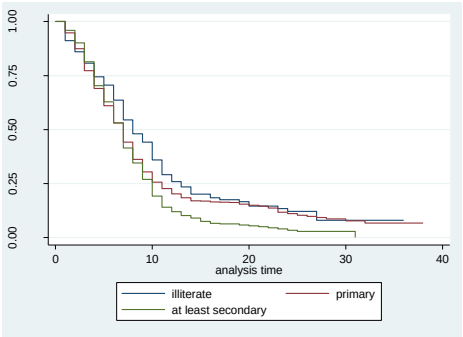

Figure 13: K-M survival estimate for the 1st formal job by father's education level

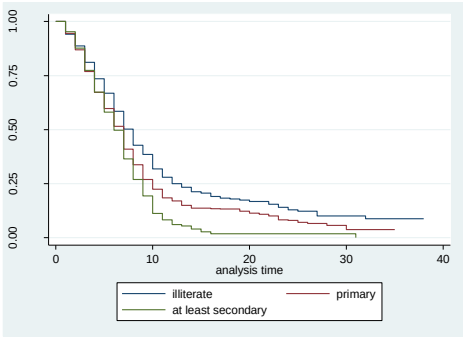

Figure 14: K-M survival estimate for the 1st formal job by mother's education level

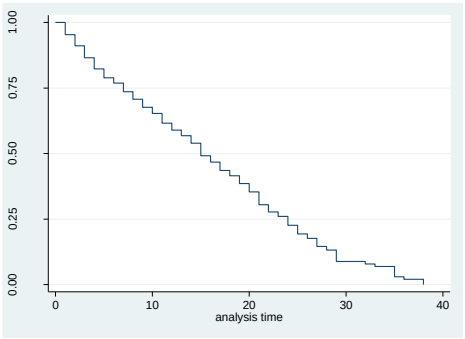

Figure 15: K-M survival estimate for the 1st informal job

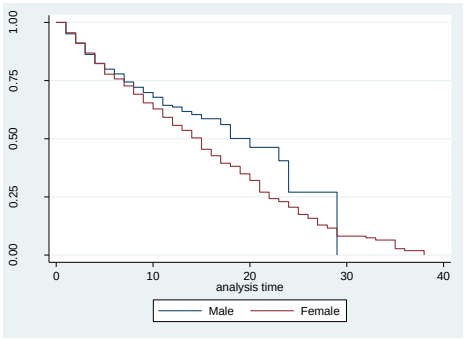

Figure 16: K-M survival estimate for the 1st informal job by gender

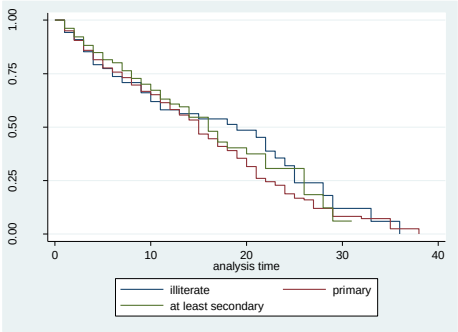

Figure 17: K-M survival estimate for the 1st informal job by father's education level

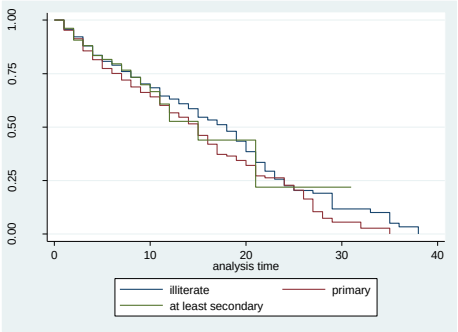

Figure 18: K-M survival estimate for the 1st informal job by mother's education level

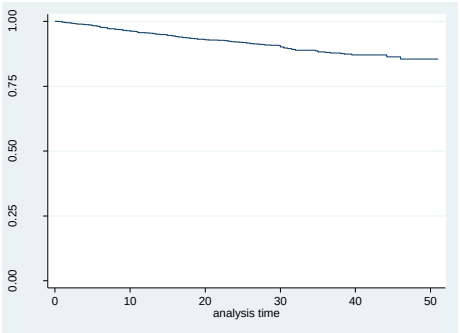

Figure 19: K-M survival estimate for the 1st FE→IE

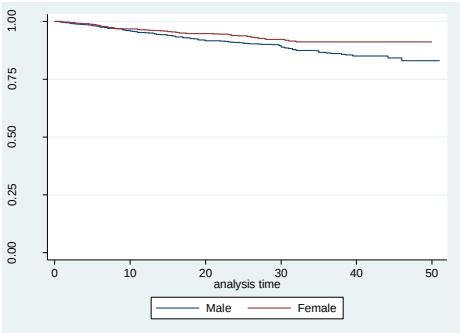

Figure 20: K-M survival estimate for the 1st FE→IE by gender

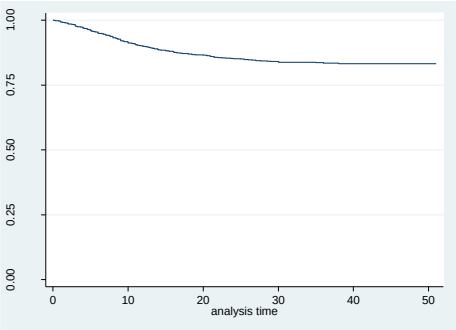

Figure 21: K-M survival estimate for the 1st IE→FE

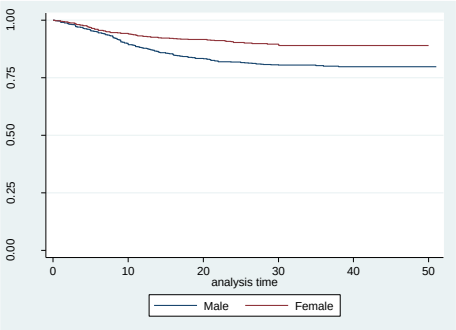

Figure 22: K-M survival estimate for the 1st IE→FE by gender

Table 5.9: Log-rank test for equality of survivor functions

	1st formal job	1st informal job	1st FE→IE	1st IE→FE
Groups	**Test results**	**Test results**	**Test results**	**Test results**
Male/Female	121.02 ***	4.19 **	8.49 **	34.80 ***
Father's education level	13.96 ***	3.20	2.92	6.06 **
Mother's education level	39.32 ***	5.74 *	2.85	1.78

*** *significant at 1%,* ** *significant at 5%,* * *significant at 10%*
Father's and mother's education level categories are "illiterate", "primary school graduate", "at least secondary school graduate"
The figures reflect the χ^2 results.

5.4.3 Semi-parametric analysis

5.4.3.1 Notes on Semi-parametric analysis

The hazard function is given by equation (5.8) in its general form. This notation incorporates the semi-parametric models where no parametric form of the survivor function is specified and it is represented by the following expression:

$$h_j(t) = somefunction\left(\left(h_0(t), \beta_0 + x_j\beta_x\right)\right) \quad (5.14)$$

where $h_0(t)$ is called the baseline hazard. That is, the hazard subject j faces is $somefunction(\,)$ of the hazard everyone faces, modified by x_j.

One of the predominant survival models is the proportional hazards models which is the result of a parameterization of equation (5.14):

$$h_j(t) = h_0(t)\, exp(\beta_0 + x_j\beta_x) \tag{5.15}$$

> They are proportional in that the hazard subject *j* faces is multiplicatively proportional to the baseline hazard, and the function exp( ) was chosen simply to avoid the problem of $h_j(\,)$ ever turning negative. Actually, even if we choose some function different from exp( )[106], it is still called the proportional hazards model.
>
> (Cleves et al., 2008: 19)

Rather than specifying a function for $h_0(t)$, we will leave it unspecified and eventually this terms will be cancelled out from our calculation when we perform the binary-outcome analyses on the individual failure times. This method is called *the Cox proportional hazards model* since it was introduced by David Cox in his 1972 paper "Regression models and life tables" in which he proposed the proportional hazards model and the method of partial likelihood estimation (see also Cox, 1975; Cox and Oakes, 1984, quoted by Mills, 2011) where the likelihood function is calculated over the separate binary-outcome analyses.

An alternative way of writing equation (5.15) is the Cox proportional hazards regression model (Cox, 1972) which states that the hazard rate for the j^{th} subject in the data is

$$h(t|x_j) = h_0(t)exp(x_j\beta_x) \tag{5.16}$$

where the regression coefficients, β_x, are to be estimated from the data.

Since the baseline hazard is given no particular parameterization, the model makes no assumptions about the shape of the hazard over time. However, it is assumed that, whatever the general shape, it is the same for everyone. One subject's hazard is a multiplicative replica of another's; comparing subject j to subject m, the model states that

[106] An alternative way of specifying the proportional hazard model can be writing it as an additive-hazards model:

$$h_j(t) = h_0(t) + exp(\beta_0 + x_j\beta_x).$$

$$\frac{h(t|x_j)}{h(t|x_m)} = \frac{exp(x_j\beta_x)}{\exp(x_m\beta_x)} \tag{5.17}$$

which is constant, assuming the covariates x_j and x_m do not change over time.

In the present chapter we utilize semi-parametric modeling, which is Cox proportional hazards model with competing risks with the latent (cause-specific) approach in the estimates for 1st formal and informal jobs.[107] However, in order to estimate transitions among four states (allowing for 8 flows), we consider multi-state models.

As described in Mills (2011: 190), in one-way or single-state transition models, the assumption of subjects experiencing a single event and not being at risk of making an additional transition holds. Therefore, one does not deal with different kinds of events occurred in these types of models where the event times are assumed to be independent (called as the "independence assumption"). However, mostly, the event history data contains multiple events and multiple failures. In our data, multiple events can be the case as follows: the transition to formal employment might be the case after a period of informal employment or non-employment; and since one can experience the same type of event more than once; our dataset is subject to multiple failures (or recurrent events) as well.

The latent or cause-specific approach is one the three techniques that are used to model competing risks[108]. The other two are the Lunn-McNiel (LM) approach and the cumulative incidence curve (CIC) approach. The latent approach has been utilized to perform survival analysis separately for each event type, where other competing event types are treated as right-censored categories. Therefore, the critical assumption of this approach (and that of the LM) is the assumption of the independence of competing risks (Mills, 2011), thereby also constituting the main shortcoming of the approach. The LM technique is almost the same as

[107] It seems to be meaningful to account for the first transitions whose origin state is non-employment, alternatively out of labor market/schooling state; explicitly from the other transitions (whose origin state is again non-employment). This is due to the fact that the first origin state has been associated with the age of 15 and linked to this, if the respondent has been non-employed at the first spell, it is more probably because of school enrollment. Therefore, the underlying reasons for the first transition from non-employment to formal or informal employment (OUT/SCH→FE, OUT/SCH→IE) may differ from the ones for the same type of transitions (NON→FE, NON→IE) that will take place subsequently.

[108] In competing risk models (multiple destination models), there are several reasons for the occurrence of an event that a subject can experience.

the latent approach, except competing events are not treated as censored. Yet, the cumulative incidence curve (CIC) provides an alternative summary to the KM-based survival curve on which the latent approach relies. The CIC produces estimates of the marginal probability of an event (Kalbfleisch and Prentice, 1980; quoted by Mills, 2011) while not requiring the restrictive assumption of the competing risks being independent.

"Although 'competing risks' and 'multi-state processes' are sometimes used interchangeably in the literature", we follow "the designation by Lancaster (1990), who treats competing risks as a 'special case' of multi-state processes" (Mills, 2011: 191-192). Multi-state models (MSMs) are more general models than competing risks models since they also take multiple failures (the possibility that one event occurring more than once) into account. Therefore, they differ from the other models considered in Table 5.5 with its focus on the evolution of the process and sequence of events.

> Multi-state models are often assumed to take the form of Markov models (Hougaard, 2000). In simple terms, the Markov property assumes that the future depends on the history only through to the present. Put another way, the Markov model adopts the homogeneity assumption by disregarding the pathway by which the previous event was reached. In other words, state occupancy and duration since the entry into the origin state are taken into account. It is therefore time-homogenous (or time-stationary). Within a multi-state model it means that, given the present state and the event history of a subject, the next state that the subject will visit and the time at which will occur will be dependent only on the present state that the subject is in.
>
> (Mills, 2011: 203-204)

In considering the transitions between labor market states, we estimate a multi-spell multi-state Markov model with stratified hazards[109] (where the strata are defined as the transition type-allowing baseline hazards to be different – to have a different shape – for each transition type rather than constraining them to be multiplicative versions of each other) with a semi-parametric competing risks model. By the estimation of the model with stratified hazard due to transition type, we control for the sequence of events (pathway) to some extent.

[109] We experimented with the same model (Model A) for cluster (Model B via cluster(id)), weight (Model B) and frailty (Model D via frailty(familyid)), separately, whose results are presented in Appendix C, through Table C.4-C.11. Although we end up with almost the same results in terms of coefficients and significance levels, these three models cannot pass the test for proportional hazards assumption using Schoenfeld residuals. Thus, we decide to utilize Model A which is a multi-spell multi-state Markov model with stratified hazards.

5.4.3.2 Semi-Parametric Analysis - Application

5.4.3.2.1 The First Formal and Informal Jobs following a Non-Employment Spell

While being aware of the shortcomings of the approach, we apply the latent approach in finding out the determinants of the 1st NON→FE and 1st NON→IE transitions, alternatively OUT/SCH→FE and OUT/SCH→IE, in order. The estimates for each origin-destination pairing are derived from an independent competing risk model which is inherent to the latent approach. In doing so, we consider a semi-parametric Cox proportional hazard model with competing risks where we control for family characteristics (dummy variables for father and mother being alive when the respondent was 15 years old; and father and mother being at least secondary school graduates), individual characteristics (Turkish being the mother tongue, number of children, late start to school, second school education, and being a student during the time period), and region of birth (via dummy variables).[110] The definitions and descriptive statistics for the independent variables used in the analyses captured in sections 5.4.3.2.1 and 5.4.3.2.2 are reported in Table 5.10 where all records/spells are considered.[111]

The first period of non-employment may be terminated by two reasons, firstly through finding (and starting to work in) a formal job and secondly through finding (and starting to work in) an informal job. The models for these two transitions are run separately for males and females to explore the gender differences in transitions between labor market states. The results are provided in Table 5.11 in which we record hazard ratios, $exp(coef)$, and significance levels. It is worth noting that the hazard ratio, $exp(coef)$, being greater than 1 means that the coefficient is positive; whilst if it is less than 1, the coefficient is negative.

Table 5.11 shows that the effects of the covariates vary by gender and destination state (k=1, 2; where the origin state, j=4).

[110] These independent variables are chosen on the basis of their possible impacts on the respondents' labor force participation decision. Some of these variables (i.e. region of birth, father and mother being alive) are not utilized in the following estimations for the transitions considering four states and 8 flows since they are subject to lose their importance over time with work experience; having father alive at the age of 15 might affect the individual's entrance to the labor market for the first time, however as time passes, it may lose its significance in changing jobs and/or states.

[111] The descriptive statistics for independent variables with respect to each model and transition are presented in Appendix C.

- *The effect of family characteristics*

We do not find significant contribution to the models by destination state and gender regarding the result for father being alive when the respondent was at the age of 15. However, we find that the mother being alive when the individual was 15 years old matters; although there is evidence of heterogeneity in outcomes. Mother being alive decreases the probability of leaving out of labor force/schooling state for a formal job for males (we estimate that individuals whose mother were alive when s/he was 15 face 0.627 of the hazards of those whose mother was dead) while having no significant effect on the same transition for females. On the other hand, the females whose mothers were alive at age 15 face an 87 percent greater hazard than those whose mothers were dead for the spells originating in out of labor force/schooling state and arriving to informal employment state. Thus, it is possible to say that, for females, having their mother alive increases the probability of finding an informal job for females.

The effect of the education level of the father is significant only for OUT/SCH→FE transition. It is revealed that males who have fathers that are at least secondary school graduates are less likely to leave OUT/SCH state in order to work in a formal job. This could be due to the fact that if the father is educated, rather than working, he prefers his son to continue his education (since we consider the first transition from non-employment to formal/informal jobs, the origin state is most probably occupied by those who were students at the time).

Only for males, mothers' education level matters in exiting from OUT/SCH. There is a higher probability of leaving OUT/SCH state with a destination state of FE while a lower probability with a destination state of IE for men. In other words, males who have at least secondary school graduate mothers are more likely to find (and work in) a formal job in comparison to those who have less educated mothers; however, males with more educated mothers face 0.156 of the hazard of those with less educated mothers when the destination state is informal employment. This result is not surprising as education level increases, the probability of working in a(n) (in)formal job increases (decreases). This is the case for the education level of the parents.

- *The effect of individual characteristics*

Table 5.11 reveals that a mother tongue different than Turkish plays a significant role in finding informal jobs. Alternatively, informal jobs are mostly associated with those whose mother tongue is other than Turkish, both for males and females. Males whose mother tongue is Turkish face a 38 percent less hazard than those males whose mother tongue is other than Turkish in finding an informal job. The associated figure for females is 51 percent. On the contrary, we see that having Turkish as the mother tongue increases the probability of working in a formal job for males.

Number of children is found to be significant only for females for their transition from OUT/SCH to IE. According to our estimations, having one more child decreases the hazard by 48 percent, implying that females with children are more likely to stay out of labor force than working informally.

Regarding the results for the education level covariates (dummy variables for secondary school education, being a student, late start to education), it seems that the probability of finding a (in)formal job increases (decreases) with education. This is reflected by the coefficients of secondary school education dummy: a secondary school graduate female is more likely to work in a formal job (these females face 3.419 hazard of the hazard of those females who have education level less than secondary school) whereas a secondary school graduate (fe)male face a hazard of 37 percent (20 percent) less than (fe)male non-graduates with a destination state of informal employment. We also find that males are more likely to work while they are attending to school; indeed being a student is associated with increases in the probabilities of finding both formal and informal jobs for males. We control for late start to education only in transition from OUT/SCH to FE for females. This is because of the fact that most of the females who experienced this transition are not students; therefore we include late start to education instead of being a student. Unexpectedly, a late start to education is found to have a positive effect on finding a formal job for males. It can be suggested that the heterogeneity in formal jobs (since in the present study formality is defined only based on the registration status the individual irrespective of the working conditions, promotional ladders, wages, etc.) as a possible explanation for this observation.

- *The effect of birth region*

Region of birth seems to have a significant impact on transitions to a formal job only. Birth in the Center region decreases the probability of the transition originating from OUT/SCH to FE for females in comparison to the birth in the West region. Moreover, males who were born in the East region face a hazard 17 percent less than those who were born in the West region.

Table 5.10: Definitions and descriptive statistics for independent variables, all records/spells

Covariate	Abbrevation*	Description	Male		Female	
			mean	*s.d.*	*mean*	*s.d.*
father being alive	*falive*	If the respondent's father was alive when (s)he was at the age of 15 (1)	0.914	0.281	0.920	0.271
mother being alive	*malive*	If the respondent's father was alive when (s)he was at the age of 15 (1)	0.976	0.152	0.971	0.167
father at least secondary school graduate	*fsec*	If the respondent's father is at least secondary school graduate (1)	0.217	0.412	0.295	0.456
mother at least secondary school graduate	*msec*	If the respondent's mother is at least secondary school graduate (1)	0.109	0.312	0.161	0.367
Turkish as the mother tongue	*Turkish*	If the mother tongue of the respondent is Turkish (0)	0.951	0.215	0.968	0.176
birth in the Center region **	*birthC*	If the respondent were born in the Center region (1)	0.362	0.481	0.327	0.469
birth in the East region **	*birthE*	If the respondent were born in the East region (1)	0.235	0.424	0.183	0.387
birth abroad **	*birthA*	If the respondent were born abroad (1)	0.026	0.160	0.034	0.182
number of children	*child*	The number of children that the respondent has (0-8)	0.483	1.002	0.504	0.963
late start to education	*lateeduc*	If the respondent started to primary school after age 7 (1)	0.090	0.286	0.060	0.237
secondary school education	*sec*	If the respondent has completed secondary school education (1)	0.320	0.466	0.327	0.469
being student	*student*	If the respondent is a student (1)	0.144	0.351	0.184	0.388
at least high school graduate	*educ*	If the respondent is at least high school graduate (1)	0.358	0.479	0.414	0.493
ever in FE (before)	*eFE*	If the respondent has ever work in a formal job (1)	0.439	0.496	0.339	0.474
ever in IE (before)	*eIE*	If the respondent has ever work in an informal job (1)	0.259	0.438	0.252	0.434
training	*train*	If the respondent has enrolled to a - training - course (1)	0.107	0.309	0.097	0.295
crisis year	*crisis*	If the times in the related spell overlaps with the crisis years (1)	0.192	0.394	0.173	0.378

Table 5.10: Definitions and descriptive statistics for independent variables, all records/spells (continued)

Covariate	Abbrevation*	Description	Male		Female	
			mean	***s.d.***	***mean***	***s.d.***
"10-24"	*MSE*	In a medium scale establishment with 10-24 employees (1)	0.145	0.352	0.172	0.377
"25 or more"	*LSE*	In a large scale establishment with 25 and more employees (1)	0.397	0.489	0.388	0.487
manufacture ***	*manuf*	If the sector of economic activity is manufacture (1)	0.287	0.453	0.284	0.451
high-skilled occupation ****	*skillHS*	In a job with high-skilled occupation (1)	0.094	0.292	0.167	0.373
intermediate-skilled occupation ****	*skillIS*	In a job with intermediate-skilled occupation (1)	0.329	0.470	0.159	0.366
clerks ****	*skillC*	Working as a clerk (1)	0.096	0.295	0.185	0.388
permanency	*perm*	In a job with permanent contract (1)	0.841	0.366	0.759	0.428
self-employment	*self*	Working as a self-employed (1)	0.161	0.368	0.090	0.286
full-time	*ft*	Working full-time (1)	0.952	0.213	0.837	0.370
job in the Center region **	*regC*	In a job in the Center region (1)	0.287	0.452	0.237	0.425
job in the East region **	*regE*	In a job in the East region (1)	0.115	0.319	0.088	0.283
job abroad **	*regA*	In a job abroad (1)	0.017	0.131	0.014	0.118
job in public	*public*	Working in the public sector (1)	0.137	0.344	0.138	0.345

Omitted categories are birth in the West region, firm size less than 10, low-skilled occupation, job in the West region.

* *These abbreviations are used in the tables presented in Appendix C.*

** *The identification of regional categories are based on Nuts 1 level: "West" including Istanbul, West Marmara, Aegean, East Marmara; "Center" capturing West Anatolia, Mediterranean, Central Anatolia, West Black Sea; and "East" consisting of East Black Sea, North East Anatolia, Middle East Anatolia, South East Anatolia.*

*** *The sector of economic activities considered in "manufacture" are mining and quarrying, manufacturing, electricity and gas, water supply.*

**** *Managers and professionals are defined under "high-skilled occupation" while technicians, skilled agricultural workers, craft workers, and machine operators are defined as "intermediate-skilled occupations". In addition to clerks, armed forced occupations are included in "clerks" category. Lastly, "low-skilled occupations" are composed of service workers and elementary occupations.*

Table 5.11: Estimation results[¥] for the first NON→FE and NON→IE transitions[112]

	1st formal job (OUT/SCH→FE)				1st informal job (OUT/SCH →IE)			
	destination state (k=1)				*destination state (k=2)*			
origin state (j=4)	***male***		***female***		***male***		***female***	
father being alive	1.048		0.989		0.923		0.915	
	(0.157)		(0.188)		(0.238)		(0.196)	
mother being alive	0.627	*	0.988		0.738		1.869	*
	(0.161)		(0.293)		(0.377)		(0.667)	
father at least sec. sch. grad.	0.776	**	1.209		0.968		0.881	
	(0.076)		(0.141)		(0.196)		(0.148)	
mother at least sec.sch. grad.	1.458	***	1.108		0.156	**	1.049	
	(0.210)		(0.168)		(0.113)		(0.258)	
Turkish as the mother tongue	1.470	*	1.234		0.621	*	0.494	***
	(0.297)		(0.406)		(0.168)		(0.132)	
birth in the Center region	0.918		0.708	***	1.213		1.029	
	(0.078)		(0.077)		(0.216)		(0.134)	
birth in the East region	0.827	*	0.867		1.071		0.961	
	(0.084)		(0.116)		(0.219)		(0.149)	
birth abroad	0.795		1.166		0.991		0.690	
	(0.228)		(0.301)		(0.599)		(0.294)	
number of children	0.915		1.388		1.391		0.516	*
	(0.219)		(0.352)		(0.438)		(0.175)	
late start to education			1.979	***				
			(0.469)					
sec. school education			3.419	***	0.632	***	0.802	*
			(0.513)		(0.098)		(0.104)	
being student	1.380	***			1.362	*	1.008	
	(0.110)				(0.218)		(0.140)	

[¥]: Hazard ratios are recorded which are calculated as $exp(coef)$.
Omitted category: "birth in the West region".
*** significant at 1%, ** significant at 5%, * significant at 10%
Standard errors of the hazard ratios are in parenthesis.

To test for proportionally, we refer to two tests, a link test (linktest) and Schoenfeld residuals (phtest)[113] for which the results are provided in Table 5.12. "Despite the suggestive name

[112] The descriptive statistics for the independent variables considering the present model are shown in Appendix C, Table C.1.

[113] The link test verifies that the coefficient on the squared linear parameter is insignificant and works as follows: firstly, estimating β_x from the standard Cox model and then estimating β_1 and β_2 from a second-round model

$$\text{LRH} = \beta_1\left(\text{x}\hat{\beta}_\text{x}\right) + \beta_2\left(x\hat{\beta}_x\right)^2$$

'testing the proportional-hazards assumption', these tests are really just model specification tests that verify you have adequately parameterized the model and you have chosen a good specification for $x\beta_x$" (Cleves et al., 2008: 197). Our models for each destination state by gender pass these two tests; implying there is no evidence of non-proportional hazards for the covariates included.

Table 5.12: Testing for proportionality – the first formal and informal jobs

	1st formal job (j=3, k=1)				**1st informal job (j=3, k=2)**			
	Male		**Female**		**Male**		**Female**	
	test result	***decision***	***test result***	***decision***	***test result***	***decision***	***test result***	***decision***
linktest	0.525	accept PH	0.321	accept PH	0.955	accept PH	0.507	accept PH
phtest	0.220	accept PH	0.143	accept PH	0.368	accept PH	0.563	accept PH

where PH stands for " proportional hazards".

5.4.3.2.2 Transitions between labor market states

In this section, we discuss the results of a four-state independent semi-parametric competing risks model[114] considered in multi-spell multi-state framework to identify the influence of the covariates on labor market transitions. The explanatory variables[115] utilized in each origin-destination pairing differ because of the characteristics of the states. For transitions from formal employment, we include all explanatory variables which reflect individual and

Under the assumption that $x\beta_x$ is the correct specification, $\beta_1 = 1$ and $\beta_2 = 0$. Thus one tests that $\beta_2 = 0$ (Cleves et al., 2008:198).On the other hand, phtest is based on the analysis of residuals where "the idea is to retrieve the residuals, fit a smooth function of time to them, and then test whether there is a relationship" (Cleves et al., 2008: 200).

[114] We experimented the same model with different covariates to check for the violation of the proportional hazards assumption. In doing so, we estimate the Schoenfeld residuals whose results are shown in Appendix C, Table C.16 with the name of "alternative to Model A". The coefficients and the standard errors (of the coefficients) of this model which is an "alternative to Model A" can also be found in Appendix C, Tables C.12-C.15.

[115] The descriptive statistics for the independent variables considering the models in this subsection are presented seperately for males and females in Appendix C, Table C.2 and Table C.3, respectively.

family characteristics and job characteristics in addition to a dummy for crises years (Table 5.13). In the case of transitions from informal employment, other than the dummy for a public job, we capture the same covariates used in the former regression (Table 5.14). However, we cannot control for job characteristics for the last two models since being in non-employment state and out of labor force/schooling state do not provide any information on work characteristics where the respondents have not being working at these states (Table 5.15 and 5.16).

- *Transitions from formal employment state*

This section of the study aims to explore the underlying dynamics of transitions out of formal employment state, the results of which are presented in Table 5.13. The coefficients of the related semi-parametric Cox models are given as hazard ratios.

Being at least high school graduate is found to be statistically significant only for the transition from formal employment to non-employment for males. It is more likely for males to leave formal employment state for non-employment, which becomes meaningful when one remembers that the alternative to this is switching to an informal job. This implies that educated males prefer to be non-employed rather than working in an informal job.

It is also found that females whose mothers are at least secondary school graduates are more likely to be unemployed or inactive: there is a (=1.588/4) 39.7 percent chance that a female who has more educated mother would be non-employed after working in a formal job, compared to those who have less educated mothers (in other words, who have education less than secondary school level). For the other transition types, parental education levels are found to have statistically insignificant effects.

Working in formal sector at least once, “ever in FE”, decreases females’ entrance to non-employment state: Those women face a 21 percent less hazard than females who had never employed formally. Moreover, “ever in IE” is associated with more significant contributions than “ever in FE” in our models. Both for males and females whose originating spells are formal employment, it is more likely to work in an informal job if they have ever been employed informally: we estimate males (females) who have ever worked in the informal sector to face 2.314 (3.955) of the hazard of those who have never worked informally. At

least once worked in the informal sector also eases the transition from formal employment to non-employment for females: they face 135 percent of the hazard of those females that were never employed in an informal job.

We find negative effects of training on the hazard rate of transitions from formal employment to non-employment for both genders, or alternatively positive effects on survival probability. These imply that it is less probable for those who get trained to leave formal employment for being non-employed. The same holds for males in the transition from formal employment to informal employment as well.

As expected, crises years are revealed as having positive effects on becoming non-employed since these years are associated with loss of jobs. Males are found to be highly at risk of leaving their formal jobs: males whose formal employment spells overlap with crises years face a 26 percent greater hazard than those whose spells do not coincide with crises years.

Our analysis reveals that firm size does not have much explanatory power in transitions originating from formal employment state. Working in small firms (10-24 employees) significantly increases the probability of movement out of FE to NON for males whereas working in medium-sized or large firms increases the probability of movement out of FE to IE for males (compared to the reference group of micro firms with less than 10 employees).

Sector of economic activity which is defined by a dummy named "manufacture" is found to be significant only in FE→NON transition for males: male employees in manufacture sector are significantly more likely to leave their formal jobs in order to be in a non-employment state (the hazard ratio associated with this transition is 1.190).

Individuals who work in high-skilled occupations are less likely to leave their formal employment state. It holds for both males and females and for both destination states, namely formal employment and non-employment. Other than males for the transition from FE to NON, the effect of intermediate-skilled occupation is found to be negative and statistically significant. Like the case in high-skilled occupation, intermediate -skilled occupations are found to be associated with reducing the probability of leaving formal employment, with respect to the base category for low-skilled occupations. For clerks, we do not find any statistically significant results.

We also find evidence for the effect of permanent jobs on labor market transitions. A permanent job decreases the probability of movement out of formal employment for both exit states of IE and NON, and for both males and females. This holds for self-employment and jobs in the public sector.

The results reveal that job in the Center region (with the reference category of job in the West region) does not significantly explain any transition out of formal employment. This is the same for a job abroad except for those into non-employment for males. Probability of moving into non-employment relative to remaining in FE significantly increases for males whose jobs are abroad. This suggests that those males could have recently immigrated to Turkey and were looking for a formal job instead of an informal one. Job in the East region appears to play a significant role in explaining movements out of FE, expect for those in IE for males: the effect of having a job in the East region is found to be negative for movements in NON whereas it is positive for movements in IE.

Lastly, males who work full-time are significantly less likely to leave their formal jobs for being non-employed: they face a hazard 30 percent less than the males who work part-time.

- *Transitions from informal employment state*

In this section, we focus on the determinants of outflows from informal employment with reference to the results shown in Table 5.14. Number of children does not exhibit any significant influence on transitions out of informal employment, in addition to training, job in manufacture and public sectors.

The variables “at least high school degree” and “ever worked in formal sector” account for increases in the probability of transition from IE to FE for males. On the other hand, the probability of finding a formal job after an informal one decreases with respect to the firm size (the hazard ratio for firms with 10-24 employees are 0.505 and it is 0.682 for the firms with more than 25 employees with respect to the base category of micro firms with less than 10 employees). As expected, working as a self-employed is subject to less mobility from IE to FE; males who are self-employed face a hazard 50 percent less than those who are wage and/or salary workers.

The effects of having “at least high school degree”, “at least secondary school graduate mother”, having “ever worked in IE”, “crises” year, “high-skilled occupation”, and working in a “full-time” job are found to be positive and statistically significant for females’ transition out of informal employment into formal employment. Whereas, being self-employed and having a job in the Center as well as East region (with respect to the base category of West region) are negatively related to the destination state of formal employment which are originated in the informal employment.

We find that chances of being non-employed out of informal employment state increases for at least high school graduate males. Since the other option is being employed formally, this result points out that educated males do prefer staying out of the labor market to formal jobs most probably in order to continue their education. Having at least secondary school graduate father also increases the same probability for both males and females. The result for ever worked in the informal sector indicate that males who has at least once employed informally are less likely to become non-employed than those who have never been employed in the informal sector. However, if a male has been employed informally during the crisis, he is more likely to lose his informal job and become non-employed. Working in a firm with 10-24 employees has opposing effects on being non-employed for males and females: its coefficient is found to be negative for males and positive for females.

The occupations that have more prestige (high-skilled occupations and clerks in comparison to low-skilled occupations) exhibit significant and positive influence on outflows from IE into NON for females. Although this seems as a contradiction to conventional wisdom, it turns out to be meaningful when one remembers that most of labor market terminations ending with non-employment state are associated with pregnancy, engagement, marriage, child and/or elder care for females regardless of the occupational category. As expected, for males, a negative relation has been observed for intermediate-skilled jobs in being non-employed after an informal employment state.

“Permanent” jobs and being “self-employed” in the informal sector in addition to informal jobs in the East region appear to be negatively related to become non-employed for both males and females. Unexpectedly, working full-time is found to increase the probability of outflow from IE into NON for females.

- *Transitions from non-employment state*

Transitions from non-employment state (NON) are explained through individual and family characteristics (Table 5.15). We find that as the number of children increases, females are more likely to become formal employees (having one more child increases the hazard of this transition by 41 percent). What is interesting is that we find insignificant results for the impact of the number of children in the same transition for males. Moreover, the number of children is found to have a decreasing effect on males' probability of finding an informal job after a non-employment state. This could be due to the wage differentials between formal and informal sector.

The impact of education level on transitions from non-employment is statistically significant for females only with a destination state of formal employment. Females who are at least high school graduates are more likely to work in a formal job after their non-employment period, compared to the reference category of less than high school degree.

Parental education levels lose their effect on labor mobility as expected. As time passes, the influence of parental education levels on individuals labor market experience is expected to diminish (if not disappear) since individuals characteristics such as education level and experience become prominent. The only exception for this in transitions out of non-employment is males whose destination state is formal employment: males who have at least secondary school graduate mother are less likely to find a formal job.

Both males and females who have ever been employed in a formal job are more likely to find another formal job (with their originating spells of non-employment). However, "ever in FE" accounts for higher probabilities for females than males in finding a formal job: we estimate females (males) who have been at least once worked in formal sector to face 2.967 (1.731) of hazard of females (males) who have never worked in formal sector. However, "ever in FE" does not make significant difference for females in transitions from OUT to IE. On the other hand, for males, the probability of working in a formal job decreases with their previous formal employment states: Males who had worked in formal sector at least once face 45 percent of the hazard of those males who had never worked in formal sector.

Regarding the estimates of "ever in IE", we find an expected result only for males for the transition of NON→IE. Other than this, it appears that this covariate does not have significant contribution to the models for transitions from non-employment. Having worked in at least one informal job increases the probability of finding an informal job for males; the ones who were once informally employed have a 2.245 chance of being reemployed in the formal sector following a non-employment spell.

Training accounts for a higher probability of being employed in formal and informal jobs for females: females who get trained are more likely to terminate their non-employment spells with a job. It is a (2.710/4=) 67.8 percent chance that a female who get trained would be employed formally, compared to one who did not get trained during her non-employment spell. The same figure is (2.132/4=) 53.3 per cent for being employed in the informal sector.

It is also revealed that crises years are associated with less mobility for males from non-employment to formal employment, but its impact has not been reflected in the other models. This finding makes sense since the crises years result in less job opportunities, especially in the formal sector.

- *Transitions from out of labor force/schooling state*

Table 5.16 provides the estimates, hazard ratios, representing the impact of explanatory variables on the probability of leaving out of labor market/schooling (OUT/SCH) state for two alternative destination states, formal employment (FE) and informal employment (IE). In this model, we only consider the 1st non-employment spells as the origin states, which have been labeled as "out of labor market/schooling", to distinguish the events experienced at early ages (since the first non-employment spells start with the age of 15) from the ones at older ages. This distinction is meaningful since most of the respondents who were non-employed at their first spell are enrolled in school and their decisions to be non-employed depend on this. It is worth noting that the present estimated model is consistent with the one in Section 5.4.3.2.1, but the current model has less explanatory variables since in this subsection the model is estimated simultaneously for the other transitions, i.e. transitions from FE, IE and NON.

Consistent with the findings in Table 5.11 (in terms of significance and the direction of the effect), the impacts of having at least secondary school graduate father and mother are significant in transitions from OUT/SCH to FE for males; educated fathers are associated with a decrease in the probability of this transition whereas educated mothers increase this probability (males having at least secondary school graduate father are estimates to face 0.832 of the hazard of males with less educated father while we estimate males with educated mothers to face 1.298 of the hazard of the ones with less educated mothers). Although educated parents are found to be associated with a lower likelihood of a child's exit from OUT/SCH and enter into IE, these estimates are not significant.

Different from the estimates in Table 5.11, education level of parents are found to have significant contribution to the OUT/SCH→FE model for females, as well. Females whose parents are at least secondary school graduates are found to be more likely to leave OUT/SCH state for a formal job; females whose fathers (mothers) are at least secondary school graduates face a 39% (41%) greater hazard than those whose fathers (mothers) are less educated. Though they have the expected sign, the impacts of parental education levels are not found to be significant in OUT/SCH→IE transition, similar to the case for males.

If the spell overlaps with the crises years, both males and females are less likely to enter in formal employment and more likely to enter in informal employment. However, the results are not statistically significant.

Table 5.13: Transitions from formal employment (FE)

	FE to IE (j=1, k=2)				FE to NON (j=1, k=3)			
	male		***female***		***male***		***female***	
number of children	0.946		0.926		0.946		0.946	
at least high school graduate	0.770		0.975		1.226	*	1.126	
father at least secondary school graduate	1.033		1.131		1.036		0.946	
mother at least secondary school graduate	1.372		0.497		1.588	***	0.969	
ever in FE (before)	1.260		0.933		0.789	**	1.030	
ever in IE (before)	2.314	***	3.955	***	0.944		1.347	**
training	0.592	*	0.995		0.644	***	0.723	**
crisis year	1.117		1.400		1.257	*	1.032	
"10-24"	0.948		0.765		1.223	¥	0.980	
"25 or more"	1.581	*	1.291		1.157		0.901	
manufacture	1.160		1.168		1.190	*	1.009	
high-skilled occupation	0.394	*	0.416	¥	0.675	**	0.621	***
intermediate-skilled occupation	0.705	*	0.385	*	0.874		0.734	*
clerks	0.599		0.700		0.928		0.865	
permanency	0.497	**	0.401	*	0.618	***	0.419	***
self-employment	0.605	*	0.430		0.459	***	0.241	***
full-time	0.616		0.576		0.696	¥	0.950	
job in the Center region	0.864		1.189		1.057		0.981	
job in the East region	0.634		2.349	*	0.486	***	0.696	¥
job abroad	0.490		0.930		1.853	*	1.262	
job in public	0.565	*	0.344	*	0.839		0.595	***

Hazard ratios are recorded which are calculated as $exp(coef)$.
Omitted categories: "micro firms (less than 10 employees)" "low-skilled occupation", "job in the West region".
Signif. codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '¥'.
The coefficients and the standard errors (of the coefficients) are presented by Model A in Appendix C, in Table C.4 for males and Table C.5 for females.

Table 5.14: Transitions from informal employment (IE)

	IE to FE (j=2, k=1)		IE to NON ((j=2, k=3)	
	male	***female***	***male***	***female***
number of children	0.980	0.760	0.927	0.972
at least high school graduate	1.640 ***	2.683 ***	1.282 ¥	1.127
father at least secondary school graduate	1.025	0.907	1.388 *	1.563 ***
mother at least secondary school graduate	1.379	2.988 ***	1.442	1.190
ever in FE (before)	1.675 ***	1.719 *	1.110	0.949
ever in IE (before)	1.017	1.191	0.771 ¥	1.091
training	1.368	1.186	0.814	1.294
crisis year	0.962	1.566 ¥	1.303 ¥	0.979
"10-24"	0.505 ***	1.181	0.634 **	1.340 *
"25 or more"	0.682 *	1.291	1.026	1.105
manufacture	1.085	1.082	1.143	1.187
high-skilled occupation	0.642	2.090 ¥	1.185	1.592 *
intermediate-skilled occupation	0.887	1.202	0.798 ¥	0.884
clerks	1.568	1.512	1.166	1.551 **
permanency	0.935	0.770	0.583 ***	0.710 **
self-employment	0.502 ***	0.249 **	0.418 ***	0.602 ***
full-time	1.022	3.780 ***	1.198	1.710 ***
job in the Center region	0.875	0.587 *	0.913	0.945
job in the East region	0.849	0.483 *	0.481 ***	0.371 ***
job abroad	0.990	0.921	1.173	0.438

Hazard ratios are recorded which are calculated as $exp(coef)$.
Omitted categories: "micro firms (less than 10 employees)" "low-skilled occupation", "job in the West region".
Signif. codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '¥'.
The coefficients and the standard errors (of the coefficients) are presented by Model A in Appendix C, in Table C.6 for males and Table C.7 for females.

Table 5.15: Transitions from non-employment (NON)

	NON to FE (j=3, k=1)		NON to IE (j=3, k=2)	
	male	***female***	***male***	***female***
number of children	1.038	1.413 ***	0.786 *	1.142
at least high school graduate	1.073	1.621 **	0.768	1.020
father at least secondary school graduate	1.001	1.105	0.671	1.018
mother at least secondary school graduate	0.773 ¥	1.119	1.297	0.884
ever in FE (before)	1.731 ***	2.967 ***	0.450 **	0.748
ever in IE (before)	1.132	0.942	2.245 **	1.296
training	0.820	2.710 ***	0.764	2.132 *
crisis year	0.815 ¥	1.084	0.869	0.946

Hazard ratios are recorded which are calculated as $exp(coef)$.
Signif. codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '¥'.
The coefficients and the standard errors (of the coefficients) are presented by Model A in Appendix C, in Table C.8 for males and Table C.9 for females.

Table 5.16: Transitions from schooling (OUT/SCH)

	OUT/SCH to FE (j=4, k=1)		OUT/SCH to IE (j=4, k=2)	
	male	***female***	***male***	***female***
father at least secondary school graduate	0.832 *	1.393 ***	0.885	0.835
mother at least secondary school graduate	1.298 *	1.412 **	0.767	1.239
crisis year	0.881	0.859	1.000	1.046

Hazard ratios are recorded which are calculated as $exp(coef)$.
Signif. codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '¥'.
The coefficients and the standard errors (of the coefficients) are presented by Model A in Appendix C, in Table C.10 for males and Table C.11 for females.

5.4.3.2.3 Transition probabilities for specific individuals

It is also possible to obtain prediction probabilities in the context of Markov multi-state models. For this, we need to specify the characteristics of the individual to reach individual-specific transition hazards for that individual for each possible transition. In our case, these correspond to transitions from formal employment, informal employment, non-employment and schooling (out of labor market). Then, by using the resulting individual-specific transition hazards (and covariances) as input, one obtains the probabilities of transitions.

The individual whose transition probabilities we are interested in has the following characteristics:

- Having no children
- Whose father and mother are not at least secondary school graduates
- Not at least high-school graduate
- Never worked in informal sector before
- Never worked in formal sector before
- Working in a full-time job in a micro-firm (with less than 10 employees)
- Working in the West region, but not in the public sector
- Having an intermediate-skilled occupation excluding economic crisis years
- In a permanent job, but not in manufacturing
- Not self-employed and not attending any training course.

The individual-specific transition probabilities are presented in Figure 23 for males and Figure 24 for females where the divergence between two adjacent lines represents the probability of being in a state.[116]

The first years for the transition from formal employment to formal and informal employment are associated with declines (up to almost 8 years overlapping with the age of 23) for males (Panel (a) of Figure 23). After the age of 23, males' probability of being employed in formal and informal sector starts to increase. In the analysis time of 10, males who have the characteristics defined above have a formal job with the probability of 0.75 and an informal job with the probability of 0.15. The increasing trend in becoming a(n) (in)formal employee reverses with middle ages (i.e. the analysis time of 20). Alternatively, as men get older, the probability of being employed either in formal or informal sector decreases.

The same figure for females (Panel (a) of Figure 24) is very different from the one for males. For a female whose originating state is formal employment, the probability of being employed decreases with time without any exception of specific ages and the declines in the probabilities are more severe in early ages.

The probability of each transition whose originating state is informal employment is shown in the Panel (b) of Figure 23 (24) for (fe)males. Since the origin state is informal employment, the probabilities associated with being in informal state at $t = 0$ are 1 for both males and females. When these males become 20 years old (at the analysis time of 5), they work in a(n) (in)formal job with a probability of 0.20 (0.70). However, the probability of being an informal worker decreases whilst that of being a formal worker increases over time up to the analysis time of 20. After that time (at the age of 35), the probability of working in a(n) (in)formal job decreases. The same transitions for females are completely different from males: the probability of being informally employed for females whose characteristics are defined above decreases over time without any exceptional ages whereas there is a slight increase in becoming a formal employee up to the analysis time of 8 or 9 (Panel b of Figure

[116] The black line is associated with formal employment whereas the red one stands for informal employment. The state of out of labor market/schooling is represented by green lines and it only appears in the panel d of each figure since transition to OUT/SCH is not allowed in our setting. Non-employment state is shown with the color of blue.

24). It is striking that the probabilities for a female to be employed in a formal job are extremely lower than those for males.

The same transition probabilities with the origin state of non-employment are shown in Panel (c) of Figures 25 and 26, for males and females, respectively. At first sight, consistent with the other panels reviewed, these two figures are completely different from each other: the probability of becoming employed for a male who originates from non-employment state increases (again) up to the analysis time of 20 (matching with their age of 35; Panel (c) of Figure 23); however, we do not observe any increasing trend for those probabilities for females who share the same characteristics with males (Panel (c) of Figure 24).

The transition probabilities to formal and informal employment from out of labor market/schooling seem to be normally distributed for males (Panel (d) of Figure 23) whereas the same probabilities for females (Panel (d) of Figure 24) appear to be left-skewed, implying the increases in the probabilities of becoming employed either in a formal or an informal job are associated with early ages for females. To compare, consider the analysis time of 32 (implying 47 year-old individuals): The probability of being in the (in)formal employment state for a 47-year-old male is about 0.60 (0.75) while the same probabilities for a female are 0.10 and 0.20, respectively.

In brief, the probabilities of transitions obtained for individuals who share the specific characteristics defined confirm females' vulnerable position in the labor market. Although gender differences have been verified for each possible transition, the most prominent differences occur in the case of transitions from FE and transitions from IE (in both Figures 23 and 24, panel (a) and (b), respectively). For males, the probability of being employed in a formal job (following formal employment state) first decrease, then increase, and finally decrease again. However, the same probability for a woman does never increases. Besides, these trends for both genders do not change when one considers the probabilities of being employed in an informal job (after a formal job). On the other hand, the probability of finding a formal job (where the origin state is informal employment) increases and then decreases for males (where the decrease in the probability of being employed in a formal job is associated with older ages). Although the trend appears almost the same for females, the magnitudes differ from each other enormously; it is revealed that there is almost no change for a female who originated from an informal state to become a formal worker. This may due

to the fact that females are prone to quit their jobs (alternatively, to exit to non-employment state) during pregnancy, marriage etc. and not to participate in the labor market after that.

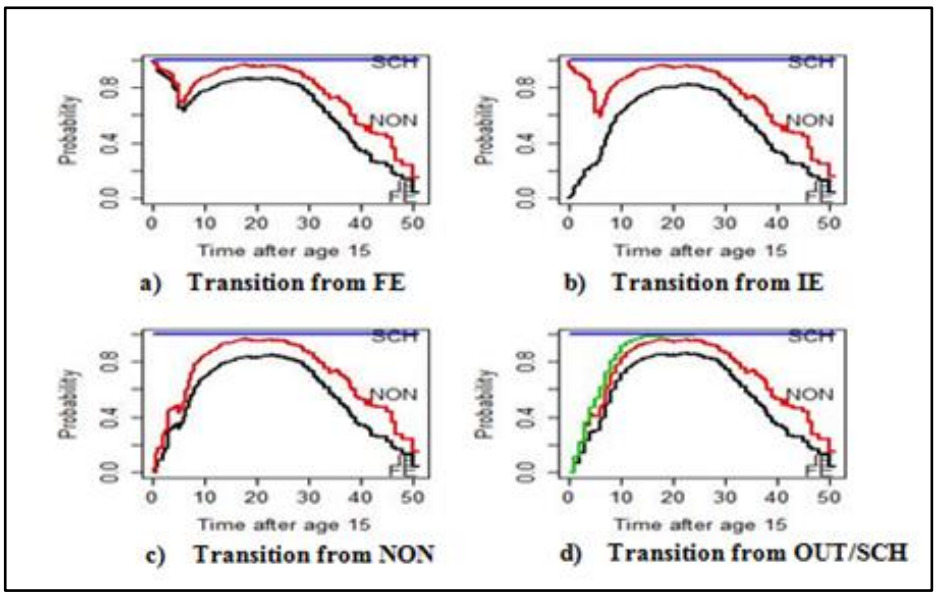

Figure 23: Transition probabilities for males with specific characteristics

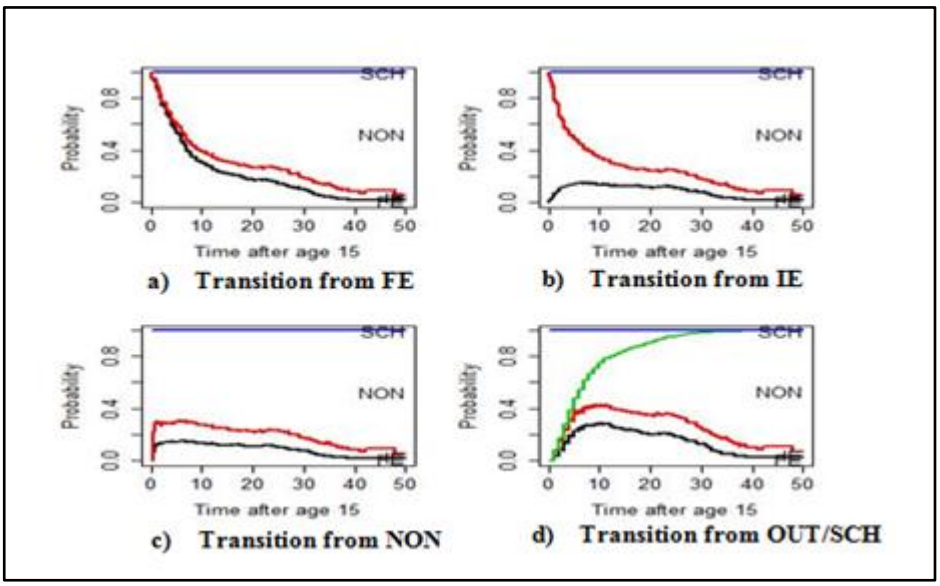

Figure 24: Transition probabilities for females with specific characteristics

5.5 Results and Discussion

Identification of segmentation in Turkish labor market in the case of earnings in Chapter 3 and the impact of variables over which one has no control (especially gender) on inequality of opportunity in Chapter 4 are followed by questioning the existence of limited labor mobility between segments in the present chapter. In doing so, we investigate the determinants of labor transition behavior between the four states defined as formal employment, informal employment, non-employment and out of labor force/schooling. Related to this, we look for evidences of informality trap in Turkish labor market.

Sequence analysis tools allow us to investigate not only the most frequent sequence of events but also the concentration and diversification of sequences in our data set. Considering the whole data, the transition from non-employment to formal employment appears to be the most frequent sequence and this is followed by the sequence of NON→FE→NON. However, the sequence of events which are more likely to occur differs between males and females: the most frequent transitions for females are NON→FE→NON, NON→IE→NON whereas they are NON→FE and NON→FE→NON for males. The working life experiences of females show that they are more likely to leave their job and stay in the state of non-employment after their participation in the labor market. Females' exit from labor market may be due to pregnancy, marriage, child or elder care, or retirement; all of which keep them stay out of the labor market later on.

We also do not face with high concentration of sequences in our data set: the measure of concentration is 16.62 percent, pointing out the diversity of sequences rather than concentration (Hint: if all (no) respondents share the same sequence, there is a high (low) concentration of sequences). When we control for gender, the measure of concentration turns out to be 20.88 (18.46) percent with 253 (152) of 394 (237) observed sequences being unique for males (females).

The evidences on the persistence of informal employment (and the existence of barriers that prevent mobility across segments) have been found in the figures presented in Table 5.4 (where the same probabilities of individuals' transitions among four labor market states have been calculated) and the estimation results for the determinants of transitions from four labor market states (which are discussed in Section 5.4.3.2.2).

Based on the figures in Table 5.4, it is more likely for a formal sector employee to find a job in the formal sector again whilst it is less likely for this individual to work in the informal sector; however it holds in total figures and for males, but not for females. For females, the most likely labor market state that terminates formal employment appears to be the non-employment state whereas informal employment accounts for only 6.30 probability points. Therefore, on the basis of the probabilities reflecting the transition from formal employment to informal employment being rare, one can argue that there exist barriers that prevent mobility across formal and informal jobs.

Considering the figures for the transition out of informal employment (the mobility in the opposite direction), it is found that the probabilities of terminating the state of informal employment either with a formal job or with an informal job are close to each regardless of gender difference. This finding can be perceived as the non-existence of the barriers between sectors whenever the origin state is informal employment. However, the same figures for females reflect that it is more likely to work again in the informal sector than to move to the formal sector, which may be concerned as a clue for the limits against labor mobility from informal to formal employment.

Yet, both these perceptions for the originating state of informal employment and the one for the originating state of formal employment cannot be taken as guaranteed since these figures are based on the assumption of "a transition exists". There are also right-censored spells in our data which are not included in these calculations by definition.

Labor market experience has also been controlled (via "ever in IE" and "ever in FE" variables) in the semi-parametric competing risk modeling where we have identified the influence of the covariates on labor market transitions throughout the Tables 5.13-5.15. It is found that having ever employed in informal sector increases the hazard ratio for a transition from formal to informal employment for both genders (Table 5.13). And, not surprisingly, in transition from informal to formal employment, it is the "ever in FE" that increases the hazard ratio for both males and females which implies that the individuals who have once worked in (in)formal sector are more likely to arrive that sector.

Finally, as an example for the gender differences in transition probabilities, one can refer to Figures 11 and 15 where the K-M survival estimates for the first formal and informal jobs are presented. In these figures, the origin state is out of labor force/schooling and the

destination state is either formal employment or informal employment. Figure 11 shows that males exit from out of labor force/schooling state (which the first non-employment state) more quickly than females with a destination state of formal employment. However, the opposite (females' exiting from out of labor force/schooling state more quickly than males) holds when the destination state turns out to be informal employment (Figure 15).

One can review the exercise captured in Section 5.4.3.2.3 (on the basis of specifying characteristics of the individuals interested in) for additional confirming evidence on gender differences in labor market.

CHAPTER 6

CONCLUSION

6.1 Introduction

The main purpose of this study is to investigate the underlying factors behind the persistence of informal employment in Turkey. In our analysis, we benefit from two literatures, Labor Market Segmentation (LMS) theory and the Equality of Opportunity (EOp) debate, and question the hypotheses of labor market segmentation and equality of opportunity in the case of Turkey. In this chapter, we briefly summarize our key findings, discuss policy implications derived from the findings of previous chapters and provide recommendations for future studies.

We began our analysis by constructing the link between LMS theory and informalization process in Chapter 2, and provided a non-technical summary on the evolution of the concept of informal sector with an emphasis on dualist, structuralist, legalist and Marxist labor market theories.

We focused on one of the two core assumptions of LMS in Chapter 3 to identify the main characteristics of the Turkish labor market over the period of 2006-2011; the existence of wage differential (between segments where differences in working conditions, control mechanisms and promotional ladders have been confirmed). We used HLFS for the period between 2006 and 2011 to examine how informal employment changes over time and how it is affected by personal/family and socio-economic factors. A multinomial logit model has been considered to identify the determinants of labor force participation decisions among seven outcomes (formal and informal jobs in manufacturing and services, entrepreneur, self-employment and non-employment). The estimation of earnings equation is based on Mincerian wage regression where we take the sample selection problem into account.

The degree and nature of inequality of opportunity for earnings in Turkey constitute the second subject investigated in the thesis. In the related chapter (Chapter 4) and the following one (Chapter 5), we used the data from our retrospective survey. Along with the critics of Stewart (2009), we account for inequality among groups in Chapter 4. The groups are defined according to the circumstance variables, such as gender, mother's and father's education level, home ownership and region of birth, and the sample is divided into different age intervals in order to account for life-cycle inequality which might be purely transitory in nature. Inequality of opportunity is operationalized as the between-group share of inequality by following the ex-ante approach of Roemer (1998). Lastly, the framework in Ferreira and Gignoux (2008) is used in order to calculate the three inequality indices on the basis of parametric and non-parametric estimates of our path-independent measure of opportunity inequality.

The fifth chapter is devoted to the investigation of the determinants of labor transition behavior between four states, namely formal employment, informal employment, non-employment and out of labor force/schooling. This chapter questions the validity of the second core hypothesis of LMS (limited labor mobility between segments) in the context of Turkish labor market. For this purpose, we first computed transition probabilities between these four labor market states. Later, we performed the sequence analysis which allows us to observe the most frequent sequences of events taken place in the data. These are followed by non-parametric survival analysis by using Kaplan-Meier approach for the respondents' first (in)formal jobs and their first transitions from a formal job to an informal one, and vice versa. After that, we estimated a four-state independent semi-parametric competing risk model without unobserved heterogeneity in a multi-state multi-spell framework where the results were provided separately for males and females. The determinants of the (first) entry to the labor market have been discussed exclusively.

6.2 Summary of the Main Findings and Conclusions

Although we do not observe a significant difference in average monthly earnings by gender within the formal and informal sectors in Turkish labor market, the existence of wage differentials between segments is identified through modeling labor force participation decision and wage equations.

Moreover, the evidence on the persistence of informal employment (and the existence of barriers that prevent mobility across segments) have been revealed by estimating the probabilities of individuals' transitions among four labor market states and by identifying the determinants of transitions from different labor market states.

Based on the estimation results on transition probabilities, we observed that it is more likely for a formal sector male employee to find a job in the formal sector again whilst it is less likely for this individual to work in the informal sector. For females, the most likely labor market state that terminates formal employment appears to be the non-employment state. On the basis of the low formal-informal employment transition probabilities, one can argue that there exist barriers that prevent mobility across formal and informal jobs.

Considering the estimates for the transition out of informal employment (the mobility in the opposite direction), it is found that the probabilities of terminating the state of informal employment either with a formal job or with an informal job are close to each other regardless of employee's gender. This finding can be perceived as the non-existence of the barriers between sectors whenever the origin state is informal employment. However, the same figures for females reflect that it is more likely to work again in the informal sector than to move to the formal sector, which may be concerned as a clue for the limits against labor mobility from informal to formal employment for females.

Yet, both these perceptions for the originating state of informal employment and the one for the originating state of formal employment cannot be taken as guaranteed since these figures are based on the assumption of "a transition exists". There are also right-censored spells in our data which are not included in these calculations by definition.

Labor market experience has also been controlled (via "ever in IE – informal employment -" and "ever in FE – formal employment -" variables) in the semi-parametric competing risk modeling where we have identified the influence of the covariates on labor market transitions. It is found that having ever employed in informal sector increases the hazard ratio for a transition from formal to informal employment for both genders. And, not surprisingly, in transition from informal to formal employment, it is the "ever in FE" that increases the hazard ratio for both males and females which implies that the individuals who have once worked in (in)formal sector are more likely to arrive that sector.

Moreover, the major findings of the chapters can be summed up through three headings:

i) with respect to employment probability

As it was the case in the period of 2000-2006 (analyzed by Taymaz, 2010b), primary schooling has insignificant effect on the employment probability for women while its effect for men is quite important. For secondary school graduates, the gender gap in the probability of being employed appears to diminish by time. Moreover, the impact of education higher than secondary school is higher on women's employability than that of men's. This is partly due to the main characteristics of the Turkish labor market: uneducated woman has less chance to be employed. The probability of being employed for a university graduate female is two times that of the university graduate males. During the crisis (from 2008 to 2009), the impact of education on employability generally declines with three exceptions: the marginal effect of primary education for women, the marginal effect of general high school for men, and the marginal effect of university for men.

Whenever the household head is not employed, the probability of employment unexpectedly declines, with 2.3 percent for females and 10.5 percent for males on average. The impact of the presence of a formal employee in the household on the employment probability for men and women is very large and close to each other. Since it is always negative, one can argue that having at least one formally employed person in the house makes the others uneager to work. This is not surprising because the opportunity of taking advantage of a family member's social security coverage may reduce the utility of being employed.

The effect of the region of residence on the employment probability is negative for women, and the effect is stronger for men than women. This is not surprising as the omitted category is the Marmara region, where the employment ratio is the highest among all regions. The largest negative impact on the probability of employment is associated with Southeast Anatolia for both genders.

In the case of marital status, we find opposite effects on males' and females' employment probability: being single or divorced has a positive effect on the employment probability for women whereas it is negative for men. This could be due to the gendered labor division at home; i.e. men being the breadwinner, and women being responsible for house and child care.

The effects of being the children in the household, and age on employment probability confirm our expectations: a child is less likely to be employed and as age increases, the probability of being employed rises.

ii) with respect to effect of variables over one has no control

The non-parametric estimates of the opportunity share of inequality are 13%, 15%, and 16% for the models associated with the samples of 15-65 year-old (model A), 20-60 year-old (model B), and 25-60 year-old (model C). In other words, differences in observed opportunity account for 16% of the total earnings inequality for the sample of individuals aged 25-60. It implies that a fairly coarse partition of the sample by five circumstance variables accounts for at least between one-sixth and one-eighth of total earnings inequality.

It is interesting to note that the ranking of the opportunity share of inequality may differ from the ranking of overall earnings inequality: The sample aged 15-65 has the highest earnings inequality, but the smallest opportunity share of that inequality.

The parametric estimates of opportunity inequality are 11%, 13%, and 14% for the same models mentioned above. Gender appears to be the most powerful circumstance variable accounting for the inequality of opportunity in earnings. Almost the entire overall (lower-bound) opportunity share of inequality is accounted for gender. Roughly one fifth of the same share is explained by the rest of circumstance variables taken together. However, we do not find any evidence for the relative shares of inequalities associated with mother's education level. Inequality of opportunity related to father's education is 2% for models A, B and C whereas it is barely 1% for home ownership and birth region for all age intervals.

iii) with respect to limited labor mobility via semi-parametric approach

- *transitions from formal employment state*

The underlying dynamics of transitions out of formal employment state reveal the following. Being at least high school graduate is found to be statistically significant only for the transition from formal employment to non-employment for males. It is more likely for males to leave formal employment state for non-employment, which becomes meaningful when

one remembers that the alternative to this is switching to an informal job. This implies that educated males prefer to be non-employed rather than working in an informal job.

It is also found that females whose mothers are at least secondary school graduates are more likely to be unemployed or inactive. Working in formal sector at least one, "ever in FE", decreases females' entrance to non-employment state. Moreover, "ever in IE" is associated with more significant contributions than "ever in FE" in our models. Both for males and females whose originating spells are formal employment, it is more likely to work in an informal job if they have ever been employed informally.

We find negative effects of training on the hazard rate of transitions from formal employment to non-employment for both genders, or alternatively positive effects on survival probability. These imply that it is less probable for the ones who get trained to leave formal employment for being non-employed. The same holds for males in the transition from formal employment to informal employment as well. As expected, crises years have positive effects on becoming non-employed since these years are associated with loss of jobs.

Firm size is revealed as not accounting for much explanatory power in transitions originating from formal employment state. Working in small firms (10-24 employees) significantly increases the probability of movement out of formal employment to non-employment for males whereas working in medium-sized or large firms increases the probability of movement out of formal to informal employment for males (compared to the reference group of micro firms with less than 10 employees). Sector of economic activity which is defined by a dummy named "manufacture" is found to be significant only in formal employment→non-employment transition for males.

Individuals who work in high-skilled occupations are less likely to leave their formal employment state. Other than males for the transition from formal employment to non-employment, the effect of intermediate-skilled occupation is found to be negative and statistically significant. Like the case in high-skilled occupation, intermediate-skilled occupations are found to be associated with reducing the probability of leaving formal employment, with respect to the base category for low-skilled occupations.

We also find evidence for the effect of permanent jobs on labor market transitions. A permanent job decreases the probability of movement out of formal employment for both exit states of informal employment and non-employment, and for both males and females. This holds for self-employment and jobs in the public sector.

- *transitions from informal employment state*

Results for the outflows from informal employment indicate that number of children does not exhibit any significant influence on transitions out of informal employment, in addition to training, job in manufacture and public sectors.

The variables “at least high school degree” and “ever (worked) in FE” increases the probability of transition from informal to formal employment for males. However, the probability of finding a formal job after an informal one decreases with respect to the firm size. As expected, working as a self-employed is subject to less mobility from informal to formal employment.

The effects of having “at least high school degree”, “at least secondary school graduate mother”, having “ever (worked) in IE”, “crisis year”, “high-skilled occupation”, and working in a “full-time” job are found to be positive and statistically significant for females’ transition out of informal employment into formal employment. Whereas, being self-employed and having a job in the Center as well as East region (with respect to the base category of West region) are negatively related to the destination state of formal employment which are originated in the informal employment.

We find that chances of being non-employed out of informal employment state increases for at least high school graduate males. Since the other option is being employed formally, this result points out that educated males do prefer staying out of the labor market to formal jobs most probably in order to continue their education. Having at least secondary school graduate fathers also increases the same probability for both males and females. The result for ever worked in the informal sector indicate that males who has at least once employed informally are less likely to become non-employed than those who have never been employed in the informal sector. However, if a male has been employed informally during the crisis, he is more likely to lose his informal job and become non-employed. Working in a

firm with 10-24 employees has opposing effects on being non-employed for males and females: its coefficient is found to be negative for males and positive for females.

The occupations that have more prestige (high-skilled occupations and clerks in comparison to low-skilled occupations) exhibit significant and positive influence on outflows from informal employment into non-employment for females. Since this seems as a contradiction to conventional wisdom, it turns out to be meaningful when one remembers that most of labor market terminations ending with non-employment state are associated with pregnancy, engagement, marriage, child and/or elder care for females regardless of the occupational category. As expected, for males, a negative relation has been observed for intermediate-skilled jobs in being non-employed after an informal employment state.

"Permanent" jobs and being "self-employed" in the informal sector in addition to informal jobs in the East region appear to be negatively related to become non-employed for both males and females. Unexpectedly, working full-time is found to increase the probability of outflow from informal employment into non-employment for females.

6.3 Policy Implications

Our findings allow us to suggest a number of policy-relevant issues. Findings on the role of region of residence imply that living in the West region (and mainly in the Marmara region) is associated with higher labor force participation, higher wage levels and more labor mobility, all of which can be considered as indicators of regional inequality. This calls for policy interventions that rest on creating not only more jobs but also better ones. In this context, the role of regional development agencies is important in activating the regional dynamics. Moreover, there seems to be a need to re-discuss "New Industrial Districts" focusing on whether their presence has resulted in expanding or diminishing the inequality between regions and/or districts.

Although region of birth and parental education levels do not appear to be powerful circumstance variables accounting for the inequality of opportunity in earnings, they have significant contributions to our models of labor market transitions. It is found that individuals who were born in the regions of East and Center are less (more) likely to find

a(n) (in)formal job. In such a situation, affirmative action policies may be considered to eliminate negative stereotypes through treating all groups equally.

The vulnerable position of females in the labor market has been confirmed strongly by our findings (i.e. K-M survival estimates indicating that they generally work in informal jobs, transition probabilities for females with specific characteristics pointing out very low level of probabilities for a transition to a formal job after an informal one). Moreover, females have lower labor participation rates in urban areas where the majority of them are inactive. This disadvantaged position of females may be due to several factors, some of which are cultural. Other than cultural barriers against women, in comparison to males, their lower education levels and marketable skills may be accounting for their status in the labor market. Although increasing the overall education level and providing training courses may raise their chance to be employed, if not supported by an increase in employment opportunities (i.e. decent jobs), these would not change anything in females' working lives.

Observations on the persistence of informal employment and the limited mobility from informal sector to formal sector for the employees (especially females) imply that these workers are trapped in informality. What we have done in this study is to clarify the determinants of the transitions among four labor states which are formal and informal employment, non-employment, and out of labor force/schooling while the results of our analyses reveal the effect of the covariates on specific transitions' likelihood of occurrence. To recommend effective policies, we need to reconsider the analyses conducted here with disaggregating both the transitions due to their underlying reasons to terminate a spell and the individuals with respect to the reasons for not being registered under any social security coverage (which we have information on and has been set as a future work). Apart from this, the three-pronged strategy which is proposed by the OECD for addressing informality sounds meaningful in general:

> (…) Informal employment comprises different phenomena that require distinct policy approaches (…):
> 1) For the world's working poor, working informally is often the only way to participate in the labour market. Policies should consequently try to unlock these people from their low-productivity activities (…). Specific recommendations include active labour market policies such as training and skill development programmes that reopen the doors to formality.
> 2) If informal employment is a deliberate choice to avoid taxes or administrative burdens, governments should aim to establish efficient formal structures that have the potential to encourage people to join or rejoin the formal market. (…) Needless to say, targeting

those who voluntarily opt out of the formal sector also involves the establishment of credible enforcement mechanisms. (…).

3) In many low-income countries, finally, informal employment is mainly a consequence of insufficient job creation in the formal economy. *Is Informal Normal?* Recognizes the need for a general push for more employment opportunities within the formal sector.

(Jütting and Laiglesia, 2009: 15)

A policy framework which is based on these propositions – being built around three objectives of creating more and better jobs, providing better incentives for formality, and protecting and promoting informal workers - seems to be not only effective but also achievable as well.

6.4 Recommendations for the Future Studies

In order to explain wage differentials in the Turkish labor market, we have considered two divisions: first due to work and employment statuses, and then due to sector of economic activity and registration status. This analysis can be reconsidered with defining occupations as segments.

The EOp analyses that we have utilized in Chapter 4 can be extended with the application of ex-post approach, and the consideration of education (as another area) via focusing on the quantity and quality of education as well. In doing so, one can also focus on long-term income distribution (with reference to intertemporal context)[117].

In addition to the suggestion mentioned in the previous section (as disaggregating the transitions and individuals due to the specified information sets), the analyses of labor market transitions can be expanded in such a manner that they come to account for the dependencies among spouses in making their labor market participation decisions. In order to do so, one needs to have information on the spouses' marriage time which is a limitation of our data set. Obtaining this information also allows conducting another research that can focus on females' labor market participation decisions considering their first labor-market re-entry after childbirth via controlling for husbands' occupational resources.

[117] The details of these extentions have been discussed in Appendix B.

REFERENCES

Aaberge, R., Mogstad, M. and Peragine, V. (2011), "Measuring Long-Term Inequality of Opportunity", *Journal of Public Economics*, 95 (3-4), pp. 193-204.

Aalen, O. O. (1978), "Nonparametric Inference for a Family of Counting Processes", *Annals of Statistics*, 6, pp. 701-726.

Açıkalın, N. (2008), "Yoksulluk ve Genç Kuşakların Toplumsal Hareketlilik Olanakları: İstanbul ve Gaziantep Örnekleri", *Çalışma ve Toplum*, 2, pp.131-153.

Arneson, R. (2008), "Equality of Opportunity", *The Stanford Encyclopedia of Philosophy (Fall 2008 Edition)*, Edward N. Zalta (ed.), Retrieved June 12, 2012, from http://plato.stanford.edu/archives/fall2008/entries/equal-opportunity/

Arranz, J. M. and Cantó, O. (2010), "Measuring the Effect of Spell Recurrence on Poverty Dynamics", Working Paper, *World Institute for Development Economics Research*, No. 2010, 72.

Arrow, K., Bowles, S. and Durlauf, S. (2000), (eds.), *Meritocracy and Economic Inequality*, New Jersey: Princeton Univesity of Press.

Artola, C. and Louise-Bell, U. (2001), "Identifying Labour Market Dynamics Using Labour Force Survey Data", *ZEW Discussion Paper* No. 01-44, Center for European Economic Research.

Aydın E., Hisarcıklılar, M., and İlkkaracan, İ (2010), "Formal versus Informal Labor Market Segmentation in Turkey in the course of Market Liberalization", *Topics in Middle Eastern and North African Economies*, Electronic Journal, Vol.12.

Baskaya, Y. S. and Hulagu, T. (2011), "Informal-Formal Worker Wage Gap in Turkey: Evidence from a Semi-Parametric Approach", *Central Bank of the Republic of Turkey*, Working Paper No: 11/15.

Başak, Z. (2005), *Explaining Informalization via Labor Market Segmentation Theory*, Unpublished Master's Thesis, Middle East Technical University, Graduate School of Social Sciences, Ankara, Turkey.

Başlevent, C. and Onaran, Ö. (2003), "Are Married Women in Turkey More Likely to Become Added or Discouraged Workers?", *Labour*, 17(3), pp. 439-458.

Bedirhanoğlu, P. and Yalman, G. (2009), Neoliberal Küreselleşme Sürecinde Türkiye'de Yerel Sermaye: Gaziantep, Denizli ve Eskişehir'den İzlenimler, Praksis, 19, pp. 241-266.

Bernabé, S. and Stampini, M. (2009), "Labour Mobility during Transition: Evidence from Georgia", *Economics of Transition*, 17(2), 377-409.

Bernardi, F. (1999), "Does the Husband Matter?: Married Women and Employment in Italy", European Sociological Review, 15(3), pp. 285-300.

Betts, J. and Roemer, J. (1999), "Equalizing Opportunity through Educational Finance Reform", *Mimeo*, San Francisco, CA: Public Policy Institute of California.

Blossfeld, H.-P., Golsch, K. and Rohwer, G. (2007), *Event History Analysis with Stata*, New York: Lawrence Erlbaum Associates, Inc.

Booth, A.L., Francesconi, M and Frank, J. (2000), "Temporary jobs: Who gets them, what are they worth, and do they lead anywhere?" University of Essex, Colchester.

Boratav, K. (2009), *Bir Krizin Kısa Hikayesi*, Ankara: Arkadaş Yayınevi.

Boratav, K., Yeldan, A. E. and Köse, A. H. (2000), "Globalization, Distribution and Social Policy: Turkey, 1980-1998", *CEPA Working Paper Series I*, Working Paper No. 20.

Bosch, M. and Maloney, W. (2008), "Cyclical Movements in Unemployment and Informality in Developing Countries", *IZA, Discussion Paper Series*, No. 3514.

Bosch, M. and Maloney, W. (2010), "Comparative Analysis of Labor Market Dynamics Using Markov Processes: An Application to Informality", *Labour Economics*, 17(4), pp. 621-631.

Bourguignon, F. (2006), "Distribution, Equity, and Development", *Berlin Workshop Series*.

Bourguignon, F., Ferreira, F. H. G. and Menéndez, M. (2007), "Inequality of Opportunity in Brazil", *Review of Income and Wealth*, 53 (4), pp. 585-618.

Bourguignon, F., Ferreira, F. H. G., and Walton, M. (2007), "Equity, Efficiency and Inequality Traps: A Research Agenda", *Journal of Economic Inequality*, 5, pp. 235-256.

Bowles, S. (1972), "Schooling and Inequality from Generation to Generation", *Journal of Political Economy*, 80(3), pp. 219-251.

Bowles, S. (1973), "Understanding Unequal Economic Opportunity", *The American Economic Review*, 63(2), pp. 346-356.

Bowles, S. and Gintis, H. (2002), "The Inheritance of Inequality", *Journal of Economic Perspectives*, 16(3), pp. 3-30.

Bowles, S. and Levin, H. M. (1968), "The Determinants of Scholastic Achievement-An Appraisal of Some Recent Evidence", *The Journal of Human Resources*, 3(1), pp. 3-24.

Bowles, S. and Weisskopf, T. E. (1998), "David M. Gordon: Economist and Public Intellectual", *The Economic Journal*, 108, pp. 153-164.

Bowles, S., Gintis, H. and Groves, M. O. (2005), (eds.), *Unequal Chances: Family Background and Economic Success,* New Jersey: Princeton Univesity of Press.

Bowles, S., Loury, G. C. and Sethi, R. (2007), "Is Equal Opportunity Enough? A Theory of Persistent Group Inequality", *Mimeo*.

Bradley, S., Crouchley, R. and Oskrochi, R. (2003), "Social exclusion and labour market transitions: a multi-state multi-spell analysis using the BHPS", *Labour Economics*, 10, pp. 659-679.

Breen, R. and Jonsson, J. O. (2005), "Inequality of Opportunity in Comparative Perspective: Recent Research on Educational Attainment and Social Mobility", *Annual Review of Sociology*, 31, pp. 223-243.

Breman, J. (1976), "A Dualistic Labour System? A Critique of the 'Informal Sector' Concept: I: The Informal Sector", *Economic and Political Weekly*, 11(48), pp. 1870-1876.

Broad, D. (2000), "The Periodic Causalization of Work: The Informal Economy, Casual Labor, and the Longue Durée", in F. Tabak and M. A. Crichlow (eds.), *Informalization: Process and Structure*, Baltimore and London: The Johns Hopkins University Press.

Bromley, R. (1978), "Introduction- The Urban Informal Sector: Why is it Worth Discussing?", *World Development*, Vol. 6, No 9/10, pp. 1033-39.

Buğra, A. and Yakut-Cakar, B. (2010), "Structural Change, the Social Policy Environment and Female Employment in Turkey", *Development and Change*, 41(3), pp. 517-538.

Buz, S., Cankurtaran-Ontas, O. and Hatiboglu, B. (2012), "Opinions of Social Work Students from Turkey on Poverty and Wealth", *International Journal of Business and Social Science*, 3 (5), pp. 187-196.

Cain, G. G. (1976), "The Challenge of Segmented Labor Market Theories to Orthodox Theory: A Survey", *Journal of Economic Literature*, 14(4), pp. 1215-1257.

Cameron, A. C. and Trivedi, P. K. (2005), *Microeconometrics: Methods and Applications*, New York: Cambridge University Press.

Canavire-Bacarreza, G. J. and Soria, L. F. (2007), "Unemployment Duration and Labor Mobility in Argentina: A Socioeconomic-Based Pre- and Post-Crisis Analysis", *CEDLAS Working Papers*, No. 0054.

Carr, M. and Chen, M. A. (2002), "Globalization and the Informal Economy: How Global Trade and Investment Impact on the Working Poor", *Working Paper on the Informal Economy*, 2002/1, Geneva: Employment Sector, ILO.

Castells, M. and Portes, A. (1989), "World Underneath: The Origins, Dynamics, and Effects of the Informal Economy", in A. Portes, M. Castells and L. A. Benton (eds.), *The Informal Economy: Studies in Advanced and Less Developed Countries*, London: The Johns Hopkins University Press.

Chang, H. J. (2010), "We lost sight of fairness in the false promise of wealth", 30 August 2010, The Guardian, Retrieved June 10, 2012, from http://www.guardian.co.uk/commentisfree/2010/aug/30/fairness-inequality-free-market-growth

Charmes, J. (2009), "Concepts, Measurement and Trends", in J. P. Jütting and J. R. de Laiglesia (eds.), *Is Informal Normal? Towards More and Better Jobs in Developing Countries*, Development Center Studies, OECD Publications, pp. 27-62.

Checchi, D. and Peragine, V. (2005), "Regional Disparities and Inequality of Opportunity: The Case of Italy", *IZA Discussion Paper Series*, No. 1874.

Checchi, D. and Peragine, V. (2010), "Inequality of Opportunity in Italy", *Journal of Economic Inequality*, 8, pp. 429-450.

Checchi, D., Peragine, V. and Serlenga, L. (2010), "Fair and Unfair Income Inequalities in Europe", *IZA Discussion Paper Series*, No. 5025.

Chen, M. A., Jhabvala, R. and Lund, F. (2002), "Supporting Workers in the Informal Economy: A Policy Framework", *Working Paper on the Informal Economy*, 2002/2, Geneva: Employment Sector, ILO.

Cleves, M. A., Gould, W. W., Gutierrez, R. G. and Marchenko, Y. U. (2008), *An Introduction to Survival Analysis Using Stata*, Texas: StataCorp LP.

Coate, S. and Loury, G. C. (1993), "Will Affirmative Action Policies Eliminate Negative Stereotypes?", *American Economic Review*, 83 (5), pp. 1220-1240.

Coleman, J. S. (1968), "Equality of Educational Opportunity: Reply to Bowles and Levin", *The Journal of Human Resources*, 3(2), pp. 237-246.

Dayıoğlu, M. and Başlevent, C. (2006), "Female Employment, Earnings Inequality and Household Well-Being: The Case of Urban Turkey", Proceedings of the 10th Annual Conference of the Economic Research Forum.

Dayıoğlu, M. and Kasnakoğlu, Z. (1997), Kentsel Kesimde Kadın ve Erkeklerin İşgücüne Katılımları ve Kazanç Farklılıkları, *METU Studies in Development*, 24(3), pp. 329-361.

Dayıoğlu, M. and M. G. Kırdar (2010), "Determinants and the Trends in Labor Force Participation of Women in Turkey", *State Planning Organization of the Republic of Turkey and World Bank, Welfare and Social Policy Analytical Work Program*; Working Paper Number 5.

de Barros, R. P., Ferreira, F. H. G., Vega, J. R. M. and Chanduvi, J. S. (2009), *Measuring Inequality of Opportunities in Latin America and the Caribbean*, Latin American Development Forum, Conference Edition, Washington, DC: The World Bank.

de Soto, H. (1990), *The Other Path: The Invisible Revolution in the Third World*, New York: Harper Trade.

Demir, E. and Suğur, N. (1999), "Özelleştirme Sonrası Çimento Sanayiinde Taşeron İşgücü Kullanımı ve Esnek İstihdam", *Mülkiyeliler Birliği Dergisi*, XXIII, 215, pp. 162-181.

Dimova, R., Gang, I. N., and Landon-Lane, J. (2005), "The Informal Sector during Crisis and Transition", *WIDER Research Paper*, 2005/18.

Doeringer, P. and Piore, M. (1971), *Internal Labor Markets and Manpower Analysis*, Lexington, Mass: D. C. Heath.

Duryea, S., Márquez, G., Pagés, C. and Scarpetta, S. (2006), "For Better or For Worse? Job and Earnings Mobility in Nine Middle and Low Income Countries", *Brookings Trade Forum*, pp. 187-203.

Edwards, R. C., Reich, M. and Gordon, D. M. (1975), *Labor Market Segmentation*, Lexington, MA: Lexington Boks and D. C. Heath.

Ercan, H. (2010), The Impact of the Global Financial Crisis on Employment in Turkey, in *Crisis and Turkey: Impact Analysis of Crisis Response Measures*, Ankara: ILO, pp. 73-97.

Evcimen, G., Kaytaz, M. and Çınar, E. M. (1991), "Subcontracting, Growth and Capital Accumulation in Small-Scale Firms in the Textile Industry in Turkey", *The Journal of Development Studies*, 28(1), pp. 130-149.

Feige, E. L. (1990), "Defining and Estimating Underground and Informal Economies: The New Institutional Economics Approach", *World Development*, Vol. 18, No. 7, pp. 989-1002.

Ferreira, F. H. G. and Gignoux, J. (2008), "The Measurement of Inequality of Opportunity: Theory and an Application to Latin America", *the World Bank Development Research Group Poverty Team*, Policy Research Working Paper 4659, Washington, DC: The World Bank.

Ferreira, F. H. G. and Gignoux, J. (2010), "Inequality of Opportunity for Education: The Case of Turkey", *State Planning Organization of the Republic of Turkey and World Bank Welfare and Social Policy Analytical Work Program*, Working Paper Number 4, Washington, DC: The World Bank.

Ferreira, F. H. G., Gignoux, J. and Aran, M. (2010a), "Measuring Inequality of Opportunity with Imperfect Data: The Case of Turkey", *The World Bank Latin America and the Caribbean Region Office of the Chief Economist and Development Research Group Poverty and Inequality Team*, Policy Research Working paper 5204, Washington, DC: The World Bank.

Ferreira, F. H. G., Gignoux, J. and Aran, M. (2010b), "Inequality of Economic Opportunity in Turkey: An Assessment using Asset Indicators and Women's Background Variables", *State Planning Organization of the Republic of Turkey and World Bank Welfare and Social Policy Analytical Work Program*, Working Paper Number 3, Washington, DC: The World Bank.

Fine, B. (1998), *Labour Market Theory: A Constructive Reassessment*, London & New York: Routledge.

Foster, J. and Shneyerov, A. (2000), "Path Independent Inequality Measures", *Journal of Economic Theory*, 91, pp. 199-222.

Gardner, J. W. (1984), *Excellence: Can we be Equal and Excellent Too?*, New York: W.W. Norton & Company.

Gezici, A. (2010), "Distributional Consequences of Financial Crises: Evidence from Recent Crises", *Review of Radical Political Economics*, 42(3), pp. 373-380.

Gong, X., Van Soest, A. and Villagomez, E. (2004), "Mobility in the Urban Labor Market: A Panel Data Analysis for Mexico", *Economic Development and Cultural Change*, 53(1), pp. 1-36.

Göksel, İ. (2013), "Female Labor Force Participation in Turkey: The Role of Conservatism", *Women's Studies International Forum*, Article in Press (available online 16 May 2013).

Graham, S. E., Willett, J. B. and Singer, J. D. (2012), "Using Discrete-Time Survival Analysis to Study Event Occurrence", in J. T. Newsom, R. N. Jones and S. M. Hofer (eds), *Longitudinal Data Analysis: A Practical Guide for Researchers in Aging, Health, and Social Sciences*, New York: Routledge, Taylor & Francis Group.

Güler-Müftüoğlu, B. (2000), "İstanbul Gedikpaşa'da Ayakkabı Üretiminin Değişen Yapısı ve Farklılaşan İşgücü", *Toplum ve Bilim*, 86, pp. 118-138.

Güvenç, M. and Işık, O. (1996), "İstanbul'u Okumak: Statü-Konut Mülkiyeti Farkılılaşmasına İlişkin Bir Çözümleme Denemesi", *Toplum ve Bilim*, 71, pp. 6-60.

Halliday, S. (2008), "Equality of Opportunity: Roemer's Synthesis", mimeo.

Hart, K. (1973), "Informal Income Opportunities and Urban Employment in Ghana", *Journal of Modern African Studies*, 11(1), pp. 61-89.

Heckman, J. J. and Hotz, V. J. (1986), "An Investigation of the Labor Market Earnings of Panamanian Males Evaluating the Sources of Inequality", The Journal of Human Resources, 21(4), pp. 507-542.

İlkkaracan, İ. (2012), "Why so Few Women in the Labor Market in Turkey?", Feminist Economics, 18(1), pp. 1-37.

Jütting, J. P. and Laiglesia, J. R. (2009) (eds.), *Is Informal Normal? Towards More and Better Jobs in Developing Countries*, Development Center Studies, OECD Publications.

Kaplan, E. L. and Meier, P. (1958), "Nonparametric Estimation from Incomplete Observations", *Journal of the American Statistical Association*, 53, pp. 457-481.

Kara, O. (2006), "Occupational Gender Wage Discrimination in Turkey", Journal of Economic Studies, 33(2), pp. 130-143.

Kaytaz, M. (1994), "Subcontracting Practice in the Turkish Textile and Metal-Working Industries", in F. Şenses (ed.), *Recent Industrialization Experience of Turkey in a Global Context*, London: Greenwood Press.

Köse, A. H. and Öncü, A. (1998), "Dünya ve Türkiye Ekonomisinde Anadolu İmalat Sanayii: Zenginleşmenin mi yoksa Yoksullaşmanın mı Eşiğindeyiz?", *Toplum ve Bilim*, 77, pp. 135-159.

Köse, A. H. and Öncü, A. (2000), "İşgücü Piyasaları ve Uluslararası İşbölümünde Uzmanlaşmanın Mekansal Boyutları: 1980 Sonrası Dönemde Türkiye İmalat Sanayii", *Toplum ve Bilim*, 86, pp. 72-90.

Kristić, G. and Sanfey, P. (2007), "Mobility, Poverty and Well-Being among the Informally Employed in Bosnia and Herzegovina", *Economic Systems*, 31(3), pp. 311-335.

Lancaster, T. (1990), *The Econometric Analysis of Transition Data*, Cambridge: Cambridge University Press.

Lefranc, A., Pistolesi, N. and Trannoy, A. (2008), "Inequality of Opportunities vs. Inequality of Outcomes: Are Western Societies all Alike?", *Review of Income and Wealth*, 54 (4), pp. 513-546.

Lefranc, A., Pistolesi, N. and Trannoy, A. (2009), "Equality of opportunity and luck: Definitions and Testable Conditions, with an Application to Income in France", *Journal of Public Economics*, 93, pp. 1189-1207.

Leontaridi, M. R. (1998), "Segmented Labour Markets: Theory and Evidence", *Journal of Economic Surveys*, Vol. 12, No. 1, pp. 63-101.

Levent, H., Taştı, E. and Sezer, D. (2004), "İşgücü Piyasasının Katmanlı Yapısı", in *Türkiye'de İşgücü Piyasasının Kurumsal Yapısı ve İşsizlik,* İstanbul: TÜSİAD.

Lewis, W. A. (1954), "Economic Development with Unlimited Supplies of Labour", *Manchester School*, 22, pp. 139-191.

Loayza, N. V. (1996), "The Economics of the Informal Sector: A Simple Model and Some Empirical Evidence from Latin America", *Carneige-Rochester Conference on Public Policy* 45, pp. 129-162.

Losby, J. L., Else, J. F., Kingslow, M. E., Edgcomb, E. L., Malm, E. T. and Kao, V. (2002), "Informal Economy Literature Review", Working Paper, ISED and FIELD; Retrieved January, 10, 2011, from http://fieldus.org/li/pdf/InformalEconomy.pdf

Loury, G. C. (1989), "Why Should we Care about Group Inequality?", in S. Shulman and W. Darity, Jr. (eds.), *The Question of Discrimination: Racial Inequality in the U.S. Labor Market*, Connecticut: Wesleyan University Press.

Loury, G. C. (2002), *The Anatomy of Racial Inequality*, the United States of America: Harvard University Press.

Maloney, W. F. (1999), "Does Informality Imply Segmentation in Urban Labor Markets? Evidence from Sectoral Transitions in Mexico", *World Bank Economic Review*, 13(3), pp. 275-302.

Maloney, W. F. (2004), "Informality Revisited", *World Development*, 32(7), pp. 1159-1178.

Mason, A. (2010), "Equality of Opportunity", *Encyclopedia of Political Theory*, Mark Bevir (ed), Sage Publications.

Mead, D. C. and Morrisson, C. (1996), The Informal Sector Elephant, *World Development*, 24 (10), 1611-1619.

Mills, M. (2011), *Introducing Survival and Event History Analysis*, London: SAGE Publications Ltd.

Morcol, G. (1997), "Lay Explanations for Poverty in Turkey and Their Determinants", *The Journal of Social Psychology*, 137 (6), pp. 728-738.

Moser, C. O. N. (1978), "Informal Sector or Petty Commodity Production: Dualism or Dependence in Urban Development?", *World Development*, Vol. 6, No. 9/10, pp. 1041-1064.

Nelson, W. (1972), "Theory and Applications of Hazard Plotting for Censored Failure Data", *Technometrics*, 14, pp. 945-965.

Nichols, T. and Sugur, N. (1996), "Small Employers in Ankara", in E. Kahveci, N. Sugur and T. Nichols (eds.), *Work and Occupation in Modern Turkey*, USA: Mansell Publishing Limited.

Nichols, T. and Suğur, N. (2005), *Global İşletme, Yerel Emek: Türkiye'de İşçiler ve Modern Fabrika*, İstanbul: İletişim Yayınları.

Nichols, T., Sugur, N., Demir, E. and Kasapoglu, A. (1998), "Privatisation in Turkey: Employees' Views on Privatisation in the Turkish Cement Industry, and Some Comparison with Britain", *Work, Employment & Society*, 12(1), pp. 1-23.

Onaran, Ö. (2000), *Labor Market Flexibility during Structural Adjustment in Turkey*, İstanbul Technical University, Discussion Papers in Management Engineering, No: 00/1, İstanbul.

Onaran, Ö. (2003), "Türkiye'de İhracat Yönelimli Büyüme Politikalarının İstihdam Üzerindeki Etkileri", in A. H. Köse, F. Şenses and E. Yeldan (eds.), *İktisat Üzerine Yazılar II: İktisadi Kalkınma, Kriz ve İstikrar*, İstanbul: İletişim Yayınları.

Özar, Ş. (1997), "Yorum", *Türk İşgücü Piyasası ile ilgili Temel Gelişmeler*, İstihdam ve Eğitim Projesi İşgücü Piyasası Bilgisi, Ankara: Devlet İstatistik Enstitüsü.

Özar, Ş. (1998), "The Employment Aspects of the Informal Sector: A Field Survey in Low-Income Neighbourhoods of İstanbul", in T. Bulutay (ed.), *Informal Sector II*, Ankara: State Institute of Statistics.

Özar, Ş. and Ercan, F. (2002), "Labor Markets in Turkey: Maladjustment or Integration?", in N. Balkan and S. Savran (eds.), *The Ravages of Neo-Liberalism: Economy, Society and Gender in Turkey*, New York: Nova Science Publishers, Inc.

Özar, Ş., Özertan, G. and İrfanoğlu, Z. B. (2008), "Micro and Small Enterprise Growth in Turkey: Under the Shadow of Financial Crisis", *The Developing Economies*, XLVI-4, pp. 331-362.

Özdemir, A. M. and Yücesan-Özdemir, G. (2004), "Living in Endemic Insecurity: An Analysis of Turkey's Labour Market in the 2000s", *South-East Europe Review*, 2, pp. 33-42.

Page, M. and Roemer, J. (2001), "The US Fiscal System as an Equal Opportunity Device", in K. Hasset and R. G. Hubbard (eds), *The Role of Inequality in Tax Policy*, Washington DC: The American Enterprise Institute Press.

Pagés, C. and Stampini, M. (2009), "No Education, No Good Jobs? Evidence on the Relationship between Education and Labor Market Segmentation", *Journal of Comparative Economics*, 37(3), pp. 387-401.

Parlak, Z. (1996), "The Car Workers of Bursa", in E. Kahveci, N. Sugur and T. Nichols (eds.), *Work and Occupation in Modern Turkey*, USA: Mansell Publishing Limited.

Peragine, V. (2011), "Review of 'Measuring Inequality of Opportunities in Latin America and the Caribbean' by Ricardo Paes de Barros, Francisco H. G. Ferreira, José R. Molinas Vega, and Jaime Saavedra Chanduvi, World Bank and Palgrave Macmillan, 2009", *Journal Of Economic Inequality*, 9, pp. 137-143.

"Policies & Programmes" (2013), Retrieved September 20, 2013, from http://wiego.org/informal-economy/policies-programmes

Portes, A. and Benton, L. (1984), "Industrial Development and Labor Absorption: A Reinterpretation", *Population and Development Review*, Vol. 10, No. 4, pp. 589-611.

Portes, A. and Sassen-Koob, S. (1987), "Making it Underground: Comparative Material on the Informal Sector in Western Market Economies", *The American Journal of Sociology*, Vol. 93, No. 1, pp. 30-61.

Rakowski, C. A. (1994), "The Informal Sector Debate, Part 2: 1984-1993", in C. A. Rakowski (ed.), *Contapunto: The Informal Sector Debate in Latin America*, Albany: The State University of New York Press.

Rawls, J. (1999), *A Theory of Justice*, Cambridge: Harvard University of Press, (revised edition).

Reich, M., Gordon, D. M. and Edwards, R. C. (1973), "Dual Labour Markets: A Theory of Labor Market Segmentation", *American Economic Association*, 63(2), pp. 359-365.

Roemer, J. E. (1998), *Equality of Opportunity*, Cambridge, MA: Harvard University Press.

Saracoglu, D. S. (2003), "On the Size and the Evolution of the Informal Sector in Developing Countries: The Case of Turkey", in *the Proceedings of the International Conference on Policy Modelling – EcoMod 2003, İstanbul, Turkey, July 3-5, 2003.*

Scheiner, F. and Enste, D. H. (2000), "Shadow Economies: Size, Causes, and Consequences", *Journal of Economic Literature*, 38, pp. 77-114.

Selçuk, F. G. (2002), *Örgütsüzlerin Örgütlenmesi: Enformel Sektörde İşçi Örgütleri*, Ankara: Atölye Yayınevi.

Sethuraman, S. V. (1976), "The Urban Informal Sector: Concept, Measurement and Policy", *International Labour Review*, Vol. 114, No.1.

Singh, A. (2012), "Inequality of Opportunity in Earnings and Consumption Expenditure: The Case of Indian Men", Review of Income and Wealth, 58 (1), pp. 79-106.

Stewart, F. (2009), "Horizontal Inequality: Two Types of Trap", *Journal of Human Development and Capabilities*, 10 (3), 315-40.

Sugur, N. (1997), "Small Firm Flexibility in Turkey: The Case of OSTIM Industrial District at Ankara", *New Perspectives on Turkey*, 16, pp. 87-104.

Şenses, F. (1996), "Structural Adjustment Policies and Employment in Turkey", *New Perspectives on Turkey*, 15, pp. 65-93.

Şenses, F. (2000), "Neoliberal Ekonomi Politikaları, İşgücü Piyasaları ve İstihdam", *2000-2003, Petrol-İş Yıllığı*, İstabul: Petrol-İş Yayını, pp. 149-162.

Şenses, F. (2001), *Küreselleşmenin Öteki Yüzü Yoksulluk*, İstanbul: İletişim Yayınları.

Tansel, A. (1994), Wage Employment, Earnings and Returns to Schooling for Men and Women in Turkey, *Economics of Education Review*, 13(4), pp. 305-320.

Tansel, A. (1996), Self Employment, Wage Employment and Returns to Education for Urban Men and Women in Turkey, in T. Bulutay (ed.), *Education and the Labor Markets in Turkey*, Ankara: State Institute of Statistics.

Tansel, A. (1998a), "Formal versus Informal Sector Choice of Wage Earners and Their Wages in Turkey", in T. Bulutay (ed.), *Informal Sector I*, Ankara: State Institute of Statistics.

Tansel, A. (1998b), Public-Private Employment Choice, Wage Differentials and Gender in Turkey, Ankara: Middle East Technical University, Department of Economics, mimeo.

Tansel, A. (1998c), "Workers Displaced due to Privatization in Turkey: Before versus After Displacement", Ankara: Middle East Technical University, Department of Economics, mimeo.

Tansel, A. (2002), "The Effects of Privatization on Labor in Turkey", Ankara: Middle East Technical University, Department of Economics, mimeo.

Tansel, A. (2012), *Intergenerational Transmission of Educational Attainment in Turkey*, Middle East Economic Association, Pre-ASSA Meetings, 5 January, Chicago: USA.

Tansel, A. and Kan, E. O. (2012), "Labor Mobility across the Formal/Informal Divide in Turkey: Evidence from Individual Level Data", *IZA Discussion Paper Series*, No. 6271.

Tasci, H. M. and Tansel, A. (2005), "Unemployment and Transitions in the Turkish Labor Market: Evidence from Individual Level Data", *IZA Discussion Paper Series*, No. 1663.

Taymaz, E. (1998), "Trade Liberalization and Employment Generation: The Experience of Turkey in the 1980s", in A. Revenga (ed.), *Turkey: Economic Reforms, Living Standards, and Social Welfare Study*, Vol II Technical Papers, Washinghton D.C.: World Bank.

Taymaz, E. (2009), "Informality and Productivity: Productivity Differentials between Formal and Informal Firms in Turkey", *ERC Working Papers in Economics*, 09/01.

Taymaz, E. (2010a), The Effectiveness of Crisis Measures: The Case of Motor Vehicles Industry, in *Crisis and Turkey: Impact Analysis of Crisis Response Measures*, Ankara: ILO, pp. 41-72.

Taymaz, E. (2010b), "Growth, Employment, Skills and Female Labor Force", *State Planning Organization of the Republic of Turkey and World Bank, Welfare and Social Policy Analytical Work Program*; *Working Paper* Number 6.

"The Informal Economy Debate: Four Dominant Schools of Thought" (2013), Retrieved September 20, 2013, from http://wiego.org/informal-economy/informal-economy-debate-four-dominant-schools-thought

Thomson, E. (2008), "Segmented Labour Markets: A Critical Survey of Econometric Studies", in M. Reich (ed.), *Segmented Labor Markets and Labor Mobility Volume II: Flexibility, Monopsony and the New Labor Market Segmentation*, UK: Edward Elgar Publishing Limited.

Tokman, V. (1990), "The Informal Sector in Latin America: Fifteen Years Later", in D. Turnham, B. Salome and A. Schwarz (eds.), *The Informal Economy Revisited*, Paris: OECD Development Center.

Trost, R. P. and Lee, L. (1984), "Technical Training and Earnings: A Polytomous Model with Selectivity", *the Review of Economics and Statistics*, 66(1), pp. 151-156.

Tunalı, İ. (1998), "Basic Conceptual Problems in Analyses of the Informal Sector," in T. Bulutay (ed.), *Informal Sector I*, Ankara: State Institute of Statistics.

Tunalı, İ. and Assaad, R. (1992), "Market Structure and Spells of Employment and Unemployment: Evidence from the Construction Sector in Egypt", Journal of Applied Econometrics, 7, pp. 339-367.

Tunalı, İ. And Başlevent, C. (2001), "Married Women's Participation Choices and Productivity Differentials: Evidence from Urban Turkey", *Koç University Working Paper*.

Tunalı, İ. and Ercan, H. (1997), "Türkiye'de Katmanlı İşgücü Piyasası", in *Türk İşgücü Piyasası ile ilgili Temel Gelişmeler*, İstihdam ve Eğitim Projesi İşgücü Piyasası Bilgisi, Ankara: Devlet İstatistik Enstitüsü.

Uraz, A., Aran, M., Hüsamoğlu, M., Şanalmış, D. O. and Çapar, S. (2010), "Recent Trends in Female Labor Force Participation in Turkey", *State Planning Organization of the Republic of Turkey and World Bank, Welfare and Social Policy Analytical Work Program*; Working Paper Number 2.

Vietorisz, T. and Harrison, B. (1973), "Labor Market Segmentation: Positive Feedback and Divergent Development", *American Economic Association*, 63(2), pp. 366-376.

Wright, E. O. (1994), "Chapter 2: The Class Analysis of Poverty", in *Interrogating Inequality: Essays on Class Analysis, Socialism and Marxism*, VERSO, London-New York, pp. 32-50.

Yeldan, A. E. (1994), "The Economic Structure of Power under Turkish Structural Adjustment: Prices, Growth and Accumulation", in F. Şenses (ed.), *Recent Industrialization Experience of Turkey in a Global Context*, London: Greenwood Press.

Yeldan, E. (2010), Global Crisis and Turkey: A macroeconomic Assessment of the Effects of Fiscal Stimulus Measures on Employment and Labour Markets, in *Crisis and Turkey: Impact Analysis of Crisis Response Measures*, Ankara: ILO, pp. 9-39.

Yücesan-Özdemir, G. (2000), "Başkaldırı, Onay ya da Boyun Eğme?: Hegemonik Fabrika Rejiminde Mavi Yakalı İşçilerin Hikayesi", *Toplum ve Bilim*, 86, pp. 241-259.

APPENDICES

APPENDIX A

SUPPLEMENTARY TABLES FOR CHAPTER 3

A.1 Distributions of employment by various variables as a percentage of total employment

Table A.1: Distribution of Employment by Age Group, 2006-2011 (percentage of total employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
15-19	0.021	0.020	0.020	0.020	0.019	0.019	*-0.003*	*0.020*
20-24	0.037	0.037	0.036	0.035	0.035	0.035	*-0.002*	*0.036*
25-29	0.042	0.042	0.044	0.044	0.044	0.043	*0.001*	*0.043*
30-34	0.036	0.037	0.038	0.042	0.042	0.044	*0.008*	*0.040*
35-39	0.035	0.036	0.037	0.038	0.040	0.041	*0.006*	*0.038*
40-44	0.029	0.029	0.030	0.033	0.036	0.037	*0.008*	*0.032*
45-49	0.022	0.022	0.024	0.025	0.026	0.029	*0.007*	*0.025*
50-54	0.016	0.016	0.017	0.018	0.019	0.020	*0.004*	*0.018*
55-59	0.011	0.011	0.011	0.012	0.013	0.014	*0.003*	*0.012*
60-64	0.007	0.007	0.007	0.008	0.008	0.008	*0.002*	*0.008*
TOTAL	*0.257*	*0.258*	*0.264*	*0.276*	*0.284*	*0.289*	*0.032*	*0.271*
MALE								
15-19	0.047	0.046	0.046	0.043	0.042	0.040	*-0.007*	*0.044*
20-24	0.073	0.070	0.067	0.063	0.061	0.064	*-0.009*	*0.066*
25-29	0.123	0.125	0.124	0.117	0.113	0.109	*-0.013*	*0.118*
30-34	0.122	0.121	0.119	0.119	0.120	0.118	*-0.004*	*0.120*
35-39	0.111	0.112	0.111	0.109	0.106	0.104	*-0.007*	*0.109*
40-44	0.098	0.098	0.097	0.097	0.095	0.093	*-0.005*	*0.096*
45-49	0.076	0.076	0.075	0.077	0.077	0.076	*0.000*	*0.076*
50-54	0.049	0.050	0.051	0.052	0.052	0.053	*0.004*	*0.051*
55-59	0.029	0.029	0.030	0.031	0.032	0.033	*0.005*	*0.031*
60-64	0.017	0.017	0.017	0.018	0.019	0.020	*0.003*	*0.018*
TOTAL	*0.743*	*0.742*	*0.736*	*0.724*	*0.716*	*0.711*	*-0.032*	*0.729*

[*]: 2011-2006

Table A.2: Distribution of Employment by Education Level, 2006-2011
(percentage of total employment)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Illiterate	0.013	0.029	0.028	0.028	0.030	0.030	*0.017*	*0.026*
No diploma	0.023	0.017	0.018	0.019	0.020	0.020	*-0.003*	*0.020*
Primary school	0.320	0.092	0.091	0.096	0.100	0.100	*-0.219*	*0.133*
Secondary education	0.123	0.025	0.026	0.029	0.032	0.035	*-0.088*	*0.045*
General High Sch.	0.091	0.027	0.027	0.025	0.024	0.024	*-0.067*	*0.036*
Vocational High Sch.	0.084	0.020	0.021	0.020	0.020	0.020	*-0.064*	*0.031*
University	0.089	0.049	0.053	0.058	0.058	0.060	*-0.029*	*0.061*
TOTAL	*0.743*	*0.258*	*0.264*	*0.276*	*0.284*	*0.289*	*-0.454*	*0.352*
MALE								
Illiterate	0.013	0.011	0.011	0.011	0.011	0.011	*-0.002*	*0.011*
No diploma	0.023	0.023	0.023	0.023	0.024	0.025	*0.002*	*0.024*
Primary school	0.320	0.313	0.302	0.291	0.280	0.268	*-0.052*	*0.296*
Secondary education	0.123	0.125	0.129	0.131	0.137	0.140	*0.017*	*0.131*
General High Sch.	0.091	0.090	0.087	0.084	0.080	0.079	*-0.012*	*0.085*
Vocational High Sch.	0.084	0.087	0.086	0.082	0.079	0.078	*-0.006*	*0.083*
University	0.089	0.093	0.098	0.102	0.105	0.110	*0.021*	*0.100*
TOTAL	*0.743*	*0.742*	*0.736*	*0.724*	*0.716*	*0.711*	*-0.032*	*0.729*

*: 2011-2006

Table A.3: Distribution of Employment by Sector, 2006-2011
(percentage of total employment)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	***change****	***Average***
FEMALE								
Agr. and fish.	0.108	0.106	0.107	0.111	0.117	0.118	*0.010*	*0.111*
Mining and quarry.	0.000	0.000	0.000	0.000	0.000	0.000	*0.000*	*0.000*
Manufacturing	0.041	0.040	0.040	0.041	0.043	0.042	*0.001*	*0.041*
EGW	0.000	0.000	0.000	0.000	0.001	0.001	*0.000*	*0.000*
Construction	0.002	0.002	0.002	0.002	0.003	0.002	*0.000*	*0.002*
Trade, H&R	0.034	0.035	0.036	0.037	0.036	0.038	*0.004*	*0.036*
Transportation	0.004	0.004	0.004	0.004	0.005	0.005	*0.001*	*0.004*
Finance, real estate	0.021	0.023	0.024	0.027	0.029	0.029	*0.008*	*0.026*
Other services	0.047	0.047	0.050	0.053	0.052	0.054	*0.007*	*0.050*
TOTAL	*0.257*	*0.258*	*0.264*	*0.276*	*0.284*	*0.289*	*0.032*	*0.271*
MALE								
Agr. and fish.	0.117	0.114	0.114	0.121	0.120	0.121	*0.004*	*0.118*
Mining and quarry.	0.006	0.006	0.005	0.005	0.005	0.005	*-0.001*	*0.005*
Manufacturing	0.163	0.161	0.164	0.149	0.148	0.143	*-0.019*	*0.155*
EGW	0.004	0.005	0.004	0.003	0.007	0.008	*0.004*	*0.005*
Construction	0.058	0.059	0.058	0.058	0.062	0.069	*0.011*	*0.061*
Trade, H&R	0.189	0.188	0.183	0.180	0.162	0.157	*-0.033*	*0.177*
Transportation	0.051	0.052	0.048	0.048	0.050	0.048	*-0.003*	*0.049*
Finance, real estate	0.085	0.091	0.093	0.096	0.099	0.097	*0.012*	*0.093*
Other services	0.070	0.067	0.066	0.066	0.063	0.062	*-0.008*	*0.066*
TOTAL	*0.743*	*0.742*	*0.736*	*0.724*	*0.716*	*0.711*	*-0.032*	*0.729*

*: 2011-2006

Table A.4: Distribution of Employment by Occupation, 2006-2011
(percentage of total employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
Legislators & managers	0.008	0.008	0.009	0.009	0.008	0.009	*0.001*	*0.008*
Professionals	0.025	0.025	0.025	0.029	0.029	0.028	*0.003*	*0.027*
Technicians	0.020	0.020	0.023	0.021	0.020	0.020	*0.000*	*0.021*
Clerks	0.025	0.028	0.028	0.029	0.030	0.031	*0.006*	*0.029*
Service workers	0.024	0.026	0.026	0.029	0.029	0.031	*0.008*	*0.027*
Skilled agr. & fish. work.	0.086	0.082	0.081	0.083	0.089	0.086	*-0.001*	*0.085*
Craft & rltd. trade work.	0.016	0.014	0.014	0.016	0.017	0.015	*-0.001*	*0.015*
Plant & mach. ope.	0.011	0.011	0.010	0.009	0.011	0.010	*-0.001*	*0.010*
Elementary occupations	0.041	0.043	0.047	0.051	0.052	0.058	*0.017*	*0.049*
TOTAL	*0.257*	*0.258*	*0.264*	*0.276*	*0.284*	*0.289*	*0.032*	*0.271*
MALE								
Legislators & managers	0.087	0.081	0.079	0.083	0.075	0.074	*-0.013*	*0.080*
Professionals	0.045	0.040	0.038	0.038	0.044	0.044	*-0.001*	*0.042*
Technicians	0.044	0.049	0.050	0.044	0.041	0.041	*-0.003*	*0.045*
Clerks	0.039	0.038	0.040	0.039	0.040	0.039	*0.000*	*0.039*
Service workers	0.097	0.101	0.097	0.099	0.096	0.095	*-0.002*	*0.097*
Skilled agr. & fish. work.	0.101	0.099	0.099	0.104	0.104	0.102	*0.001*	*0.102*
Craft & rltd. trade work.	0.135	0.136	0.132	0.122	0.122	0.119	*-0.016*	*0.128*
Plant & mach. ope.	0.100	0.103	0.100	0.090	0.095	0.093	*-0.007*	*0.097*
Elementary occupations	0.094	0.096	0.102	0.106	0.099	0.103	*0.009*	*0.100*
TOTAL	*0.743*	*0.742*	*0.736*	*0.724*	*0.716*	*0.711*	*-0.032*	*0.729*

[*]: 2011-2006

Table A.5: Distribution of Employment by Establishment Size, 2006-2011
(percentage of total employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
Less than 10	0.162	0.160	0.160	0.171	0.179	0.182	*0.020*	*0.169*
10-24	0.020	0.020	0.021	0.021	0.022	0.023	*0.002*	*0.021*
25-49	0.025	0.027	0.030	0.031	0.031	0.031	*0.006*	*0.029*
50 or more	0.050	0.051	0.053	0.053	0.053	0.053	*0.003*	*0.052*
TOTAL	*0.257*	*0.258*	*0.264*	*0.276*	*0.284*	*0.289*	*0.032*	*0.271*
MALE								
Less than 10	0.438	0.428	0.415	0.414	0.402	0.395	*-0.043*	*0.415*
10-24	0.062	0.061	0.063	0.061	0.061	0.064	*0.002*	*0.062*
25-49	0.075	0.084	0.088	0.084	0.087	0.088	*0.013*	*0.084*
50 or more	0.167	0.169	0.170	0.165	0.165	0.164	*-0.004*	*0.167*
TOTAL	*0.743*	*0.742*	*0.736*	*0.724*	*0.716*	*0.711*	*-0.032*	*0.729*

[*]: 2011-2006

Table A.6: Distribution of Employment by Employment Status, 2006-2011 (percentage of total employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
Regular/casual emp.	0.134	0.139	0.144	0.145	0.148	0.153	*0.019*	*0.144*
Employer	0.003	0.004	0.004	0.004	0.004	0.004	*0.000*	*0.004*
Self-employed	0.031	0.028	0.028	0.034	0.035	0.032	*0.001*	*0.031*
Unpaid family work.	0.089	0.087	0.088	0.094	0.098	0.100	*0.012*	*0.093*
TOTAL	*0.257*	*0.258*	*0.264*	*0.276*	*0.284*	*0.290*	*0.032*	*0.271*
MALE								
Regular/casual emp.	0.469	0.480	0.481	0.471	0.476	0.478	*0.009*	*0.476*
Employer	0.053	0.053	0.055	0.053	0.049	0.048	*-0.005*	*0.052*
Self-employed	0.180	0.172	0.164	0.162	0.154	0.150	*-0.030*	*0.164*
Unpaid family work.	0.041	0.038	0.036	0.039	0.036	0.035	*-0.006*	*0.037*
TOTAL	*0.743*	*0.742*	*0.736*	*0.724*	*0.716*	*0.710*	*-0.032*	*0.729*

[*]: 2011-2006

Table A.7: Distribution of Employment by Registration Status, 2006-2011 (percentage of total employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
informal	0.159	0.154	0.151	0.158	0.163	0.164	*0.005*	*0.158*
formal	0.098	0.104	0.113	0.118	0.121	0.125	*0.028*	*0.113*
TOTAL	*0.257*	*0.258*	*0.264*	*0.276*	*0.284*	*0.290*	*0.032*	*0.271*
MALE								
informal	0.300	0.289	0.271	0.268	0.257	0.245	*-0.055*	*0.272*
formal	0.443	0.453	0.465	0.456	0.459	0.465	*0.022*	*0.457*
TOTAL	*0.743*	*0.742*	*0.736*	*0.724*	*0.716*	*0.710*	*-0.032*	*0.729*

[*]: 2011-2006

Table A.8: Distribution of Employment by Registration Status, 2006-2011 (percentage of gender specific total employment)

	2006	2007	2008	2009	2010	2011	*change 2011-2006*	*Average*
FEMALE								
informal	0.619	0.596	0.573	0.572	0.575	0.567	*-0.053*	*0.584*
formal	0.381	0.404	0.427	0.428	0.425	0.433	*0.053*	*0.416*
MALE								
informal	0.404	0.389	0.368	0.370	0.359	0.345	*-0.059*	*0.373*
formal	0.596	0.611	0.632	0.630	0.641	0.655	*0.059*	*0.627*

Table A.9: Distribution of Employment by Region, 2006-2011
(percentage of total employment)

	2006	2007	2008	2009	2010	2011	*change*[*]	*Average*
FEMALE								
Marmara	0.081	0.082	0.084	0.084	0.085	0.089	*0.008*	*0.084*
Aegean	0.039	0.039	0.037	0.042	0.045	0.047	*0.009*	*0.042*
Mediterranean	0.034	0.035	0.035	0.036	0.041	0.042	*0.007*	*0.037*
Central Anatolia	0.031	0.031	0.033	0.037	0.039	0.040	*0.009*	*0.035*
Black Sea	0.046	0.045	0.047	0.049	0.042	0.042	*-0.004*	*0.045*
East Anatolia	0.020	0.018	0.018	0.019	0.019	0.019	*0.000*	*0.019*
Southeast Anatolia	0.006	0.006	0.009	0.009	0.012	0.010	*0.004*	*0.009*
TOTAL	*0.257*	*0.258*	*0.264*	*0.276*	*0.284*	*0.289*	*0.032*	*0.271*
MALE								
Marmara	0.259	0.259	0.257	0.246	0.241	0.241	*-0.018*	*0.250*
Aegean	0.106	0.105	0.102	0.100	0.100	0.100	*-0.006*	*0.102*
Mediterranean	0.091	0.093	0.091	0.091	0.091	0.090	*-0.001*	*0.091*
Central Anatolia	0.109	0.112	0.110	0.108	0.107	0.106	*-0.003*	*0.109*
Black Sea	0.078	0.077	0.077	0.076	0.071	0.068	*-0.010*	*0.074*
East Anatolia	0.049	0.048	0.049	0.050	0.049	0.050	*0.002*	*0.049*
Southeast Anatolia	0.051	0.050	0.050	0.054	0.057	0.056	*0.004*	*0.053*
TOTAL	*0.743*	*0.742*	*0.736*	*0.724*	*0.716*	*0.711*	*-0.032*	*0.729*

[*]: 2011-2006

Table A.10: Actual labor market outcome probabilities, 2006-2011
(percentage)

	2006	*2007*	*2008*	*2009*	*2010*	*2011*	*Average*
Female							
Non-employment	0.862	0.857	0.850	0.845	0.832	0.819	0.844
Informal manufacturing	0.013	0.012	0.010	0.010	0.011	0.011	0.011
Informal services	0.022	0.022	0.021	0.020	0.020	0.023	0.021
Formal manufacturing	0.020	0.023	0.025	0.022	0.024	0.025	0.023
Formal services	0.069	0.074	0.080	0.082	0.089	0.099	0.082
Employer	0.003	0.003	0.003	0.004	0.004	0.004	0.003
Self-employed	0.011	0.010	0.011	0.018	0.021	0.020	0.015
Male							
Non-employment	0.399	0.395	0.398	0.420	0.402	0.382	0.399
Informal manufacturing	0.060	0.058	0.051	0.047	0.050	0.051	0.053
Informal services	0.065	0.064	0.059	0.058	0.058	0.055	0.060
Formal manufacturing	0.121	0.127	0.135	0.121	0.130	0.141	0.129
Formal services	0.199	0.208	0.215	0.220	0.231	0.243	0.219
Employer	0.051	0.053	0.054	0.052	0.051	0.052	0.052
Self-employed	0.104	0.095	0.087	0.082	0.078	0.076	0.087

A.2 Marginal effects of household characteristics on various labor market outcomes

Table A.11: Marginal effects of household characteristics on informal manufacturing employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
*Parent*hh size*	-0.001		0.000		0.000		0.000		0.001	**	0.001	*	0.000
*Child*hh size*	0.004	***	0.005	***	0.005	***	0.004	***	0.006	***	0.006	***	0.005
Unemp. hh head	-0.001	***	-0.001	***	-0.001	***	-0.002	***	-0.001	***	-0.002	***	-0.001
Any formal	-0.082	***	-0.083	***	-0.072	***	-0.074	***	-0.069	***	-0.054	***	-0.072
Male													
*Parent*hh size*	0.034	***	0.030	***	0.033	***	0.024	***	0.026	***	0.031	***	0.030
*Child*hh size*	0.040	***	0.038	***	0.036	***	0.032	***	0.041	***	0.050	***	0.040
Unemp. hh head	-0.011	***	-0.013	***	-0.004	*	-0.012	***	-0.011	***	-0.007	***	-0.010
Any formal	-0.087	***	-0.085	***	-0.075	***	-0.075	***	-0.073	***	-0.072	***	-0.078

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.12: Marginal effects of household characteristics on informal services employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
*Parent*hh size*	-0.001		-0.001		-0.001		-0.001		-0.001		0.002	*	-0.001
*Child*hh size*	0.005	***	0.002	*	0.000		0.003	***	0.004	***	0.003	**	0.003
Unemployed hh head	-0.004	***	-0.004	***	-0.005	***	-0.005	***	-0.005	***	-0.006	***	-0.005
Any formal	-0.244	***	-0.227	***	-0.213	***	-0.179	***	-0.166	***	-0.183	***	-0.202
Male													
*Parent*hh size*	0.005		0.016	***	0.011	**	0.007	*	0.010	**	0.012	***	0.010
*Child*hh size*	0.015	**	0.016	***	0.013	**	0.017	***	0.019	***	0.013	***	0.016
Unemployed hh head	-0.010	**	-0.017	***	-0.012	***	-0.016	***	-0.009	**	-0.012	***	-0.013
Any formal	-0.108	***	-0.109	***	-0.099	***	-0.102	***	-0.092	***	-0.083	***	-0.099

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.13: Marginal effects of household characteristics on formal manufacturing employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
*Parent*hh size*	-0.003	***	-0.003	***	-0.005	***	-0.004	***	-0.004	***	-0.005	***	-0.004
*Child*hh size*	0.002	***	0.003	***	0.005	***	0.005	***	0.006	***	0.008	***	0.005
Unemployed hh head	-0.002	***	-0.002	***	-0.002	***	-0.002	***	-0.002	***	-0.003	***	-0.002
Any formal	-0.075	***	-0.072	***	-0.081	***	-0.074	***	-0.075	***	-0.075	***	-0.075
Male													
*Parent*hh size*	0.010	*	0.009	*	0.009	*	0.018	***	0.031	***	0.024	***	0.017
*Child*hh size*	0.014	*	0.015	*	0.020	**	0.015	*	0.043	***	0.032	***	0.023
Unemployed hh head	-0.021	***	-0.025	***	-0.030	***	-0.024	***	-0.024	***	-0.025	***	-0.025
Any formal	-0.119	***	-0.118	***	-0.128	***	-0.126	***	-0.128	***	-0.128	***	-0.125

* *p < 0.05,* ** *p < 0.01,* *** *p < 0.001*

Table A.14: Marginal effects of household characteristics on formal services employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
*Parent*hh size*	-0.002	***	-0.004	***	-0.006	***	-0.005	***	-0.006	***	-0.008	***	-0.005
*Child*hh size*	0.003	**	0.005	***	0.004	***	0.006	***	0.006	***	0.007	***	0.005
Unemployed hh head	-0.006	***	-0.008	***	-0.009	***	-0.011	***	-0.012	***	-0.015	***	-0.010
Any formal	-0.169	***	-0.208	***	-0.201	***	-0.213	***	-0.206	***	-0.238	***	-0.206
Male													
*Parent*hh size*	0.016	**	0.003		0.010	*	0.005		0.021	***	0.010	*	0.011
*Child*hh size*	-0.044	***	-0.021	*	-0.015		-0.003		0.022	**	-0.001		-0.010
Unemployed hh head	-0.039	***	-0.040	***	-0.045	***	-0.053	***	-0.043	***	-0.049	***	-0.045
Any formal	-0.173	***	-0.170	***	-0.177	***	-0.207	***	-0.201	***	-0.176	***	-0.184

* *p < 0.05,* ** *p < 0.01,* *** *p < 0.001*

Table A.15: Marginal effects of household characteristics on employer probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
*Parent*hh size*	-0.001	**	-0.001	*	-0.001	**	-0.001	***	-0.001	**	-0.001	*	-0.001
*Child*hh size*	0.000		0.000		-0.001		-0.001		-0.001		-0.001		-0.001
Unemployed hh head	-0.001	***	-0.001	***	-0.001	***	-0.001	***	-0.001	***	-0.001	***	-0.001
Any formal	-0.007	***	-0.008	***	-0.011	***	-0.012	***	-0.010	***	-0.010	***	-0.010
Male													
*Parent*hh size*	0.005	**	0.011	***	0.009	***	0.003		0.010	***	0.007	***	0.008
*Child*hh size*	0.016	**	0.009		0.019	***	0.020	***	-0.006		0.014	**	0.012
Unemployed hh head	-0.005		-0.001		-0.013	***	-0.008	*	-0.012	***	-0.010	**	-0.008
Any formal	-0.046	***	-0.050	***	-0.053	***	-0.050	***	-0.047	***	-0.042	***	-0.048

* *p < 0.05,* ** *p < 0.01,* *** *p < 0.001*

Table A.16: Marginal effects of household characteristics on self-employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
*Parent*hh size*	-0.001		-0.001		-0.001		0.000		-0.001		-0.001		-0.001
*Child*hh size*	-0.001		0.000		-0.001		-0.001		-0.001		0.002		0.000
Unemployed hh head	-0.002	***	-0.001	***	-0.003	***	-0.005	***	-0.005	***	-0.005	***	-0.004
Any formal	-0.099	***	-0.081	***	-0.094	***	-0.142	***	-0.138	***	-0.111	***	-0.111
Male													
*Parent*hh size*	0.032	***	0.043	***	0.026	***	0.027	***	0.021	***	0.028	***	0.030
*Child*hh size*	0.062	***	0.066	***	0.046	***	0.047	***	0.042	***	0.047	***	0.052
Unemployed hh head	0.000		0.001		-0.006		-0.009	*	-0.009	*	-0.008	*	-0.005
Any formal	-0.145	***	-0.139	***	-0.125	***	-0.118	***	-0.104	***	-0.095	***	-0.121

* *p < 0.05,* ** *p < 0.01,* *** *p < 0.001*

A.3 Marginal effects of child, age, marital status and region of residence on various labor market outcomes

Table A.17: Marginal effects of child, age, marital status and region of residence on informal manufacturing employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Child	-0.005	***	-0.005	***	-0.005	***	-0.004	***	-0.006	***	-0.006	***	-0.005
Age (log)	0.069	***	0.089	***	0.057	***	0.079	***	0.090	***	0.116	***	0.083
Age (log square)	-0.010	***	-0.013	***	-0.008	***	-0.012	***	-0.013	***	-0.017	***	-0.012
Single	0.005	***	0.006	***	0.005	***	0.004	***	0.005	***	0.007	***	0.005
Divorced	0.000		0.001		0.002	*	-0.001		0.000		0.001	*	0.001
Aegean	-0.002	***	-0.002	***	-0.002	***	-0.002	***	-0.002	***	-0.003	***	-0.002
Mediterranean	-0.004	***	-0.003	***	-0.003	***	-0.003	***	-0.004	***	-0.004	***	-0.004
Central Anatolia	-0.004	***	-0.004	***	-0.002	***	-0.003	***	-0.003	***	-0.003	***	-0.003
Black Sea	-0.003	***	-0.003	***	-0.003	***	-0.003	***	-0.004	***	-0.004	***	-0.003
East Anatolia	-0.004	***	-0.005	***	-0.004	***	-0.004	***	-0.005	***	-0.004	***	-0.004
Southeast Anatolia	-0.005	***	-0.004	***	-0.004	***	-0.004	***	-0.004	***	-0.005	***	-0.004
Male													
Child	-0.005		-0.002		-0.003		-0.006		-0.018	**	-0.028	***	-0.010
Age (log)	-0.462	***	-0.615	***	-0.566	***	-0.343	***	-0.502	***	-0.711	***	-0.533
Age (log square)	0.055	***	0.078	***	0.073	***	0.041	***	0.064	***	0.094	***	0.068
Single	0.016	***	0.010	**	0.007	*	0.004		0.006	*	0.009	**	0.009
Divorced	0.015		0.021	*	0.022	*	0.009		0.013		0.026	**	0.018
Aegean	-0.022	***	-0.022	***	-0.011	***	-0.010	***	-0.010	***	-0.005	*	-0.013
Mediterranean	-0.021	***	-0.017	***	-0.009	***	-0.001		-0.008	***	-0.009	***	-0.011
Central Anatolia	-0.022	***	-0.018	***	-0.011	***	-0.011	***	-0.011	***	-0.010	***	-0.014
Black Sea	-0.023	***	-0.012	***	-0.012	***	-0.013	***	-0.022	***	-0.019	***	-0.017
East Anatolia	-0.044	***	-0.036	***	-0.032	***	-0.024	***	-0.024	***	-0.021	***	-0.030
Southeast Anatolia	-0.025	***	-0.017	***	-0.013	***	-0.008	***	-0.005	*	-0.005	*	-0.012

*Note: Omitted categories: "married", and "Marmara region"; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Table A.18: Marginal effects of child, age, marital status and region of residence on informal services employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Child	-0.005	**	-0.006	**	-0.002		-0.003	*	-0.005	**	-0.002		-0.004
Age (log)	0.228	***	0.223	***	0.206	***	0.216	***	0.257	***	0.283	***	0.236
Age (log square)	-0.033	***	-0.033	***	-0.030	***	-0.031	***	-0.037	***	-0.041	***	-0.034
Single	0.012	***	0.018	***	0.011	***	0.012	***	0.012	***	0.015	***	0.013
Divorced	0.007	***	0.009	***	0.010	***	0.007	***	0.009	***	0.010	***	0.009
Aegean	-0.002	**	-0.001		-0.001		0.000		-0.001		0.002	*	-0.001
Mediterranean	-0.001	*	0.000		0.001		0.001		0.000		0.002	*	0.001
Central Anatolia	-0.003	***	-0.002	***	-0.001		-0.001		0.000		0.000		-0.001
Black Sea	-0.002	***	-0.002	**	-0.003	***	-0.001		-0.001		-0.001		-0.002
East Anatolia	-0.008	***	-0.007	***	-0.007	***	-0.007	***	-0.009	***	-0.009	***	-0.008
Southeast Anatolia	-0.010	***	-0.010	***	-0.009	***	-0.005	***	-0.006	***	-0.009	***	-0.008
Male													
Child	0.014		0.039	***	0.026	*	0.015		0.009		0.033	***	0.023
Age (log)	-0.853	***	-1.083	***	-1.041	***	-0.898	***	-1.015	***	-1.141	***	-1.005
Age (log square)	0.112	***	0.147	***	0.143	***	0.120	***	0.139	***	0.159	***	0.137
Single	0.023	***	0.020	***	0.019	***	0.012	**	0.020	***	0.021	***	0.019
Divorced	0.022		0.040	**	0.005		0.023	*	0.028	**	0.039	***	0.026
Aegean	-0.013	***	0.004		-0.003		-0.005		0.003		0.007	*	-0.001
Mediterranean	-0.003		0.016	***	0.011	**	0.011	**	0.023	***	0.024	***	0.014
Central Anatolia	-0.003		0.003		0.003		0.003		0.007	*	0.006	*	0.003
Black Sea	-0.005		-0.004		-0.006		-0.009	**	0.000		-0.003		-0.005
East Anatolia	-0.011	**	-0.007		-0.004		-0.009	**	-0.001		0.013	**	-0.003
Southeast Anatolia	-0.003		0.001		0.013	**	0.011	**	0.020	***	0.020	***	0.010

*Note: Omitted categories: "married", and "Marmara region"; * p < 0.05, ** p < 0.01, *** p < 0.001*

Table A.19: Marginal effects of child, age, marital status and region of residence on formal manufacturing employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Child	-0.003	***	-0.004	***	-0.009	***	-0.008	***	-0.008	***	-0.011	***	-0.007
Age (log)	0.276	***	0.294	***	0.419	***	0.366	***	0.419	***	0.515	***	0.382
Age (log square)	-0.040	***	-0.043	***	-0.061	***	-0.053	***	-0.061	***	-0.074	***	-0.055
Single	0.005	***	0.007	***	0.009	***	0.006	***	0.005	***	0.007	***	0.007
Divorced	-0.001		0.000		0.000		0.002	*	0.002	*	0.000		0.001
Aegean	-0.002	***	-0.002	***	-0.003	***	-0.002	***	-0.001	***	-0.001	***	-0.002
Mediterranean	-0.006	***	-0.006	***	-0.009	***	-0.007	***	-0.009	***	-0.011	***	-0.008
Central Anatolia	-0.006	***	-0.006	***	-0.007	***	-0.006	***	-0.008	***	-0.010	***	-0.007
Black Sea	-0.005	***	-0.005	***	-0.007	***	-0.006	***	-0.008	***	-0.007	***	-0.006
East Anatolia	-0.007	***	-0.008	***	-0.010	***	-0.009	***	-0.011	***	-0.011	***	-0.009
Southeast Anatolia	-0.007	***	-0.008	***	-0.010	***	-0.009	***	-0.010	***	-0.011	***	-0.009
Male													
Child	-0.015		-0.014		-0.012		-0.001		-0.032	**	-0.015		-0.015
Age (log)	3.316	***	3.447	***	3.431	***	3.353	***	3.450	***	3.699	***	3.449
Age (log square)	-0.498	***	-0.518	***	-0.518	***	-0.500	***	-0.518	***	-0.555	***	-0.518
Single	-0.040	***	-0.047	***	-0.057	***	-0.047	***	-0.053	***	-0.065	***	-0.052
Divorced	-0.062	***	-0.065	***	-0.068	***	-0.047	***	-0.046	***	-0.066	***	-0.059
Aegean	-0.036	***	-0.035	***	-0.044	***	-0.033	***	-0.025	***	-0.030	***	-0.034
Mediterranean	-0.092	***	-0.090	***	-0.101	***	-0.084	***	-0.091	***	-0.106	***	-0.094
Central Anatolia	-0.070	***	-0.064	***	-0.071	***	-0.058	***	-0.066	***	-0.068	***	-0.066
Black Sea	-0.081	***	-0.082	***	-0.086	***	-0.069	***	-0.083	***	-0.088	***	-0.082
East Anatolia	-0.126	***	-0.133	***	-0.144	***	-0.116	***	-0.133	***	-0.138	***	-0.132
Southeast Anatolia	-0.116	***	-0.130	***	-0.130	***	-0.103	***	-0.111	***	-0.119	***	-0.118

Note: Omitted categories: "married", and "Marmara region"; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.20: Marginal effects of child, age, marital status and region of residence on formal services employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Child	-0.006	***	-0.010	***	-0.010	***	-0.011	***	-0.013	***	-0.012	***	-0.010
Age (log)	0.582	***	0.672	***	0.711	***	0.741	***	0.912	***	1.168	***	0.798
Age (log square)	-0.083	***	-0.096	***	-0.102	***	-0.107	***	-0.130	***	-0.167	***	-0.114
Single	0.007	***	0.010	***	0.007	***	0.005	***	0.008	***	0.006	***	0.007
Divorced	-0.001		-0.001		-0.001		-0.001		0.001		0.000		-0.001
Aegean	-0.001	***	-0.001	**	-0.001	**	0.000		-0.001		-0.001		-0.001
Mediterranean	-0.004	***	-0.004	***	-0.005	***	-0.004	***	-0.006	***	-0.009	***	-0.005
Central Anatolia	-0.002	***	-0.003	***	-0.002	***	-0.001		-0.003	***	-0.006	***	-0.003
Black Sea	-0.002	***	-0.003	***	-0.004	***	-0.003	***	-0.005	***	-0.005	***	-0.004
East Anatolia	-0.005	***	-0.005	***	-0.007	***	-0.006	***	-0.010	***	-0.010	***	-0.007
Southeast Anatolia	-0.006	***	-0.008	***	-0.011	***	-0.008	***	-0.009	***	-0.015	***	-0.010
Male													
Child	0.043	*	-0.008		-0.007		-0.023		-0.047	**	-0.028		-0.012
Age (log)	5.111	***	5.884	***	5.720	***	5.646	***	6.040	***	6.321	***	5.787
Age (log square)	-0.732	***	-0.845	***	-0.823	***	-0.812	***	-0.868	***	-0.909	***	-0.832
Single	-0.046	***	-0.042	***	-0.041	***	-0.047	***	-0.056	***	-0.072	***	-0.051
Divorced	-0.086	***	-0.089	***	-0.072	***	-0.074	***	-0.067	***	-0.063	***	-0.075
Aegean	-0.022	***	-0.016	***	-0.008		-0.009		-0.007		-0.003		-0.011
Mediterranean	-0.052	***	-0.053	***	-0.054	***	-0.057	***	-0.052	***	-0.039	***	-0.051
Central Anatolia	-0.007		0.003		0.004		0.015	**	0.011	*	0.009	*	0.006
Black Sea	0.000		-0.003		-0.012	*	0.004		0.003		0.008		0.000
East Anatolia	-0.038	***	-0.055	***	-0.059	***	-0.041	***	-0.048	***	-0.028	***	-0.045
Southeast Anatolia	-0.114	***	-0.130	***	-0.154	***	-0.115	***	-0.112	***	-0.099	***	-0.121

*Note: Omitted categories: "married", and "Marmara region"; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Table A.21: Marginal effects of child, age, marital status and region of residence on employer probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Child	-0.001		-0.001		-0.001		0.000		0.000		0.000		-0.001
Age (log)	0.031	***	0.033	***	0.047	***	0.043	***	0.048	***	0.056	***	0.043
Age (log square)	-0.004	***	-0.004	***	-0.006	***	-0.005	***	-0.006	***	-0.007	***	-0.005
Single	0.000	*	0.000	*	0.000		-0.001		-0.001		0.000		0.000
Divorced	-0.001		0.000		-0.001		-0.001		-0.001		-0.001		-0.001
Aegean	-0.001	*	0.000		0.000		-0.001		-0.001		0.000		-0.001
Mediterranean	-0.001	**	-0.001		-0.001	***	-0.001	***	-0.001	**	-0.001	*	-0.001
Central Anatolia	-0.001	***	-0.001		-0.001		-0.001	*	-0.001	***	-0.001	***	-0.001
Black Sea	-0.001		-0.001	**	-0.001	**	-0.001	*	-0.001	***	-0.001		-0.001
East Anatolia	-0.001	***	-0.001	***	-0.001	*	-0.001	***	-0.001	***	-0.001	***	-0.001
Southeast Anatolia	-0.001	***	-0.001	***	-0.001	***	-0.001	**	-0.001	***	-0.001	***	-0.001
Male													
Child	-0.032	***	-0.020	*	-0.020	*	-0.039	***	0.005		-0.029	***	-0.023
Age (log)	0.881	***	0.940	***	0.990	***	1.065	***	0.959	***	1.066	***	0.984
Age (log square)	-0.118	***	-0.127	***	-0.133	***	-0.143	***	-0.128	***	-0.143	***	-0.132
Single	-0.025	***	-0.025	***	-0.026	***	-0.018	***	-0.021	***	-0.018	***	-0.022
Divorced	-0.014	**	-0.013	**	-0.017	**	-0.015	**	-0.009	*	-0.012	**	-0.013
Aegean	-0.018	***	-0.010	***	-0.006	**	-0.002		-0.001		0.001		-0.006
Mediterranean	-0.023	***	-0.018	***	-0.018	***	-0.012	***	-0.013	***	-0.016	***	-0.017
Central Anatolia	-0.006	***	-0.005	**	-0.011	***	0.002		-0.002		-0.006	***	-0.005
Black Sea	-0.014	***	-0.015	***	-0.016	***	-0.009	***	-0.009	***	-0.003		-0.011
East Anatolia	-0.025	***	-0.023	***	-0.028	***	-0.021	***	-0.023	***	-0.021	***	-0.024
Southeast Anatolia	-0.039	***	-0.037	***	-0.044	***	-0.030	***	-0.027	***	-0.027	***	-0.034

*Note: Omitted categories: "married", and "Marmara region"; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Table A.22: Marginal effects of child, age, marital status and region of residence on self-employment probability

	2006		*2007*		*2008*		*2009*		*2010*		*2011*		*Average*
Female													
Child	-0.002		-0.003	*	-0.002		-0.001		-0.005	*	-0.007	**	-0.003
Age (log)	0.223	***	0.203	***	0.200	***	0.309	***	0.374	***	0.446	***	0.293
Age (log square)	-0.031	***	-0.028	***	-0.028	***	-0.043	***	-0.053	***	-0.062	***	-0.041
Single	0.002	**	0.002	**	0.002	*	-0.001		-0.002	*	-0.001		0.000
Divorced	0.000		0.001	*	0.001	*	0.001		0.001		0.002	**	0.001
Aegean	0.000		0.000		-0.001		-0.002	***	-0.002	**	-0.002	**	-0.001
Mediterranean	0.000		0.001	*	0.000		-0.001		-0.001		-0.001		0.000
Central Anatolia	-0.001	*	-0.001		0.001	**	0.001	**	0.001		-0.001		0.000
Black Sea	-0.002	***	-0.001	***	-0.002	***	-0.004	***	-0.005	***	-0.005	***	-0.003
East Anatolia	-0.002	***	-0.001		-0.001		-0.004	***	-0.008	***	-0.004	***	-0.003
Southeast Anatolia	-0.002	***	-0.002	***	-0.003	***	-0.005	***	-0.006	***	-0.008	***	-0.004
Male													
Child	-0.051	***	-0.055	***	-0.030	**	-0.028	*	-0.034	**	-0.035	***	-0.039
Age (log)	0.747	***	0.493	***	0.648	***	0.622	***	0.714	***	0.622	***	0.641
Age (log square)	-0.092	***	-0.057	***	-0.079	***	-0.075	***	-0.088	***	-0.075	***	-0.078
Single	-0.039	***	-0.021	***	-0.017	***	-0.017	***	-0.013	**	-0.002		-0.018
Divorced	0.012		0.025	*	0.017		-0.006		0.013		0.004		0.011
Aegean	0.027	***	0.012	**	0.001		0.008	*	0.008	**	0.001		0.010
Mediterranean	0.004		-0.009	*	-0.012	***	-0.003		0.003		-0.008	**	-0.004
Central Anatolia	-0.001		-0.001		-0.008	*	-0.009	**	0.000		-0.006	**	-0.004
Black Sea	-0.001		-0.001		-0.006		0.000		0.009	**	-0.012	***	-0.002
East Anatolia	-0.002		-0.010	*	-0.008	*	-0.002		-0.001		-0.006		-0.005
Southeast Anatolia	0.002		-0.023	***	-0.019	***	-0.016	***	-0.014	***	-0.022	***	-0.015

*Note: Omitted categories: "married", and "Marmara region"; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

A.4 Descriptive statistics for various labor market outcomes (for Tables A.23-A.30)

A.5 Determinants of wages for various labor market outcomes (OLS estimates with no sample correction) (for Tables A.31-A.38)

Table A.23: Descriptive statistics for informal manufacture wage earners, 2006-2011, female (mean values)

	2006	2007	2008	2009	2010	2011
Wage rate (log)	5.645	5.768	5.833	5.853	5.886	5.922
Wage rate	341	378	418	444	457	483
Age(log)	3.251	3.270	3.296	3.303	3.329	3.325
Age	28	28	29	29	30	30
Education level						
Primary school	0.581	0.553	0.554	0.551	0.551	0.518
Secondary school	0.205	0.220	0.208	0.238	0.265	0.294
General high school	0.081	0.076	0.087	0.090	0.059	0.045
Vocational high school	0.055	0.055	0.068	0.053	0.048	0.068
University	0.016	0.020	0.019	0.033	0.027	0.024
Firm size						
"10-24"	0.260	0.237	0.203	0.244	0.211	0.203
"25-49"	0.175	0.197	0.214	0.199	0.213	0.178
"50 or more"	0.199	0.184	0.162	0.144	0.150	0.151
Occupation						
Managers	0.004	0.004	0.003	0.006	0.003	0.005
Professionals	0.006	0.005	0.005	0.005	0.007	0.004
Technicians	0.052	0.060	0.043	0.054	0.047	0.044
Clerks	0.053	0.047	0.039	0.048	0.039	0.043
Service workers	0.027	0.027	0.047	0.038	0.041	0.033
Skilled agr workers	0.000	0.000	0.000	0.000	0.000	0.001
Craft workers	0.383	0.374	0.386	0.430	0.429	0.427
Machine operators	0.296	0.313	0.271	0.231	0.243	0.237
Region						
Aegean	0.177	0.155	0.143	0.128	0.107	0.089
Mediterranean	0.060	0.084	0.084	0.079	0.079	0.088
Central Anatolia	0.050	0.061	0.106	0.115	0.147	0.174
Black Sea	0.074	0.068	0.077	0.066	0.052	0.061
East Anatolia	0.010	0.013	0.021	0.018	0.015	0.035
Southeast Anatolia	0.021	0.032	0.037	0.036	0.039	0.038
Working time (log)	3.886	3.835	3.847	3.782	3.739	3.695
Full time	0.918	0.920	0.901	0.849	0.847	0.809
n obs	1,241	1,110	915	979	1,089	1,138

Table A.24: Descriptive statistics for informal manufacture wage earners, 2006-2011, male (mean values)

	2006	2007	2008	2009	2010	2011
Wage rate (log)	5.999	6.122	6.206	6.267	6.345	6.451
Wage rate	455	515	568	602	653	719
Age(log)	3.405	3.417	3.428	3.421	3.410	3.416
Age	32	33	33	33	33	33
Education level						
Primary school	0.608	0.598	0.568	0.545	0.507	0.493
Secondary school	0.215	0.227	0.254	0.262	0.308	0.323
General high school	0.061	0.063	0.065	0.071	0.066	0.065
Vocational high school	0.068	0.061	0.059	0.065	0.062	0.063
University	0.016	0.022	0.023	0.028	0.025	0.027
Firm size						
"10-24"	0.143	0.134	0.128	0.125	0.125	0.130
"25-49"	0.100	0.105	0.114	0.110	0.110	0.107
"50 or more"	0.099	0.088	0.085	0.095	0.083	0.094
Occupation						
Managers	0.007	0.006	0.008	0.010	0.010	0.011
Professionals	0.006	0.005	0.006	0.004	0.003	0.004
Technicians	0.018	0.014	0.015	0.019	0.018	0.016
Clerks	0.016	0.012	0.012	0.020	0.017	0.019
Service workers	0.016	0.011	0.013	0.017	0.019	0.016
Skilled agr workers	0.000	0.001	0.000	0.000	0.001	0.000
Craft workers	0.566	0.567	0.558	0.539	0.559	0.539
Machine operators	0.172	0.160	0.153	0.162	0.169	0.161
Region						
Aegean	0.137	0.127	0.124	0.109	0.095	0.095
Mediterranean	0.116	0.116	0.131	0.129	0.115	0.121
Central Anatolia	0.122	0.130	0.136	0.144	0.166	0.189
Black Sea	0.076	0.085	0.076	0.067	0.065	0.069
East Anatolia	0.052	0.058	0.058	0.068	0.080	0.075
Southeast Anatolia	0.138	0.154	0.154	0.152	0.162	0.146
Working time (log)	3.998	3.941	3.954	3.955	3.930	3.928
Full time	0.979	0.976	0.975	0.972	0.966	0.968
n obs	5,639	5,231	4537	4092	4,658	4,840

Table A.25: Descriptive statistics for informal services wage earners, 2006-2011, female (mean values)

	2006	2007	2008	2009	2010	2011
Wage rate (log)	5.627	5.759	5.839	5.896	5.934	6.073
Wage rate	333	381	416	444	455	508
Age(log)	3.391	3.398	3.398	3.380	3.418	3.461
Age	32	32	32	31	33	34
Education level						
Primary school	0.439	0.430	0.431	0.413	0.425	0.449
Secondary school	0.149	0.167	0.186	0.206	0.220	0.213
General high school	0.156	0.169	0.157	0.155	0.127	0.119
Vocational high school	0.109	0.114	0.103	0.114	0.107	0.094
University	0.079	0.066	0.075	0.082	0.076	0.077
Firm size						
"10-24"	0.079	0.078	0.075	0.081	0.090	0.083
"25-49"	0.071	0.079	0.078	0.080	0.081	0.070
"50 or more"	0.054	0.040	0.050	0.058	0.054	0.043
Occupation						
Managers	0.009	0.008	0.005	0.013	0.008	0.010
Professionals	0.040	0.043	0.035	0.028	0.030	0.029
Technicians	0.051	0.059	0.054	0.058	0.048	0.046
Clerks	0.128	0.123	0.110	0.115	0.120	0.110
Service workers	0.451	0.468	0.488	0.521	0.513	0.532
Skilled agr workers	0.000	0.000	0.000	0.000	0.000	0.002
Craft workers	0.025	0.019	0.017	0.021	0.027	0.014
Machine operators	0.007	0.005	0.006	0.004	0.003	0.003
Region						
Aegean	0.164	0.183	0.170	0.158	0.123	0.135
Mediterranean	0.165	0.172	0.197	0.171	0.175	0.189
Central Anatolia	0.135	0.136	0.148	0.155	0.199	0.210
Black Sea	0.124	0.120	0.110	0.137	0.131	0.123
East Anatolia	0.041	0.046	0.036	0.038	0.037	0.036
Southeast Anatolia	0.028	0.025	0.038	0.050	0.056	0.040
Working time (log)	3.755	3.700	3.698	3.731	3.668	3.667
Full time	0.868	0.843	0.823	0.836	0.807	0.809
n obs	2,275	2,217	2100	2122	2,223	2,587

Table A.26: Descriptive statistics for informal services wage earners, 2006-2011, male (mean values)

	2006	2007	2008	2009	2010	2011
Wage rate (log)	5.873	6.012	6.098	6.159	6.209	6.327
Wage rate	414	482	529	550	587	658
Age(log)	3.391	3.405	3.420	3.399	3.417	3.424
Age	32	33	33	32	33	34
Education level						
Primary school	0.461	0.444	0.435	0.418	0.393	0.371
Secondary school	0.244	0.258	0.273	0.292	0.327	0.350
General high school	0.124	0.121	0.129	0.126	0.117	0.105
Vocational high school	0.101	0.101	0.088	0.095	0.093	0.092
University	0.050	0.055	0.054	0.049	0.055	0.063
Firm size						
"10-24"	0.080	0.081	0.078	0.077	0.081	0.078
"25-49"	0.073	0.076	0.081	0.069	0.069	0.076
"50 or more"	0.045	0.051	0.047	0.053	0.057	0.054
Occupation						
Managers	0.037	0.032	0.039	0.035	0.035	0.032
Professionals	0.024	0.022	0.017	0.015	0.015	0.019
Technicians	0.056	0.052	0.058	0.048	0.047	0.053
Clerks	0.056	0.059	0.057	0.055	0.059	0.055
Service workers	0.388	0.392	0.378	0.411	0.405	0.408
Skilled agr workers	0.002	0.002	0.003	0.002	0.003	0.003
Craft workers	0.122	0.131	0.131	0.115	0.127	0.121
Machine operators	0.151	0.142	0.145	0.146	0.143	0.138
Region						
Aegean	0.138	0.155	0.129	0.116	0.105	0.106
Mediterranean	0.120	0.138	0.141	0.141	0.144	0.153
Central Anatolia	0.144	0.145	0.146	0.162	0.185	0.195
Black Sea	0.095	0.087	0.083	0.081	0.088	0.083
East Anatolia	0.082	0.083	0.087	0.084	0.090	0.088
Southeast Anatolia	0.130	0.128	0.146	0.143	0.135	0.123
Working time (log)	4.038	3.989	3.997	3.998	3.945	3.934
Full time	0.952	0.956	0.948	0.946	0.929	0.928
n obs	6,371	6,174	5774	5874	6,215	5,929

Table A.27: Descriptive statistics for formal manufacture wage earners, 2006-2011, female (mean values)

	2006	2007	2008	2009	2010	2011
Wage rate (log)	*6.237*	*6.323*	*6.477*	*6.571*	*6.609*	*6.663*
Wage rate	583	636	751	825	845	889
Age(log)	3.368	3.364	3.386	3.414	3.411	3.420
Age	30	30	31	32	31	32
Education level						
Primary school	0.356	0.331	0.336	0.349	0.355	0.340
Secondary school	0.144	0.153	0.143	0.140	0.155	0.168
General high school	0.164	0.165	0.161	0.148	0.132	0.126
Vocational high school	0.144	0.159	0.151	0.138	0.131	0.128
University	0.181	0.183	0.198	0.212	0.216	0.227
Firm size						
"10-24"	0.082	0.075	0.079	0.089	0.099	0.107
"25-49"	0.181	0.187	0.202	0.201	0.198	0.194
"50 or more"	0.679	0.672	0.660	0.634	0.606	0.599
Occupation						
Managers	0.032	0.030	0.036	0.046	0.033	0.033
Professionals	0.064	0.053	0.048	0.052	0.061	0.052
Technicians	0.148	0.130	0.159	0.141	0.132	0.148
Clerks	0.155	0.171	0.161	0.163	0.166	0.158
Service workers	0.028	0.032	0.040	0.042	0.037	0.040
Skilled agr workers	0.001	0.000	0.000	0.000	0.001	0.001
Craft workers	0.190	0.165	0.136	0.140	0.132	0.133
Machine operators	0.258	0.265	0.230	0.213	0.250	0.240
Region						
Aegean	0.201	0.217	0.198	0.196	0.208	0.200
Mediterranean	0.036	0.048	0.048	0.044	0.040	0.040
Central Anatolia	0.072	0.077	0.081	0.095	0.115	0.110
Black Sea	0.054	0.055	0.064	0.066	0.050	0.075
East Anatolia	0.006	0.004	0.007	0.004	0.007	0.011
Southeast Anatolia	0.009	0.004	0.008	0.011	0.015	0.013
Working time (log)	3.909	3.861	3.906	3.888	3.839	3.852
Full time	0.990	0.990	0.997	0.993	0.984	0.985
n obs	2,222	2,506	2767	2542	2,909	3,167

Table A.28: Descriptive statistics for formal manufacture wage earners, 2006-2011, male (mean values)

	2006	2007	2008	2009	2010	2011
Wage rate (log)	6.430	6.528	6.651	6.711	6.772	6.840
Wage rate	716	783	884	928	985	1053
Age(log)	3.482	3.485	3.485	3.503	3.502	3.508
Age	34	34	34	34	34	35
Education level						
Primary school	0.428	0.425	0.407	0.406	0.407	0.388
Secondary school	0.155	0.165	0.168	0.170	0.189	0.196
General high school	0.107	0.099	0.103	0.105	0.097	0.098
Vocational high school	0.204	0.208	0.210	0.202	0.187	0.185
University	0.100	0.100	0.107	0.112	0.114	0.128
Firm size						
"10-24"	0.099	0.096	0.099	0.101	0.109	0.113
"25-49"	0.149	0.170	0.177	0.176	0.182	0.182
"50 or more"	0.606	0.582	0.575	0.555	0.533	0.525
Occupation						
Managers	0.024	0.026	0.027	0.030	0.027	0.032
Professionals	0.035	0.026	0.026	0.029	0.030	0.031
Technicians	0.088	0.091	0.093	0.083	0.090	0.091
Clerks	0.054	0.051	0.053	0.057	0.052	0.055
Service workers	0.041	0.034	0.031	0.032	0.031	0.030
Skilled agr workers	0.001	0.002	0.002	0.001	0.001	0.001
Craft workers	0.355	0.360	0.345	0.342	0.359	0.355
Machine operators	0.294	0.288	0.278	0.255	0.295	0.284
Region						
Aegean	0.189	0.194	0.173	0.160	0.150	0.142
Mediterranean	0.073	0.080	0.079	0.077	0.079	0.077
Central Anatolia	0.129	0.138	0.137	0.152	0.180	0.202
Black Sea	0.075	0.076	0.078	0.078	0.069	0.071
East Anatolia	0.023	0.020	0.018	0.024	0.023	0.024
Southeast Anatolia	0.044	0.032	0.036	0.045	0.051	0.046
Working time (log)	3.955	3.917	3.948	3.939	3.903	3.903
Full time	0.995	0.997	0.998	0.996	0.994	0.994
n obs	12,643	13,166	14123	13233	15,178	16,700

Table A.29: Descriptive statistics for formal services wage earners, 2006-2011, female (mean values)

	2006	2007	2008	2009	2010	2011
Wage rate (log)	6.581	6.678	6.797	6.901	6.978	7.020
Wage rate	837	916	1031	1151	1251	1295
Age(log)	3.439	3.439	3.444	3.449	3.468	3.480
Age	32	32	32	33	33	34
Education level						
Primary school	0.076	0.082	0.092	0.089	0.094	0.098
Secondary school	0.049	0.052	0.044	0.048	0.058	0.062
General high school	0.160	0.173	0.170	0.145	0.145	0.138
Vocational high school	0.163	0.144	0.144	0.136	0.125	0.122
University	0.548	0.545	0.549	0.580	0.576	0.578
Firm size						
"10-24"	0.147	0.140	0.145	0.141	0.133	0.145
"25-49"	0.233	0.244	0.254	0.256	0.244	0.242
"50 or more"	0.446	0.429	0.417	0.425	0.431	0.415
Occupation						
Managers	0.039	0.042	0.047	0.048	0.044	0.044
Professionals	0.321	0.309	0.285	0.315	0.310	0.306
Technicians	0.213	0.203	0.212	0.187	0.170	0.164
Clerks	0.242	0.247	0.243	0.245	0.258	0.254
Service workers	0.101	0.117	0.123	0.115	0.128	0.131
Skilled agr workers	0.000	0.000	0.000	0.000	0.000	0.000
Craft workers	0.006	0.006	0.005	0.006	0.005	0.005
Machine operators	0.004	0.003	0.004	0.002	0.003	0.003
Region						
Aegean	0.165	0.185	0.186	0.173	0.156	0.150
Mediterranean	0.113	0.110	0.102	0.096	0.103	0.110
Central Anatolia	0.181	0.170	0.172	0.201	0.225	0.223
Black Sea	0.111	0.108	0.096	0.102	0.106	0.111
East Anatolia	0.051	0.049	0.042	0.048	0.045	0.048
Southeast Anatolia	0.040	0.027	0.021	0.033	0.040	0.031
Working time (log)	3.776	3.726	3.778	3.760	3.723	3.703
Full time	0.965	0.963	0.958	0.947	0.941	0.942
n obs	7,637	8,197	8965	9667	11,011	12,401

Table A.30: Descriptive statistics for formal services wage earners, 2006-2011, male (mean values)

	2006	2007	2008	2009	2010	2011
Wage rate (log)	6.610	6.721	6.835	6.935	7.022	7.083
Wage rate	852	952	1065	1189	1301	1380
Age(log)	3.562	3.557	3.555	3.560	3.567	3.571
Age	36	36	36	36	37	37
Education level						
Primary school	0.237	0.234	0.234	0.232	0.225	0.209
Secondary school	0.136	0.133	0.134	0.132	0.135	0.143
General high school	0.171	0.173	0.167	0.161	0.157	0.152
Vocational high school	0.153	0.153	0.150	0.146	0.137	0.135
University	0.301	0.306	0.312	0.325	0.343	0.357
Firm size						
"10-24"	0.120	0.117	0.124	0.121	0.118	0.125
"25-49"	0.202	0.220	0.221	0.215	0.216	0.215
"50 or more"	0.448	0.434	0.421	0.421	0.430	0.418
Occupation						
Managers	0.069	0.067	0.069	0.095	0.075	0.075
Professionals	0.178	0.159	0.146	0.136	0.166	0.170
Technicians	0.112	0.130	0.126	0.118	0.099	0.098
Clerks	0.132	0.120	0.126	0.122	0.132	0.131
Service workers	0.210	0.220	0.227	0.224	0.229	0.237
Skilled agr workers	0.004	0.005	0.005	0.004	0.003	0.004
Craft workers	0.074	0.074	0.074	0.073	0.069	0.067
Machine operators	0.096	0.104	0.097	0.095	0.096	0.093
Region						
Aegean	0.153	0.163	0.164	0.142	0.125	0.123
Mediterranean	0.102	0.107	0.110	0.099	0.103	0.112
Central Anatolia	0.174	0.175	0.176	0.199	0.230	0.238
Black Sea	0.123	0.119	0.112	0.115	0.113	0.113
East Anatolia	0.084	0.075	0.077	0.082	0.079	0.073
Southeast Anatolia	0.059	0.053	0.041	0.056	0.062	0.057
Working time (log)	3.894	3.850	3.892	3.887	3.851	3.835
Full time	0.986	0.987	0.988	0.986	0.982	0.983
n obs	20,776	21,634	22636	24232	27,319	29,253

Table A.31: Determinants of urban informal manufacturing wages, 2006-2011, female (OLS estimates with no sample correction)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	2.041	*	1.175		2.612	**	2.218	*	1.554		-0.472	
Age (log square)	-0.308	*	-0.166		-0.386	**	-0.328	*	-0.218		0.097	
Primary school	0.027		0.163	**	-0.049		-0.121		-0.097		-0.014	
Secondary school	0.002		0.173	**	-0.038		-0.135		-0.022		0.027	
General high school	0.132		0.272	***	0.231	*	0.120		0.031		0.219	*
Vocational high school	0.050		0.207	*	0.028		-0.035		-0.102		0.065	
University	0.254	*	0.446	***	0.492	**	0.220		0.072		0.537	***
"10-24"	0.344	***	0.263	***	0.225	***	0.368	***	0.335	***	0.272	***
"25-49"	0.346	***	0.311	***	0.260	***	0.339	***	0.307	***	0.207	***
"50 or more"	0.346	***	0.272	***	0.221	***	0.410	***	0.354	***	0.232	***
Working time (log)	0.276	***	0.294	***	0.647	***	0.507	***	0.314	***	0.285	***
Full time	0.641	***	0.774	***	0.410	***	0.533	***	0.723	***	0.904	***
Managers	0.575	*	1.390	***	1.569	***	1.314	***	1.752	***	0.903	***
Professionals	0.466	*	0.646	**	0.782	**	0.461		0.740	**	0.855	**
Technicians	0.220	**	0.123		0.183	*	0.284	**	0.308	***	0.109	
Clerks	0.199	**	0.218	**	0.082		0.088		0.233	*	0.219	*
Service workers	0.161		0.096		0.329	***	0.050		0.325	***	0.143	
Skilled agr workers	(omit.)		(omit.)		(omit.)		(omit.)		(omit.)		-0.469	
Craft workers	-0.092	*	-0.091	*	-0.128	**	-0.136	**	-0.126	**	-0.114	**
Machine operators	0.164	***	0.132	**	0.138	**	0.144	**	0.182	***	0.159	**
Aegean	-0.201	***	-0.275	***	-0.053		-0.056		-0.084		-0.101	
Mediterranean	-0.345	***	-0.278	***	-0.253	***	-0.263	***	-0.328	***	-0.316	***
Central Anatolia	-0.042		-0.262	***	-0.307	***	-0.271	***	-0.378	***	-0.352	***
Black Sea	-0.422	***	-0.428	***	-0.33	***	-0.181	*	-0.314	***	-0.35	***
East Anatolia	-0.474	**	-0.248		-0.566	***	-0.417	**	-0.638	***	-0.506	***
Southeast Anatolia	-0.371	***	-0.683	***	-0.710	***	-0.263	**	-0.469	***	-0.313	***
n obs	1232		1086		907		962		1073		1105	
R-squared	0.4969		0.5278		0.5363		0.5963		0.5797		0.6569	

Omitted categories are "illiterate", "firm size less than 10", "elementary occupations", "Marmara region". $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.32: Determinants of urban informal manufacturing wages, 2006-2011, male (OLS estimates with no sample correction)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	5.162	***	5.183	***	6.523	***	6.440	***	7.210	***	6.011	***
Age (log square)	-0.702	***	-0.710	***	-0.892	***	-0.880	***	-0.992	***	-0.820	***
Primary school	0.089	**	0.050		0.073		0.093	*	0.065		0.045	
Secondary school	0.044		0.000		0.071		0.077		0.033		0.012	
General high school	0.120	**	0.075		0.115	*	0.150	**	0.092	*	0.117	*
Vocational high school	0.106	**	0.064		0.118	*	0.188	***	0.082		0.036	
University	0.215	***	0.036		0.415	***	0.192	**	0.127	*	0.093	
"10-24"	0.109	***	0.112	***	0.138	***	0.066	**	0.099	***	0.119	***
"25-49"	0.153	***	0.103	***	0.114	***	0.131	***	0.111	***	0.117	***
"50 or more"	0.176	***	0.172	***	0.186	***	0.190	***	0.178	***	0.175	***
Working time (log)	0.310	***	0.268	***	0.218	***	0.358	***	0.193	***	0.149	***
Full time	0.238	***	0.276	***	0.514	***	0.313	***	0.521	***	0.525	***
Managers	0.712	***	0.865	***	0.278	**	0.482	***	0.706	***	0.465	***
Professionals	0.699	***	0.796	***	0.746	***	0.848	***	0.842	***	0.646	***
Technicians	0.194	***	0.375	***	0.321	***	0.206	***	0.273	***	0.354	***
Clerks	0.040		0.095		0.062		0.050		-0.007		-0.045	
Service workers	-0.066		-0.025		0.047		0.027		-0.071		0.010	
Skilled agr workers	-0.496		-0.117		-2.683	***	0.135		-0.116		-0.139	
Craft workers	0.055	***	0.070	***	0.068	***	0.080	***	0.099	***	0.065	***
Machine operators	0.096	***	0.084	***	0.061	**	0.125	***	0.075	**	0.035	
Aegean	-0.181	***	-0.227	***	-0.175	***	-0.150	***	-0.140	***	-0.112	***
Mediterranean	-0.372	***	-0.364	***	-0.358	***	-0.326	***	-0.294	***	-0.244	***
Central Anatolia	-0.175	***	-0.161	***	-0.226	***	-0.143	***	-0.143	***	-0.121	***
Black Sea	-0.219	***	-0.224	***	-0.168	***	-0.187	***	-0.185	***	-0.167	***
East Anatolia	-0.137	***	-0.150	***	-0.099	**	-0.152	***	-0.134	***	-0.036	
Southeast Anatolia	-0.305	***	-0.345	***	-0.351	***	-0.306	***	-0.279	***	-0.174	***
n obs	5620		5187		4516		4046		4608		4763	
R-squared	0.3047		0.3079		0.3545		0.3494		0.3643		0.3182	

Omitted categories are "illiterate", "firm size less than 10", "elementary occupations", "Marmara region". $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.33: Determinants of urban informal services wages, 2006-2011, female (OLS estimates with no sample correction)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	1.954	**	2.486	***	4.646	***	4.177	***	3.768	***	4.370	***
Age (log square)	-0.235	**	-0.309	***	-0.619	***	-0.547	***	-0.497	***	-0.572	***
Primary school	0.099	*	0.033		0.039		0.000		0.025		0.004	
Secondary school	0.069		0.076		0.153	*	0.078		0.079		0.048	
General high school	0.212	***	0.131	*	0.175	**	0.161	*	0.169	**	0.157	**
Vocational high school	0.214	***	0.081		0.181	**	0.178	*	0.076		0.168	**
University	0.365	***	0.265	**	0.311	***	0.312	***	0.237	**	0.275	***
"10-24"	0.137	***	0.198	***	0.127	**	0.226	***	0.193	***	0.132	***
"25-49"	0.191	***	0.161	***	0.231	***	0.262	***	0.157	***	0.175	***
"50 or more"	0.284	***	0.214	***	0.232	***	0.244	***	0.224	***	0.211	***
Working time (log)	0.398	***	0.330	***	0.464	***	0.465	***	0.333	***	0.312	***
Full time	0.223	***	0.234	***	0.050		0.115	*	0.322	***	0.302	***
Managers	0.274	*	0.416	**	0.303		0.440	***	0.559	***	0.358	***
Professionals	0.418	***	0.439	***	0.421	***	0.452	***	0.575	***	0.315	***
Technicians	0.049		0.233	***	0.205	***	0.145	**	0.338	***	0.099	
Clerks	-0.012		0.082		-0.043		0.001		0.143	**	0.066	
Service workers	-0.099	**	-0.032		-0.060	*	-0.091	**	-0.021		-0.026	
Skilled agr workers	(omit.)		(omit.)		(omit.)		0.238		(omit.)		0.075	
Craft workers	-0.236	**	-0.252	**	-0.142		-0.406	***	-0.197	**	0.000	
Machine operators	-0.102		-0.154		-0.128		0.064		0.142		0.061	
Aegean	-0.147	***	-0.182	***	-0.218	***	-0.131	***	-0.109	**	-0.098	**
Mediterranean	-0.343	***	-0.368	***	-0.321	***	-0.276	***	-0.266	***	-0.186	***
Central Anatolia	-0.174	***	-0.199	***	-0.183	***	-0.218	***	-0.234	***	-0.079	**
Black Sea	-0.409	***	-0.350	***	-0.298	***	-0.262	***	-0.202	***	-0.200	***
East Anatolia	-0.258	***	-0.260	***	-0.380	***	-0.263	***	-0.205	**	-0.114	*
Southeast Anatolia	-0.327	***	-0.339	***	-0.318	***	-0.289	***	-0.309	***	-0.159	**
n obs	2265		2185		2084		2099		2186		2544	
R-squared	0.3959		0.3483		0.3767		0.4218		0.4107		0.3772	

Omitted categories are "illiterate", "firm size less than 10", "elementary occupations", "Marmara region". $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.34: Determinants of urban informal services wages, 2006-2011, male (OLS estimates with no sample correction)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	5.882	***	5.878	***	7.371	***	7.513	***	7.726	***	7.147	***
Age (log square)	-0.807	***	-0.801	***	-1.018	***	-1.041	***	-1.059	***	-0.977	***
Primary school	0.111	**	0.102	*	0.113	*	0.014		0.117	*	-0.026	
Secondary school	0.062		0.094	*	0.109	*	0.016		0.148	**	0.015	
General high school	0.193	***	0.171	***	0.196	***	0.081		0.190	***	0.071	
Vocational high school	0.171	***	0.138	**	0.126	*	0.092		0.157	**	0.072	
University	0.317	***	0.323	***	0.298	***	0.185	**	0.308	***	0.157	**
"10-24"	0.135	***	0.159	***	0.173	***	0.152	***	0.200	***	0.176	***
"25-49"	0.144	***	0.229	***	0.204	***	0.196	***	0.198	***	0.157	***
"50 or more"	0.288	***	0.287	***	0.303	***	0.248	***	0.251	***	0.265	***
Working time (log)	0.349	***	0.283	***	0.311	***	0.271	***	0.231	***	0.237	***
Full time	0.168	***	0.336	***	0.248	***	0.285	***	0.405	***	0.400	***
Managers	0.310	***	0.280	***	0.235	***	0.195	***	0.218	***	0.239	***
Professionals	0.501	***	0.586	***	0.724	***	0.453	***	0.477	***	0.507	***
Technicians	0.294	***	0.302	***	0.266	***	0.234	***	0.237	***	0.235	***
Clerks	0.143	***	0.105	***	0.111	***	0.026		0.053		0.062	*
Service workers	0.096	***	0.105	***	0.113	***	0.064	***	0.056	**	0.082	***
Skilled agr workers	0.157		0.087		0.139		-0.142		0.139		-0.019	
Craft workers	0.111	***	0.098	***	0.081	**	0.032		0.029		0.054	*
Machine operators	0.246	***	0.197	***	0.251	***	0.176	***	0.206	***	0.196	***
Aegean	-0.162	***	-0.156	***	-0.136	***	-0.173	***	-0.142	***	-0.148	***
Mediterranean	-0.291	***	-0.302	***	-0.306	***	-0.324	***	-0.271	***	-0.222	***
Central Anatolia	-0.175	***	-0.209	***	-0.188	***	-0.182	***	-0.175	***	-0.155	***
Black Sea	-0.249	***	-0.205	***	-0.214	***	-0.253	***	-0.228	***	-0.260	***
East Anatolia	-0.262	***	-0.220	***	-0.269	***	-0.280	***	-0.180	***	-0.171	***
Southeast Anatolia	-0.294	***	-0.316	***	-0.328	***	-0.311	***	-0.278	***	-0.209	***
n obs	6335		6122		5735		5836		6161		5866	
R-squared	0.3383		0.3539		0.37		0.3536		0.3793		0.3686	

Omitted categories are "illiterate", "firm size less than 10", "elementary occupations", "Marmara region". $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.35: Determinants of urban formal manufacturing wages, 2006-2011, female (OLS estimates with no sample correction)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	1.144	*	1.557	**	2.485	***	2.064	***	1.654	**	1.352	**
Age (log square)	-0.113		-0.179	*	-0.324	***	-0.254	**	-0.197	**	-0.148	*
Primary school	0.166	*	0.115		0.004		0.055		0.023		-0.003	
Secondary school	0.193	**	0.144		0.054		0.129		0.091		0.072	
General high school	0.331	***	0.266	**	0.160	*	0.205	**	0.183	**	0.127	*
Vocational high school	0.296	***	0.224	**	0.138	*	0.224	**	0.154	*	0.154	**
University	0.589	***	0.507	***	0.421	***	0.409	***	0.356	***	0.382	***
"10-24"	0.131	**	0.044		0.049		0.042		0.087	**	0.025	
"25-49"	0.117	**	0.066	*	0.061	*	0.104	**	0.115	***	0.071	**
"50 or more"	0.174	***	0.093	**	0.092	**	0.141	***	0.139	***	0.080	***
Working time (log)	0.067		-0.025		-0.098	*	0.010		-0.053	*	-0.076	**
Full time	0.775	***	0.816	***	0.753	***	0.571	***	0.761	***	0.831	***
Managers	0.658	***	0.771	***	0.704	***	0.765	***	0.807	***	0.852	***
Professionals	0.479	***	0.533	***	0.623	***	0.597	***	0.517	***	0.528	***
Technicians	0.226	***	0.286	***	0.214	***	0.230	***	0.193	***	0.174	***
Clerks	0.157	***	0.157	***	0.142	***	0.192	***	0.161	***	0.120	***
Service workers	0.082		0.053		0.100	**	0.060		0.057		0.030	
Skilled agr workers	0.239		(omit.)		-0.061		(omit.)		0.047		-0.134	
Craft workers	0.049		0.044		0.027		0.041		0.056	*	0.021	
Machine operators	0.074	**	0.054	*	0.044	*	0.043		0.053	**	0.036	*
Aegean	-0.096	***	-0.083	***	-0.089	***	-0.065	***	-0.037	*	-0.068	***
Mediterranean	-0.123	**	-0.101	**	-0.170	***	-0.167	***	-0.149	***	-0.118	***
Central Anatolia	-0.012		-0.013		-0.063	*	0.008		0.037		-0.032	
Black Sea	-0.147	***	-0.104	**	-0.130	***	-0.105	***	-0.238	***	-0.195	***
East Anatolia	0.187		-0.228	*	-0.351	***	-0.115		-0.277	***	-0.069	
Southeast Anatolia	-0.114		0.158		-0.095		-0.157	*	-0.153	**	-0.098	*
n obs	2171		2437		2716		2481		2823		3059	
R-squared	0.4769		0.4907		0.4843		0.4772		0.4842		0.541	

Omitted categories are "illiterate", "firm size less than 10", "elementary occupations", "Marmara region". $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.36: Determinants of urban formal manufacturing wages, 2006-2011, male (OLS estimates with no sample correction)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	2.080	***	1.768	***	2.278	***	2.249	***	2.877	***	2.392	***
Age (log square)	-0.210	***	-0.170	***	-0.248	***	-0.249	***	-0.347	***	-0.278	***
Primary school	0.272	***	0.038		0.097		0.136	**	0.152	***	0.128	**
Secondary school	0.306	***	0.098		0.175	**	0.208	***	0.204	***	0.193	***
General high school	0.418	***	0.179	**	0.249	***	0.274	***	0.269	***	0.260	***
Vocational high school	0.453	***	0.237	***	0.273	***	0.299	***	0.291	***	0.283	***
University	0.632	***	0.370	***	0.456	***	0.468	***	0.483	***	0.450	***
"10-24"	0.067	***	0.031	*	0.032	*	0.058	***	0.026	*	0.018	
"25-49"	0.069	***	0.028	*	0.040	***	0.059	***	0.032	**	0.019	*
"50 or more"	0.158	***	0.115	***	0.129	***	0.127	***	0.093	***	0.058	***
Working time (log)	-0.108	***	0.017		0.000		0.018		-0.028	**	-0.026	**
Full time	0.903	***	0.627	***	0.357	***	0.644	***	0.860	***	0.820	***
Managers	0.747	***	0.774	***	0.699	***	0.729	***	0.683	***	0.813	***
Professionals	0.528	***	0.692	***	0.666	***	0.583	***	0.690	***	0.688	***
Technicians	0.298	***	0.322	***	0.321	***	0.303	***	0.293	***	0.300	***
Clerks	0.243	***	0.207	***	0.171	***	0.152	***	0.164	***	0.183	***
Service workers	0.146	***	0.112	***	0.142	***	0.089	***	0.071	***	0.097	***
Skilled agr workers	0.236	*	-0.029		0.083		-0.044		-0.003		0.088	
Craft workers	0.151	***	0.157	***	0.166	***	0.100	***	0.120	***	0.132	***
Machine operators	0.120	***	0.106	***	0.115	***	0.064	***	0.088	***	0.094	***
Aegean	-0.115	***	-0.106	***	-0.120	***	-0.092	***	-0.108	***	-0.088	***
Mediterranean	-0.093	***	-0.077	***	-0.114	***	-0.123	***	-0.114	***	-0.066	***
Central Anatolia	-0.085	***	-0.091	***	-0.089	***	-0.065	***	-0.051	***	-0.046	***
Black Sea	-0.012		0.005		-0.013		-0.054	***	-0.028	*	-0.036	**
East Anatolia	-0.001		-0.015		-0.149	***	-0.005		0.017		-0.010	
Southeast Anatolia	-0.061	**	-0.149	***	-0.170	***	-0.142	***	-0.158	***	-0.132	***
n obs	12487		12957		13913		12981		14906		16408	
R-squared	0.3829		0.3731		0.3716		0.3842		0.4053		0.4368	

Omitted categories are "illiterate", "firm size less than 10", "elementary occupations", "Marmara region". $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.37: Determinants of urban formal services wages, 2006-2011, female (OLS estimates with no sample correction)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	4.174	***	4.444	***	4.051	***	3.755	***	4.138	***	4.035	***
Age (log square)	-0.514	***	-0.559	***	-0.505	***	-0.457	***	-0.508	***	-0.495	***
Primary school	0.047		0.054		0.135		0.001		0.135		0.189	**
Secondary school	0.102		0.136		0.223	*	0.083		0.272	**	0.308	***
General high school	0.265	***	0.250	***	0.357	***	0.264	**	0.434	***	0.450	***
Vocational high school	0.299	***	0.288	***	0.373	***	0.286	***	0.470	***	0.500	***
University	0.504	***	0.492	***	0.588	***	0.489	***	0.703	***	0.697	***
"10-24"	0.115	***	0.114	***	0.083	***	0.101	***	0.089	***	0.122	***
"25-49"	0.128	***	0.104	***	0.095	***	0.133	***	0.100	***	0.122	***
"50 or more"	0.243	***	0.231	***	0.205	***	0.252	***	0.206	***	0.190	***
Working time (log)	-0.049	*	0.022		-0.004		0.045	*	0.000		-0.030	**
Full time	0.339	***	0.226	***	0.262	***	0.263	***	0.349	***	0.380	***
Managers	0.685	***	0.753	***	0.719	***	0.659	***	0.617	***	0.642	***
Professionals	0.436	***	0.552	***	0.521	***	0.509	***	0.482	***	0.494	***
Technicians	0.426	***	0.446	***	0.415	***	0.382	***	0.369	***	0.280	***
Clerks	0.241	***	0.273	***	0.233	***	0.192	***	0.181	***	0.180	***
Service workers	0.204	***	0.224	***	0.208	***	0.170	***	0.162	***	0.143	***
Skilled agr workers	(omit.)		(omit.)		0.603	**	0.509		0.085		0.232	
Craft workers	0.124		0.233	***	0.138	*	0.078		0.116	*	0.143	**
Machine operators	0.179	*	0.095		0.039		0.058		0.114		0.148	*
Aegean	-0.097	***	-0.103	***	-0.080	***	-0.081	***	-0.069	***	-0.055	***
Mediterranean	-0.045	**	-0.077	***	-0.097	***	-0.084	***	-0.075	***	-0.092	***
Central Anatolia	-0.028	*	-0.045	***	-0.014		0.007		0.000		0.004	
Black Sea	-0.056	***	-0.056	***	-0.058	***	-0.071	***	-0.056	***	-0.085	***
East Anatolia	-0.031		-0.026		-0.036		0.041	*	0.059	**	0.020	
Southeast Anatolia	-0.058	*	-0.052	*	-0.073	**	0.014		0.013		0.014	
n obs	7319		7856		8544		9123		10229		11552	
R-squared	0.4871		0.5302		0.533		0.5428		0.5597		0.5624	

Omitted categories are "illiterate", "firm size less than 10", "elementary occupations", "Marmara region". $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table A.38: Determinants of urban formal services wages, 2006-2011, male (OLS estimates with no sample correction)

	2006		***2007***		***2008***		***2009***		***2010***		***2011***	
Age(log)	4.078	***	3.370	***	3.424	***	3.428	***	3.263	***	3.795	***
Age (log square)	-0.506	***	-0.401	***	-0.412	***	-0.408	***	-0.383	***	-0.457	***
Primary school	0.187	**	0.241	***	0.050		0.046		0.005		0.082	
Secondary school	0.246	***	0.306	***	0.107	*	0.104	*	0.081		0.171	***
General high school	0.362	***	0.412	***	0.203	***	0.200	***	0.164	***	0.265	***
Vocational high school	0.360	***	0.396	***	0.186	***	0.202	***	0.156	***	0.272	***
University	0.589	***	0.644	***	0.460	***	0.488	***	0.458	***	0.552	***
"10-24"	0.114	***	0.123	***	0.105	***	0.099	***	0.108	***	0.096	***
"25-49"	0.145	***	0.134	***	0.141	***	0.141	***	0.135	***	0.127	***
"50 or more"	0.276	***	0.268	***	0.256	***	0.271	***	0.273	***	0.251	***
Working time (log)	-0.071	***	-0.012		-0.096	***	-0.114	***	-0.075	***	-0.069	***
Full time	0.342	***	0.267	***	0.260	***	0.335	***	0.429	***	0.493	***
Managers	0.495	***	0.512	***	0.515	***	0.527	***	0.497	***	0.504	***
Professionals	0.406	***	0.471	***	0.441	***	0.432	***	0.486	***	0.480	***
Technicians	0.293	***	0.315	***	0.297	***	0.296	***	0.303	***	0.273	***
Clerks	0.189	***	0.195	***	0.187	***	0.178	***	0.188	***	0.165	***
Service workers	0.203	***	0.199	***	0.201	***	0.204	***	0.197	***	0.215	***
Skilled agr workers	0.052		0.003		0.044		0.045		-0.026		0.031	
Craft workers	0.243	***	0.253	***	0.244	***	0.227	***	0.218	***	0.226	***
Machine operators	0.177	***	0.177	***	0.192	***	0.179	***	0.180	***	0.187	***
Aegean	-0.093	***	-0.098	***	-0.101	***	-0.092	***	-0.051	***	-0.056	***
Mediterranean	-0.072	***	-0.089	***	-0.104	***	-0.106	***	-0.072	***	-0.087	***
Central Anatolia	-0.064	***	-0.064	***	-0.070	***	-0.054	***	-0.026	***	-0.026	***
Black Sea	-0.062	***	-0.076	***	-0.051	***	-0.041	***	-0.033	***	-0.064	***
East Anatolia	-0.034	**	-0.039	***	-0.037	***	-0.027	**	-0.009		-0.025	**
Southeast Anatolia	-0.093	***	-0.134	***	-0.128	***	-0.073	***	-0.053	***	-0.066	***
n obs	20381		21122		22077		23622		26434		28320	
R-squared	0.4636		0.4881		0.503		0.5378		0.5494		0.5568	

Omitted categories are "illiterate", "firm size less than 10", "elementary occupations", "Marmara region". $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

APPENDIX B

DATA APPENDIX

Our main motive for designing the field survey is the inadequacy of Turkish labor market data sets to conduct two important analyses that are related to informality dynamics: equality of opportunity and mobility between sectors (or jobs).

Though not broad, there is a literature on measuring equality of opportunity (EOp) in Turkey (Ferreira et al., 2010a and 2010b; Ferreira and Gignoux, 2010). However, "there is no single survey that contains satisfactory information both on household income or consumption, on the one hand, and on key pre-determined circumstances on the other" (Ferreira et al., 2010b: 2). By employing some statistical methods to combine two different datasets for Turkish labor market, the authors calculate the extent of opportunity inequality in earnings. Although their methods could be considered as highly reliable, the individuals in the datasets are not identical. In our case, we do not need to worry about imperfect data problem since we can extract advantage and circumstance variables from one data set.

Investigation of labor market transitions will enable us to discuss labor market dynamics rather than doing analysis on a snapshot of the labor market. This is done through duration/survival analysis. Like the case in EOp, the studies on labor market from a dynamic point of view are rare. There are some that focus on unemployment duration (Tasci and Tansel, 2005) and one (Tansel and Kan, 2012) considering labor mobility across the formal-informal divide in Turkey.

In unemployment duration analyses, the authors have to construct panels of short duration because of the sample design of the survey. These studies are also limited to one work status: unemployment. What we try to find out using our field survey data is to calculate all transition probabilities among all work status (besides unemployment, formal and informal employment as well) and the determinants of mobility between these states via the tools of

survival analysis. On the other hand, Tansel and Kan (2012) focus on labor mobility across the formal/informal divide in Turkey which is missing in the duration analyses mentioned.

To calculate the transition probabilities of individuals moving across the labor market states of formal-salaried, informal-salaried, formal self-employed, informal self-employed, unemployed and inactive" (Tansel and Kan, 2012: 1), they make use of the Income and Living Conditions Survey panel data set. But, they do not utilize any survival analysis tools. What is good about our data in conducting duration analyses is that it allows us non-parametric, semi-parametric and fully-parametric estimations of labor market transitions. Having these motives in mind, we proposed a field survey that ended with a new data set regarding Turkish labor market.

Our field survey captures 1703 households, 6563 individuals (3397 female, 3166 male) in 34 provinces and was funded by TUBITAK (Turkish Institute of Scientific and Technological Research) and OYP (a government program oriented towards select graduate students with a view to promote new scholars as well as new state universities).

B.1 Preparation of the Questionnaire

A quick review of literature on *equality of opportunity* and *duration/survival analyses* allowed us to get familiar with the concepts and identify (to what extent we would need) the variables. We also covered labor force surveys in different country settings.

The surveys examined are:

- Household Labor Force Survey (carried on by TurkStat),
- Household Budget Survey (carried on by TurkStat),
- Turkey Demographic and Health Survey (carried on by Hacettepe University Institute of Population Studies),
- Survey on Working Life and Informality in Turkey (carried on by Bogazici University),
- The Indonesia Family Life Survey (IFLS),
- The First and Second Malaysian Family Life Surveys,
- Mexican Family Life Survey.

The preparation of our questionnaire was followed by the pilot survey which was conducted in 20 households in Ankara. These households were quite different from each other regarding the size, their employment profile, ages, registration status, and education levels. In line with the difficulties faced in the pilot survey, the questionnaire was revised. All questions were designed by us and closed-ended. Thus, there was no room for perceptions and valuations of the respondents. This has been preferred in order to end up with information that is as objective as possible.

It was not possible to conduct the survey by ourselves because of its scope: we were looking for a sample that would be representative of Turkish urban population. We worked with a research firm, Ipsos KGM[118], a joint venture company majority owned by Ipsos, which is advertised as one of the world's leading survey-based marketing research firms. It has experience in household surveys, specifically household consumption panels. The meetings with the field survey group (one project coordinator, 2 field team managers and 2 data analysts) in the company was followed by a series of training lessons took place in each province.

B.2 Sample Selection

The method used in sample selection is "Stratified Simple Random Sampling" where clusters (provinces) are determined based on NUTS 1 level. In addition to the age and education level of the household head, socio-economic status (SES) and the size of the household are used in calculating weights[119]. Therefore, our sample is representative considering these four criteria.

The field survey took place between January 2011 and April 2011 in 34 provinces of rural areas in Turkey. Based on these sample selection criteria, 39.9% of our sample comes from Marmara Region. The rest 60.1 % is distributed as follows: 17.6% from Central Anatolia, 12.3% from Eastern and South Eastern Anatolia, 11.7% from Mediterranean, 11.5% from Aegean, and the remaining 7% from Black Sea.

[118] See the following website for a detailed information on the research firm and its surveys: http://eng.ipsos-kmg.com/

[119] As it can been guessed, our sample selection is based on households rather than individuals (like the case in most of the labor force surveys) and the unit of analysis is individual.

The questionnaire consists of 6 sections. The number of questions varies from one person to the other since the last two sections are devoted to the respondent's work and migration history. We ask a certain subset of questions for each work status (i.e. being employed, unemployed, and inactive) of the respondent separately which makes the length of the survey be particular to one's working life. The same methodology has been applied to migration history.

Table B.1: Sections of the Questionnaire and Related Information

Section	***Information due to questions considered***
One	Demographic characteristics of all family members (relation to household head, age, gender, marital status, number of children one has)
Two	Education level and region of birth (birth region, type of birth area, the city one lived in at the longest till age 12, mother tongue, asset ownership of the family during respondent's childhood)
Three	Family background (education level of parents and their work status when the respondent was at the age of 15, followed by job characteristics if employed at that time: employment status, sector, occupation, registration status)
Four	Current work status (whether at least once worked, and current work status, if unemployed or inactive the reasons of that and monetary issues: earnings including wage/salary and retirement payments)
Five	Work history (if employed, each job-related characteristics such as the calendar of the employment, sector, size of the establishment, occupation, employment status, permanency of job, registration status; if unemployment and inactive, time spent in that status and unemployment insurance payment)
Six	Migration history (migration from where to where in terms of city and type of the area – urban vs. rural -, calendar time and the reasons of each migration)

The first three parts of the questionnaire (Table B.1) are devoted to *inequality of opportunity* analysis in order to determine circumstance variables (these are variables on which a person does have no control over). If the respondent lives with his/her parents, he/she does not need to answer questions that are related to family background. Since the questionnaire has been

applied to anyone living in the same house between 15 and 65, this information is gathered from the mother and father of the respondent separately. If one lives apart from his/her family, then the questions in part three will be filled by the respondent. Therefore, we are able to gather information from two generations. Three generation information is the case in the following families: respondent being the child of the house and living with parents does not need to give information on family background since his/her parents will answer these questions themselves. Moreover, his/her parents will answer family background questions considering their fathers and mothers. Therefore, from the point of the child, we have some basic information on his/her grandparents (first generation), on his/her parents (second generation) and on him/herself (third generation).

In the fourth section, current work status of the respondent is clarified in addition to the monetary issues if one is currently working and/or retired. These monetary terms will be used in measuring *the extent of earnings inequality* in Turkey.

The dynamic character of the questionnaire comes from the fifth and sixth parts. In part five, one is asked to tell all his/her work life story from the time he/she entered to labor market to the time of the survey with whole work status. The job characteristics will be used in conducting *mobility between formal and informal jobs* where the specifics of all work statuses will be considered in *duration analysis*.

Sixth part is about migration history of each respondent who had at least worked once. Their migration to other cities or to other type of areas (center, district center, sub-district or village) in the same city has been questioned with the reasons of their migration. The data gathered in this part has just been used for validation issues: some questions took place in the fifth section has been repeated in a different format to confirm respondents' answers. Except for this information, most of the information in part six will not be analyzed in the present study, especially migration patterns.

B.3 Basic Descriptives of the Data

We received the field survey data in STATA format. Though most of the questions have been coded in categories, the respondents were asked to define their and their parents' (whenever it was the case) occupations (with regards to their appellation, tasks and job promotions if received any) and sectors (considering the main activity of the establishment

and some examples for the goods and services that are produced in their firm), in full. The coding of these two variables had been completed by us. This coding and data cleaning process were tough since we had to consider all employment spells including sector and occupation information associated with them. These two processes completed mostly during my stay in Barnard College, Columbia University. For occupations ISCO-08, and sectors NACE Rev. 1.1 classifications had been used and coded in four digits.

Table B.2 gives the basic descriptives of our data in terms of its sample size. One can find more information on each part in the related chapters (*Chapter 4 (EOp)* and *Chapter 5 (mobility between sectors/jobs)* for Part A and B, respectively).

Referring to Table B.2:

(a) In 1703 households, we have reached to 6563 individuals (3397 female, 3166 male). However, 1682 of them are under the age of 15 or older than age-65. Collecting information from the ones who are younger than 15 is forbidden in Turkey. Yet, some information (i.e. gender, age, education level, current enrollment status) on them had been taken from other household members (if possible their parents).
(b) Out of 4881 people, aged between 15 and 65, 2287 are male and 2594 are female.

Part A:

Part Four of the questionnaire lets us determine the current employment profile of our sample: 1873 of 4881 individuals were currently working at the time of the survey (38% of the working age population) whereas 330 were unemployed (7%) and 2678 (55%) were inactive.

The share of employment seems to be low but this can be explained by the age profile of our sample: out of 4881 people, 797 are between 15 and 19 years old. In that age group, being inactive is very common (88% of 797 people are inactive).

(c) Female share of employment is 23.8 % whereas male share is 3.2 times that of female share.
(d) Unemployed females are more than unemployed males (61.5% of total unemployment are female).

(e) Like the case in unemployment figures, inactive females constitute the higher share in total inactive working age population. But this time, their relative share is substantially high: 72.7% (compared to 27.3% of males).

Part B:

Distribution of our sample due to their working history is centered on the information gathered in *Part Five* of the questionnaire. Working life has been specified as starting at the age of 15 that overlaps with the minimum age limit for defining "working age population" in Turkish labor market surveys.

(f) 65% of our sample (3189 individuals out of 4881) worked at least once in their life and the rest (1692 individuals) did not work even once.

Among the ones who are never employed, 1302 are females. Looking at their age and education level compositions may give us an idea about why they are inactive:

- 55% of these inactive females are younger than 35,
- 5% of them are illiterate and %39 has either has no diploma or has completed primary school only,
- only %4 of them completed university,
- in terms of their eagerness to work, again only %4 are looking for a job.

The same figures for men that have never worked are as follows:

%69 of these men is under the age of 20 (15-19). So, the first thing comes to mind about the reason for their activeness is that they never work because they are still students. When we check their current enrollment status, %91 of them are students and %4 declare that they are unemployed.

Thus, the story depicted scenery coming from our sample overlaps with the common perception about gender dynamics of Turkish labor market: a woman being mostly inactive is one of the main characteristics of Turkish labor market.

(g) The distribution of employment by gender turns out to be different when one considers the shares among the ones who had at least worked once. Unlike the

current work status division, females had worked at least once in their life as much as males. 1292 females report that they had worked while it is 1897 for males. It is not so surprising when it is considered that our questionnaire captures informal employment practices as well. Even though, a woman is not working at the time of the survey, it is highly probable that she had worked once, at least informally, in her entire life.

(h) We have information about 3171 individuals' entire work history (who started to work at least at the age of 15) out of 3189 individuals who are employed at least once in their life. The difference between these figures reflects the ones who worked for a while under the age of 15 but did not work anymore.

The gender and age profiles of these 3171 people for whom we have work history of reveal the following:

- %40 of the people (1284 individual) with whom we will deal in survival analysis are females,
- A U-shaped age profile has been the case with the 15-19 aged group consisting of %5 of the sample, 55-59 corresponding to %6 and 60-65 to 4% of the sample.

(i) The ones who start to work between age 5 and 14 are considered as child workers by ILO (International Labor Organization). In Turkey, starting to work at lower ages is common, especially in rural areas, in agriculture, construction and services sector. In our sample, we faced with 18 individuals (8 female, 10 male) who worked before he/she was 15, but did not continue working after that. These people could be the ones who worked for a while when they were young, and as soon as they started to go to school, got disappointed or married, they gave up working. The current work status of the 18 individuals who had worked before age 15 is inactive. Completion of secondary basic school has the highest percentage (%47) in their education level distribution.

(j) 516 individuals start to work before age 15 (76% of the sample is male, 123 individuals are female). Out of these 516 people, 488 individuals continued to stay in the labor force and 18 left the labor market and were inactive at the time of the

survey. These 488 individuals work history has been used in mobility analysis considering their experience since they were 15[120].

Table B.2: Basic Descriptives of the Data

Sample selection criteria	**Sample size**		
	Total	**Female**	**Male**
(a) whole sample (without any restrictions)	6563	3397	3166
(b) aged between 15 and 65	4881	2594	2287
PART A			
(with regard to current employment status)			
(c) who were employed at the time of the survey	1873	445	1428
(d) who were unemployed at the time of the survey	330	203	127
(e) who were inactive at the time of the survey	2678	1946	732
PART B			
(with regard to work history)			
(f) who are never employed	1692	1302	390
(g) who worked at least once in their life	3189	1292	1897
(h) who worked at least once in their life and gave their work history information	3171	1284	1887
(with regard to child labor)			
(i) who worked at least once but it was the case when they were under age 15 (and not work anymore)	18	8	10
(j) who worked at least once and they started to work under age 15	516	123	393

B.4 Distribution of (Working Age) Population

In this section we will try to summarize the distribution of our (working age) population by the variables considered in Chapter 3 (LFDP) using Household Labor Force Survey 2006 (2007) -2011, and Chapter 4 (EOP). In doing so, we will give a snapshot picture of Turkish labor market reflected by our field survey in 2011 whereas dynamic structure of our data has been discussed in Chapter 5 via mobility and/or duration analyses in detail. This picture will clarify how our data set differs from the Household Labor Force Surveys (conducted by TUKSTAT and much more comprehensive regarding to its size) in urban areas.

[120] Analyzing child labor dynamics is beyond the scope of the present study. It is left as a future study.

B.4.1 Population

The ones who do not take place in working age population in our sample are all under 15 at the time of our survey. Out of 1682, 879 children are male and the rest is female. Among all, 42% (714 children) are between ages 0 and 7. 60% of children who are 8-14 years-old have no diploma whereas 37% are primary and 3% are secondary school graduates.

Turning to working age population, female population (56%) is higher than male population (44%). The composition of working age population[121] in urban areas due to our data by different characteristics is as follows:

- Distribution of urban population by age group reveals that 72% of our sample is below 45 years-old. The highest share belongs to 15-19 age group (16%) and it is followed by the age groups 35-39, 20-24 and 25-29, in order given.
- Primary school graduates constitute 34% of urban working age population, and it is 25% and 16% for secondary and general high school graduates, respectively. Except general high school graduates, there does not seem to be a gender gap in school enrollment.
- The figures for current enrollment to any school points that 76% of our sample are not registered to any school. 16% of the rest continue their education in formal schools, whereas 8% join to distant learning programs.
- 38% of our working age population is located in Marmara region. Shares for other regions are: 10% in Aegean, 20% in Central Anatolia, 12% in Mediterranean, 15% in Eastern and South Eastern Anatolia, and 5% in Black Sea.

The following five remarks are about the variables on which the individual has no control over. As a reminder, these have been categorized as "circumstance variables" in Chapter 4[122].

[121] The figures in sections B.4.1 and B.4.2 are all weighted.

[122] The shares given here are not the same with the ones used in inequality of opportunity measurement carried out in Chapter 4. In opportunity inequality in earnings analysis, we have to restrict our sample through excluding the respondents who are not employed and have no incomes since our outcome variable is utilized as earnings. Besides, we are obliged to combine categories of

- 91% of the individuals report their mother tongue as Turkish. Kurdish as being the mother tongue has been mentioned by 6% of our sample, and Arabic by 2%.
- Istanbul (TR1) and Mediterranean (TR6) are found to be the two regions where one fourth of sample was born in, 14% and 11% respectively. The share of South East Anatolia (TRC) is as high as these two regions, 12%. The three regions following them are Central Anatolia (TR7), West Black Sea (TR8) and Aegean (TR3). North East Anatolia (TRA) constitutes the lowest share in terms of birth region, 4%.
- Being born in center has been mentioned by 55% of our respondents. Sub-district and village follows this with 26%, and the rest 19% state they were born in district center.[123]
- 53% of the responders have fathers that are primary school graduates. 14% of the fathers are illiterate and the numbers for those without diploma and graduated from secondary school are close to each other, 11% and 10%, respectively. Having a university graduate father is the rarest situation; only 3% of urban working age population in our data has university graduate father.
- Mothers' education level is lower than fathers' education level in all categories, except being illiterate. The share of having an illiterate mother accounts to 41% (being 22 percentage points higher than the one associated with their fathers). 10% of mothers have no diploma and 39% graduated from primary school. Being a university graduate mother is again very scarce, 1%.

Next are the figures for urban employment shares.

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the circumstance variables in order to overcome the problems that would be the case in non-parametric estimation of opportunity inequality otherwise. But here, the figures reflect the distribution of urban working age population by the variables mentioned.

[123] The city and the type of area one was born are very critical in inequality of opportunity analysis. This set of information is not covered in HLFS data; although since 2009 contains the information on the country one was born in (Turkey vs. abroad) which does not make sense regarding the previous analysis. Due to the lack of information, it was common practice to use the region of residence as a proxy for region of birth.

B.4.2 Urban Employment

In this section we investigate to what extent our data match with the data in Household Labor Force Surveys (HLFS)[124]. We now consider the ones who were employed at the time of our survey among urban working age population. Job-related characteristics are based on respondents' last (if we have information on their work history) or the only job (if otherwise); therefore these reflect Turkish Labor Market Snapshot in 2011 based on our field survey.

Female share of urban employment is 74% whilst male share is 25% in our data. These figures turn out to be 75% and 25%, for female and male, respectively when we consider the shares in inactiveness. Both for employment and inactiveness distribution, we are very close to 2011 HLFS[125] figures; however the same does not apply for unemployment rates (see Table 3.4). In our data, female share in unemployment is 1.5 times that of male share (60% for females, 40% for males) whereas it has been almost half of male share in the official data through 2007 to 2011. This mismatch in unemployment can be due to "recall error" which has been discussed in Chapter 5 for being pointed out as one of the main pitfalls of conducting labor force surveys.

B.4.2.1 Share of Employees by Different Variables

B.4.2.1.1 Age profile, Education level, Sector, Occupation

Age profile:

Distribution of urban employment by age group and share of formal employment in urban areas by age group are given in Table B.3 and B.4, respectively. The equivalent tables for HHLS data are Table 3.5 and 3.6.

The composition of urban employment by age group reveals that male labor force participation is the highest in 35-39 and 40-44 age intervals whereas it is 20-24 and 25-29 for females. This is partially confirmed in the official data as well: though the corresponding age groups being not the same, female employees are younger than male employees.

[124] For the distributions of responses in HLFS, see Chapter 3, section 3.5.

[125] From this point on, "official" data and HLFS data will be used interchangeably.

It is worth noting that the difference of the figures between 2011 HLFS and our survey data does not even account for 1 percentage point in almost all categories.

Table B.3: Distribution of Urban Employment by Age Group, 2011 (percentage of total urban employment)

	Male	Female
15-19	0.039	0.020
20-24	0.056	0.044
25-29	0.100	0.051
30-34	0.101	0.035
35-39	0.128	0.038
40-44	0.115	0.026
45-49	0.103	0.023
50-54	0.048	0.013
55-59	0.031	0.005
60-65	0.018	0.005
TOTAL	*0.739*	*0.261*

Table B.4 confirms the case found in Table 3.6: registration ratios are maximum among 35-39 and 40-44 year-old males and 25-29 and 30-35 year-old females. 82.4% of 50-54 year-old female employees are employed informally while it is 26.1% for males.

There has been a variation in registration status due to age groups among females; however it is almost the same for males except 15-19 year-old males. While being registered in middle age cohorts is dominant among males, it is young age cohorts for females.

Education level:

There does not seem to be a variation in the general picture of the composition of urban employment by education level between two different data sources. Still, the share of male employees in total urban employment is higher than the share of females in all educational level categories and the primary school graduates constitute the biggest portion in total urban employment.

There are mismatches in two datasets (see Table B.5 and Table 3.7) in the shares of university graduates. It could be said that we are faced with under representation of university graduates in urban employment among both males and females (the differences between 2011 HLFS and our survey shares of university graduates are 2% for females and 6% for males). In the same manner, the four percentage point difference in the share of male primary school graduates in urban employment could be regarded as over representation of that group.

The expectation of the increase in formal employment with the increase in education level is confirmed in male employment (Table B.6). However, this pattern is not that clear among female employees. Apart from this, the formality is found to be the top among university graduates both for males and females which overlaps with the case in the official data.

Table B.4: Share of Formal Employment in Urban Areas by Age Group, 2011 (percentage of employment by age group and gender)

	Male	Female
15-19	0.334	0.521
20-24	0.718	0.616
25-29	0.812	0.697
30-34	0.836	0.715
35-39	0.895	0.461
40-44	0.866	0.554
45-49	0.816	0.351
50-54	0.739	0.176
55-59	0.726	0.542
60-65	0.788	0.837
TOTAL	0.797	0.567

Table B.5: Composition of Urban Employment by Education Level, 2011 (percentage of total urban employment)

	Male	Female
Illiterate	0.009	0.004
No diploma	0.012	0.009
Primary school	0.287	0.068
Secondary/basic education	0.158	0.042
General High School	0.106	0.040
Vocational High School	0.084	0.035
University	0.083	0.064
TOTAL	*0.739*	*0.261*

Table B.6: Share of Formal Employment in Urban Areas by Education Level, 2011 (percentage of employment by sector and gender)

	Male	**Female**
Illiterate	0.623	0.140
No diploma	0.646	0.097
Primary school	0.788	0.345
Secondary/basic education	0.689	0.338
General High School	0.838	0.735
Vocational High School	0.870	0.650
University	0.952	0.895
TOTAL	*0.797*	*0.567*

Sectoral composition:

Our figures reflecting the share of agriculture and fishing in total urban employment are less than the ones reported in Table 3.9. It is due to the regional scope of our survey: our survey was conducted in centers, not even in district centers.

Regardless of gender, manufacturing, "trade, hotels and restaurants" are the two sectors in which urban employment has been intensified.

Female employees in other services is seen to be over-represented (by 3.8 percentage points) whilst male employees in finance and real estate to be under-represented (by 3.6 percentage points) in our field survey in comparison to 2011 HLFS shares given in Table 3.9. Other than these, the figures overlap with each other.

We face with significant differences across sectors and genders in the share of formal employment (as a percentage of total employment in the sector, Table B.7). Employees in electricity, gas and water production are all formally employed which can be explained by the large share of public companies and institutions in this sector. What is striking is that construction exhibits a high formality rate among men: it is 73% in Table B.8, though 52.2% in 2011 HLFS. The share of formal male employees is higher than the share of formal female employees in all sectors with the gender gap in other services being the maximum.

Table B.7: Sectoral Composition of Urban Employment, 2011
(percentage of total urban employment)

	Male	Female
Agriculture and fishing	0.011	0.005
Mining and quarrying	0.002	0.000
Manufacturing	0.196	0.053
EGW	0.002	0.000
Construction	0.081	0.005
Trade, H&R	0.195	0.053
Transportation	0.088	0.004
Finance, real estate	0.084	0.029
Other services	0.080	0.111
TOTAL	*0.739*	*0.261*

Table B.8: Share of Formal Employment in Urban Areas by Sector, 2011
(percentage of employment by sector and gender)

	Male	Female
Agriculture and fishing	0.796	0.020
Mining and quarrying	1.000	n.a.
Manufacturing	0.831	0.712
EGW	1.000	1.000
Construction	0.730	0.234
Trade, H&R	0.745	0.656
Transportation	0.773	0.265
Finance, real estate	0.898	0.870
Other services	0.821	0.426
TOTAL	*0.797*	*0.567*

Occupation:

There is one occupational category where the share of female employees is more than the share of male employees despite the low participation rate of females; "professionals". It is not that surprising when one evaluates this with the distribution of urban employment by education levels (Table B.5). The gender gap in employment between the university graduates is found to be least among the ones who graduated from any level of school. In all other occupations, males are preferred over females. Service workers constitute 25% of

urban employment, and it is followed by elementary occupations (24%). 20% of the employees in urban areas state that they work as craft and related workers.

As can be guessed, formality is the highest among legislators and professionals. Like the case in the gender composition of urban employment due to occupation, there is a substantial formality differential between women and men. This differential is remarkable in elementary occupations.[126]

B.4.2.1.2 Establishment Size, Employment and Registration Status, Region

Establishment size:

The distribution of urban employment by establishment size using our survey data shows the same profile discussed in Section 3.5.6: micro establishments constitute the highest share in urban employment and it is followed by the ones that employ 50 or more workers. This profile is independent from gender.

If we consider our data instead of 2011 HLFS data while commenting on the trends, we cannot conclude with a gradual shift of employees from micro to larger establishments. However, we can still capture the ongoing increase in small establishments' share. The gender gap in the shares of employees in each establishment size category fits the one found by the official data: micro establishments share is the highest, followed by that of large establishments. Small establishments have the smallest share.

As the size of establishments increase, the share of formal employment rise. This has important policy implications since the majority of employment has been provided by micro establishments (51.4 % in our survey, 46.8% in HLFS on average). When one adds the figures for small establishments, the picture turns out to be more dramatic: the bulk of employment working in micro- and small firms are mostly informally employed.

[126] When one works with occupational categories in 4 digits, it is seen that the most frequent occupations in formal sector are "*general office clerks*", "*shop keepers*", "*manufacturing laborers not elsewhere classified*", and "*primary school teachers*", the two of which ("*shop keepers*", "*manufacturing laborers not elsewhere classified*") are also common for informal sector. Other than these two occupations, "*childcare workers*", "*cleaners and helpers in offices, hotels and other establishments*", and "*stall and market salespersons*" are generally not registered under any social security institution.

Employment status:

The main difference between our figures and the HLFS results is seen in the distribution of urban employment by employment status: as emphasized before, our field survey captures only district areas, correspondingly, the size of our sample reporting themselves as unpaid family workers are rare (consistent with the case investigated in agriculture and fishing sector). Beyond this, regular/casual employment is the most common category in urban employment irrespective of gender (that matches with HLFS data results) and self-employment comes next.

Formal employment is dominant for men in being employer whereas it is regular/casual employee among women. Though the shares are not exactly the same in the two compared datasets (HLFS and our survey), the distributions reflect the same ordering. Being unpaid family worker corresponds to the case with least formality ratios for both men and women.

Registration status:

The composition of urban employment by registration status points out formal employment is a more common practice among males than among females. The share of female informal employment (as a percentage of total urban employment) is 11.3%, and the same share for males equals to 15%. Formal employment shares are found to be 14.8% and 58.9%, for women and men, respectively (Table B.9).

In comparison to 2011 HLFS results (Table 3.17), we can argue that our data capture more informal female employees (and less informal males) and more formal male employees (and less formal females).

Table B.9: Distribution of Urban Employment by Registration Status, 2011 (percentage of total urban employment)

	Male	Female
formal	0.589	0.148
informal	0.150	0.113
TOTAL	*0.739*	*0.261*

The figures turn out to be more dramatic for women when we calculate the shares of female formal and informal employment (as a percentage of urban female employment). 43.3% of female urban employment has been working informally. This number is 20.3% for males (Table B.10). What we did not expect is 79.7% of male employees in urban areas are found to be working formally. Though this share is consistent with the other information they reported about their work (sector, occupation, employment status), it is still 6.2 percentage points higher than the one indicated by 2011 HLFS data (see Table 3.18).

Table B.10: Distribution of Urban Employment by Registration Status, 2011 (percentage of gender specific total urban employment)

	Male	Female
formal	0.797	0.567
informal	0.203	0.433

Region:

The regional dispersion of urban employment matches with the one shown by the official data: Marmara region arises as the most intensified region in terms of urban employment (46% of total urban employment), and Central Anatolia is the second. East Anatolia appears to be the last in the list of the regional employment shares. Unfortunately, we did not face with an analogous profile in the shares formal employment by region using two different data sets. The most remarkable difference is that: although Marmara region is the one covering the most of urban employees in terms of HLFS data, it does not appear even in the

top first three of the list due to our survey data. Besides, our East and South East Anatolia figures are much than the ones revealed in HLFS data.

B.4.2.1.3 Household Characteristics

The distribution of urban population using household level data will complement the ones summarized above which were based on individual level. We group households by the number of people living in the household, household size (like the case in HLFS, see Table 3.21). 45.2% of urban working age population lives in households with 4-5 people. When we add households with 3 people to that sum, it accounts more than half of urban working age population, 62.6%. The remaining is divided as follows: 10.1% live in small (1-2 people), 15.9% in large (7 and more people households), and finally 11.4% lives in a family with 6 members.

The shares of people living in households with any employment display women living alone are the most vulnerable group, as the related share is 43.8%. The same value among men is 82.9%. When we consider 2-people households, the figures tend to get closer to each other; 52.1% among women, and 58.7% among men. For larger household, as the number of family members increase, the probability of finding at least one employed person in the household rises.

The probability of the person to be formally employed is very low if one is living alone: it is 6% among women, and almost 1% among men. As soon as one more person is added to the house, the figures start to recover. About 35 percent of people living in households with 2 people have at least one formal employee in the household. We cannot talk about a clear-cut inverted-U type relationship between formality and household size which was caught in HLFS data. In our data, the figures are volatile and it is hard to discuss the link between formality and household size with reference to patterns. The likeliness of (all) household members benefiting from (at least) one's social security coverage reaches its maximum value in large households with 7-9 people.

B.4.2.2 Share of Employees by Other Variables those are specific to our field survey

There are some job-related characteristics which are not covered with reference to HLFS (and Chapter 3) but took place in our questionnaire.

- The distribution of urban employment by gender and *job property* gives us the following shares (as a percentage of total urban employment): private accounts for 63%, own business for 24%, and public for 12% .The remaining is associated with state economic enterprise and institutions, namely *KİT (Kamu İktisadi Teşekkülü), KİK (Kamu İktisadi Kurumu), İDT (İktisadi Devlet Teşekkülü), BİT (Belediye İktisadi Teşebbüsü)*.
- The figures for urban employment divided as *part-time and full-time*[127] shows that 87.7% of urban employment is associated with full-time work (and the rest with part-time). If perceiving formal employees having full-time job is accurate, we realize that there are people who work full-time but are not registered in our sample (the gap between these two figures is 14 percentage points).
- Job permanency composition of urban employment gives somewhat similar results faced with in part-time vs. full-time division: 84% of the respondents who are employed report that their job is permanent and again this share is higher than the share of formal employees, 73.7%. This implies the same phenomenon: there is a bunch of people (10.3% of urban employment) whose job is permanent however they are not registered under any social security institution. Moreover, 9.2% of urban employees report that they work with temporary or fixed time contract whereas 6.8% without any contract[128].

There is a consensus in the literature that part-time work and temporary or fixed time contract are inherent in informal employment. But, through our survey, we have seen that being employed informally can also be the case in full-time and permanent work which can be perceived as an evidence of "informalization of formal sector" in Turkey. Analyzing this condition with the distribution of the institutions registered and the reasons of being informal may clarify its existence a bit more.

[127] Working part-time is defined as working between 1 and 35 hours per week.

[128] Among the three job permanency categories, the shares of males are always higher than the shares of females except one: the share of female employees in jobs without contract is more than the one among male employees. This share is also expected to be less among females because of females' low labor force participation rates in Turkey. The vulnerable position of females in labor market has again been confirmed with that result.

- Among the three major social security institutions in Turkey, SSK (Institute of Social Insurances, *Sosyal Sigortalar Kurumu*) covers 58% of urban employment, and out of 58%, 48% are recorded on the basis of the wage earned, and 10% on the basis of minimum wage rather than their exact wage. 10% of urban employees are registered under BK (Social Security Organization for Artisans and the Self-Employed, *Esnaf ve Sanatkarlar ve Diğer Bağımsız Çalışanlar Sosyal Sigorta Kurumu*) whereas 5% under ES (Retirement Fund, *Emekli Sandığı*). Only 1% of the employees in urban areas join private insurance and 26% of urban employees report that they are working informally.

- 37% of the unregistered employees state that they are informal because the employer does not want to register them. This may explain the underlying reason for being informal even working full-time in a permanent job. 22% of informal employees report that they cannot afford social security premiums. This reasoning makes us think that these people may be self-employed or employer. The share of urban informal employees pointing out the registration status of the firm as the reason of their being informal is 9%.

- Lastly, union membership rate is very striking: only 7.9% of total urban employees are members of a union.

B.5 Final Remarks

We can conclude that we get a reasonable fit of our data with HLFS data. The differences from the official data are minor and are negligible. We were not expecting this much overlap since we did not start with any restriction/criteria in sample selection: our method of sample selection is "Stratified Simple Random Sampling" where NUTS 1 level has been operationalized as clusters. By using four variables (age and education level of household head, SES and the size of the household), we end up with a representative sample of Turkish urban working age population (in household level) which is confirmed through the comparison with the official data. So far in the appendix, we examined the composition of our sample due to current work status of the respondent however the originality of our survey mainly comes from its dynamic structure which is captured in work history part of

the questionnaire. This dynamic framework of the questionnaire is the primary purpose that makes us conduct the survey and has been analyzed in Chapter 5 to find out labor market transitions in Turkey.

It is important to note that in addition to describing the data set used in our analyses; this appendix has also been written with the aim of introducing new data on Turkish labor market. Before giving a guide on how to make proper use of the available information in our data (which can be perceived as future work), indicating the analyses conducted so far in the presentation makes sense.

In the present dissertation, to find out the dynamics of informal employment, we first analyzed labor force participation decision and wage inequality in urban areas of Turkey via HLFS data. The absence of the information to conduct inequality of opportunity and mobility analyses leads us to carry out our field survey. With the detection of circumstance variables and the advantage variable in the same data set, we were able to measure inequality of opportunity in earnings in Turkey. In the next step, we again employ our data to investigate the dynamic characteristic of Turkish labor market with reference to mobility between formal and informal jobs/sectors.

The new and related issues to be analyzed and studied can be the extensions of inequality of opportunity analysis. Taking into account of Peragine's (2011) critics to de Barros et al.'s (2009) work, the new roads of research can be listed as follows: Insofar as committed to the ex-ante approach of opportunity inequality definition, we did not distinguish between a direct effect of circumstances on the outcome and the indirect effect via the choice of effort. This has been considered in Bourguignon et al. (2007) study via estimating the regression for effort variables as well and can be implemented to our work. Another aspect of EOp analysis that can be thought as a complement to ours is applying ex-post approach which overlaps with "fair opportunity of (in)equality" discussed in the "descriptive clarification" section of Chapter 4.

Considering EOp literature with its relation to intergenerational mobility literature, one can assert that educational transmissions should be the concern of analyses. Inequality of opportunity for education was studied by Ferreira and Gignoux (2010) in the case of Turkey; however it can be extended through questioning the quantity and quality of education. Since we have employment status and some other related information related to one's employment

status for at least two generations in our data, intergenerational transmissions in employment status arises as another area of research.

Paraphrasing Peragine (2011: 142) from his review of de Barros et al. (2009) book, "(…) as in most of existing contributions, the analysis of inequality of opportunity contained in the book is based on snapshots of income or consumption. However, there is a large agreement on the relevance of extending the income distribution analysis to an intertemporal context. Until now, only few papers have focused on extending the analysis of inequality of opportunity to an intertemporal context (Bourguignon et al., 2007, Aaberge et al., 2011)". Thus, it would be worth to try discussing the principle of equality of opportunity with its relation to long-term income distribution empirically up to the limits of our data.

Finally, there is one part of our survey which we did not interpret in detail, the part on migration history. TURKSTAT started to collect migration data since 2009 in their HHLS captured by the questions pointing out the respondent's previous migration experience. Our data set is more comprehensive in this regard since we gather all migration experiences of the respondents since the age of 15. Therefore, we can model migration probabilities in a duration context through separating long-distance moves from the short-distance ones as well. The reasons of migration will also be integrated to the analysis.

APPENDIX C

SUPPLEMENTARY TABLES FOR CHAPTER 5

C.1 Descriptive statistics for transitions from formal employment (FE), informal employment (IE), non-employment (NON) and out of labor force/schooling (OUT/SCH)

Table C.1: Descriptive statistics for transitions from out of employment/schooling*

	OUT/SCH→FE				OUT/SCH→IE			
	Male		Female		Male		Female	
covariates	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***
falive	0.907	0.261	0.920	0.271	0.907	0.291	0.911	0.286
malive	0.970	0.149	0.974	0.159	0.970	0.170	0.973	0.162
fsec	0.250	0.445	0.377	0.485	0.250	0.434	0.224	0.418
msec	0.094	0.347	0.206	0.404	0.094	0.293	0.123	0.329
Turkish	0.905	0.193	0.974	0.159	0.905	0.293	0.942	0.234
birthC	0.354	0.481	0.320	0.467	0.354	0.479	0.393	0.489
birthE	0.308	0.422	0.178	0.382	0.308	0.462	0.224	0.418
birthA	0.024	0.143	0.032	0.176	0.024	0.154	0.018	0.132
child	0.015	0.153	0.020	0.160	0.015	0.146	0.016	0.156
lateeduc			0.055	0.227				
sec	0.655		0.833	0.373	0.655	0.476	0.569	0.496
student	0.360	0.478			0.360	0.481	0.336	0.473

** Alternatively, the first NON→FE and NON→IE transitions*
Note: For description and full names of the covariates, see Table 4.10.
Omitted category: birth in the West region.

Table C.2: Descriptive statistics for transitions from FE, IE, NON and OUT/SCH, males

	FE→IE		FE→NON		IE→FE		IE→NON		NON→FE		NON→IE		OUT/SCH→FE		OUT/SCH→IE	
covariates	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***
child	0.510	1.023	0.382	0.882	0.339	0.839	0.215	0.725	0.304	0.744	0.510	1.003				
educ	0.260	0.440	0.438	0.496	0.265	0.442	0.233	0.424	0.465	0.499	0.302	0.460				
fEduc	0.142	0.350	0.204	0.403	0.146	0.353	0.163	0.370	0.197	0.398	0.117	0.322	0.271	0.445	0.250	0.434
mEduc	0.080	0.273	0.116	0.321	0.062	0.241	0.078	0.269	0.101	0.302	0.076	0.266	0.140	0.347	0.094	0.293
eFE	0.500	0.501	0.354	0.478	0.319	0.467	0.172	0.378	0.776	0.417	0.432	0.497				
eIE	0.406	0.492	0.186	0.390	0.410	0.493	0.252	0.435	0.385	0.487	0.750	0.434				
train	0.109	0.313	0.165	0.371	0.071	0.257	0.064	0.244	0.052	0.223	0.036	0.188				
crisis	0.146	0.354	0.177	0.382	0.153	0.361	0.156	0.364	0.182	0.386	0.229	0.421	0.153	0.360	0.162	0.369
MSE	0.099	0.299	0.164	0.370	0.121	0.327	0.127	0.334								
LSE	0.521	0.501	0.484	0.500	0.112	0.316	0.154	0.361								
manuf	0.361	0.482	0.348	0.477	0.221	0.416	0.236	0.425								
skillHS	0.037	0.188	0.102	0.302	0.021	0.142	0.024	0.153								
skillIS	0.330	0.471	0.312	0.464	0.333	0.472	0.292	0.455								
skillC	0.073	0.261	0.119	0.324	0.035	0.185	0.034	0.183								
perm	0.839	0.369	0.875	0.331	0.743	0.437	0.645	0.479								
self	0.167	0.374	0.122	0.328	0.206	0.405	0.127	0.334								
ft	0.953	0.212	0.962	0.192	0.912	0.284	0.899	0.301								
regC	0.292	0.456	0.296	0.457	0.322	0.468	0.371	0.484								
regE	0.083	0.277	0.077	0.266	0.165	0.372	0.101	0.301								
regA	0.005	0.072	0.019	0.137	0.035	0.185	0.019	0.135								
public	0.130	0.337	0.201	0.401												

Note: For description and full names of the covariates, see Table 4.10.
Omitted categories: firm size less than 10, low-skilled occupation, job in the West region.

Table C.3: Descriptive statistics for transitions from FE, IE, NON and OUT/SCH, females

	FE→IE		FE→NON		IE→FE		IE→NON		NON→FE		NON→IE		OUT/SCH→FE		OUT/SCH→IE	
covariates	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***
child	0.480	0.891	0.384	0.833	0.388	0.778	0.695	1.132	0.458	0.845	0.615	0.966				
educ	0.467	0.502	0.603	0.490	0.534	0.501	0.352	0.478	0.637	0.482	0.454	0.499				
fEduc	0.236	0.428	0.308	0.462	0.263	0.442	0.232	0.423	0.332	0.472	0.240	0.428	0.377	0.485	0.224	0.418
mEduc	0.103	0.306	0.171	0.377	0.217	0.414	0.112	0.316	0.169	0.376	0.107	0.310	0.206	0.404	0.123	0.329
eFE	0.347	0.479	0.384	0.487	0.250	0.435	0.177	0.382	0.844	0.363	0.502	0.501				
eIE	0.400	0.493	0.164	0.371	0.336	0.474	0.301	0.459	0.335	0.473	0.649	0.479				
train	0.147	0.356	0.190	0.393	0.086	0.282	0.088	0.283	0.080	0.272	0.073	0.261				
crisis	0.280	0.452	0.187	0.390	0.259	0.440	0.200	0.400	0.241	0.428	0.171	0.377	0.176	0.381	0.162	0.369
MSE	0.147	0.356	0.184	0.388	0.190	0.394	0.183	0.387								
LSE	0.560	0.500	0.543	0.499	0.224	0.419	0.189	0.392								
manuf	0.413	0.496	0.340	0.474	0.276	0.449	0.248	0.433								
skillHS	0.093	0.293	0.189	0.392	0.095	0.294	0.069	0.254								
skillIS	0.120	0.327	0.192	0.394	0.147	0.355	0.137	0.344								
skillC	0.200	0.403	0.227	0.419	0.181	0.387	0.127	0.333								
perm	0.853	0.356	0.850	0.358	0.724	0.449	0.631	0.483								
self	0.040	0.197	0.021	0.144	0.060	0.239	0.165	0.372								
ft	0.933	0.251	0.932	0.253	0.888	0.317	0.760	0.428								
regC	0.213	0.412	0.220	0.415	0.198	0.400	0.281	0.450								
regE	0.133	0.342	0.053	0.225	0.112	0.317	0.094	0.292								
regA	0.013	0.115	0.023	0.149	0.017	0.131	0.010	0.100								
public	0.108	0.313	0.216	0.412												

Note: For description and full names of the covariates, see Table 4.10.
Omitted categories: firm size less than 10, low-skilled occupation, job in the West region.

C.2 Alternative model specifications for transitions out of four labor market states in a multi-state multi-spell framework

Table C.4: Alternative model specifications for transitions out of FE, males

	FE to IE (j=1, k=2)				FE to NON (j=1, k=3)			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
child	-0.055	-0.055	-0.140	-0.055	-0.055	-0.055	-0.047	-0.055
	(0.093)	(0.093)	(0.090)	(0.094)	(0.047)	(0.047)	(0.042)	(0.047)
educ	-0.261	-0.261	-0.360	-0.261	0.204	0.204	0.162	0.204
	(0.200)	(0.200)	(0.229)	(0.200)	(0.086)	(0.086)	(0.092)	(0.086)
fEduc	0.032	0.032	-0.011	0.032	0.036	0.036	0.069	0.036
	(0.237)	(0.237)	(0.271)	(0.237)	(0.100)	(0.100)	(0.112)	(0.100)
mEduc	0.316	0.316	-0.027	0.317	0.463	0.463	0.176	0.463
	(0.305)	(0.305)	(0.411)	(0.305)	(0.125)	(0.125)	(0.156)	(0.125)
eFE	0.231	0.231	0.179	0.230	-0.237	-0.237	-0.286	-0.239
	(0.179)	(0.179)	(0.168)	(0.179)	(0.085)	(0.085)	(0.085)	(0.085)
eIE	0.839	0.839	1.026	0.838	-0.058	-0.058	-0.058	-0.059
	(0.168)	(0.168)	(0.156)	(0.168)	(0.095)	(0.095)	(0.090)	(0.095)
train	-0.524	-0.524	-0.218	-0.524	-0.441	-0.441	-0.300	-0.441
	(0.253)	(0.253)	(0.237)	(0.254)	(0.103)	(0.103)	(0.112)	(0.103)
crisis	0.111	0.111	0.438	0.111	0.229	0.229	0.280	0.229
	(0.219)	(0.219)	(0.193)	(0.219)	(0.093)	(0.093)	(0.095)	(0.093)
MSE	-0.053	-0.053	-0.427	-0.054	0.202	0.202	-0.011	0.202
	(0.271)	(0.271)	(0.285)	(0.271)	(0.111)	(0.111)	(0.110)	(0.111)
LSE	0.458	0.458	0.466	0.458	0.146	0.146	0.273	0.146
	(0.199)	(0.199)	(0.185)	(0.199)	(0.093)	(0.093)	(0.093)	(0.093)
manuf	0.148	0.148	0.170	0.148	0.174	0.174	0.277	0.174
	(0.169)	(0.169)	(0.160)	(0.169)	(0.080)	(0.080)	(0.077)	(0.080)
skillHS	-0.932	-0.932	-1.382	-0.932	-0.393	-0.393	-0.241	-0.393
	(0.417)	(0.417)	(0.744)	(0.417)	(0.138)	(0.138)	(0.170)	(0.138)
skillIS	-0.350	-0.350	-0.550	-0.350	-0.135	-0.135	-0.229	-0.134
	(0.172)	(0.172)	(0.164)	(0.172)	(0.083)	(0.083)	(0.078)	(0.083)
skillC	-0.512	-0.512	-0.022	-0.512	-0.074	-0.074	-0.291	-0.075
	(0.323)	(0.323)	(0.306)	(0.323)	(0.124)	(0.124)	(0.147)	(0.124)
perm	-0.699	-0.699	-0.990	-0.700	-0.481	-0.481	-0.565	-0.482
	(0.234)	(0.234)	(0.207)	(0.234)	(0.117)	(0.117)	(0.118)	(0.117)
self	-0.503	-0.503	-0.071	-0.503	-0.778	-0.778	-0.808	-0.779
	(0.241)	(0.241)	(0.219)	(0.241)	(0.120)	(0.120)	(0.127)	(0.121)
ft	-0.485	-0.485	0.159	-0.486	-0.363	-0.363	-0.003	-0.363
	(0.418)	(0.418)	(0.448)	(0.418)	(0.200)	(0.200)	(0.214)	(0.200)
regC	-0.147	-0.147	0.178	-0.147	0.055	0.055	-0.027	0.055
	(0.185)	(0.185)	(0.164)	(0.185)	(0.081)	(0.081)	(0.080)	(0.082)
regE	-0.456	-0.456	-0.367	-0.456	-0.721	-0.721	-0.804	-0.722
	(0.291)	(0.291)	(0.272)	(0.291)	(0.143)	(0.143)	(0.138)	(0.143)
regA	-0.714	-0.714	-0.717	-0.715	0.617	0.617	0.901	0.616
	(1.007)	(1.007)	(1.185)	(1.007)	(0.273)	(0.273)	(0.288)	(0.273)
public	-0.570	-0.570	-0.508	-0.570	-0.176	-0.176	-0.152	-0.176
	(0.273)	(0.273)	(0.262)	(0.273)	(0.109)	(0.109)	(0.111)	(0.109)

Note: Model A: multi-spell multi-state Markov model with stratified hazards (sh), Model B: sh and clustering (cluster(id)), Model C: sh and weights, and Model D: sh and frailty (frailty(familyid)).
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios).Omitted categories: firm size less than 10, low-skilled occupation, job in the West region.

Table C.5: Alternative model specifications for transitions out of FE, females

	FE to IE (j=1, k=2)				FE to NON (j=1, k=3)			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
child	-0.077	-0.077	-0.006	-0.077	-0.056	-0.056	0.010	-0.056
	(0.202)	(0.202)	(0.225)	(0.202)	(0.069)	(0.069)	(0.072)	(0.069)
educ	-0.026	-0.026	-0.664	-0.026	0.119	0.119	0.282	0.118
	(0.314)	(0.314)	(0.377)	(0.314)	(0.106)	(0.106)	(0.117)	(0.106)
fEduc	0.123	0.123	0.798	0.123	-0.056	-0.056	0.092	-0.055
	(0.338)	(0.338)	(0.379)	(0.338)	(0.109)	(0.109)	(0.131)	(0.109)
mEduc	-0.700	-0.700	-0.619	-0.697	-0.031	-0.031	-0.508	-0.029
	(0.455)	(0.455)	(0.446)	(0.455)	(0.128)	(0.128)	(0.161)	(0.129)
eFE	-0.069	-0.069	-0.109	-0.074	0.029	0.029	0.003	0.024
	(0.298)	(0.298)	(0.349)	(0.298)	(0.094)	(0.094)	(0.108)	(0.095)
eIE	1.375	1.375	1.838	1.368	0.298	0.298	0.452	0.290
	(0.276)	(0.276)	(0.308)	(0.276)	(0.115)	(0.115)	(0.131)	(0.116)
train	-0.005	-0.005	-0.021	-0.005	-0.325	-0.325	-0.235	-0.325
	(0.365)	(0.365)	(0.436)	(0.365)	(0.114)	(0.114)	(0.141)	(0.114)
crisis	0.336	0.336	-0.482	0.337	0.031	0.031	-0.099	0.031
	(0.315)	(0.315)	(0.439)	(0.315)	(0.114)	(0.114)	(0.134)	(0.114)
MSE	-0.268	-0.268	0.195	-0.269	-0.020	-0.020	0.153	-0.021
	(0.449)	(0.449)	(0.478)	(0.449)	(0.130)	(0.130)	(0.151)	(0.130)
LSE	0.255	0.255	0.422	0.254	-0.104	-0.104	0.171	-0.105
	(0.339)	(0.339)	(0.405)	(0.339)	(0.112)	(0.112)	(0.125)	(0.112)
manuf	0.156	0.156	-0.152	0.155	0.009	0.009	-0.175	0.008
	(0.312)	(0.312)	(0.373)	(0.312)	(0.103)	(0.103)	(0.119)	(0.103)
skillHS	-0.876	-0.876	-0.687	-0.880	-0.476	-0.476	-0.672	-0.478
	(0.483)	(0.483)	(0.577)	(0.483)	(0.138)	(0.138)	(0.176)	(0.139)
skillIS	-0.954	-0.954	-1.334	-0.955	-0.309	-0.309	-0.135	-0.309
	(0.398)	(0.398)	(0.466)	(0.398)	(0.121)	(0.121)	(0.134)	(0.122)
skillC	-0.357	-0.357	-0.509	-0.358	-0.145	-0.145	-0.068	-0.146
	(0.348)	(0.348)	(0.414)	(0.348)	(0.119)	(0.119)	(0.137)	(0.119)
perm	-0.914	-0.914	-0.438	-0.918	-0.870	-0.870	-1.006	-0.874
	(0.385)	(0.385)	(0.488)	(0.385)	(0.126)	(0.126)	(0.137)	(0.127)
self	-0.843	-0.843	-0.243	-0.844	-1.424	-1.424	-1.379	-1.427
	(0.658)	(0.658)	(0.581)	(0.658)	(0.320)	(0.320)	(0.323)	(0.321)
ft	-0.552	-0.552	-0.342	-0.554	-0.051	-0.051	0.163	-0.052
	(0.532)	(0.532)	(0.667)	(0.532)	(0.192)	(0.192)	(0.222)	(0.193)
regC	0.173	0.173	-0.378	0.173	-0.019	-0.019	0.057	-0.019
	(0.333)	(0.333)	(0.406)	(0.333)	(0.105)	(0.105)	(0.125)	(0.106)
regE	0.854	0.854	0.301	0.856	-0.362	-0.362	-0.489	-0.361
	(0.380)	(0.380)	(0.460)	(0.380)	(0.194)	(0.194)	(0.230)	(0.194)
regA	-0.072	-0.072	0.365	-0.071	0.233	0.233	0.374	0.235
	(1.039)	(1.039)	(1.216)	(1.039)	(0.290)	(0.290)	(0.405)	(0.291)
public	-1.068	-1.068	-0.856	-1.069	-0.519	-0.519	-0.559	-0.521
	(0.459)	(0.459)	(0.524)	(0.459)	(0.128)	(0.128)	(0.158)	(0.129)

Note: Model A: multi-spell multi-state Markov model with stratified hazards (sh), Model B: sh and clustering (cluster(id)), Model C: sh and weights, and Model D: sh and frailty (frailty(familyid)).
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios).Omitted categories: firm size less than 10, low-skilled occupation, job in the West region.
For description and full names of the covariates in Tables C.4 and C.5, see Table 4.10.

Table C.6: Alternative model specifications for transitions out of IE, males

	IE to FE (j=2, k=1)				IE to NON ((j=2, k=3)			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
child	-0.021	-0.021	-0.149	-0.021	-0.076	-0.076	-0.127	-0.076
	(0.091)	(0.091)	(0.084)	(0.091)	(0.121)	(0.121)	(0.114)	(0.121)
educ	0.494	0.494	0.397	0.494	0.249	0.249	0.526	0.249
	(0.146)	(0.146)	(0.166)	(0.146)	(0.149)	(0.149)	(0.165)	(0.149)
fEduc	0.025	0.025	-0.510	0.025	0.328	0.328	0.260	0.328
	(0.187)	(0.187)	(0.216)	(0.187)	(0.162)	(0.162)	(0.168)	(0.162)
mEduc	0.321	0.321	0.898	0.321	0.366	0.366	0.069	0.366
	(0.268)	(0.268)	(0.283)	(0.268)	(0.225)	(0.225)	(0.307)	(0.225)
eFE	0.516	0.516	0.246	0.513	0.105	0.105	-0.120	0.102
	(0.148)	(0.148)	(0.135)	(0.148)	(0.186)	(0.186)	(0.178)	(0.186)
eIE	0.017	0.017	-0.079	0.016	-0.260	-0.260	-0.279	-0.261
	(0.132)	(0.132)	(0.125)	(0.133)	(0.143)	(0.143)	(0.137)	(0.143)
train	0.314	0.314	0.024	0.313	-0.206	-0.206	-0.251	-0.207
	(0.231)	(0.231)	(0.228)	(0.231)	(0.233)	(0.233)	(0.208)	(0.233)
crisis	-0.038	-0.038	-0.211	-0.039	0.264	0.264	0.343	0.264
	(0.180)	(0.180)	(0.174)	(0.180)	(0.157)	(0.157)	(0.149)	(0.157)
MSE	-0.684	-0.684	-0.702	-0.684	-0.456	-0.456	-0.407	-0.456
	(0.186)	(0.186)	(0.183)	(0.186)	(0.167)	(0.167)	(0.158)	(0.168)
LSE	-0.382	-0.382	-0.249	-0.382	0.026	0.026	-0.187	0.026
	(0.192)	(0.192)	(0.172)	(0.192)	(0.168)	(0.168)	(0.171)	(0.168)
manuf	0.082	0.082	0.177	0.082	0.134	0.134	0.270	0.133
	(0.150)	(0.150)	(0.136)	(0.150)	(0.140)	(0.140)	(0.130)	(0.140)
skillHS	-0.443	-0.443	-0.266	-0.444	0.169	0.169	0.193	0.169
	(0.433)	(0.433)	(0.421)	(0.433)	(0.366)	(0.366)	(0.299)	(0.366)
skillIS	-0.120	-0.120	-0.131	-0.121	-0.225	-0.225	-0.193	-0.226
	(0.134)	(0.134)	(0.126)	(0.134)	(0.133)	(0.133)	(0.130)	(0.133)
skillC	0.450	0.450	-0.088	0.450	0.153	0.153	0.361	0.153
	(0.310)	(0.310)	(0.383)	(0.310)	(0.332)	(0.332)	(0.322)	(0.332)
perm	-0.067	-0.067	0.149	-0.068	-0.539	-0.539	-0.594	-0.540
	(0.148)	(0.148)	(0.135)	(0.148)	(0.128)	(0.128)	(0.119)	(0.129)
self	-0.690	-0.690	-0.568	-0.691	-0.872	-0.872	-1.123	-0.872
	(0.158)	(0.158)	(0.149)	(0.158)	(0.179)	(0.179)	(0.182)	(0.179)
ft	0.021	0.021	0.460	0.021	0.181	0.181	0.119	0.181
	(0.229)	(0.229)	(0.250)	(0.229)	(0.194)	(0.194)	(0.180)	(0.195)
regC	-0.134	-0.134	0.066	-0.134	-0.091	-0.091	0.064	-0.091
	(0.140)	(0.140)	(0.127)	(0.140)	(0.127)	(0.127)	(0.120)	(0.127)
regE	-0.163	-0.163	-0.174	-0.164	-0.731	-0.731	-0.612	-0.731
	(0.174)	(0.174)	(0.160)	(0.174)	(0.193)	(0.193)	(0.175)	(0.193)
regA	-0.010	-0.010	-0.234	-0.009	0.160	0.160	0.397	0.161
	(0.380)	(0.380)	(0.461)	(0.380)	(0.429)	(0.429)	(0.506)	(0.430)

Note: Model A: multi-spell multi-state Markov model with stratified hazards (sh), Model B: sh and clustering (cluster(id)), Model C: sh and weights, and Model D: sh and frailty (frailty(familyid)).
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios).Omitted categories: firm size less than 10, low-skilled occupation, job in the West region.
For description and full names of the covariates, see Table 4.10.

Table C.7: Alternative model specifications for transitions out of IE, females

	IE to FE (j=2, k=1)				IE to NON ((j=2, k=3)			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
child	-0.274	-0.274	-0.094	-0.275	-0.028	-0.028	0.028	-0.028
	(0.192)	(0.192)	(0.165)	(0.192)	(0.064)	(0.064)	(0.055)	(0.064)
educ	0.987	0.987	1.039	0.986	0.119	0.119	0.443	0.119
	(0.259)	(0.259)	(0.271)	(0.259)	(0.123)	(0.123)	(0.134)	(0.123)
fEduc	-0.098	-0.098	-0.058	-0.097	0.446	0.446	0.190	0.449
	(0.280)	(0.280)	(0.283)	(0.281)	(0.131)	(0.131)	(0.136)	(0.132)
mEduc	1.094	1.094	1.185	1.097	0.174	0.174	0.118	0.175
	(0.287)	(0.287)	(0.311)	(0.288)	(0.171)	(0.171)	(0.203)	(0.172)
eFE	0.542	0.542	0.443	0.528	-0.053	-0.053	-0.054	-0.064
	(0.257)	(0.257)	(0.267)	(0.257)	(0.136)	(0.136)	(0.152)	(0.137)
eIE	0.174	0.174	0.310	0.173	0.087	0.087	0.054	0.086
	(0.231)	(0.231)	(0.233)	(0.232)	(0.115)	(0.115)	(0.114)	(0.115)
train	0.171	0.171	0.972	0.170	0.258	0.258	0.385	0.258
	(0.377)	(0.377)	(0.328)	(0.377)	(0.174)	(0.174)	(0.187)	(0.174)
crisis	0.449	0.449	0.450	0.447	-0.021	-0.021	-0.041	-0.020
	(0.265)	(0.265)	(0.288)	(0.266)	(0.146)	(0.146)	(0.139)	(0.146)
MSE	0.166	0.166	0.080	0.166	0.292	0.292	0.111	0.290
	(0.291)	(0.291)	(0.286)	(0.291)	(0.141)	(0.141)	(0.136)	(0.141)
LSE	0.256	0.256	0.495	0.253	0.100	0.100	0.014	0.098
	(0.283)	(0.283)	(0.264)	(0.283)	(0.137)	(0.137)	(0.137)	(0.138)
manuf	0.079	0.079	0.116	0.081	0.172	0.172	0.094	0.172
	(0.280)	(0.280)	(0.255)	(0.280)	(0.134)	(0.134)	(0.124)	(0.135)
skillHS	0.737	0.737	0.436	0.736	0.465	0.465	0.352	0.466
	(0.407)	(0.407)	(0.420)	(0.408)	(0.225)	(0.225)	(0.269)	(0.225)
skillIS	0.184	0.184	0.034	0.185	-0.123	-0.123	0.001	-0.122
	(0.320)	(0.320)	(0.314)	(0.320)	(0.155)	(0.155)	(0.141)	(0.156)
skillC	0.414	0.414	0.075	0.413	0.439	0.439	0.314	0.435
	(0.298)	(0.298)	(0.327)	(0.298)	(0.161)	(0.161)	(0.158)	(0.161)
perm	-0.262	-0.262	-0.391	-0.265	-0.343	-0.343	-0.405	-0.346
	(0.259)	(0.259)	(0.256)	(0.259)	(0.115)	(0.115)	(0.109)	(0.115)
self	-1.389	-1.389	-1.399	-1.389	-0.508	-0.508	-0.402	-0.512
	(0.470)	(0.470)	(0.463)	(0.470)	(0.143)	(0.143)	(0.141)	(0.143)
ft	1.330	1.330	0.836	1.331	0.537	0.537	0.483	0.540
	(0.390)	(0.390)	(0.312)	(0.390)	(0.136)	(0.136)	(0.128)	(0.136)
regC	-0.533	-0.533	-0.751	-0.534	-0.057	-0.057	-0.091	-0.058
	(0.259)	(0.259)	(0.258)	(0.259)	(0.111)	(0.111)	(0.103)	(0.111)
regE	-0.727	-0.727	-0.944	-0.726	-0.992	-0.992	-0.655	-0.991
	(0.355)	(0.355)	(0.399)	(0.356)	(0.173)	(0.173)	(0.162)	(0.174)
regA	-0.082	-0.082	0.219	-0.092	-0.826	-0.826	-0.898	-0.834
	(0.761)	(0.761)	(0.996)	(0.762)	(0.514)	(0.514)	(0.926)	(0.516)

Note: Model A: multi-spell multi-state Markov model with stratified hazards (sh), Model B: sh and clustering (cluster(id)), Model C: sh and weights, and Model D: sh and frailty (frailty(familyid)).
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios).Omitted categories: firm size less than 10, low-skilled occupation, job in the West region.
For description and full names of the covariates, see Table 4.10.

Table C.8: Alternative model specifications for transitions out of NON, males

	NON to FE (j=3, k=1)				NON to IE (j=3, k=2)			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
child	0.037	0.037	-0.051	0.036	-0.240	-0.240	-0.393	-0.241
	(0.071)	(0.071)	(0.062)	(0.071)	(0.119)	(0.119)	(0.105)	(0.120)
educ	0.071	0.071	-0.042	0.070	-0.263	-0.263	-0.167	-0.264
	(0.088)	(0.088)	(0.099)	(0.089)	(0.195)	(0.195)	(0.196)	(0.195)
fEduc	0.001	0.001	-0.211	0.001	-0.399	-0.399	-0.387	-0.399
	(0.114)	(0.114)	(0.134)	(0.114)	(0.286)	(0.286)	(0.292)	(0.286)
mEduc	-0.257	-0.257	-0.049	-0.257	0.260	0.260	-0.219	0.260
	(0.149)	(0.149)	(0.189)	(0.149)	(0.352)	(0.352)	(0.488)	(0.352)
eFE	0.548	0.548	0.572	0.546	-0.800	-0.800	-0.389	-0.802
	(0.135)	(0.135)	(0.130)	(0.135)	(0.243)	(0.243)	(0.194)	(0.243)
eIE	0.124	0.124	0.026	0.124	0.809	0.809	1.225	0.808
	(0.114)	(0.114)	(0.112)	(0.114)	(0.255)	(0.255)	(0.226)	(0.255)
train	-0.198	-0.198	-0.066	-0.199	-0.270	-0.270	-0.323	-0.270
	(0.180)	(0.180)	(0.213)	(0.180)	(0.397)	(0.397)	(0.430)	(0.397)
crisis	-0.204	-0.204	-0.199	-0.205	-0.140	-0.140	-0.221	-0.141
	(0.114)	(0.114)	(0.120)	(0.114)	(0.235)	(0.235)	(0.217)	(0.235)

Note: Model A: multi-spell multi-state Markov model with stratified hazards (sh), Model B: sh and clustering (cluster(id)), Model C: sh and weights, and Model D: sh and frailty (frailty(familyid)).
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios). For description and full names of the covariates, see Table 4.10.

Table C.9: Alternative model specifications for transitions out of NON, females

	NON to FE (j=3, k=1)				NON to IE (j=3, k=2)			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
child	0.346	0.346	0.393	0.345	0.133	0.133	0.162	0.132
	(0.104)	(0.104)	(0.093)	(0.104)	(0.090)	(0.090)	(0.075)	(0.091)
educ	0.483	0.483	0.701	0.482	0.020	0.020	0.089	0.019
	(0.171)	(0.171)	(0.181)	(0.171)	(0.172)	(0.172)	(0.179)	(0.172)
fEduc	0.100	0.100	-0.325	0.102	0.017	0.017	-0.252	0.019
	(0.179)	(0.179)	(0.218)	(0.179)	(0.200)	(0.200)	(0.227)	(0.201)
mEduc	0.112	0.112	0.296	0.111	-0.123	-0.123	-0.311	-0.125
	(0.218)	(0.218)	(0.285)	(0.218)	(0.267)	(0.267)	(0.378)	(0.267)
eFE	1.088	1.088	0.941	1.081	-0.291	-0.291	-0.164	-0.299
	(0.256)	(0.256)	(0.291)	(0.256)	(0.239)	(0.239)	(0.243)	(0.239)
eIE	-0.059	-0.059	-0.475	-0.064	0.259	0.259	0.379	0.254
	(0.193)	(0.193)	(0.231)	(0.193)	(0.239)	(0.239)	(0.256)	(0.239)
train	0.997	0.997	1.300	0.995	0.757	0.757	0.645	0.758
	(0.271)	(0.271)	(0.313)	(0.271)	(0.299)	(0.299)	(0.443)	(0.299)
crisis	0.081	0.081	-0.069	0.081	-0.056	-0.056	-0.277	-0.054
	(0.195)	(0.195)	(0.226)	(0.195)	(0.209)	(0.209)	(0.222)	(0.210)

Note: Model A: multi-spell multi-state Markov model with stratified hazards (sh), Model B: sh and clustering (cluster(id)), Model C: sh and weights, and Model D: sh and frailty (frailty(familyid)).
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios). For description and full names of the covariates, see Table 4.10.

Table C.10: Alternative model specifications for transitions out of OUT/SCH, males

	OUT/SCH to FE (j=4, k=1)				OUT/SCH to IE (j=4, k=2)			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
fEduc	-0.184	-0.184	-0.221	-0.184	-0.122	-0.122	-0.121	-0.122
	(0.085)	(0.085)	(0.097)	(0.085)	(0.156)	(0.156)	(0.157)	(0.156)
mEduc	0.261	0.261	0.416	0.261	-0.265	-0.265	-0.134	-0.265
	(0.109)	(0.109)	(0.135)	(0.109)	(0.232)	(0.232)	(0.258)	(0.232)
crisis	-0.126	-0.126	-0.109	-0.126	0.000	0.000	0.085	0.000
	(0.096)	(0.096)	(0.111)	(0.096)	(0.174)	(0.174)	(0.170)	(0.174)

Note: Model A: multi-spell multi-state Markov model with stratified hazards (sh), Model B: sh and clustering (cluster(id)), Model C: sh and weights, and Model D: sh and frailty (frailty(familyid)).
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios). For description and full names of the covariates, see Table 4.10.

Table C.11: Alternative model specifications for transitions out of OUT/SCH, females

	OUT/SCH to FE (j=4, k=1)				OUT/SCH to IE (j=4, k=2)			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
fEduc	0.331	0.331	0.434	0.332	-0.181	-0.181	0.066	-0.180
	(0.098)	(0.098)	(0.112)	(0.098)	(0.133)	(0.133)	(0.131)	(0.133)
mEduc	0.345	0.345	0.514	0.347	0.214	0.214	-0.107	0.216
	(0.117)	(0.117)	(0.135)	(0.117)	(0.168)	(0.168)	(0.182)	(0.168)
crisis	-0.152	-0.152	-0.235	-0.151	0.045	0.045	0.138	0.046
	(0.117)	(0.117)	(0.132)	(0.117)	(0.131)	(0.131)	(0.120)	(0.132)

Note: Model A: multi-spell multi-state Markov model with stratified hazards (sh), Model B: sh and clustering (cluster(id)), Model C: sh and weights, and Model D: sh and frailty (frailty(familyid)).
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios). For description and full names of the covariates, see Table 4.10.

Table C.12: Transitions out of FE, Model A with different covariates

	FE to IE (j=1, k=2)				FE to NON (j=1, k=3)			
	male		***female***		***male***		***female***	
number of children	-0.036		-0.011		-0.046		0.009	
	(0.093)		(0.196)		(0.047)		(0.069)	
at least high school grad.	-0.246		-0.060		0.225	**	0.114	
	(0.198)		(0.312)		(0.085)		(0.104)	
father at least sec. sch. grad.	0.073		-0.127		0.153	¥	-0.091	
	(0.226)		(0.312)		(0.092)		(0.097)	
ever in FE (before)	0.233		-0.082		-0.241	**	0.029	
	(0.179)		(0.298)		(0.085)		(0.095)	
ever in IE (before)	0.825	***	1.268	***	-0.088		0.235	*
	(0.168)		(0.272)		(0.094)		(0.115)	
training	-0.516	*	-0.084		-0.427	***	-0.350	**
	(0.252)		(0.364)		(0.103)		(0.114)	
crisis year	0.091		0.299		0.227	*	0.024	
	(0.218)		(0.314)		(0.093)		(0.114)	
"10-24"	-0.029		-0.280		0.207	¥	-0.067	
	(0.270)		(0.440)		(0.110)		(0.128)	
"25 or more"	0.513	**	0.218		0.181	*	-0.144	
	(0.195)		(0.311)		(0.092)		(0.106)	
high-skilled occup.	-0.926	*	-0.873	¥	-0.368	**	-0.478	***
	(0.416)		(0.483)		(0.137)		(0.139)	
inter.-skilled occup.	-0.362	*	-0.945	*	-0.152	¥	-0.352	**
	(0.170)		(0.392)		(0.083)		(0.119)	
clerks	-0.529		-0.323		-0.056		-0.179	
	(0.322)		(0.340)		(0.123)		(0.117)	
self-employment	-0.513	*	-0.921		-0.779	***	-1.522	***
	(0.240)		(0.655)		(0.120)		(0.320)	
full-time	-0.829	*	-0.854	¥	-0.520	**	-0.337	¥
	(0.398)		(0.499)		(0.193)		(0.185)	
job in the Center region	-0.129		0.142		0.031		-0.006	
	(0.184)		(0.332)		(0.081)		(0.105)	
job in the East region	-0.474		0.826	*	-0.757	***	-0.408	*
	(0.290)		(0.374)		(0.142)		(0.193)	
job abroad	-0.779		-0.026		0.556	*	0.232	
	(1.007)		(1.035)		(0.273)		(0.289)	
job in public	-0.672	*	-1.096	*	-0.287	**	-0.532	***
	(0.268)		(0.448)		(0.106)		(0.125)	

Notes: It is another specification for Model A, with different covariates to check for the violation of the proportional hazards assumption. Different from the Table 4.13, in Table C.12, we do not control for mother at least secondary graduate, manufacture and permanency.
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios).
Omitted categories: firm size less than 10, low-skilled occupation, job in the West region.
*Signif. codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '¥'.*

Table C.13: Transitions out of IE, Model A with different covariates

	IE to FE (j=2, k=1)				IE to NON ((j=2, k=3)			
	male		***female***		***male***		***female***	
number of children	-0.020		-0.276		-0.065		-0.024	
	(0.091)		(0.192)		(0.122)		(0.064)	
at least high school grad.	0.488	***	1.022	***	0.258	¥	0.166	
	(0.145)		(0.256)		(0.149)		(0.122)	
father at least sec. sch. grad.	0.036		-0.099		0.371	*	0.440	***
	(0.186)		(0.278)		(0.161)		(0.131)	
mother at least sec. sch. grad.	0.324		1.086	***	0.309		0.191	
	(0.267)		(0.285)		(0.222)		(0.170)	
ever in FE (before)	0.515	***	0.507	*	0.118		-0.078	
	(0.148)		(0.253)		(0.186)		(0.135)	
ever in IE (before)	0.023		0.173		-0.232		0.059	
	(0.132)		(0.230)		(0.143)		(0.113)	
training	0.317		0.170		-0.294		0.261	
	(0.231)		(0.376)		(0.232)		(0.174)	
crisis year	-0.036		0.483	¥	0.291	¥	0.007	
	(0.180)		(0.263)		(0.157)		(0.146)	
"10-24"	-0.655	***	0.184		-0.403	*	0.306	*
	(0.184)		(0.283)		(0.166)		(0.136)	
"25 or more"	-0.400	*	0.285		0.030		0.139	
	(0.192)		(0.270)		(0.168)		(0.132)	
high-skilled occupation	-0.433		0.728	¥	0.096		0.416	¥
	(0.431)		(0.401)		(0.364)		(0.222)	
intermediate-skilled occupation	-0.103		0.237		-0.222	¥	-0.049	
	(0.130)		(0.296)		(0.127)		(0.145)	
clerks	0.362		0.375		0.048		0.374	*
	(0.309)		(0.294)		(0.332)		(0.158)	
self-employment	-0.686	***	-1.388	**	-0.908	***	-0.521	***
	(0.157)		(0.469)		(0.178)		(0.143)	
full-time	-0.015		1.175	***	-0.080		0.370	**
	(0.213)		(0.356)		(0.183)		(0.123)	
job in the Center region	-0.131		-0.501	*	0.009		-0.036	
	(0.138)		(0.255)		(0.124)		(0.109)	
job in the East region	-0.174		-0.678	¥	-0.666	***	-0.938	***
	(0.173)		(0.348)		(0.192)		(0.170)	
job abroad	0.004		-0.066		0.158		-0.815	
	(0.378)		(0.762)		(0.431)		(0.516)	

Notes: It is another specification for Model A, with different covariates to check for the violation of the proportional hazards assumption. Different from the Table 4.14, in Table C.13, we do not control for manufacture and permanency.
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios).
Omitted categories: firm size less than 10, low-skilled occupation, job in the West region.
*Signif. codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '¥'.*

Table C.14: Transitions out of NON, Model A with different covariates

	NON to FE (j=3, k=1)		NON to IE (j=3, k=2)	
	male	***female***	***male***	***female***
number of children	0.031	0.295 **	-0.227 ¥	0.132
	(0.071)	(0.101)	(0.120)	(0.090)
father at least sec. sch. grad.	0.016	0.211	-0.469 ¥	0.023
	(0.113)	(0.176)	(0.282)	(0.195)
mother at least sec. sch. grad.	-0.245 ¥	0.137	0.214	-0.123
	(0.148)	(0.219)	(0.350)	(0.267)
ever in FE (before)	0.554 ***	1.244 ***	-0.818 ***	-0.285
	(0.135)	(0.250)	(0.243)	(0.233)
ever in IE (before)	0.119	-0.060	0.836 ***	0.259
	(0.114)	(0.192)	(0.254)	(0.239)
training	-0.191	1.107 ***	-0.315	0.762 **
	(0.180)	(0.269)	(0.394)	(0.296)
crisis year	-0.194 ¥	0.062	-0.176	-0.056
	(0.113)	(0.195)	(0.233)	(0.209)

Notes: It is another specification for Model A, with different covariates to check for the violation of the proportional hazards assumption. Different from the Table 4.15, in Table C.14, we do not control for at least high school graduate.
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios).
*Signif. codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '¥'.*

Table C.15: Transitions out of OUT/SCH, Model A with different covariates

	OUT/SCH to FE (j=4, k=1)		OUT/SCH to IE (j=4, k=2)	
	male	***female***	***male***	***female***
number of children	-0.121	-0.063	0.206	-0.535
	(0.233)	(0.227)	(0.309)	(0.333)
father at least sec. sch. grad.	-0.185 *	0.330 ***	-0.119	-0.191
	(0.085)	(0.098)	(0.156)	(0.133)
mother at least sec. sch. grad.	0.261 *	0.344 **	-0.268	0.212
	(0.109)	(0.117)	(0.232)	(0.168)
crisis year	-0.126	-0.153	-0.001	0.032
	(0.096)	(0.117)	(0.174)	(0.131)

Notes: It is another specification for Model A, with different covariates to check for the violation of the proportional hazards assumption. Different from the Table 4.16, in Table C.15, we also control for the number of children.
Standard errors of the coefficients are in parenthesis while the rest are the coefficients (rather than hazard ratios).
*Signif. codes: 0 '***', 0.001 '**', 0.01 '*', 0.05 '¥'.*

Table C.16: Testing for proportionality- Model A vs. alternative to Model A

	Male		**Female**	
	Model A	**alternative to Model A**	**Model A**	**alternative to Model A**
test result	0.001	0.102	0.201	0.184
decision	reject PH	accept PH	accept PH	accept PH

where PH is proportional hazards

APPENDIX D

CIRRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Başak, Zeynep

Nationality: Turkish (TC)

Date and Place of Birth: 13 August 1980, Üsküdar

Marital Status: Single

email: zeynepbsk@gmail.com

EDUCATION

Degree	Institution	Year of Graduation
MS	METU, Economics	2005
BS	Marmara University, Economics	2003
High School	Sırrı Yırcalı Anadolu High School, Balıkesir	1998

Visiting Scholar, Department of Economics, Barnard College, Columbia University, New York, USA, 2011-2012.

WORK EXPERIENCE

Year	Place	Enrollment
2005- Present	METU, Deparment of Economics	Research Assistant

FOREIGN LANGUAGES

Advanced English

PUBLICATIONS

Journal Articles

1. Saracoğlu, D. Ş. and Başak, Z. (2009), "Firmalar arası Değişim İlişkileri Kapsamında Fason Üretim: Denizli ve Gaziantep Tekstil Sektörü Örneği (Subcontracting Production in terms of the Exchange Relations between Firms: The Case of Textile Sector in Denizli and Gaziantep)", *Toplum ve Bilim*, 114, pp. 214-237.

2. Başak, Z. (2003), "Çalışma Yaşamında Son Gelişmeler (Recent Developments in the Working Life)", *İktisat Dergisi*, 437, 88-91.

Book Chapters

1. Başak, Z. and Saracoğlu, D. Ş. (2011), "Sermayenin Yeni Mekan Arayışı, Kapitalist Üretim İlişkilerinde Değişim ve Yeni Sanayi Odakları: Gaziantep, Quo Vadis? (The Search of Capital for New Spaces, the Change in the Capitalist Production Relations and New Industrial Districts: Gaziantep, Quo Vadis?)", in M. N. Gültekin (ed.), *"Ta Ezelden Taşkındır.." Antep*, İletişim Yayınları: İstanbul.

2. Başak, Z. (2009), "Keynes'in Kalkınma İktisadı için Önemi (The Significance of Keynes for Development Economics)", - translation from English to Turkish, Author: J. Toye -, in F. Şenses (ed.), *Neoliberal Küreselleşme ve Kalkınma: Seçme Yazılar*, İletişim Yayınları: İstanbul.

Conference Presentations

1. Başak, Z. and Taymaz, E. (2013), "Kriz Gölgesindeki Yıllar: Bir Türkiye Hikayesi", Türkiye Ekonomisi Çalıştayı: Türkiye Ekonomisinin Dünü, Bugünü, Yarını – Yakup Kepenek'e ve Oktar Türel'e Armağan, April 25-26, METU Northern Cyrus Campus, Northern Cyprus.

2. Başak, Z. and Taymaz, E. (2013), "Inequality of Opportunity in Turkey: Evidence from Field Survey Data", the 2013 Midwest Economics Association Annual Meeting, March 22-24, Columbus: Ohio, USA.

3. Başak, Z. and Taymaz, E. (2013), "Dynamics of Informal Employment in Turkey", 2013 Advanced Graduate Workshop on Poverty, Development and Globalization, partners as Azim Premji University (Bangalore, India) and Institute for New Economic Thinking (New York, United States), January 7-18, Bangalore: India.

4. Başak, Z. (2012), "Inequality in the Turkish Labor Market: Is it Déjà Vu or Permanent?", Turkish Economic Association International Conference on "Debt Dynamics, Fiscal Instability and the Great Recession", November 1-3, İzmir: Turkey.

5. Başak, Z. and Taymaz, E. (2012), "Dynamics of Informality: Employment and Mobility between Formal and Informal Sectors/Jobs", Middle East Economic Association, Pre-ASSA Meetings, January 5, Chicago: USA.

6. Başak, Z. and Taymaz, E. (2009), "Dynamics of Informality in the Times of Crisis", The 3rd Annual Workshop on European Working Lives: European Working Lives in Crisis, June 4-5, Bilgi University, İstanbul: Turkey.

7. Koska, A. O. and Başak, Z. (2006), "Two-Sector Open Economy General Equilibrium Model: Three Types of Individuals", Turkish Economic Association International Conference, September 11-13, Ankara: Turkey.

Projects

1. Research Assistant, "Enforel İstihdam Dinamikleri ve Politika Önerileri (Dynamics of Informal Employment and Policy Recommendations)", funded by Turkish Institute of Scientific and Technological Research (TÜBİTAK) and Scientific HR Development Program (ÖYP), 2011.

   Director: Erol Taymaz (Middle East Technical University, Faculty of Economic and Administrative Sciences, Department of Economics)
   Literature Research, Field Survey, Questionnaire Preparation, Data Analysis, Executive Function on Corporate Affairs, Team Leadership of the Research Group

2. Research Assistant, "Dış Ticaret Serbestleşmesi Sürecinde Enformel İstihdam (Informal Employment in the Times of Foreign Trade Liberalization)", funded by TÜBİTAK, 2008.

   Director: D. Şirin Saracoğlu (Middle East Technical University, Faculty of Economic and Administrative Sciences, Department of Economics)
   Literature Research, Field Survey, Questionnaire Preparation and Application, Data Analysis, Executive Function on Corporate Affairs, Team Leadership of the Research Group

3. Research Assistant, "Istanbul'un Haliç Semtlerinde Yerel Değişim, Toplumsal Dönüşüm ve Topluluk Yaşantıları (Local Change, Social Transformation and Community Experiences in Golden Horn, Istanbul)", funded by TÜBİTAK, 2003.

   Director: Aynur İlyasoğlu (Marmara University, Faculty of Economic and Administrative Sciences, Department of Economics)
   Literature Research, Field Survey, Questionnaire Application, Data Analysis, Executive Function on Corporate Affairs, Team Leadership of the Research Group

APPENDIX E

TURKISH SUMMARY

Teorik Çerçeve

1950'lerde başlayan, 1960 ve 1970'li yıllarda genişleyen kayıt dışı (*informal*) sektör yazını, erken dönem metinlerde modernleşme ve sanayileşme ile beraber ortadan kalkacağına inanılan bir olguya işaret etmekteydi. Ancak, hem gelişmiş hem de gelişmekte olan ülke deneyimleri, bu beklentinin gerçekleşmediğini ortaya koydu. Kayıt dışı sektör varlığını devam ettirdiği gibi genişlemeye de başladı.

Scheider ve Enste (2000) ve Loayza (1996)'da verilen 1990'ların başlarına ait rakamlara göre, gelişmekte olan ülkelerde (Afrika, Güney ve Orta Amerika, Asya) kayıt dışı sektörün gayrisafi yurtiçi hasıla (GSYİH) içindeki payı % 35 ile % 44 arasında iken geçiş ülkelerinde (eski Sovyet Rusya ve Doğu Avrupa) % 21 ile % 35 arasındadır. Ekonomik İşbirliği ve Kalınma Örgütü (OECD) üyesi ülkeler arasında bile kayıt dışı sektörün payı % 15'e kadar çıkmaktadır; Latin Amerika'da ise ortalama % 39'dur.

Kayıt dışı sektörün istihdam içindeki payına ilişkin veriler de GSYİH'den pek parlak değildir: Charmes (2009: 32)'de sunulan rakamlar temelinde, Batı Asya ve Kuzey Afrika'da kayıt dışı istihdam, toplam tarım dışı istihdamın % 47'sinden daha fazla bir orana sahip iken; bu oran, Afrika'da Sahra Çölü'nün güney kısımlarında % 70'e kadar çıkar. Latin Amerika'da toplam tarım dışı istihdamın % 50'sinden fazlası kayıt dışı olarak çalışırken; bu rakam, Güney ve Güneydoğu Asya için yaklaşık % 70'dir. Aynı oran, geçiş ekonomilerinde % 24'tür.

Türkiye'deki kayıt dışı istihdama ait verilere baktığımızda da, bu olgunun göz ardı edilemeyecek kadar yüksek rakamlara ulaştığını görmekteyiz. "Çalışan nüfus içinde herhangi bir sosyal sigorta kurumuna kayıtlı olmayan" tanımına ve Hanehalkı İşgücü Anketi

(2004-2011) verilerine göre, toplam istihdamın ortalama % 46'sının, kent istihdamının da % 34'ünün kayıt dışı olarak çalıştığı görülmektedir.

Toplam çalışan nüfus ve gayrisafi yurtiçi hâsıla içindeki payları kullanılarak tespit edilen kayıt dışı sektördeki genişleme, akademisyenlerin ve politika yapıcıların sektöre olan ilgisini ve sektöre ait yazını artırmış ve bu da kavramın zaman içinde farklı yorumlarına yol açmıştır.

> 1960'larda sosyal bilimciler, kayıt dışı sektörün dünya ekonomisinin çevre bölgelerinde işgücü ve finansal işlemlerin tamamına değilse bile önemli bir kısmına hâkim olduğunu veri kabul etmişlerdi. Ancak son çalışmalar, kayıt dışı ekonominin merkezde de gelişmekte olduğunu tespit etmiştir. Bu eğilim, kimi analistlerin merkez bölgelerdeki üretim ve sosyal ilişkilerin, çevre bölgelerde görmeye alıştığımız halini andırmaya başladığı sonucuna varmışlardır.
>
> (Broad, 2000: 23)

Bu alıntı, kayıt dışı sektörün zaman içinde merkez ülkelere yayıldığına işaret etmesi dışında, enformelleşmenin (*informalization*) tanımını üretim ve sosyal ilişkiler üzerinden yapması açısından da dikkate değerdir. Bu tanım, Castells ve Portes (1989)'un yaklaşımı ile örtüşür niteliktedir: Castells ve Portes (1989) enformelleşmeyi, bir nesne olmaktan ziyade bir süreç olarak görürler; dolayısıyla kayıtlı (*formal*) ve kayıt dışı faaliyetler arasındaki temel farkı nihai çıktının karakteri üzerinden değil, onun nasıl üretilip, mübadele edildiği üzerinden açıklarlar.

Söz konusu yaklaşımın, enformelleşme sürecini daha iyi tanımlayabilmesi için "hedef kitlenin tespiti" ile tamamlanması gerekmektedir: enformelleşme ya da kayıt dışı sektör neye işaret eder, nereye atıfta bulunur? "[E]konomik arenadaki aktörlere (bireyler, firmalar, kuruluşlar, kurumlar) ya da bunların arasındaki ilişkilere mi? Veya kendi aralarında ve devletle olan ilişkilerini düzenleyen mekanizmalara mı?" (Tunalı, 1998: 33). Verilecek cevap kayıt dışı sektörün farklı bir görünümüne dikkat çekecektir; illegal, gölge, kuralsız, yeraltı, saklı, kriminal ekonomi vb. Bu çalışma boyunca, enformelleşme bir süreç olarak düşünülmüş olup, kayıt dışı istihdama odaklanılmıştır. Kayıt dışı istihdam da herhangi bir sosyal sigorta kurumuna kayıtlı olmama olarak tanımlanmıştır.

Katmanlaşmış işgücü piyasası (KİP) teorisi, kayıtlı ve kayıt dışı istihdam şeklinde yapılan sınırlandırma ile örtüşerek, Türkiye'deki işgücü piyasasının dinamiklerini tespit etmeye uygun teorik ve ampirik çerçeve sunmaktadır. KİP teorisine ilişkin yazın 1800'lere kadar

gitmektedir. Teori, neoklasik işgücü piyasası teorisine eleştiri olarak ortaya çıkmıştır. Thomson (2008)'de belirtildiği gibi neoklasik iktisat, ücret farklılıklarını beşeri sermaye yatırımlarının farklı olmasının sonucu olarak görür ve zaman içinde (belli koşullar altında) ücret farklılıklarının azalacağını iddia eder. KİP teorisi ise işgücündeki ayrımın, piyasa mekanizmasının doğasında olduğunu söyler. Bu anlamda, "işgücü piyasasındaki katmanlaşma, dengeye yakınsamadan ziyade, ıraksak (*divergent*) gelişme örneğidir" (Vietorisz ve Harrison, 1973: 367). 1950'lerdeki Amerikan Kurumsalcılarının metinleri, işgücü piyasasında iki çalışan grubunun olduğunu ortaya çıkarmıştır ve bulguları, Doeringer ve Piore (1971)'in oluşturduğu "İkili İşgücü Piyasası (*Dual Labor Market*)" teorisinin özellikleri ile örtüşmektedir. Dooeringer ve Piore (1971; Cain, 1976'dan alıntı) birincil ve ikincil işler arasındaki ikilemin kendini, birincil sektördeki işlerin iyi işler ve ikincil sektördeki işlerin kötü işler olması şeklinde gösterdiğini ifade eder. İyi işler istikrar, yüksek ücret, sosyal güvenlik ve işte yükselme olasılıkları ile tanımlanırken, bu özelliklerin tam tersi kötü işler için geçerlidir. KİP analizlerinin radikal Marksist yorumları Gordon, Edwars ve Reich'in (GER) çalışmaları ile şekillenmiştir. GER'in ilk ortak çalışmalarında vurguladıkları dört katmanlaşma süreci (birincil ve ikincil piyasa şeklinde katmanlaşma, birincil sektör içinde katmanlaşma, ırk ve cinsiyete göre katmanlaşma), bu üç yazarın tezlerinin ürünüdür: Gordon'un ikili işgücü piyasası, Edwards'ın modern işbirliğinin hiyerarşik organizasyonu ve Reich'in ırk ve/veya cinsiyete göre ekonomik ayrımın temelleri üzerine çalışmaları (Bowles ve Weisskopf, 1998). Bu yazarlar, KİP yazınındaki diğer araştırmacılardan işgücü piyasasındaki katmanlaşmanın varlığını açıklama şekilleri nedeniyle farklılaşırlar. GER'in açıklaması tarihseldir: "Amerikan kapitalizmi içindeki politik ve ekonomik güçler, katmanlaşmış işgücü piyasasının yükselmesi ve sürdürülmesini sağlamışlardır ve katmanlaşmış piyasasının sebebini ekonomik sistemin dışında görmek yanlıştır" (Reich vd., 1973: 359).

Farklı iktisadi düşünce okullarına ait yazarlar, KİP teorisinin uygulanması özelinde metodolojik ve teorik ayrımlara sahip olsalar da bu yazarların çalışmaları, teorinin iki temel hipotezi etrafında birleştirilebilir: katmanlar arası ücret, güvenlik, çalışma koşulları, kontrol mekanizmaları açısından farklılığın oluşu ve katmanlar arası sınırlı işgücü hareketliliğinin oluşu.

Teorinin bu iki temel varsayımının Türkiye'deki kayıt dışı istihdamın sürekliliğini açıklamada kullanılabileceği düşüncesinden hareketle, bu çalışma şu şekilde kurgulanmıştır:

Giriş bölümünü takip eden ikinci bölümde, "kayıt dışı sektör" kavramının ortaya çıkışı ve gelişimi kısaca açıklandıktan sonra ikili (*dualist*), yapılsalcı (*structuralist*), hukuki (*legalist*) ve Marksist işgücü piyasası teorilerinin farklı kavramsallaştırmalarına değinilmiştir. Enformelleşme ve KİP teorisi arasındaki ilişki, yine bu bölümde kurulmuştur.

Üçüncü bölümde, katmanlar arası ücret farklılığının olup olmadığı beşeri sermaye modeli temelinde analiz edilmiştir. Bu doğrultuda, işgücü piyasasına katılım kararını tahmin etmek için çok terimli logit modeli kullanılmış ve çalışma çağındaki bir birey için altı tür işin söz konusu olduğu varsayılmıştır: kayıtlı imalat (fm), kayıtlı hizmetler (fs), kayıt dışı imalat (im), kayıt dışı hizmetler (is), işveren (e), kendi hesabına çalışanlar (se). Kayıtlı ve kayıt dışı imalat ve hizmetlere düzenli ücretli, maaşlı ve yevmiyeli çalışanlar dâhil edilmiştir. Çalışmayanlar (işsizler ve işgücü piyasası dışında olanlar) referans grubu olarak alınmıştır. Bu tahminin ardından bireysel düzeyde ücretlerin belirlenmesi için oluşturulan ücret modeli, çok terimli logit model ile seçime ilişkin düzeltme (*selectivity correction*) yapılarak tahmin edilmiştir.

Hanehalkı İşgücü Anketi (HİA)'daki demografik ve şu anki işin özellikleri ile ilgili bireysel düzeydeki veri seti, işgücüne katılım kararının ve ücret eşitsizliğinin belirleyicilerini tespit etmek için oldukça zengindir. Ancak, bireylerin ebeveynlerine ilişkin bilgiye, kişi eğer ailesi ile birlikte yaşıyor ise ulaşılabilmektedir. Bir diğer deyişle, eğer anket uygulanan kişi babası ile aynı hanede yaşamıyor ise, bu kişinin babasının eğitim durumunu öğrenmek mümkün olmamaktadır. Buna ek olarak, doğum yeri bilgisine dair sorular HİA'ya 2009 yılı itibariyle eklenmiştir. Bazı durumlarda bu sorular bireylerin nerede doğdukları bilgisini elde etmek konusunda yetersiz kalmaktadır. Bunun sebebi sorunun doğrudan sorulmamış olup, bir dizi başka soruya verilen cevaplar üzerinden bu bilgiye ulaşmanın gerekliliğidir. Ankette kişilere öncelikle Türkiye'de mi yoksa yurtdışında mı doğdukları sorulmuş ve bu soruyu "doğduğunuzdan beri bu ilde mi yaşıyorsunuz?", "hangi yıldan itibaren bu ilde yaşıyorsunuz?", "bu ilden önce ikamet ettiğiniz yeri belirtiniz (Türkiye ya da yurtdışı)", "daha önce ikamet ettiğiniz yerleşim yeri" soruları takip etmektedir. Bu sorular ile kişi eğer doğduğu yerde yaşamıyorsa, doğduğu yeri tespit etmek mümkün değildir. HİA'daki bu bilgi eksiklerini belirtmemizin sebebi, hem ebeveynlere ait bilgilerin hem de doğum yerinin fırsat eşitsizliği yazınında oynadığı önemli roldür.

Katmanlar arası işgücü hareketliliğinin önünde engellerin olduğu hipotezinin sınanması adına yapılacak analizler için de HİA veri seti yetersiz kalmaktadır. Ankette, kişinin bir

önceki işine dair sınırlı sayıda soru bulunmaktadır; herhangi bir sosyal sigorta kurumuna kayıtlı olarak çalışıp çalışmadığı bilgisi dahi yoktur. HİA'daki bireyin bir önceki işi ile ilgili bilgi kullanılarak sadece iki dönem arasındaki işgücü piyasası hareketliliği modellenebilir ki, anket sonuçları yılda bir kez yayınlandığı için bir kişi yıl içinde birden fazla iş değiştirmiş olsa da tek bir iş değişimi yaşanmış gibi görülecektir. Bu tip veri setleri ile çalışan araştırmacıların sıklıkla başvurdukları bir yöntem vardır: "eşleştirilmiş dosya (*matched files*)" yöntemi. Bu anketlerin örneklem seçimindeki dönüşümlü panel yapısı, aynı kişilerin birbirini takip eden dönemler içinde tespitini mümkün kılmaktadır. Ancak, bu yöntem de bir takım problemlere gebedir; örneklem aşınması (*sample attrition*), hatalı sınıflandırma (*misclassification error*) vb.

Dördüncü bölümde, saha çalışmasından gelen veriler kullanılarak Türkiye'de kazançta fırsat eşitsizliğinin düzeyini ölçmek hedeflenmiştir. Bu amaçla, standart (parametrik olmayan) eşitsizlik analizi ve bu analizin parametrik alternatifi olan regresyon analizine dayalı bir yöntem kullanılmıştır. Bu analizlerin yapılmasının temel sebebi, üçüncü bölümdeki analizlerin bireyler arası eşitsizliğin tespitine yönelik oluşu ve analizlere birey iradesinden bağımsız belirleyenlerin (ırk, etnik grup, din, doğum yeri, vb.) dâhil edilmemiş olmasıdır. Gruplar arası eşitsizliğin tartışıldığı bu bölümde gruplar cinsiyet, anne ve babanın eğitim durumu, ailenin çocuk 15 yaşında iken ev sahipliği ve doğum yeri üzerinden belirlenmiştir. Beşinci bölüm, KİP teorisinin ikinci hipotezinin sorgulanması adına işgücü piyasasındaki geçişlere odaklanmıştır. "Kayıt dışı istihdam, kayıtlı istihdam, çalışmama ve iş gücü piyasası dışında olma/okulda olma" şeklinde dört farklı işgücü piyasası durumu tanımlanmış olup, bu durumlar arasındaki geçişlerin belirleyicileri yaşamda kalma (*survival*) analizinin parametrik ve kısmi (yarı) parametrik modelleri ile tespit edilmiştir.

Türkiye'deki işgücü piyasasının katmanlı yapısına dair ampirik çalışmalar (Tunalı ve Ercan, 1997; Tansel, 1998a; Levent, Taştı ve Sezer, 2004; Aydın vd., 2010) katmanlar arası ücret eşitsizliğinin varlığına işaret etmektedir. Bizim çalışmamızın, bu çalışmalardan farkı, yapmış olduğumuz sınıflandırmadır. Taymaz (2010b), aynı sınıflandırma ile HİA'yı kullanarak, 2000-2006 yılları için işgücü piyasasına katılım ve ücret eşitsizliğini incelemiş, ancak ikamet etkisini kontrol etmemiştir.

Her ne kadar kazançta fırsat eşitsizliğine dair Türkiye özelinde yapılmış çalışmalar (Ferreira vd., 2010a ve 2010b) olsa da, veri sıkıntısı sebebiyle bu çalışmalar sadece kadınların durumunu dikkate almakta ve "koşul (*circumstance*)" ve "çaba (*effort*)" değişkenlerinin aynı

veri setinde olmamasından ötürü iki farklı verinin birleştirilmesi ile üretilmişlerdir. Saha çalışmamsı ile elde ettiğimiz veri seti hem "koşul" ve "çaba" değişkenlerinin bir arada daha tutarlı bir yapıda olmasını hem de cinsiyet farklılıklarını kontrol edebilmemizi sağlamıştır.

Türkiye'de işgücü piyasasında katmanlar/durumlar arası geçişler üzerine yapılmış olan çalışmalar (Tasci ve Tansel, 2005; Tansel ve Kan, 2012), mevcut veri setlerinin izin verdiği zaman dilimini kapsamaktadır. Veri setimizde ise kişilerin tüm iş tarihi göz önünde bulundurulduğundan birden fazla iş değişikliği analizlere dâhil edilebilmiştir.

Saha Çalışmasına Dair

Bu kısımda, yukarıda belirtmiş olduğumuz analizleri gerçekleştirmemize imkân sağlayacak veri setinin toplanılması için yürütülen saha çalışmasına dair temel bilgiler derlenmiştir. Bu bilgiler anketin içeriği, araştırma evreninin belirlenmesi, örneklem seçimi ve son olarak da veri setinin temel özelliklerini içermektedir.

Uygulanan anket altı ana bölümden oluşmaktadır. İlk bölümde yer alan sorular ile hane içinde bulunan tüm bireylerin demografik özellikleri (hane reisine yakınlık derecesi, yaşı, cinsiyeti, medeni durumu, ana dili, varsa çocuk sayısı, vs.) derlenmeye çalışılmıştır. Anketin ikinci bölümü bireylerin eğitim durumu, ikamet ettikleri ve doğdukları yere ilişkin sorulardan oluşmaktadır. Üçünde bölümde hanehalkı fertlerinin ebeveynlerine ilişkin bilgiler toplanmıştır. Bu kapsamda kişilerden, anne ve babalarının eğitim durumları, kişi 15 yaşında iken anne ve babalarının çalışma durumları, çalışıyor iseler çalıştıkları sektör, yaptıkları iş ve herhangi bir sosyal sigorta kurumuna kayıtlı olup olmadıkları bilgileri alınmıştır. Bireylerin anketin yapıldığı andaki çalışma durumuna ilişkin sorular (iş arıyor ya da iş gücü dışında iseler bunun sebepleri, çalışıyor ya da emekli iseler aylık nakdi gelirleri vs.) ise dördüncü bölümde yer almaktadır.

Beşinci bölüm ise kişilerin iş tarihlerine (*work history*) yöneliktir. Bu bölümde, en az bir kez çalışma yaşamına girmiş kişilerden iş yaşamına girdikleri andan itibaren, anketin yapıldığı tarihe kadarki zaman dilimi içindeki tüm çalışma/çalışmama hallerine (istihdam, işsiz, işgücü piyasası dışında olma) dair bilgiler alınmıştır. Bu bilgiler şunları içermektedir:

- İstihdam hali için: bu halin hangi yıllar arasında ve kaç ay süre ile geçerli olduğu, çalışılan sektör ve yerin niteliği (devlet, özel), işletme büyüklüğü, hangi ilde

çalışıldığı, görev tanımı, çalışma şekli, işin süreklilik durumu, söz konusu işte herhangi bir sosyal sigorta kurumuna kayıtlılık durumu, kayıtlı değil iseler sebebi, sendikaya kayıtlılık durumu, istihdam hali devam ederken herhangi bir kurs ya da eğitim alıp almadıkları;

- İşsizlik hali için: bu halin hangi yıllar arasında ve kaç ay süre ile geçerli olduğu, bu hal devam ederken herhangi bir kurs ya da eğitim alıp almadıkları, işsizlik yardımı alıp almadıkları, işsizlik yardımı almış iseler ne kadar süre ile bu yardımı aldıkları;
- İşgücü piyasası dışında olma haline ilişkin: bu halin hangi yıllar arasında ve kaç ay süre ile geçerli olduğu, bu hal devam ederken herhangi bir kurs ya da eğitim alıp almadıkları.

Yukarıda adı geçen üç konum üzerinden tanımlanan işgücü piyasasında olma/olmama hallerinin her biri için tekrar eden bir soru da, konum değişikliğini yaratan sebeplerdir (mevcut işinden daha iyi imkanları olan bir işe geçmek; işyerinin kapanması; geçici bir iş olması ve sürenin bitmesi; çalışmasını engelleyen kısıtın ortadan kalkması vb.).

Kişilerinin iş tarihinin toplanmasında izlenen yöntem, göç tarihlerinin toplandığı anketin son bölümünde de geçerlidir. Bu bölümde, en az bir kez çalışma hayatına girmiş kişilere 12 yaşlarını doldurduktan sonra yaşadıkları yerleşim yerlerini değiştirip değiştirmedikleri sorulmuş; cevapları olumlu olduğu takdirde, kişilerin göç tarihi bilgilerini (söz konusu göç öncesinde nerede yaşadıkları, ne kadar süreyle yaşadıkları, nereye, ne zaman ve neden göç ettikleri vs.) vermeleri istenilmiştir.

Bireylerin iş ve göç tarihlerine ulaşmak için kullandığımız yöntem dâhilinde anketimiz, "geriye dönük (*retrospective*)" anket olarak sınıflandırılabilir.

Örneklem, Türkiye'deki tüm hane sayısını temsil etmek üzere "Katmanlı Basit Tesadüfi Örnekleme Yöntemi" ile seçilmiş, il kümeleri TÜİK'in NUTS 1, 2 ve 3 düzeylerine göre belirlenmiştir. Türkiye örnekleminde de il nüfusları, sosyo-ekonomik statü ve hane büyüklüğüne göre temsiliyet sağlanmıştır. Bu illere düşen örneklem sayıları, NUTS seviyesinde toplam hane sayısından aldıkları pay ile doğru orantılı olacak şekilde belirlenmiştir.

Bu doğrultuda seçilen 1.703 hanenin bölge düzeyinde dağılımı şöyledir: % 39,9 Marmara, % 17,6 Orta Anadolu, % 12,3 Doğu ve Güneydoğu Anadolu, % 11,7 Akdeniz, % 11,5 Ege ve % 7 Karadeniz.

İpsos KMG araştırma şirketi tarafından yürütülen saha çalışmasına geçilmeden önce Ankara'da 20 hanede pilot çalışma yapılmış, bu pilot çalışma ardından tekrar düzenlenen soru kâğıdı kullanılarak Ocak-Nisan 2011 tarihleri arasında anket 34 ilde uygulanmıştır. Söz konusu saha çalışması, 110K321 no.lu TÜBİTAK ve BAP-08-11-DPT-2002K120510 no.lu BAP-ÖYP projeleri dâhilinde gerçekleştirilmiştir.

1.703 hanede uygulanan anket sonucunda 3.397'si kadın, 3.166'i erkek olmak üzere 6.563 kişi hakkında bilgiye erişilmiştir. Ancak, bu hanelerdeki kişilerin 1.682'si 15 yaş altındadır ve bu kişiler hakkındaki bilgiler ailelerinden alındığı için oldukça kısıtlıdır. Kalan 4.881 kişi, 15-65 yaş arasındadır.

Anketin yapıldığı an itibariyle herhangi bir işte çalışan kişi sayısı 1.873 olup, çoğunluk işgücü piyasası dışındadır (işgücü piyasası dışında yer alan 2.678 kişinin % 72,7'si kadındır).

4.881 kişiden % 65'i hayatlarında en az bir kez çalışmış ve anketin iş tarihine ilişkin bölümü için gerekli bilgileri vermiştir. 1.692 kişi ise anketin uygulandığı an itibariyle çalışma hayatına henüz hiç girmemiştir.

Çalışmamızın yöntem ve sonuçlarını tartıştığımız bölüme geçmeden önce belirtilmesi gereken bir diğer husus, anketimizin, tüm anket çalışmalarında olduğu gibi, eksiklik ve yetersizliğe yol açan bazı problemler ile karşı karşıya oluşudur. Tuzak ya da gizli tehlike (*pitfall*) olarak tanımlanabilecek bu olası problemler arasında heterojen örneklem dizaynı (*heterogeneous sample design*) ve anımsamada hata yanlılığı (*recall error bias*) sayılabilir.

Yürütülen saha çalışmasında, anımsamada hata yanlılığı iki şekilde gerçekleşebilir: 1) kişiler, geçmişte belirli zamanlardaki işgücü piyasası konumunu kesin olarak anımsayabilir ya da, 2) belirttikleri (işsizlik) müddetlerinde hata olabilir (Artola ve Louise-Bell, 2001: 5). Ancak, heterojen örneklem dizaynı probleminin veri setimiz özelinde söz konusu olmadığını söyleyebiliriz. Bu problem, görüşmeyi yapan kişi ile görüşme yapılan kişinin cevaplarının örtüşmemesine işaret eder ki, saha çalışması dâhilinde anketörlere, görüşme yapılan kişiye

sorulan sorular üzerinde hiçbir müdahale izni tanınmamış olup, soru kâğıtlarındaki tüm cevaplar örneklem içindeki bireylere aittir.

Çalışmanın Genel Sonuçları

Çalışmanın, daha çok bir yazın taraması özelliği taşıyan ikinci bölümünde özellikle saha çalışmaları içeren, Türkiye'de işgücü piyasasındaki çalışma koşulları üzerine yoğunlaşan metinlerin KİP teorisi çerçevesinde yeniden değerlendirilmesi yapılmıştır. Bunun sonucunda, her ne kadar bulguların işgücü piyasasında katmanlaşmanın varlığına işaret ettiği söylenebilir olsa da bunların, saha çalışmalarına katılan kişilerin öznel değerlendirmeleri olduğu unutulmamalıdır. Bu sebeple, ikinci bölümü izleyen diğer üç bölümde bu öznel değerlendirmeler nesnel analizlerle tamamlanmıştır.

- ***İşgücü Piyasasındaki Katmanlaşmaya Dair Öznel Değerlendirmeler:***

Bu bölümde, farklı yazarların saha çalışmalarından derlenen sonuçlar ışığında Türkiye'deki işgücü piyasasında katmanlaşmanın olduğuna dair ulaşılan ipuçları özetlenmiştir. Bu ipuçları, katmanların tanımlanmasında kullanılan birime bağlı olarak iki başlık altında verilmiştir: katmanlaşma biriminin firma büyüklüğü olarak tanımlandığı işletme düzeyinde ve katmanlaşma biriminin çalışanların kayıtlılığı veya istihdam durumları üzerinden tanımlandığı çalışanlar düzeyinde. Bu sayede, KİP teorisinin iki temel hipotezi iki farklı düzeyde sorgulanmış olacaktır.

i) işletme düzeyinde: firmalar arası katmanlaşma

Firma büyüklüğü , katmanların belirlenmesinde kullanıldığında büyük firmalar birincil sektör, küçük firmalar ise ikincil sektör ile özdeşleştirilir. Firma düzeyinde işgücü piyasasındaki katmanlaşmayı araştıran çalışmaların ana konusu, katmanlar arası hareketliliğinin sınırlı olup olmadığıdır.

Bu yaklaşımda, katmanlaşmaya hem işgücü piyasasında hem de emek (ya da üretim) sürecinde rastlanılmaktadır. Reich vd. (1973)'te tartışıldığı gibi, işgücü piyasasında, büyüklüklerine göre birbirinden farklılaşan firmalar vardır ve bu durum küçük ve büyük firmaların üretimleri üzerinden bir katmanlaşmaya işaret eder. Bu ayrışmanın temel sebebinin, büyük ve küçük firmalar arasında sermaye birikimi farklılığı olduğu söylenebilir:

küçük firmaların birikimi büyük firmalarınkine göre oldukça az olup, bu durum küçük firmaların piyasaya erişebilme adına zorluklarla karşı karşıya kalmalarına yol açmaktadır. Buna ek olarak (neoklasik iktisat çerçevesinde) küçük firmalar, piyasa koşullarında belirlenen fiyatlar üzerinde etkisizdirler. Sahip oldukları teknoloji, küçük firmaların daha çok emek-yoğun üretim yapmalarını beraberinde getirirken, bu durum sermaye-emek oranlarının düşük olduğuna işaret eder. Alt-sözleşme ilişkilerinin yaygınlaşması ise büyük ve küçük firmalar arasındaki farkın azalmasından ziyade, katmanlaşmanın derinleşmesine hizmet etmiştir.

İşletmelerin bu özelliklerine paralel olarak, Türkiye işgücü piyasasında küçük ve büyük firmalar arası değişim ilişkileri üzerine yazılmış metinleri incelerken vardığımız sonuçlar şu şekilde sıralanabilir:

- Büyük firmadan küçük firmaya doğru herhangi bir şekilde yardım olması söz konusu değildir (Nichols ve Sugur, 1996; Güler-Müftüoğlu, 2000; Kaytaz, 1994; Evcimen vd., 1991). Bununla birlikte küçük firmaların zamanında ödemelerini alamamaları, küçük firmaların hiçbir zaman bağımsız bir firma haline gelebilmesi için gerekli sermaye birikimine ulaşamamasını beraberinde getirir (Başak, 2005).
- Sugur (1997: 97)'nin belirttiği gibi "yetersiz talebin en önemli problem olduğu bir piyasada, firmalar arası işbirliği ve birlikte çalışmanın söz konusu olmaması şaşırtıcı değildir" ve küçük firmalar arasındaki rekabet, piyasadaki kendi durumlarını daha da kötüleştirmektedir.
- Benzer şekilde küçük firmaların düşük kâr marjları, bu firmaların teknolojilerini yenilemelerine izin vermemekte ve bu da katmanlar arası hareketliliğin önünde bir engel olarak yer almaktadır. Ancak, katmanlar içinde işgücü hareketliliği deneyimlenebilmektedir (Reich vd., 1973). Sugur (1997), OSTİM'deki birçok küçük işyeri sahibinin bir zamanlar bu küçük işyerlerinden birinde çalışan olduğunu göstermiştir: kendi işyerlerini açmalarına yetecek sermaye birikimine ulaşır ulaşmaz, ücret karşılığında çalışmış oldukları işyerlerini terk edip, kendi işlerini kurmaktadırlar.
- Kayıtlı (büyük formel) firma ile kayıt dışı (küçük enformel) firma aralarındaki geçişler asimetriktir: formelden enformele geçiş oldukça kolay gibi dururken tam tersi geçiş söz konusu bile değildir. Evcimen vd. (1991) küçük firmaların, büyük firmalar ile bir kez alt-sözleşme ilişkilerine girdikleri zaman, bu ilişkilerinden

kurtulmalarının oldukça zor olduğunu söyler ve bunu da alt-sözleşme ilişkilerinin sömürücü karakteri üzerinden açıklar.

- Aynı hikâye, çalışanlar cephesinden daha da dramatik boyutlardadır. Bir kişi kayıt dışı sektörde çalışmaya başlamış ise kayıtlı sektörde çalışması önündeki tüm fırsatları kaybetmiş gibi gözükmektedir. Güler-Müftüoğlu (2000) bu savı şu şekilde doğrular: İstanbul Gedikpaşa'daki ayakkabı üreticileri ile yaptığı saha çalışmasında firma sahiplerinin, bu kayıt dışı çalışan işçileri kendi firmalarında istihdam etmek istemediklerini ve bunu kayıt dışı çalışanların düşük üretkenliklerine ve düşük beceri seviyelerine bağladıklarını söyler. Tam da bu yüzden kayıt dışı çalışma, sonu olmayan bir çalışma şekli olarak görülmektedir (Başak, 2005: 120).
- Aksine, kayıtlı istihdamdan kayıt dışı istihdama geçişin göreli olarak kolay oluşu Tansel'in (1998c, 2002) çalışmalarında doğrulanmıştır. Yazar, özelleştirme yüzünden çimento fabrikasındaki işlerinden çıkarılan çalışanların kayıt dışı sektöre geçip ücretli veya kendi hesabına çalışmaya başladıklarını göstermiştir.

Bir sonraki bölüm, çalışanlar cephesinden işgücü piyasasındaki katmanlaşmaya dair bulgulara yer vererek, bu kısmı tamamlamaktadır.

ii) çalışan düzeyinde: işçiler/işler arası katmanlaşma

Bu yaklaşıma göre kayıtlı ve/veya sürekli/düzenli işler (iyi işler) birincil sektör içinde sınıflandırılırken, kayıt dışı ve/veya geçici/düzensiz işler (kötü işler) ikincil sektörde yer almaktadır. Bu şekilde katmanların belirlenmesinde, çalışma koşulları (çalışma saatleri) ve kontrol mekanizmalarındaki farklılaşmalara dikkat edilmektedir.

Nichols vd. (1998) özelleştirmenin çimento sanayi üzerindeki etkilerini araştırırken, firma içerisindeki mesleki hiyerarşiye dair önemli ipuçları bulmuşlardır. Yöneticiler, memurlar, işçiler ve taşeronlar olmak üzere dört kategori altında sınıflandırılan firma çalışanlarına, özelleştirme sonrasında ücret, çalışma koşulları, iş güvenliği, iş tatmini ve (iş) baskısında herhangi bir değişiklik yaşanıp yaşanmadığına dair sorular sorulmuştur. Yöneticiler dışındaki çalışanların tamamı, özelleştirme ile birlikte çalışma koşullarının kötüleştiğini ifade etmişlerdir. Bu ifade, firma içerisinde farklı istihdam stratejilerinin söz konusu olduğu yönünde değerlendirilebilir. Bu durumdan en olumsuz etkilenenler ise taşeronlardır.

TOFAŞ'ta yapmış olduğu çalışmanın sonuçlarına dayanarak Parlak (1996), geçici işçilere verilen görevlerin son derece ağır olduğunu söyler. İşlerini kaybetme ihtimali olduğu için geçici işçilerin bu görevleri reddetme gibi bir lüksleri olmamaktadır. Ancak düzenli çalışanlar bu işleri yapmayacaklarını ifade edebilmektedirler. Benzer sonuçlara Demir ve Sugur (1999) da ulaşmıştır; taşeron çalışanlar, daha yoğun işlerde görevlendirilirken, daha az iş güvenliğine sahiptirler.

- ***İşgücü Piyasasındaki Katmanlaşmaya Dair Nesnel Sonuçlar:***

Hanehalkı İşgücü Anketi (2006-2011) verileri kullanılarak hesaplanan ücret gelirlerinde (kayıtlı ve kayıt dışı istihdamın kendi içinde) cinsiyete göre farklılık görülmese de aynı gelirlere kayıtlı ve kayıt dışı istihdam olma durumuna göre bakıldığında, aralarında ciddi farklar vardır: kayıtlı istihdamda olanlar, kayıt dışı istihdamda olanların nerdeyse iki katı gelire sahiptirler. İşgücüne katılım kararının ve ücret denklemlerinin belirleyicileri arasında eğitim seviyesi en önemli değişken olarak karşımıza çıkmıştır.

Ayrıca, kayıt dışı istihdamın sürekliliğine (ve katmanlar arası hareketliliğinin önündeki engellerin varlığına) dair ipuçlarına, dört işgücü piyasası durumu arası geçiş olasılıklarının (*transition probabilities*) hesaplandığı ve işgücü piyasası hareketliliğinin belirleyicilerinin tahmin edildiği modeller sonucunda ulaşılmıştır.

Geçiş olasılıklarının hesaplandığı bölümden elde edilen sonuçlar, kayıtlı sektörde çalışan erkeklerin büyük olasılıkla yine kayıtlı sektörde çalıştığını göstermiştir. Bu kişilerin kayıt dışı sektörde çalışma ihtimali oldukça düşüktür. Kadınlar için ise kayıtlı istihdam hali çok büyük olasılıkla çalışmama durumu ile izlenmekte, kayıt dışı bir işe geçiş ise sadece % 6,3 olasılıkla söz konusu olmaktadır. Tüm örneklem düşünüldüğünde, kayıtlı istihdamdan kayıt dışı istihdama geçişin sık rastlanılan bir pratik olmadığı söylenebilir.

Yine tüm örneklem üzerinden kayıt dışı istihdam halinden çıkış olasılıklarına bakıldığında, kayıt dışı bir işin kayıtlı bir iş ya da çalışmama hali ile sonlanma olasılıkları birbirine oldukça yakın olduğu görülür. Ancak bu durum kadınlar için farklılaşmaktadır; kayıt dışı bir işi büyük olasılıkla, bir diğer kayıt dışı iş takip etmektedir.

Geçiş olasılıkları üzerinden işgücü piyasasındaki hareketliliğinin sınırlı olup olmadığı hakkında fikir yürütmek mümkün olsa da, aynı veriler üzerinden kayıt dışı istihdamın

sürekliliğine dair çıkarımlar yaparken dikkatli olmak gerekmektedir. Bu yöntem ile hesaplanan değerler, işgücü piyasasında tanımlanan durumlar arasında bir geçişin/hareketliliğin olduğu halleri kapsamaktadır. Örneğin, işgücü piyasasına girdiği andan itibaren kayıt dışı çalışan kişiler bu hesaplamaların dışında tutulmuştur.

İşgücü piyasası deneyimi, önceden kayıtlı ve kayıt dışı istihdamda (sektörde çalışmış) olma değişkenleri ile kontrol edilmiş ve bu değişkenlerin işgücü piyasası geçişleri üzerindeki etkilerini tahmin edebilmek için kısmi (yarı) parametrik yarışan riskler (*competing risks*) modeli kullanılmıştır. Sonuçlar, önceden kayıt dışı sektörde çalışmış olmanın, kayıtlı istihdamdan kayıt dışı istihdama geçişler üzerinde pozitif etkiye sahip olduğunu göstermiştir. Tam tersi geçiş modellerinde ise pozitif etki, önceden kayıtlı sektörde çalışmış olma üzerinden gelmektedir.

Ek olarak, çalışmanın üç ana metninden elde edilen temel sonuçlar üç başlık altında özetlenebilir:

i) kişinin istihdam edilme olasılığına dair:

İstihdam durumunda olma olasılığında okula gitmenin marjinal etkilerine bakıldığında, Taymaz (2010b)'nin sonuçları ile tutarlı bir şekilde, ilkokul öğreniminin kadınların iş bulma olasılığı üzerindeki etkisi belirsiz iken erkeklerin iş bulma olasılığı üzerindeki etkisi oldukça büyüktür. Ortaokul öğreniminde ise sonuçlar farklılaşmakta, bu eğitim seviyesinin etkisi kadın ve erkek arasında zaman içinde birbirine yakınlaşmaktadır. Buna ek olarak lise ve üstü eğitimin kadınlar üzerindeki etkisi, erkekler üzerindeki etkisinden daha fazladır. Bunun sebebi olarak, okur-yazar olmayan kadınların istihdam edilme olasılıklarının oldukça düşük olduğu düşünülebilir. Üniversite mezunu bir kadının iş bulma olasılığı, üniversite mezunu bir erkeğin iş bulma olasılığının iki katıdır. Kriz sırasında, üç istisna dışında, eğitimin iş bulma olasılığı üzerindeki etkisi düşmüştür; bunlar kadınlar için ilkokul, erkekler için lise ve üniversite eğitimi.

Hanehalkı reisinin çalışmadığı durumlarda, iş bulma olasılığının hem kadınlar hem de erkekler için düştüğü gözlemlenmiştir. Bu durum, Türkiye'de iş bulunmasında sosyal yapıların rolü ile açıklanabilir (Taymaz, 2010b). Hane içinde kayıtlı olarak çalışan birinin olması, kadın ve erkeklerin istihdam olasılıkları üzerinde oldukça önemli bir etkiye sahiptir. Her istihdam kategorisi için negatif bulunan bu etki, hanede kayıtlı çalışan bir kişinin olması

haline, hanedeki diğer kişilerin çalışma konusunda istekli olmaması şeklinde yorumlanır. Bunun ardındaki temel neden, kayıt altında çalışan kişi üzerinden gelen sosyal güvenlik vb. avantajlardan diğer fertlerin (en azından belli bir zamana kadar) faydalanabiliyor olmasıdır.

İstihdam edilme olasılığı üzerinde ikamet edilen bölge etkisi özellikle erkekler için negatif bulunmuştur. Bu bulgu, analizlerde referans alınan bölgenin Marmara Bölgesi olması ve bu bölgenin en yüksek istihdam oranına sahip olduğu düşünüldüğünde, pek de şaşırtıcı değildir. En yüksek negatif etki ise Güneydoğu Anadolu Bölgesi'nde görülmektedir.

Medeni halin iş bulma olasılığı üzerindeki etkisi, kadın ve erkekler için tam ters şekildedir; kadınlar için bekâr ya da boşanmış olmanın istihdam olasılığına etkisi pozitif iken, aynı etki erkekler için negatiftir. Bu durum, hane içindeki işbölümü ile açıklanabilir; evli olmaları halinde genellikle kadınlar ev işleri ve çocuk bakımı ile uğraşırken, evin geçiminin sağlanması erkeğe verilmiş bir görev olmaktadır.

Çocuk ve yaş değişkenlerin istihdam edilme olasılığı üzerindeki etkisi beklentilerimizi doğrular niteliktedir; çocuklar (aileye göre) daha düşük ihtimalle istihdam ediliyor iken yaş artıkça, istihdam edilme olasılığı artmaktadır.

ii) kişinin kontrolü altında olmayan değişkenlere dair:

Standart (parametrik olmayan) analiz ile hesaplanan kazançtaki fırsat eşitsizliğinin alt sınır payları, örneklem kapsamı üzerinden farklılaştırılan üç model için şu şekildedir: Model A (15-65 yaş grubu) için % 13, Model B (20-60 yaş grubu) için % 15 ve Model C (25-60 yaş grubu) için % 16. Bir başka ifadeyle, Model C için toplam kazanç eşitsizliğindeki fırsat bileşenin payı (en az) % 16'dır. Üç model sonuçları bir arada düşünüldüğünde beş koşul değişkeni (cinsiyet, anne ve babanın eğitim durumu, ev sahipliği ve doğum yeri) üzerinden ayrıştırılan örneklem, toplam kazanç eşitsizliğinin (en az) altıda biri ile sekizde birini açıklar niteliktedir.

Bu üç model kazanç eşitsizliğindeki fırsat bileşeninin payına ve toplam kazanç eşitsizliğinin büyüklüğüne göre sıralandığında, bu sıralamalar birbirini ile örtüşmemektedir: 15-65 yaş grubunun dahil edildiği veri seti ile yapılan analiz sonuçları bu grubun, en yüksek toplam kazanç eşitsizliğine sahip olmasına rağmen bu eşitsizlik içinde en düşük fırsat bileşeni payına sahip olduğunu göstermiştir.

Regresyon analizine dayanan parametrik alternatif yöntem ile hesaplanan gelirde fırsat eşitsizliğin alt sınır payları ise Model A için % 11, Model B için % 13 ve Model C için % 14'tür. Fırsat eşitsizliğinin kısmi miktarları, toplam eşitsizlikteki fırsat bileşenin payının ne kadarlık bir kısmının söz konusu değişken ile açıklandığını gösterir. Hesaplanan bu kısmi miktar değerleri arasında cinsiyetin, kazançtaki fırsat eşitsizliğini açıklamada en güçlü koşul değişkeni olduğu görülmüştür; üç modelde de toplam alt sınır koşul payının nerdeyse tamamı cinsiyet değişkenine aittir. Annenin eğitim durumunun toplam eşitsizlikteki fırsat bileşeni payını açıklamada herhangi bir etkisi bulunamazken bu değer, babanın eğitim durumu için % 2'dir.

iii) kısmi (yarı) parametrik yaklaşım ile kısıtlı işgücü hareketliliğine dair:

- *kayıtlı istihdam durumundan geçişler/çıkışlar*

Kayıtlı istihdamdan diğer işgücü piyasası durumlarına (kayıt dışı istihdam ve çalışmama) geçiş analizlerinin sonuçlarına göre, "en az lise mezunu" olmak, sadece erkekler için ve yalnızca kayıtlı istihdamdan çalışmama haline geçişi üzerinde istatistiksel olarak anlamlıdır; "en az lise mezunu" olanlar erkekler, daha az eğitim seviyesine sahip olan erkeklere göre daha yüksek olasılıkla kayıtlı bir işten çalışmama durumuna geçmektedir. Bu veri, diğer alternatifin kayıt dışı çalışma olduğu ve bu geçiş için anlamlı bir sonuç bulunmadığı ile birlikte değerlendirildiğinde, eğitimli erkeklerin kayıt dışı çalışma yerine çalışmama durumunu tercih ettikleri söylenebilir.

"Annesi en az ortaokul mezunu" olan kadınların kayıtlı bir işten çalışmama durumuna geçişi, annesi daha az eğitim düzeyine sahip kadınlara göre daha yüksektir. Önceden kayıtlı veya kayıt dışı bir işte çalışmış olan kadınların, çalışmamış olan kadınlara göre işsiz kalmaları ya da işgücü piyasası dışında yer almaları daha düşük bir olasılıktır. Bununla birlikte, kayıtlı istihdamdan çıkış modellerimizin açıklama gücünde önceden kayıt dışı bir işte çalışmış olmanın katkısı, önceden kayıtlı bir işte çalışmış olmanın etkisine göre daha fazladır; hem kadınlar hem de erkekler için önceden kayıt dışı bir işte çalışmış olmak, yeniden kayıt dışı bir işte çalışma olasılığını artırmaktadır.

Herhangi bir kurs ya da eğitim programına katılıyor olmak, kayıtlı istihdamdan çalışmama haline geçişin risk (*hazard*) oranını azaltırken, hayatta kalmasını artırmaktadır. Bir diğer

deyişle, söz konusu süre içerisinde kurs veya eğitim alan kişilerin (almayan kişilere nazaran) kayıtlı bir işi, çalışmama durumuna geçmek için terk etmesi daha az olasıdır. Aynı durum erkeklerin kayıt dışı bir işe geçişlerinde de söz konusudur. Kriz yıllarının etkisi erkeklerin çalışmama durumuna geçişi için pozitif ve anlamlı bulunmuştur.

Firma büyüklüğü, kayıtlı istihdamdan çıkışlar için yapılan modellerin sadece birkaçında önemli bir etkiye sahiptir. Küçük firmada (10-24 işçi) çalışıyor olmak, erkeklerin kayıtlı sektörden çalışmama haline geçiş ihtimalini artırıyor iken daha büyük işletmelerde çalışmak, kayıt dışı sektöre geçiş olasılığını artırmaktadır (referans kategori 10'dan daha az işçi çalıştıran mikro-işletmeler). Tekstil sektöründe çalışmanın etkisi sadece erkekler ve çalışmama durumuna geçiş için anlamlı bulunmuştur.

Yüksek beceri isteyen işlerde çalışanlar, düşük beceri isteyen işlerde çalışanlara göre daha düşük bir ihtimalle kayıtlı işlerini terk etmektedir. Ortalama beceri gerektiren işlerin kayıtlı işlerden diğer durumlara geçiş üzerindeki negatif ve anlamlı etkisi, erkeklerin çalışmama durumuna geçişinde kaybedilmektedir.

Ayrıca "sürekli iş"lerin işgücü piyasası geçişleri üzerinde etkisi olduğu bulunmuştur; hem kadınlar hem de erkekler için sürekli bir işte çalışma, kayıtlı bir işten kayıt dışı bir işe ya da çalışmama durumuna geçişi azaltan bir etkiye sahiptir. Aynı etki, kendi hesabına çalışma ve kamu sektöründe çalışmada da görülmektedir.

- *kayıt dışı istihdam durumundan geçişler/çıkışlar*

Kayıt dışı istihdamdan çıkış modellerimizin sonuçları çocuk sayısının, kayıt dışı bir işi kayıtlı çalışma ya da çalışmama için bırakma kararı üzerinde istatiksel olarak anlamlı bir etkiye sahip olmadığını göstermiştir. Aynı durum "herhangi bir eğitim ya da kursa katılma", "tekstil sektöründe çalışma" ve "kamuda istihdam edilme" değişkenleri için de geçerlidir.

Erkekler için "en az lise mezunu olma" ve "(en az bir kez) kayıtlı sektörde istihdam edilmiş olma", kayıt dışı bir işten kayıtlı bir işe geçiş olasılığını artırmaktadır. Ancak aynı olasılık, "işletme büyüklüğü"ne bağlı olarak azalmaktadır; işletme büyüdükçe, kayıt dışı istihdamdan kayıtlı istihdama geçiş olasılığı düşmektedir. Çoğu kayıt dışı çalışanın 10 kişiden daha az işçi istihdam eden işletmelerde olduğu düşünüldüğünde, bu ters orantı beklenmedik bir

sonuç değildir. Beklentilerimiz dâhilinde kendi hesabına çalışanların, kendi hesabına çalışmayanlara göre kayıt dışı sektörden kayıtlı sektöre geçişleri daha azdır.

Kadınlar için karşımıza çıkan durum şöyledir: "en az lise mezunu olma", "annenin en az ortaokul mezunu olması", "(en az bir kez) kayıt dışı sektörde istihdam edilmiş olma", "kriz" yıllarında çalışıyor olma ve "sürekli" bir işte, "yüksek beceri gerektiren bir görev"de olma, kadınların kayıt dışı istihdamdan kayıtlı istihdama geçiş ihtimallerini artırmaktadır. Bu ihtimali azaltan etkiler ise "kendi hesabına çalışma", "Doğu" ve "Orta bölgelerde çalışma" değişkenleri üzerinden görülmektedir.

Kayıt dışı bir işten çalışmama durumuna geçiş olasılığı, "en az lise mezunu" erkekler için artmaktadır. Eğitim durumunun kayıtlı istihdama geçiş üzerinde istatistiksel olarak anlamlı bir etkisi bulunmamıştır. Buna bağlı olarak eğitimli erkeklerin, enformel bir iş sonrası ya eğitimlerine devam etmek ya da askerlik gibi çalışmalarını engelleyecek kısıtlar ortadan kalkıncaya kadar çalışmama durumunda olma olasılıklarının, kayıtlı sektörde istihdam edilme olasılıklarına göre daha fazla olduğu söylenebilir. "Babanın en az ortaokul mezunu olması", hem kadınlar hem de erkekler için kayıt dışı çalışma halinin çalışmama durumu ile takip edilme olasılığını artırmaktadır. Bununla birlikte, önceden kayıt dışı sektörde çalışmış olmak, kayıt dışı bir işten çıkıp çalışmamaya başlama ihtimalini (kayıt dışı sektörde hiç çalışmamış olmaya göre) azaltır niteliktedir. Yine beklenen şekilde, krizin kayıt dışı bir işten çalışmama durumuna geçiş üzerinde negatif etkisi vardır: bir erkek kriz dönemlerinde kayıt dışı istihdamda ise (krizin yaşanmadığı dönemlerde aynı işi yapmasına göre) daha büyük olasılıkla çalışmama durumuna geçmektedir. Kayıt dışı bir işten çalışmama haline geçiş üzerinde, 10-24 işçi çalıştıran firmalarda çalışmanın etkisi kadın ve erkek için tam tersi olarak bulunmuştur; erkekler için negatif bir etkisi varken, bu etki kadınlar için pozitiftir.

Yüksek beceri gerektiren işlerde çalışan kadınların kayıt dışı istihdamdan çıkış olasılıkları, düşük beceri isteyen işlerde çalışan kadınlara göre daha yüksektir. Kayıt dışı istihdamdan çalışmama haline geçişteki anlamlı ve pozitif etki geleneksel beklentiye karşıtlık oluşturuyor gibi gözükse de, kadınlar için işgücü piyasasından çıkış kararının çoğunlukla yapılan işten bağımsız olarak doğum, nişan, evlilik, çocuk ya da yaşlı bakımı gibi sebeplerden olduğu hatırlandığında, bu bulgu anlamlı olmaktadır. Beklenildiği üzere, erkekler için, ortalama beceri gerektiren işler (*intermediate-skilled jobs*) kayıt dışı bir işi takip eden çalışmama durumuna geçiş ile ters ilişkilidir.

Hem kadınlar hem de erkekler için kayıt dışı sektörde "sürekli" işlerde, "Doğu" bölgesinde, "kendi hesabına çalışma", çalışmama durumuna geçiş ile ters ilişkilidir. Beklenmedik bir şekilde, tam zamanlı çalışma ise kayıt dışı istihdamdan çalışmama durumuna geçiş olasılığını kadınlar için artırır niteliktedir.

Çalışma Bulguları Temelinde Bazı Politika Önerileri

Çalışmanın "ikamet edilen bölge (*region of residence*)" etkisi bulguları, Türkiye'nin Batı'sında yaşamanın (özellikle Marmara Bölgesinde) daha fazla oranda işgücüne katılım, daha yüksek ücret ve daha fazla işgücü haraketliliği ile ilişkilendirilebileceğine işaret etmektedir. Bu sonuç sadece yeni iş olanaklarının yaratılması değil, aynı zamanda daha iyi yeni iş olanaklarının yaratılması üzerinden şekillendirilecek bir politika önerisini akla getirmektedir. Bu bağlamda, bölgesel dinamiklerin yerel düzeyde oluşturulacak projeler ile harekete geçirilmesi amacıyla kurulmuş olan kalkınma ajanslarının rolü büyük önem kazanmaktadır. Bununla birlikte "Yeni Sanayi Odakları"nın, bölgesel eşitsizliği artıran mı yoksa azaltan mı bir işleve sahip olduğu, kavram üzerinde devam eden tartışmalar ve örnekler üzerinden yeniden değerlendirilebilir.

Her ne kadar doğum yeri ve ebeveynlerin eğitim durumları kazançta fırsat eşitsizliğini açıklamada güçlü "koşul" değişkenleri olarak tespit edilmemiş olsa da işgücü piyasasındaki geçişlere ilişkin oluşturulan modellerde önemli etkiye sahiptirler. Doğu ve Orta bölgelerde doğmuş kişilerin, Batı bölgesinde doğanlara göre daha fazla (az) bir olasılıkla kayıt dışı (kayıtlı) bir iş bulacağı sonucuna ulaşılmıştır. Böyle bir durumda, tüm grupların eşit olduğu ilkesinden hareketle, negatif önyargıları ortadan kaldırma adına pozitif ayrımcılık politikaları gündeme getirilebilir.

Bu çalışma ile kadınların işgücü piyasasındaki dezavantajlı konumları, genellikle kayıt dışı işlerde çalıştığını gösteren Kaplan-Meier hayatta kalma tahminleri ve belirli özelliklere sahip kadınların kayıt dışı bir işten kayıtlı işe geçme olasılıklarının düşüklüğünü gösteren işgücü piyasasındaki geçiş olasılıkları ile doğrulanmıştır. Ayrıca kadınlar, kentte oldukça düşük işgücüne katılım oranına sahip olup, çoğunluğu işgücü piyasası dışında yer almaktadır. Bu bulguların ardındaki olası faktörler arasında şunlar sayılabilir: kültürel sebepler ve eğitim düzeylerinin erkeklere göre daha düşük oluşu. Ülke genelinde eğitim düzeyinin yükseltilmesi ve kurs ve seminerlerin düzenlenmesi kadınların istihdam edilme olasılıklarını

artırabilecek olsa da bunlar, istihdam olanaklarında genişleme ile desteklenmediği sürece kadınların çalışma hayatında değişiklik yaratacak gibi durmamaktadır.

Kayıt dışı istihdamın sürekliliği ve (özellikle kadınların) kayıt dışı sektörden kayıtlı sektöre geçişinin sınırlı oluşu üzerine bulgular, bu kişilerin enformelleşme tuzağına düşmüş olduklarına işaret etmektedir. Bu çalışmanın beşinci bölümündeki analizler ile dört işgücü durumu arasındaki geçişlerinin belirleyicini tespit edilmiş olup, analize dâhil edilen değişkenlerin, her bir geçişin olma olasılığı üzerindeki etkileri gösterilmiştir. Kanımızca, uygulanabilir bir politika önerisi geliştirebilmek için yapmış olduğumuz bu analizlerin, durum değişikliği sebeplerine ve kayıt dışı çalışma nedenlerine göre ayrıştırılıp tekrar edilmesi daha anlamlı olacaktır. Bunun dışında, OECD'nin enformelleşmeye hitaben önerdiği üç ayaklı strateji dikkate değerdir:

> (…) Kayıt dışı istihdam her biri ayrı politika yaklaşımı gerektiren farklı fenomenlerden oluşturmaktadır (…):
>
> 1) Dünyadaki çalışan yoksullar için, kayıt dışı çalışma, çoğu zaman, işgücü piyasasına katılmanın tek yoludur. Politikalar, nihayetinde, bu kişileri onların düşük üretken faaliyetlerinden kurtarmayı denemelidir. (…) Spesifik öneriler, eğitim, beceri geliştirme programları gibi aktif işgücü piyasası politikalarını içerir.
> 2) Eğer kayıt dışı istihdam vergi ya da idari yüklerden kaçınmak için kasti bir seçim ise; devlet, kişilerin kayıtlı piyasaya katılım ya da yeniden-katılımını teşvik edecek potansiyeli olan etkin formel yapılar kurmayı hedeflemelidir. (…) Söylemeye gerek yok, kayıtlı sektör dışında kalmayı kendi isteğiyle seçenleri hedef almak, inandırıcı zorlama mekanizmalarının oluşturulmasını da içerir.
> 3) Çoğu düşük gelirli ülkelerde, sonuç olarak, kayıt dışı istihdam, esasen kayıtlı ekonomideki yetersiz iş imkanlarının sonucudur. Kayıt dışılık Normal mi?, kayıtlı sektör içinde daha fazla istihdam fırsatı/olanağı için genel bir itme ihtiyacını onaylar.
>
> (Jütting ve Laiglesia, 2009: 15)

Son olarak, bu üç öneri – yeni ve daha iyi işlerin yaratılması, formelleşme (*formalization*) için daha iyi teşvik edici mekanizmaların sunulması, kayıt dışı çalışanların korunması ve çalışma koşullarının desteklenmesi - etrafında şekillendirilecek bir politika taslağı, etkili olmasının yanı sıra ulaşılabilirdir.

APPENDIX F

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü	
Sosyal Bilimler Enstitüsü	x
Uygulamalı Matematik Enstitüsü	
Enformatik Enstitüsü	
Deniz Bilimleri Enstitüsü	

YAZARIN

Soyadı : Başak
Adı : Zeynep
Bölümü : İktisat

TEZİN ADI (İngilizce) : Persistence of Informal Employment in Turkey

TEZİN TÜRÜ : Yüksek Lisans [ ] Doktora [x]

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. [ ]
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. [ ]
3. Tezimden bir (1) yıl süreyle fotokopi alınamaz. [x]

TEZİN KÜTÜPHANEYE TESLİM TARİHİ: