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Recent Trends in the Turkish Labor Market

Ozan Bakış [(a)]

Abstract.
The purpose of this paper is to survey recent labor market trends in Turkey, between 2002 and 2012, when important structural and institutional changes took place. The decreasing trend in labor force participation seems to stop in the early 2000s, and recover thereafter, at a faster pace in the case of women. Both the share of wage earners and registered workers increased substantially. Wage inequality decreased only in the first half of 2000s, with no clear trend afterwards. The paper identifies three main drivers of recent trends: (i) structural transformation consisting of reallocation of labor from rural areas/agriculture to urban areas/services or industry; (ii) changes in the minimum wage level; (iii) reforms to retirement laws. The combination of these three factors is used to explain the recent labor market trends.
Keywords: *Turkey, Labor force participation, Self-employment, Informality, Wage Inequality.*
JEL Classification: *J21, J31.*

Özet. Türkiye İşgücü Piyasasında Güncel Eğilimler
Bu çalışmanın amacı, önemli yapısal ve kurumsal değişimlerin meydana geldiği 2002-2012 döneminde, Türkiye İşgücü Piyasasında görülen güncel eğilimleri incelemektir. Uzun bir süredir azalma eğiliminde olan işgücüne katılım oranı 2000'lerin ilk yıllarında durağan hale geldikten sonra yükselmeye başlamıştır. Bu artış kadınlar için daha yüksektir. Hem kayıtlı çalışma hem de ücretli çalışanlar oranında önemli artışlar gözlenmiştir. Ücret eşitsizliği sadece 2000'li yılların ilk yarısı azalmış, sonrasında belirsiz bir eğilim göstermiştir. Çalışma yukarda kabaca özetlenen gelişmeler için üç temel belirleyici saptamaktadır: (i) İşgücünün tarımdan/kırsal bölgelerden sanayi ve hizmetlere/kentsel bölgelere kayması; (ii) Asgari ücret seviyesinde meydana gelen değişiklikler; (iii) Emeklilik yaşıyla ilgili düzenlemeler. İşgücü piyasasının güncel eğilimleri bu üç faktörün farklı kombinasyonları yardımıyla açıklanmaktadır.
Anahtar Kelimeler: *Türkiye, İşgücüne Katılım, Kendi Hesabına Çalışma, Kayıt Dışılık, Ücret Eşitsizliği.*
JEL Sınıflaması: *J21, J31.*

(a) TUSIAD-Sabanci University Competitiveness Forum, Sabanci University Orhanlı, Tuzla 34956 / Istanbul, Turkey, Email: bakis@sabanciuniv.edu

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1) Introduction

This paper provides an overview of Turkish labor market trends since 2002. 2002 is an interesting year to start the analysis for two reasons: first, in this year Household Labor Force Surveys (HLFS) micro data files available to researchers started to include wage information: secondly, 2002 marked the launch of the recovery program after the 2001 crisis. The post-2002 period is characterized by a stable political system (characterized by single-party governments as opposed to the unstable coalition governments of the 1990s) and macroeconomic environment (including relatively low interest and inflation rates, a low public debt to GDP ratio, high FDI and sustained growth). Other important factors shaping labor market trends are structural: education and retirement reforms, urbanization/structural transformation and demographic transition. Turkey's recent labor market trends have been affected to various degrees by these and other factors. Instead of trying to list all relevant factors shaping recent trends, this paper, for the sake of clarity and simplicity, tries to spot the most relevant ones. We identify three main drivers: (i) structural change consisting of reallocation of labor from rural areas and agriculture to urban areas and services or industry; (ii) changes in the level of minimum wage; (iii) reforms in retirement laws. As we will see in the following sections, combinations of these 3 factors prove to be sufficient in explaining the recent trends in labor force participation; self-employment and informality; employment and wage structure and wage inequality.

We use the term *structural change / transformation* to refer both the reallocation of labor both from agriculture to industry/services and rural-urban migration. These two processes go hand in hand and cannot be separated. A direct result of this process is urbanization and its consequences on labor market. Actually, it will help to think this urbanization process as part of demographic transition during which one would expect an improvement in the attitude toward working women, an increasing demand for education, higher life expectancies etc.

We provide an analytical overview of the main trends over the 2002-2012 period in labor force participation (LFP) rates, self-employment and informality, employment and wage structures. Where possible, Turkish labor market trends are compared to Organization for Economic Co-Operation and Development (OECD) countries to gain a wider perspective.

Both male and female LFP rates have a declining profile until 2003/2004, where the LFP rate was 74.0% for males, and 25.2% for females so that in aggregate one person over two was out of labor market in 2004. Since 2004, however, LFP rates have risen gradually for both genders. Decomposing by gender and age groups makes it clear that, in urban areas, women in all age groups and men above age of 40 participate more intensively in the labor

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market. The most likely explanation for these common trends for males and females is the change in retirement laws introduced in 1999. Using the Survey of Income and Living Conditions 2006-2010, Gürsel et al. (2013) claim that this change in retirement law is the main driver of the declining share of retirees among the 35-49 age group.

Surprisingly, job creation during the relatively good macroeconomic performance of the early 2000s was not sufficient to reduce unemployment, with average unemployment rates remaining higher between 2002 and 2007 than during the chaotic 1990s. The sharp jump in unemployment in 2001 seems to have had a rather persistent effect, a typical case of hysteresis.

Recent trends in Turkey's employment structure can be characterized by two main movements. First, the average years of schooling continued to grow between 2002 and 2012. The share of illiterate and junior primary school graduates decreased while the share of college and primary school graduates increased. The share of high school (HS) graduates remained almost unchanged between 2002 and 2012. Second, labor was reallocated from rural areas and agriculture to urban areas and industry or services. Men were mostly reallocated from agriculture to services and construction, while women mostly moved from agriculture to services and trade. The secular decline in the share of agriculture seems to have halted since 2008 as there has even been a slight increase its share. Thus, a longer horizon will be required in order to decide whether this slight increase in agriculture is permanent or not.[1]

With continuing structural change both self-employment and informality (lack of social security coverage) shares have decreased substantially. For example, self-employment's share has decreased from 51.4% to 37% in the last 12 years. Yet, despite this remarkable change, Turkey still has the highest level of self-employment among OECD countries. The main trend in the 2000s can be summarized as follows: for women, the shares of unpaid family workers and wage earners have moved in opposite directions, in contrast to men, where the rise in the share of wage earners is mostly correlated with the decreasing share of self-employed workers. Similarly, the registration of workers with the social security system has a secular upward trend for both men and women, although the increase is more pronounced for women.

The gender gap in monthly wages and hours worked by an average worker remained almost constant between 2002 and 2012. However, changes in employment structure, LFP and informality substantially affected hourly wages. While male and female unadjusted mean hourly wages were almost equal in 2002, the balance has since shifted in favor of females. However, a

1 See Gürsel and İmamoğlu (2013) for a detailed analysis of the recent increase in the share of agricultural employment.

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detailed analysis suggests that the higher real hourly wages for females is more likely to be the outcome of a composition effect. That is, the average female worker is relatively better educated than her male counterpart. Accordingly, once we control for education and potential experience, we find that there is a only a minor, though still significant wage gap, disfavoring women.

Recent studies report a decrease in wage and income inequality in Turkey, especially in the first half of 2000s, but in the second half, after 2007/2008, there was either no significant change or a slight increase in wage and income inequality ((See Bakış and Polat, 2015; Ekşi and Kırdar, 2015; Filiztekin, 2015; Tansel et al., 2014, for details). Comparing 1994 with 2003-2011 using the Household Budget and Expenditure Surveys, Filiztekin (2015) finds that income inequality decreased relatively fast until 2007 before increasing slightly thereafter, resulting in a net decrease when comparing 2003 and 2011. Analyzing the 2005-2011 period using the Survey of Income and Living Conditions panel data, Tansel et al. (2014) found a slight increase in wage inequality. Looking at wage growth by percentiles rather than the average level may help in understanding the main drivers of these contradictory trends in the 2000s. Between 2002 and 2004, upper wage percentiles grew, while lower percentiles shrank, with middle percentiles staying approximately at the same level. The main cause of the high wage growth at lower wages was the hike in the minimum wage in 2004. However, wage growth was polarized between 2004 and 2012, with both lower and higher percentiles achieving higher growth rates than the middle ones. A standard supply-demand framework with a stable demand curve can explain wage movements at the lower tail of the distribution for 2004-2012. However, the co-movement of relative supply and relative wages from 2004 to 2012 in the case of college graduates/below college workers calls for a demand shift favoring skilled (college graduate) workers. The answer is likely to lie in the structural change process, defined as the reallocation of labor across different sectors.

We would like to warn the reader about two limitations of the analysis. The first one is about 2002 being the first year after serious financial crisis in 2000 and 2001. Thus, it is possible that the effects crisis was still felt in 2002 so that the picture in 2002 may partly reflect the effect of crisis as well as the structure of the economy. The second one is about sample selection. We only observe women and men *selected* into the labor market. In the case of women the selection bias is present at all age groups, while for men, this is present especially at old ages. So the reader is invited to be cautious about comparisons involving either young and old people or men and women of the same age group.

Section2 describes the HLFS data. Section 3 looks at the evolution of LFP and unemployment rates for both men and women, across different

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age groups. Section 4 analyzes the evolution of the employment structure, especially sectoral and age distribution of employment. Section 5 analyzes recent trends in self-employment and informality. Finally, section 6 analyzes the evolution of wage structure and wage inequality in Turkey.

2) Data

We use 2002-2012 HLFS micro data compiled by TurkStat which contain information on economic activity, occupation, employment status, monthly wages and working hours along with some other individual characteristics. Even though HLFS are implemented since 1988, the micro data is available to researchers since 2000. Unfortunately, surveys of 2000 and 2001 do not contain wage information.

We computed real wages by deflating nominal wages by the Consumer Price Index (CPI) (2003=100). To compute hourly wage we assume that workers' weekly hours remain constant within a month, so we multiply weekly hours by 4.29 (to be precise by, 30/7). Two additional restrictions are made deliberately. First, we restricted our data to positive wage earners when computing hourly wages. Second, we discard wage earners working below 8 or above 84 hours a week in order to minimize the risk of outliers. Our lower limit, 8 hours, captures workers working a full day in a week. And our upper limit captures workers working 12 hours a day and working every day in a week. Finally, we deflated these hourly wages by the CPI to get real hourly wages.

The HLFS data provides highest level of education successfully completed. We have the following categories: illiterate (**illit**); literate but not completed any educational institution (**liter**); primary school (**PS**; 5 years); secondary school or primary education (**PE**; 8 years); high school (**HS**); vocational or technical high school (**VHS**); higher education (**Col+**; university, faculty or upper).

Other information included in the HLFS database used in this paper is: i) location of residence (urban vs rural, where urban refers to settlement with population 20001 and more); ii) economic activity of the local unit in which persons work (ISIC. Rev.3 before 2004, NACE Rev.1 for years 2004-2009, and NACE Rev.2 for 2009-2012, where 2009 is double coded.); iii) employment status; iv) social security coverage.

TurkStat declares that "employment status" for all employees (current and past) is coded following International Classification on Status in Employment (ICSE, 1993).[2] This classification has 4 groups in the HLFS data: wage earner (regular employee), employer, self employed (own-account worker) and unpaid family worker. However, ILO makes a distinction

2 http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007, accessed on 29.04.2015.

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between "paid employment" and "self-employment" jobs at the top level so that self employment is not in the list of ICSE groups, but instead, it covers several groups of ICSE. Self-employment jobs are defined as "...those jobs where the remuneration is directly dependent upon the profits (or the potential for profits) derived from the goods and services produced (where own consumption is considered to be part of profits)." As a result, employers, own-account workers, members of producers' cooperatives and contributing family members are considered as self-employed.[3] This difference is important because OECD relies on ILO classification.[4] In the paper we use ILO/OECD convention which means "self employment" includes not only own-account workers (*kendi hesabına çalışan*) but also employers (*işveren*) and unpaid family workers (*ücretsiz aile işçisi*).

3) Labor force participation

Turkey has relatively low rates of labor force participation and employment compared to other OECD countries. In this section, we summarize the evolution of labor force participation, employment and unemployment rates for both men and women and for different age groups since 2002. When comparing Turkey with the OECD average at the aggregate level we will use data from 1988 onwards (given the lack of data for Turkey for earlier years) in order to have a better understanding of long-term trends.

a) Labor force participation

Average LFP in OECD countries is oscillating around 70% for total population, albeit with a slightly upward trend. In Turkey, however, LFP is not only lower than the OECD average but also declining until the early 2000s, reaching its lowest value of 49.64% in 2004. Thereafter, following a short period of stagnation, it has increased since 2007 onwards, reaching 55% in 2013, although this is still substantially lower than the OECD average.[5]

Looking at males and females separately reveals large differences in Turkey and and relatively small differences in OECD countries. Figure 1 compares Turkey with the OECD average in terms of LFP rates for males and females. Turkey's male LFP is comparable to the OECD average, albeit slightly decreasing until 2003 before slowly increasing. However, female LFP is very low, and then decreases further down to 25.19% in 2004. For both male and female LFP was higher in 1988 (84.80% and 36% respectively). Since 2003, LFP has recovered for both genders, although we are still far from 1988 levels. As of 2013, male LFP rate is 76.27% (at approximately the same level as of the early 2000s) and 33.75% for females (at approximately the same

3 http://laborsta.ilo.org/applv8/data/icsee.html, accessed on 29.04.2015.
4 https://data.oecd.org/emp/self-employment-rate.htm, accessed on 29.04.2015.
5 https://data.oecd.org/emp/labour-force-participation-rate.htm, , accessed on 29.04.2015.

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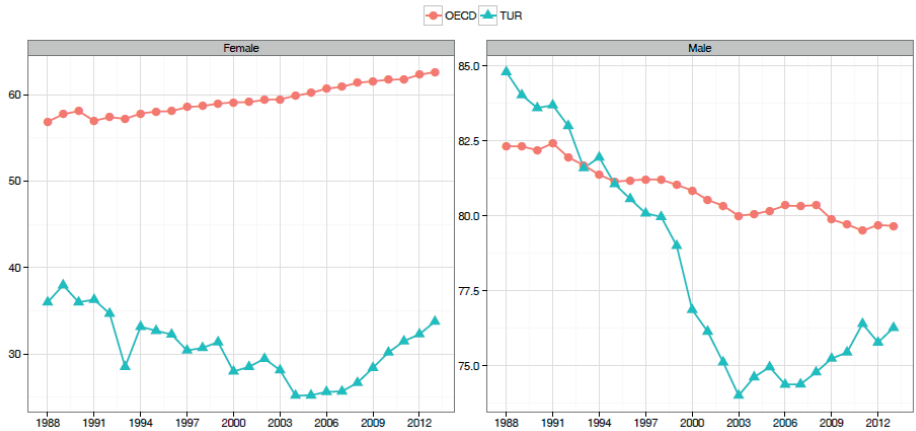
level as the early 1990s). On average, Female LFP has a slight increasing trend while male LFP has slight decreasing trend in OECD countries (Figure 1).

Figure 1: LFP rates by gender: Turkey versus the OECD average, 1988-2013



Source: OECD Stat Extracts, http://stats.oecd.org/. The dataset is a subset of the Annual Labour Force Statistics database which presents annual labour force statistics and broad population series for 34 OECD member countries plus Brazil, Columbia and Russian Federation and 4 geographical areas (Major Seven, Euro area, European Union and OECD-Total). The reference population is the non-institutional civilian population aged 15-64.

In short, Turkey's LFP rates up to 2003 were not only low by international standards but were also falling. The main factor explaining this continuous decline is likely to be structural change. Specifically, the reallocation of labor out of agriculture/rural zones to services and industry/urban areas may explain such a phenomenon. In rural zones/agriculture, most jobs are not paid, with many family members contributing to household work, hence considered as employed, which yields very high LFP rates. With urbanization, some of these unpaid family members, usually poorly educated women, become inactive. There are several possible explanations: first, it is likely that they lack the required skills and training to be employed.[6] Second, they may prefer to stay at home because they undertake non-marketed family work, such as housekeeping, child or elderly care. Finally, cultural factors may prevent women from working "outside". These factors are likely to change over the

6 Gürbüz et al. (2014), using 2006-2011 HLFS, find that workers with low education profile fall into "discouraged worker" status. LFP trends by broad education groups are compatible with this result: only below-HS graduate workers (both men and women) aged 55 or more years have lower LFP rates in 2012 compared to 2002, and decreasing trends.

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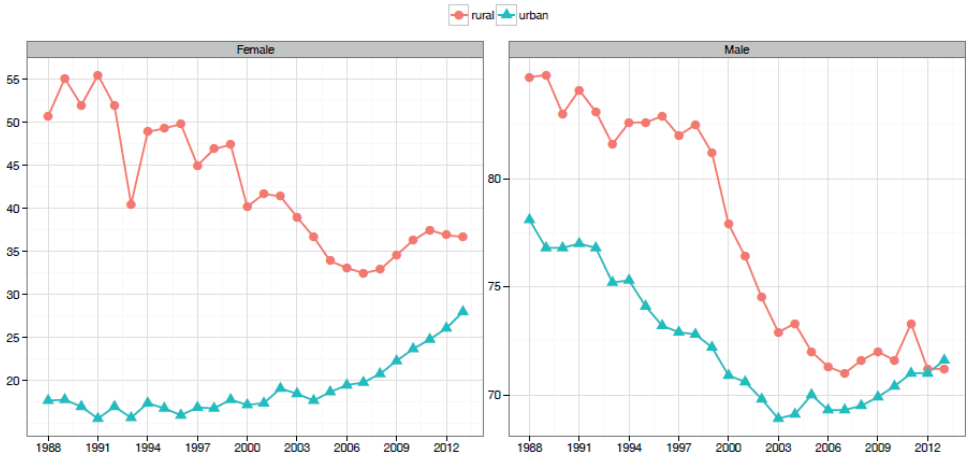
long run and are not directly related to market dynamics.[7] In addition, the structural change argument does not automatically exclude market related factors. For instance, a poorly educated female migrant is likely to find a job in the informal sector where wages are low. This may also limit female participation, since wages affect the trade-off between working at home "as housewife" and working outside, and if the expected wage is not high enough to pay someone else to do housekeeping, child care, cleaning etc., then there will be no incentive for these women to participate to the labor market.[8] Yet another market related factor is the elimination of the minimum retirement age in 1993 which further exacerbated the decline in LFP rates in the late 1990s and early 2000s.

Figure 2: LFP rates by gender in Turkey: rural versus urban, 1988-2013



Source: TurkStat, http://www.tuik.gov.tr

Decomposing aggregate LFP rates into rural and urban components provides further insights regarding entry to and exit from the labor force in that LFP dynamics seem to change by location. 2007 shows a clear break in the long-run downward trend of rural LFP rates for both females and males (Figure 2). Although it is too early to conclude whether this represents

7 In the longer term, the increase in female LFP rate is preceded by a decline, with a U-shaped pattern of female LFP during the development process: in more rural agricultural societies, LFP is high due to unpaid family work, whereas, following urbanization, it declines before recovering again. The initial lag behind male participation rates is explained by the time the modernization process takes to affect female LFP through education, decline in fertility rates, childcare provision, change in values and norms, etc.

8 Uraz et al. (2010), using 2003 Turkey Demographic and Health Survey, report that about two thirds of ever-married women declare "being a housewife" or "taking care of children" as being the main reason for not working.

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stagnation or a reversal of long-run trends, we have enough evidence to suspect that the long-term trend ended in 2003/2004, with sizeable changes starting to occur in 2007.[9] For urban areas, the rise in LFP rates begins around 2000 for women and 2003 for men. While the difference between male and female LFP rates is about 30% in rural areas, it is close to 50% in urban areas. However, this gap has narrowed recently, faster in urban areas (Figure 2). There are several factors behind the increasing LFP rate in urban areas. First, younger generations are more educated and education is positively correlated with LFP. Second, the change in retirement laws introduced in 1999 may play a role especially for individuals relatively old.[10] In addition to these common factors, there may be some other drivers affecting only female participation. World Bank (2009) states the following ones: i) a favorable change in the social attitude toward working women; ii) women getting married at a later age; and iii) the decline in fertility rates.

The above mentioned arguments, especially structural change, can explain, at best, only part of the observed trends, because even in agriculture/rural areas LFP rate fell until 2007. That is, they can only explain declining aggregate LFP trends and low LFP trends in urban areas in Turkey. There is no unique explanation for the decline in LFP rates in rural areas before 2007. One suggested explanation is the decline in small-scale family farming, due to the declining share of agriculture (World Bank, 2006, 2009; Dayıoğlu and Kırdar, 2010). Another potential explanation is related to migration. According to this explanation, women with a higher LFP rate are also more likely to migrate (Dayıoğlu and Kırdar, 2010).[11] Yet another one is the Agricultural Reform Implementation Program (ARIP) implemented in 2000 and 2001 which reduced agricultural subsidies and as a result probably caused further migration of individuals with higher LFP rates between 2000 and 2005 (World Bank, 2009).[12]

9 See also Atiyas and Bakis (2014) and Gürsel and İmamoğlu (2013) for further discussion.

10 Uysal (2013) finds that observable factors such as improvements in educational attainment, decrease in fertility rates, getting married

11 Using the 2003 Turkey Demographic and Health Survey, Dayıoğlu and Kırdar (2010) find that migrants women are on average more educated and younger, compared to the residents of rural areas. Since LFP rates are positively correlated with education, this has some potential to explain the falling participation rates in urban areas.

12 Turkey implemented the ARIP in 2000 and 2001, as part of the European Union harmonization process. The program had two stages. The first stage consisted of a series of reforms reducing fiscal support to state enterprises, fertilizer subsidies and deficiency payments (output price subsidies) for certain agricultural products, while a Direct Income Support (DIS) scheme was initiated to compensate approximately half of the income loss due to subsidy cuts. This program was applied from 2001 to 2008. The second stage of the ARIP consisted of competitiveness-enhancing agricultural and rural development measures. Some involved investment in organization, credit support and the introduction of agro-environmental schemes. This reduction in agricultural subsidies and labor saving technological progress (drip irrigation, tractors, cultivators etc.) may thus explain the more pronounced decline in rural LFP rates in the 2000s.

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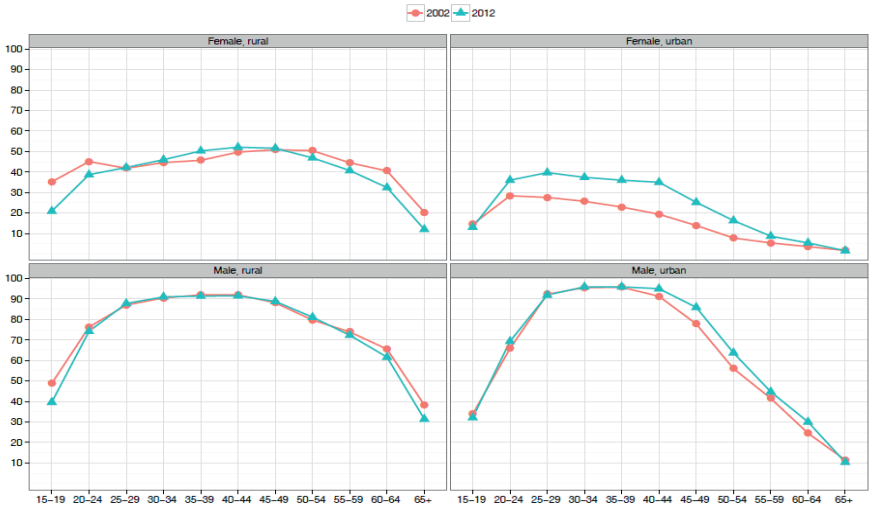
Figure 3 gives LFP rates in 2002 and 2012 by location of residence for men and women separately. Each point represents the average LFP rate in the corresponding age group. Several observations can be made: first, female LFP rates are still much lower than for males. In almost each age group, male rates are more than double female LFP rates. The second observation about Figure 3 is that LFP rates decline from 2002 to 2012 for very young and very old age groups only in rural areas. Given the 1997 education reform expanding compulsory education and improvements in educational attainment, the decrease in young ages is expected. It is not surprising that improvement in enrollment rates and years of schooling mainly benefit rural areas. The unexpected phenomenon is the decrease in old age groups in rural areas. The third observation is that in urban areas, male LFP rates are higher in each group above 40. The fourth observation is about females residing in urban areas which is probably the most interesting fact in Figure 3. In each age group LFP rate is higher in 2012 compared to in 2002. The magnitude of this rise is more pronounced for ages between 25 and 49. Our analysis indicates that LFP trends are heterogeneous across age groups. Thus, it seems that 2003 is when the reduction in LFP rates halted. For females, the succeeding upward trend increased slowly for all groups at first, between 2004-2007, before increasing far more significantly. The strongest increases were in the 35-44 age groups. For males, the only age groups that saw their LFP rate go up significantly were ages 45-49 and 50-54. Such increases only occurred after 2007, whereas before that there was no visible trend.

Figure 3: Age-LFP rate profiles by location and gender, 2002, 2012



Source: TurkStat, http://www.tuik.gov.tr

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An interesting finding is that between 2002 and 2004 the cumulative change in the LFP rate is systematically negative for women aged 20-54 years, while there is no such pattern for men in the same age group. This may come from the fact that LFP rate in 2002 is unusually high because of the "added worker" effect caused by the 2001 crisis. Using Household Budget Surveys between 2002 and 2005, Polat and Saraceno (2010) find stronger added worker effect for unskilled female labor just after the crisis year 2002. They argue that this impact due to income loss lasted during 2002 and 2003 and starting from 2004, the inflow of workers returned to pre-crisis period. Our analysis supports this claim. Looking at LFP trends by broad education groups gives further insights: this added worker phenomenon is likely to be observed especially for low-educated women.

The most likely explanation for these common trends for both genders after age 40 residing in urban areas is probably the change in retirement laws introduced in 1999, which introduced a minimum age retirement threshold of 58 for females and 60 for males. The law also foresaw a transition period of 18 years for females and 22 years for males, which implies that in the early 2000s the actual threshold may have been as low as 38 and 44 years for females and males respectively. Thus, the increase in LFP rates of those older than 40 can be attributed to the change in retirement law. For younger age groups, the increase in average years of schooling is a candidate explanation, as LFP increases with education. In the case of women, some other factors may have played a role as well: urbanization, decline in fertility rates, increase in marriage age, changes in social attitudes toward female work, changes in the Labor Law regarding maternity leave (from 12 weeks to 16 weeks), unpaid leave (6 months of unpaid leave can be used following the end of maternity leave), and other measures regarding childcare or elderly care.

Analyzing LFP by education levels and age groups reveals that female LFP increases especially for college and HS graduates among the 40-54 age groups. For males we have a similar picture but the differences are relatively small. Another important result is that college graduates, both men and women, have similar LFP rates. Consequently, low female LFP are observed mainly at below university degree levels.

b) Unemployment

Figure 4 shows unemployment rates in Turkey compared to the OECD average. Since there are no important gender differences in unemployment rates, only unemployment rate for total population is given. There is a big jump in unemployment in 2001, and unemployment figures did not return back to their pre-2001 crisis levels. The relatively good macroeconomic performance in the early 2000s does not seem to make a difference in terms job creation that cannot keep pace with increased participation. On the

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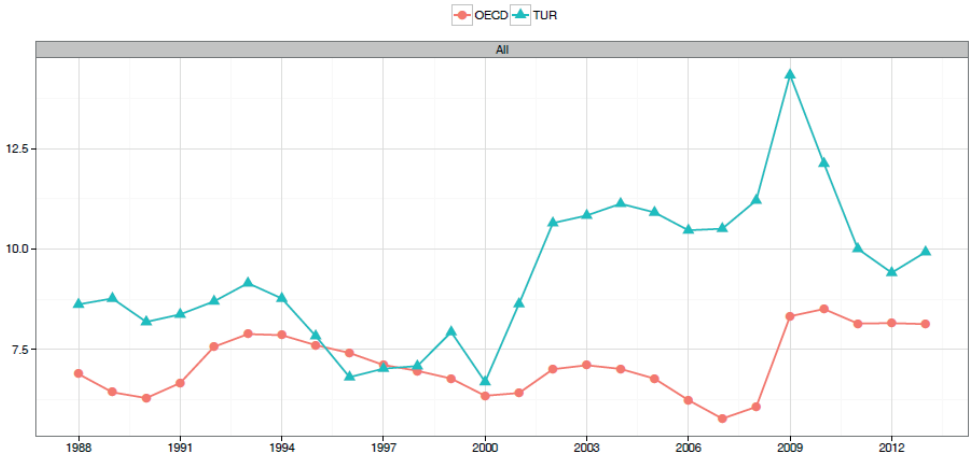
contrary, the unemployment rates are, on average, higher in the 2002-2007 period characterized by relatively high growth rates. However, unlike OECD economies, the recovery was very fast after 2008 crisis. The unemployment levels are even lower than their pre-crisis levels. The reader should be cautious with the definition of unemployment. The reference population is the non-institutional civilian population aged 15 and over. For an individual to be classified as unemployed she has to satisfy three criteria: (i) did not work during the reference week; (ii) actively searched for a job during the past six (1988 to 1999) or three (2000 to 2008) or one (since 2009) months; and (iii) they are ready to start work in two weeks.[13]

Figure 4: Unemployment rates: Turkey vs OECD, 1988-2013



Source: OECD Stat Extracts, http://stats.oecd.org/

Looking at unemployment rates for males and females by location, we see that they move in parallel, with almost a constant gap. However, female unemployment rate is systematically higher in urban areas but lower in rural ones. Unemployment-age profiles reveal that, from 2002 to 2012, females faced higher rates of unemployment for all age groups. Male workers younger than 50 had lower unemployment rates in 2012 than in 2002. Another finding is that unemployment rates decline with age almost monotonically (Figure 5). Comparing unemployment-age profiles by gender, we see an interesting pattern: female unemployment rates are higher than male if they are younger than 40 but lower if they are older (Figure 6).

13 See Tunalı (2003, Chapter 5) and TurkStat website (http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007) for the definition of unemployment since 1988.

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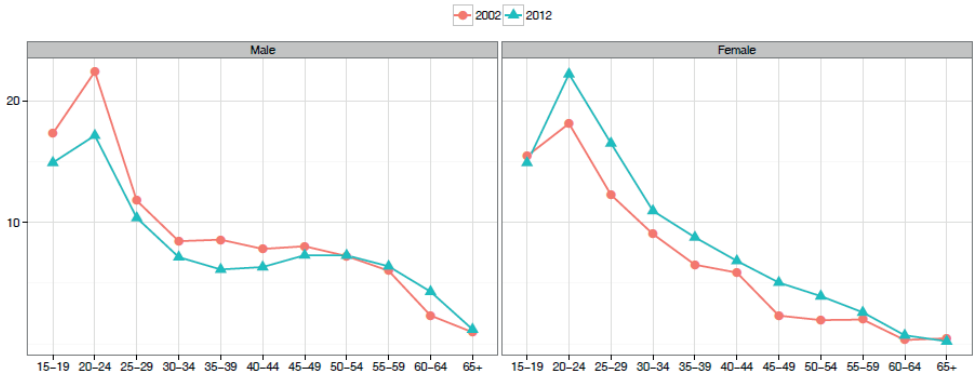
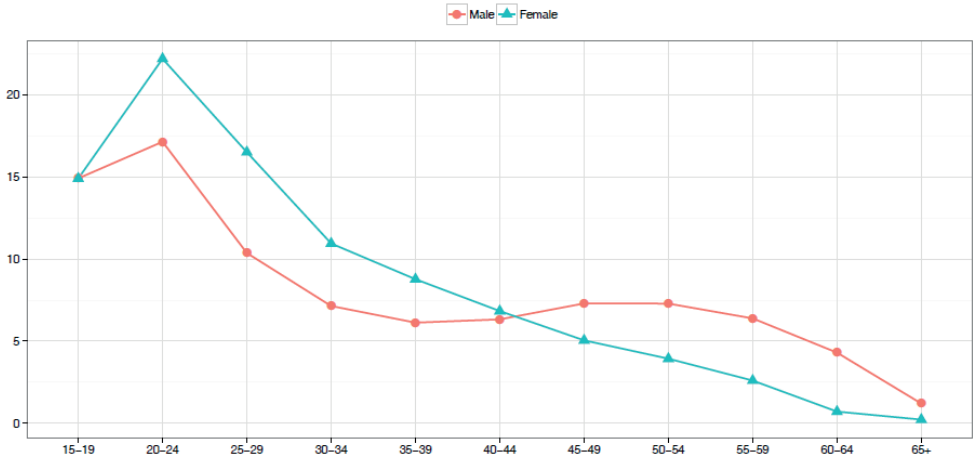
Figure 5: Unemployment-age profiles by gender, 2002, 2012



Source: HLFS

Figure 6: Unemployment-age profiles by gender, 2012



Source: HLFS

Unemployment-age profiles by broad education groups have a similar shape, but separating them by gender discloses another difference between males and females. For males, except for the 15-24 age group for college graduates, education and unemployment are negatively correlated. For females, however, this is no longer true. Interestingly, high school (HS) and vocational high school (VHS) graduates have higher unemployment rates than below HS graduates in all age groups. After age 30, unemployment rates

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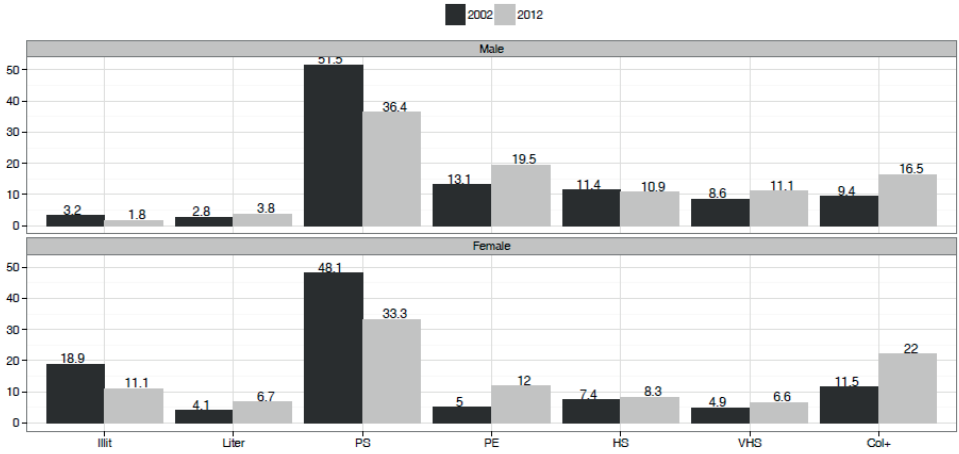
of below HS and college graduates are almost equal for females. Finally, fresh college graduates appear to face difficulties in the labor market as both males and females younger than 30 have equal or higher unemployment rates than less educated individuals, probably due to their lack of work experience.

4) Employment structure

The composition of employment directly affects the allocation of resources. The main driver of labor productivity growth used to be the secular trend of labor reallocation from agriculture to industry and services. This section looks at the evolution of Turkey's employment structure, particularly how the educational, sectoral and age distribution of employment has evolved in the last decade.

Figure 7: Educational distribution of employment by gender, 2002, 2012.



Note: Illit: illiterates; Liter: literates; PS: primary school (5 years); PE: secondary school or primary education (8 years); HS: high school; VHS: vocational high school; Col+: college graduates or above. Source: HLFS

The education distribution of employment by gender is pictured in Figure 7. Between 2002 and 2012, the shares of literates (Liter), primary school (PS), vocational high school (VHS) graduates and college (Col+) graduates increased, while the shares of illiterates (Illit), primary education (PE) graduates decreased for both genders. Only the share of high school (HS) did not change significantly. The share of employed females is also higher than males at each extreme of the educational distribution: that is, both women with a college degree and below PS diploma have higher employment shares.

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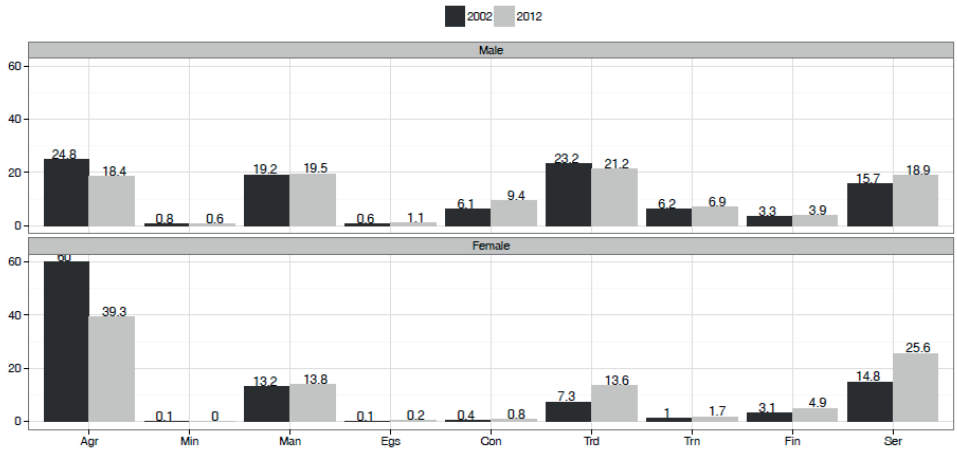
The most striking difference is in the share of illiterates. While only 1.8% of employed men were illiterate in 2012, for women this ratio was 11.1%. Our calculations show that the share of employed women in total illiterate employment is 72.5%, meaning that 7 out of 10 illiterate employees in Turkey in 2012 were women. Both the decrease in the share of low education groups and the increase in the share of high education groups is higher for females than males.

Figure 8: Sectoral distribution of employment by gender, 2002, 2012



Note: AGR: Agriculture, forestry; Fishing, MIN: Mining, MAN: Manufacturing, EGS: Electricity, gas and water supply, CON: Construction, TRD: Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods; Hotels and restaurants, TRN: Transport, storage and communication, FIN: Financial intermediation; Real estate, renting and business activities, consulting, SER: Public administration and defense; compulsory social security; Education; Health and social work; Other community, social and personal service activities; Activities of households. Source: HLFS

As we see in Figure 8, structural transformations continued throughout 2002-2012, with labor mainly being reallocated from agriculture (-10.4 percentage points) to services (+5.4 points) and construction (+2.4 points). Other sectors also experienced positive change, but less than 1%. However, this reallocation differed by gender: while males were reallocated from agriculture and trade to services and construction, females were reallocated from agriculture to trade and finance.[14] These trends represent a general development process consisting of a declining agriculture sector and expanding

14 We use the term "reallocation" cursorily throughout the paper. As we have already mentioned, with rural-urban migration, some family members, usually older women, become inactive. The active members in migrating families are likely to be younger, better educated, and with better market skills. Thus, in reality, it is not likely that these are the same individuals who are reallocated between sectors.

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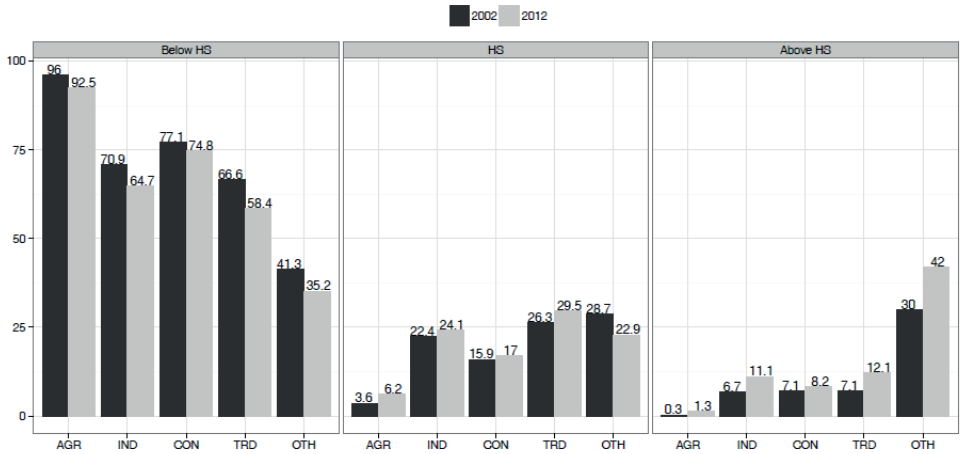
industry or services sectors. Looking at the evolution of sectoral employment across years we see that the reallocation of labor from agriculture to other sectors takes place between 2002 and 2007, whereas there is slight increase in the share of agricultural employment after 2008. Gürsel and İmamoğlu (2013) first noted this break in the long-run trend, arguing that the recent increase in the share of agricultural employment can be explained by changes in relative agricultural prices.

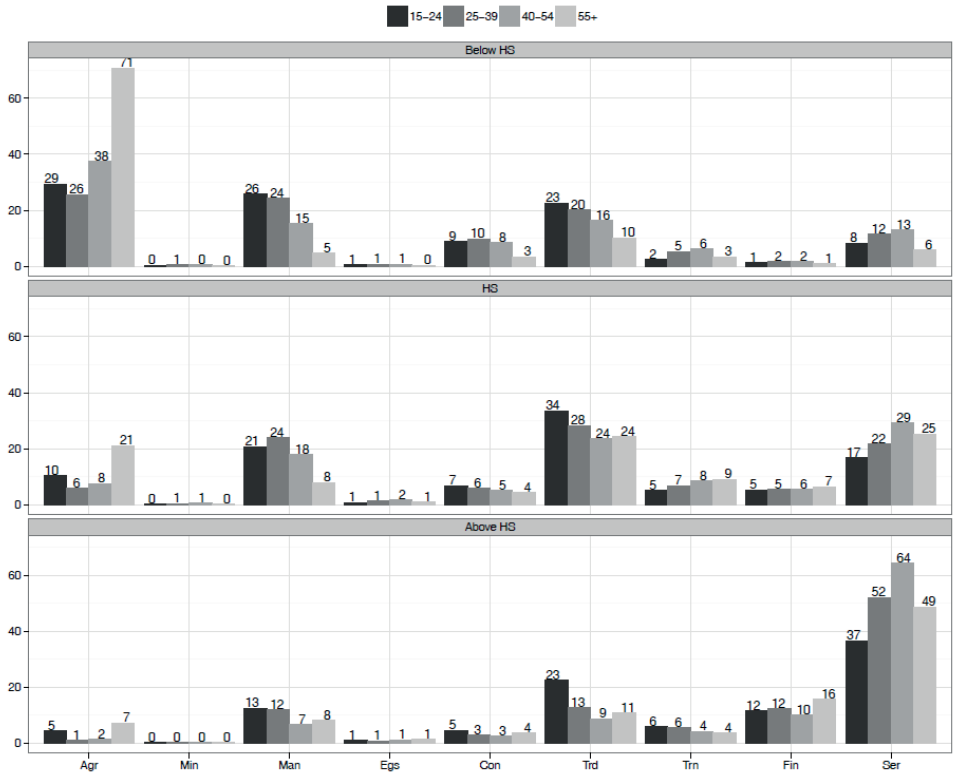
Figure 9: Educational distribution of employment by broad sectors, 2002, 2012



Note: See note to Figure 8 for sectoral details. AGR, CON, TRD is defined in the same way. Additionally, here we have: IND: MIN, MAN and EGS, OTH: TRN, FIN and SER. "Below HS" includes all education levels up to HS, "HS" includes both high school and vocational high school and finally "Above HS" includes college graduates or above. Source: HLFS.

Figure 9 shows the distribution of employment across education groups within each sector for 2002 and 2012. Agricultural employment is predominantly composed of poorly educated workers, and this does not change significantly from 2002 to 2012, although the situation is slightly better in the rest of the economy. Nevertheless, more than half of Turkish workers in 2012 were below-HS graduates working mainly in construction, manufacturing and trade. On the other hand, the impact of demographic transition is becoming more apparent as the share of college graduates increased in all sectors between 2002 and 2012, with the highest increase in services. There are large gender differences in the educational distribution across sectors, with the three education levels being relatively similar in construction and services for females.

Figure 10: Educational distribution of employment by sectors and age groups, 2012



Note: See note to Figure 8 for sectoral details. "Below HS" includes all education levels up to HS, "HS" includes both high school and vocational high school and finally "Above HS" includes college graduates or above. Source: HLFS.

When we look at the evolution of age distribution by sector across time we see several patterns: first, the share of young workers aged 15-24 has declined in almost all sectors, with the aggregate share falling by 5 percentage points (from 19% to 14%). An important exception is construction, where the share of young workers increased steadily. The overall decline in the share of young workers is probably related to the lengthening of school attendance and the rise in school enrollment rates. Second, the share of middle age groups (40-54) and old age groups (55+) rose between 2002 and 2012. For the 40-54 age group, the most plausible explanation is the change in the retirement laws. The rise in the share of the 55+ age group is rather unexpected given the slight decline in their LFP rate between 2002 and 2012. Nevertheless, the employment rate is positively correlated with age, with the unemployment

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rate below 5% for the 55+ age group (Figure 6). Third, given rural-urban migration, one might expect the share of older agricultural workers to have increased because migration disproportionally involves young workers. Accordingly, agriculture is the sector with the greatest decrease in younger age groups and the largest increase in older age groups.

Figure 10 shows the sectoral distribution of different age and education groups in 2012. The share of employment adds up to 100 for each age group within each education level. The majority of college graduates work in services, while for below HS the majority is in agriculture. The broad picture that emerges is that there is a positive (negative) correlation between the share of employment and age in services (manufacturing and trade). As we see from the upper panel, more than two thirds (70%) of workers below HS diploma aged 55 or more work in agriculture, while the share is 37.6% for workers aged 40-54 in the same education group. Above 25 years of age, more than half of college graduates work in services, with the highest share being 64.4% for the 40-54 age group. Hence, it appears that more experienced workers move from low-wage sectors to high-wage sectors. This holds for all education levels, although the trend is most pronounced for college graduates.

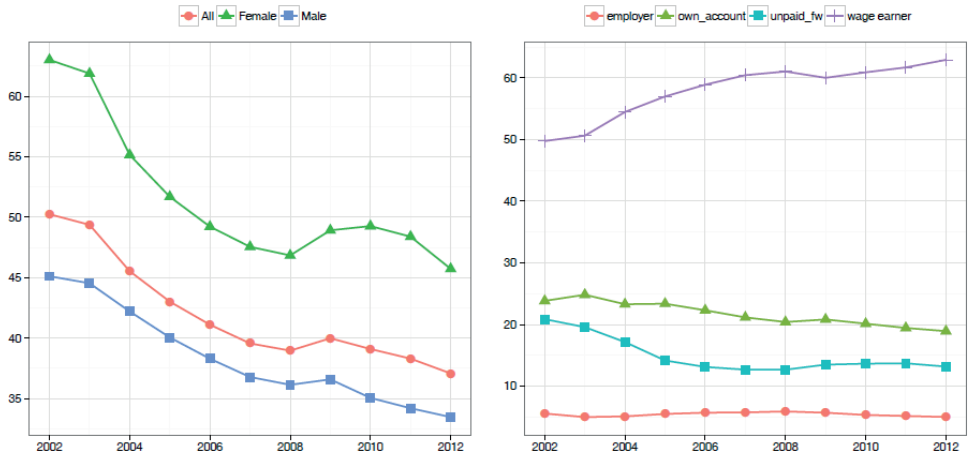
5) Informality and self-employment

The Turkish economy is characterized by relatively high proportions of self-employment and informality (lack of social security coverage). This section analyzes recent trends in these two long-standing issues. The analysis further explores gender and age differences.

a) Self-employment

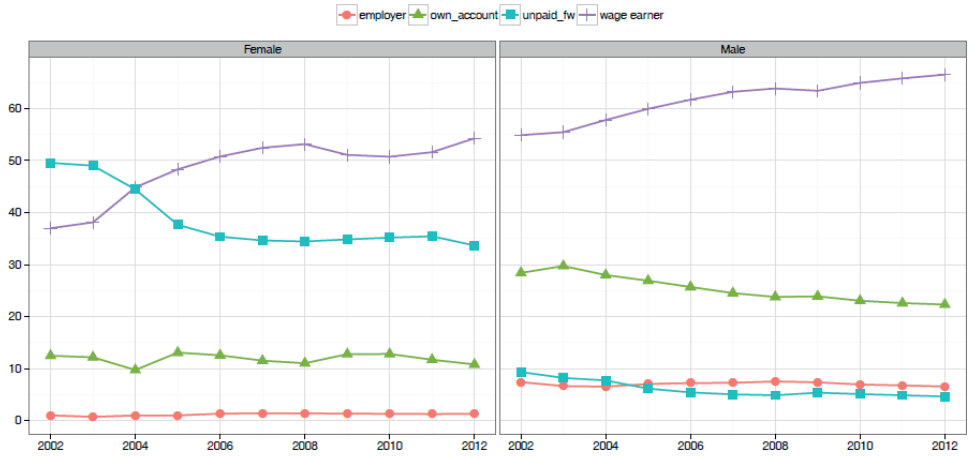
Self-employment is defined as being a non-wage earner, more specifically it includes own-account workers, employers and unpaid family workers. Figure 11 (left panel), which presents self-employment trends between 2002 and 2012 for total, male and female population, shows that share of self-employment decreased steadily. For the total population, the self-employment rate fell from 50% to 37% in 10 years, although this decrease was even sharper for females: from 64% to 46%.

Figure 11: Self-employment rates (left panel) and employment status (right panel), 2002-2012



Source: HLFS

Figure 12: Employment status by gender, 2002-2012



Source: HLFS

The right panel in Figure 11 traces the trend in the share of workers in each employment status. Consistent with the structural transformation hypothesis, the share of wage earners increased, while other groups' shares either remained constant (employers) or shrank (own-account workers and unpaid family workers). By 2012, wage earners represent 63% of the workers suggesting that the decrease in self-employment is the result of a decrease in the share of unpaid family workers and own-account workers.

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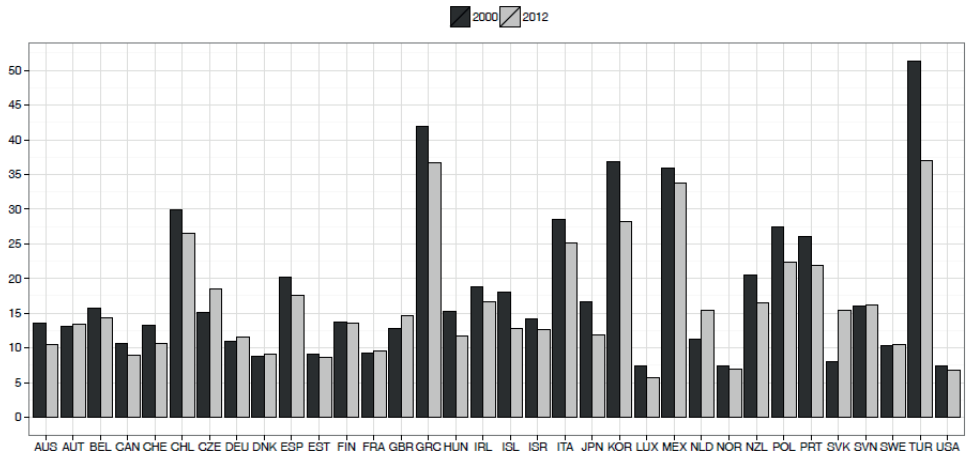
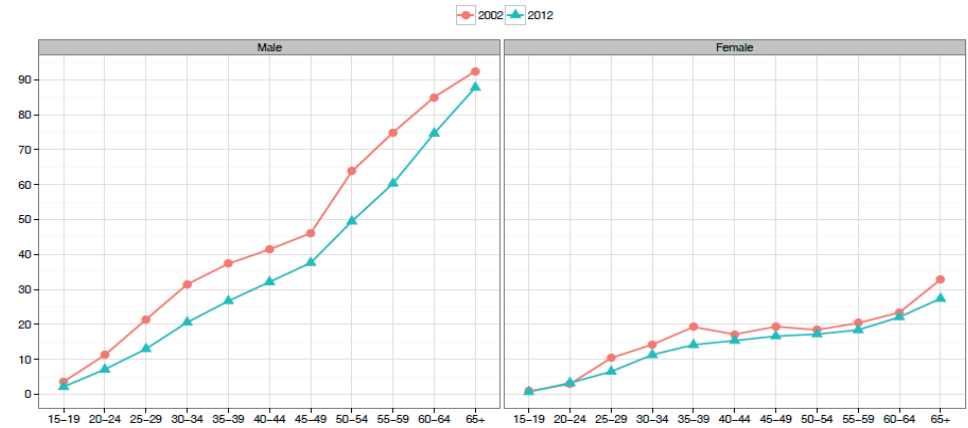
Figure 13: Self-employment rates in OECD countries, 2000, 2012



Source: OECD Factbook 2014.

Figure 14: Entrepreneurship-age profiles by gender, 2002, 2012



Source: HLFS

In the case of women, the share of unpaid family workers and wage earners moved in opposite directions (Figure 12). In contrast, the growth in the male wage-earner share is mostly correlated with the decreasing share of male own-account workers. Additionally, the increase in the share of wage-earners is faster for females.

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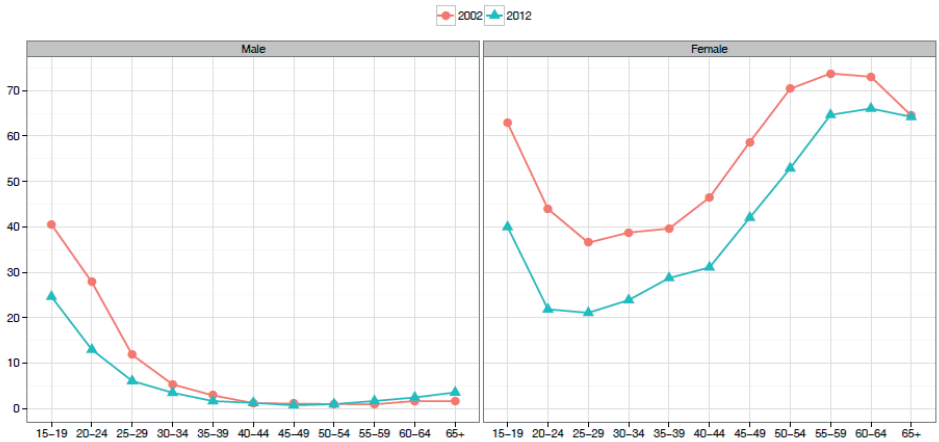
Figure 13 gives the self-employment rates for OECD countries in 2002 and 2012. In 2002, Turkey was a clear outlier with the highest self-employment rate. By 2012, Turkey, Greece and Mexico had comparable self-employment rates of more than 35%, which are well above the OECD average of 18.1% in 2000 and 16.2% in 2012.

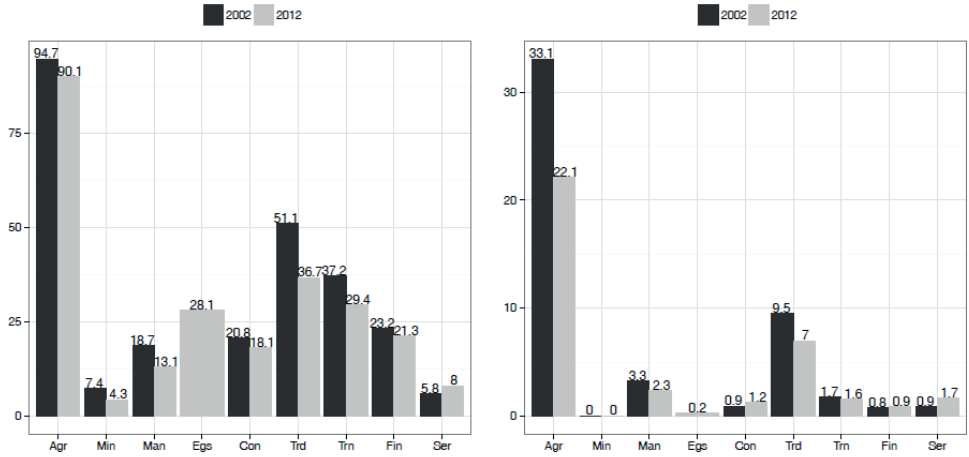
Figure 15: Unpaid family worker–age profiles by gender, 2002, 2012



Source: HLFS

Looking at self-employment-age profiles, we see a positive correlation between age and self-employment for both males and females. However, this masks two distinct phenomena which are illustrated by Figures 14 and 15. Figure 14 shows the entrepreneurship-age profiles for males and females, where entrepreneurship is defined as being an employer or own-account worker. It shows a consistent positive correlation between age and entrepreneurship for both genders that does not change from 2002 to 2012. Moreover, the share of unpaid family workers decreases with age only for males (Figure 15). For females it has a U-shape: decreasing until 25-29 before increasing thereafter. More importantly, this profile does not change between 2002 and 2012. This means women aged 35 and above have a higher share of unpaid family worker in older ages. One possible explanation could be the need for "more flexible" jobs as usually these are married women who take care of children and elders and do other family related non-marketed works.

Figure 16: Self-employment rates by sector (left panel) and share of self-employed workers in total employment by sector (right panel), 2002, 2012



Note: See note to Figure 8 for sectoral details. Source: HLFS.

Figure 16 (left panel) shows that the share of non-wage earners within each sector did not change much between 2002 and 2012, except for public utilities (EGS), which is likely to be due to inadequate sampling. Given that the self-employment rate has not changed significantly across sectors, we suspect that compositional (structural) change must be the main driver behind the decline in aggregate self-employment rates. Figure 16 (right panel), which shows the share of self-employed workers in total employment by sector (the sum of wage earners and self-employed workers is 100 in each year), confirms this intuition: the decline in aggregate self-employment rate is accompanied by a contraction in the agriculture sector. There are several mutually-reinforcing factors involved. On the one hand, structural change has taken place alongside rural-urban migration. As we have already pointed out, it is likely that some unpaid family workers in migrating families have switched from agriculture to services or left the labor market. Both are important. Switches from agriculture to inactivity used to be the main explanation for decreasing LFP rates until 2003. Switching from agriculture (unpaid family worker) to services or industry (wage earner) is one of the main explanations for the rising trend in the share of wage earners. On the other hand, younger generations (whether they live in a migrating family or not) are relatively better educated because of both lengthening years of schooling and increasing rates of enrollment following the 1997 education reform. It is well known

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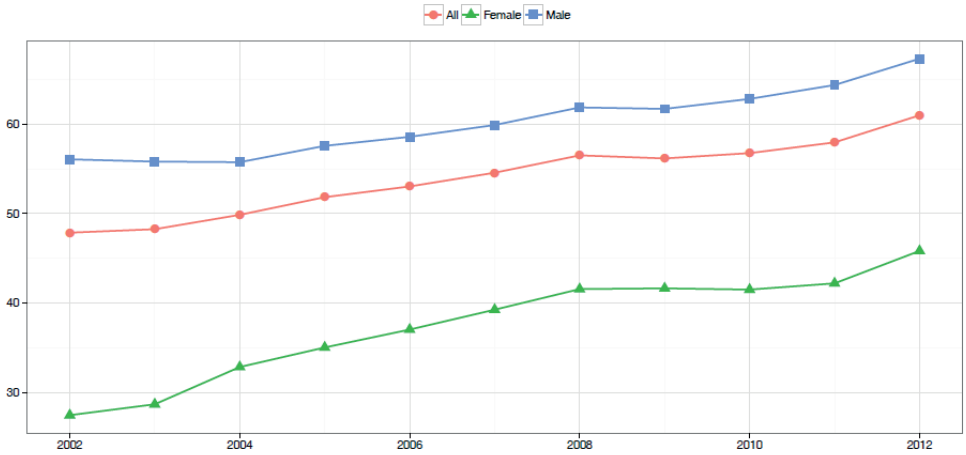
that education makes it more likely that a worker has social security coverage and decreases the probability that they become self-employed. That is, the younger generations, which are replacing the older workers, are more likely to be wage earners and registered with social security.

b) Informality

Figure 17 shows the evolution of social security coverage for males and females between 2002 and 2012. The registration of workers with the social security system experienced a secular upward trend for both males and females, although it is more pronounced for females: in 2002, 56% of males but only 27.5% of females were registered with social security, a gap of almost 30 percentage points. By 2012, however, this gap had narrowed to 21.5 points: 67.3% for males, 45.83% for females.

Figure 17: Social security coverage by gender, 2002-2012



Source: HLFS

The left and right panels in Figure 18 show, respectively, the share of workers covered by social security in each sector (the sum of registered and unregistered workers is 100 in each sector for each year) and the share of workers covered by social security in total employment by sector (the sum of registered and unregistered workers is 100 in each year). The two sides need to be considered together to understand the evolution of informality in Turkey. The share of registered workers increased for two main reasons: first, the share of registered workers increased in relatively large sectors, such as manufacturing, trade and construction (Figure 18, left panel). Second, the structural change (change in the sectoral composition) in the economy

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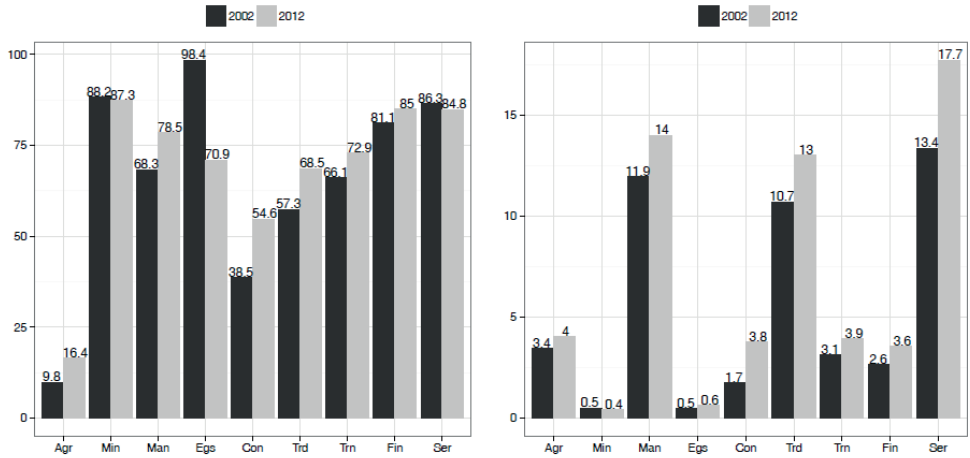
improved the situation, specifically for the services sector. The share of registered workers did not change significantly in this sector from 2002 to 2012, but since the share of registered workers was already higher than in other sectors, an increase in the size of this sector ameliorated the ratio of registered workers at the aggregate level (Figure 18, right panel).

Figure 18: Social security coverage by sector (left panel) and share of workers with social security coverage in total employment by sector (right panel), 2002, 2012

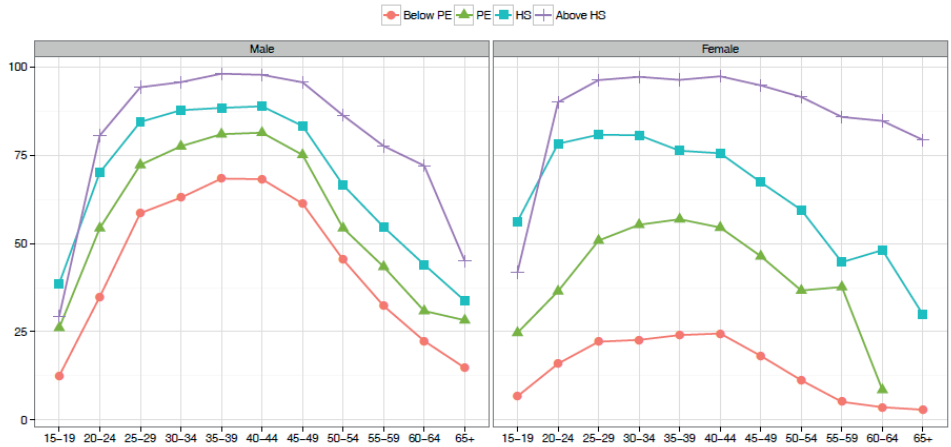


Note: See note to Figure 8 for sectoral details. Source: HLFS.

Figure 19 displays the share of registered workers in each age group by broad educational groups and gender. While there is practically no difference between males and females for HS and above in 2012, below HS we see that registration rates are higher for men than women. For each education level, the curves have an age-related inverse-U shape for both males and females.

Looking at the change in informality by education level between 2002 and 2012, we see that the share of registered workers mainly increased in low education groups for both males and females. At college and above level, the share of registered workers increased only among older female workers (45-64). Another interesting finding is that informality-age profiles have a clear inverse-U shape for males at each education level while the shapes for females are flatter, implying a limited role of age.

Figure 19: Social security coverage-age profiles by gender and broad education groups, 2012



Note: "Below PE" includes all education levels below 8 years; "PE" is used for primary education or secondary school (8 years); "HS" is used for both high school and vocational high school and finally "Above HS" includes college graduates or above. Source: HLFS.

6) Wage structure

a) Wage differentials

We computed real wages by deflating nominal wages by the CPI. First, we compare real monthly wages to see whether there is a difference in monthly wage earnings across years. Figure 20 depicts the evolution of mean real monthly wages (left panel) and mean weekly hours worked (right panel) for fulltime wage earners by gender. Except in 2009, female monthly wages were about 5% lower than males on average. The disparity in hours worked is more significant than the monthly wage differences, with males working 8% longer than females on average. However, we should note that full-time working females are more educated than males. On average, the difference in years of schooling is about 1.5 years.

The remaining part of this section focuses on hourly wages. The HLFS provides monthly wage and weekly hours. To compute hourly wage we assumed that workers' weekly hours remain constant within a month. Thus, we applied the following formula to get nominal hourly wages: **hwage = mwage / (hours*30/7)**. Finally, we deflated these hourly wages by the CPI to get real hourly wages.

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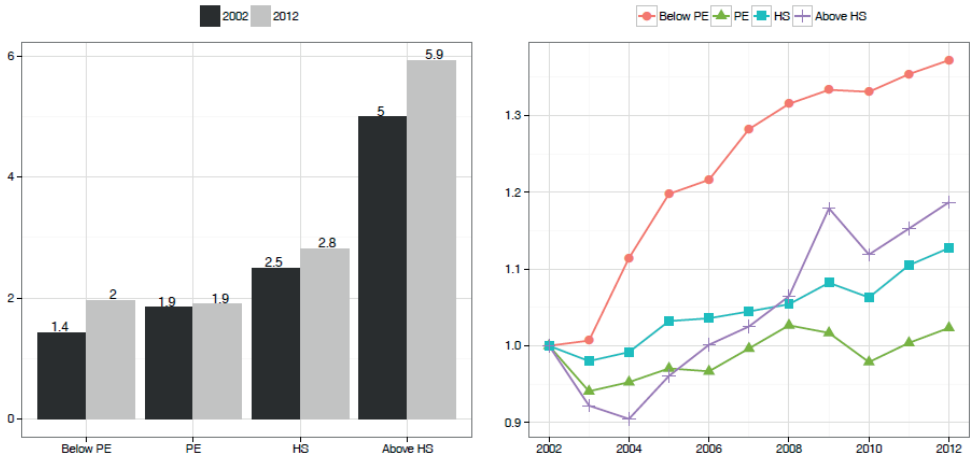
Figure 20: Real monthly wages (left panel) and weekly hours of full-time workers (right panel) by gender, 2002-2012

Source: HLFS

Figure 21: Real hourly wages by education groups, 2002, 2012 (left panel); Evolution of wage differentials by education groups relative to 2002, 2002-2012 (right panel)



Note: See note to Figure 19 for the definition of education groups. Source: HLFS.

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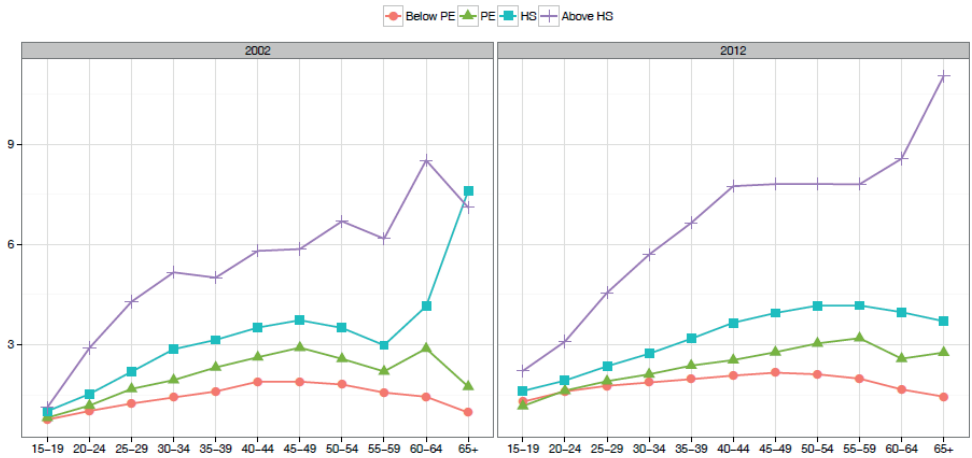
Figure 21 plots real wages by education levels in 2002 and 2012. Low education groups saw a substantial increase in their wages, with college and below HS graduates having a very similar wage trend, except during 2002-2004, when average wages decreased by 10%. HS and VHS graduates have the lowest wage growth rates.

Figure 22: Wage-age profiles by broad education groups, 2002, 2012



Note: See note to Figure 19 for the definition of education groups. Source: HLFS.

Figure 22 shows wage-age profiles for different education groups in 2002 and 2012. Since the number of observations decreases significantly at older age groups, there is more variation in these cells. Thus, our results should be interpreted with caution, especially for older age groups. However, there are some common broad patterns across ages. First, better educated workers earn higher wages on average. Second, comparing 2002 and 2012, we see that real wages grew across age groups for college graduates. For "Below PE" (5 years and below) education group wage growth was also positive but very limited and without any age pattern. Third, the wage-age profiles of different education groups have a diverging character. The main reason for this divergence is that the profile of high education groups is not concave (inverse-U shaped). This suggests that, for lower education groups, wages first increase with age (positive slope), then decrease at older ages (negative slope), while for higher education groups, this change in slope does not occur: wages increase with age at all ages. The positive slope at younger ages is usually attributed to "learning by doing" and/or on-the-job training. This seems to be the case for all education groups. What is surprising, however, is the lack of decreasing

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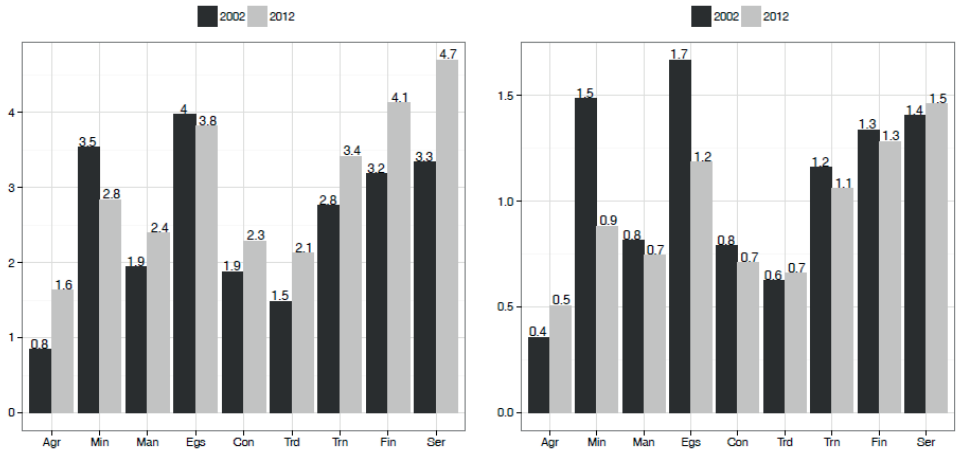
wages at older ages at college and plus level. This unexpected result is not particular to the 2000s. World Bank (2006) finds a similar pattern for 1989, 1994, and 2002 as well. The standard theory of human capital requires a concave wage-age profile. The idea is that at younger ages investment in human capital is higher than depreciation, thus productivity increases. But at older ages the opposite is true and productivity declines with age. If we accept this model, one potential explanation, as put forward by World Bank (2006), is selection. Those who stay in the labor market are those endowed with a better earning potential. Other candidate explanations are: (i) the standard model does not hold for university graduates, for whom there is no productivity decline at older ages. This would be possible, for instance, if the returns to tenure and/or to firm specific human capital compensates for human capital depreciation; (ii) the standard model holds for university graduates, but the wages of old university graduates stay above their productivity because of efficient wage profiles (Lazear, 1981).

Figure 23: Sectoral wages: real hourly wage (left panel) vs relative hourly wages (right panel), 2002, 2012



Note: See note to Figure 10 for sectoral details. Relative hourly wage in right panel is defined as the ratio of mean sectoral wage to aggregate wage. Source: HLFS

Figure 23 shows mean real hourly wage levels (left panel) and relative sectoral hourly wages, defined as the ratio of mean sectoral wage to aggregate wage (right panel), for 2002 and 2012. Let us first focus on wage levels. Low wage sectors in both 2002 and 2012 were agriculture, manufacturing, construction and trade, but joined by mining in 2012.[15] These figures also

15 We use "low" to mean "below aggregate wage" in the economy.

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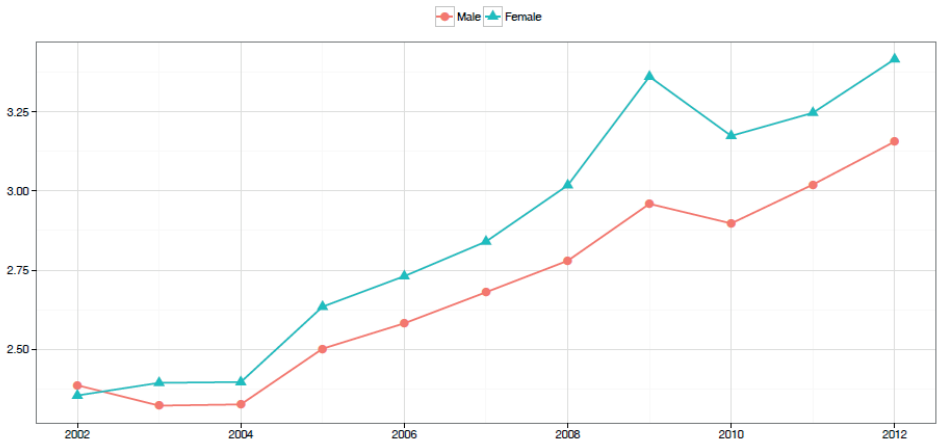
reveal important wage dynamics across sectors. The average real hourly wage decreased in mining and public utilities (EGS), while average wages increased between 2002 and 2012 in all other sectors. Hence, positive wage growth has not been strong enough in the agriculture, manufacturing, construction and trade sectors, which remain low-wage sectors. We observe that services, agriculture and trade are the only sectors with relative wage increases between 2002 and 2012 (Figure 23, right panel).

Figure 24: Wages by gender, 2002-2012



Source: HLFS

Figure 24 shows the evolution of real hourly wages by gender for all workers. Again, female hourly wages are higher. Unadjusted, this gives the erroneous impression that female hourly wages are higher in Turkey. As we have already seen in Figure 7, the share of college graduates and illiterates is slightly higher among female workers than male workers. Moreover, the increase in the share of college graduate workers is higher for females between 2002 and 2012. As a result, higher real hourly wages for females are more likely due to a composition effect as the average female worker is relatively more educated than the average male worker (1.5 school years). A very simple regression which controls for age and potential experience reveals that there is more likely to be a gender wage gap favoring males.

b) Wage inequality

Figure 25 shows the growth of real hourly wages in Turkey by percentile from 2002 to 2004, 2004 to 2012 and 2002 to 2012. Several remarks can be made. First, between 2002 and 2004, the growth rate of wage percentiles can

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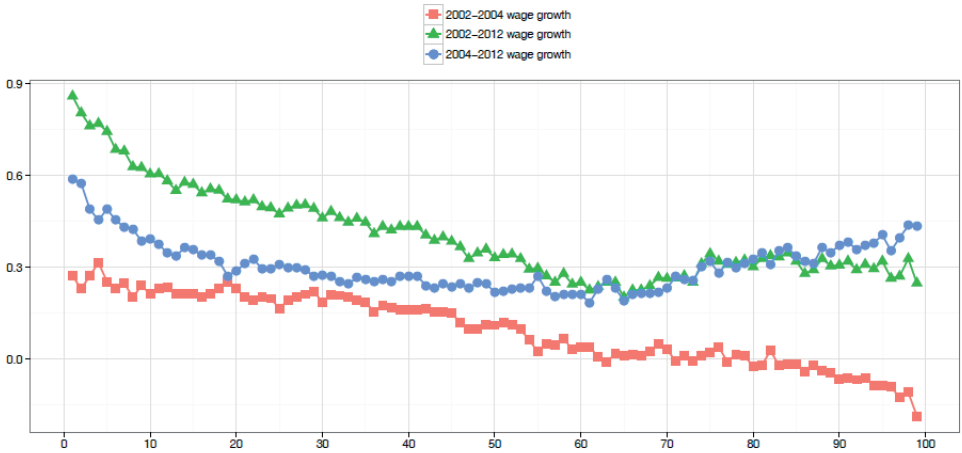
be regrouped into 3 categories: those with negative wage growth (above the 80th percentile), those with a constant wage (60th to 80th percentiles) and those with positive wage growth (below the 60th percentile). Second, the wage growth is polarized between 2004 and 2012, with lower and higher percentiles having higher growth rates than the middle ones. The cumulative effect can be interpreted as a catch-up process where one would expect a decrease in wage inequality.

Figure 25: Growth of real hourly wages by percentiles, 2002-2004-2012



Source: HLFS

Figure 26 plots the evolution of the different wage ratios commonly used to measure inequality in the literature. The first ratio is the 90/10: the ratio of 90th-to-10th wage percentiles (P90/P10). The second and the third are similarly-defined 90/50 and 50/10 ratios. One advantage of these ratios compared to the variance is that they allow us to see whether upper and lower parts of the wage distribution behave differently. There is a clear decline in the 90/10 ratio between 2002 and 2008 but no clear trend after 2008. The 50/10 ratio shows a less clear but continuous declining trend over the whole period, which can be explained by two factors. First, P90 decreases between 2002 and 2004, from 4.87 in 2002 to 4.67 in 2003 and 4.57 in 2004. However, P50 and P10 both grow throughout the period. Second, after 2004, while P50 and P90 have comparable growth rates, P10 has a higher growth rate. From 2002 to 2012, P10 has a 1.83-fold increase while P90 and P50 have respectively 1.36- and 1.39-fold increases.

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Figure 26: Wage inequality: Gini coefficient (left panel), and percentile wage ratios (right panel) 2002-2012

Source: HLFS

These trends are consistent with other studies on wage inequality in Turkey, which find a decrease in inequality, especially in the first half of the 2000s (see Bakis and Polat, 2015, and Eksi and Kirdar, 2015, for details). Comparing 1994 with 2003-2011 using the Household Budget and Expenditure Surveys, Filiztekin (2015) found a decrease in income inequality until 2007 and an increase thereafter. Tansel et al. (2014) analyzed the 2005-2011 period using the Survey of Income and Living Conditions data, and found a slight increase in wage inequality. The upward trend in the very recent years (2008 onwards) is not very clear when we only consider the 90/10, 90/50 and 50/10 ratios. For a clear picture of these two phases of inequality one needs to look at the Gini coefficient (Figure 26, left panel) which clearly reveals these two distinct phases.

Comparing males to females, we find no important differences regarding the levels and evolution of these inequality measures. However, there are important differences between broad education groups. Figure 27 plots the evolution of these inequality measures relative to their 2002 levels for broad education groups. The overall inequality (90/10) and lower tail inequality (50/10) have secular decreasing trends at HS and below HS levels. This is just the opposite in the case of College and above, where we see an upward trend. The upper tail inequality (90/50) stays almost constant at HS and above, has a decreasing trend at below HS. This implies an increasing wage inequality for both overall inequality and lower tail inequality at College and above. However, below College, these two inequality measures shrank between

2002 and 2012. As for upper tail inequality, there is a decrease only at below HS education level.

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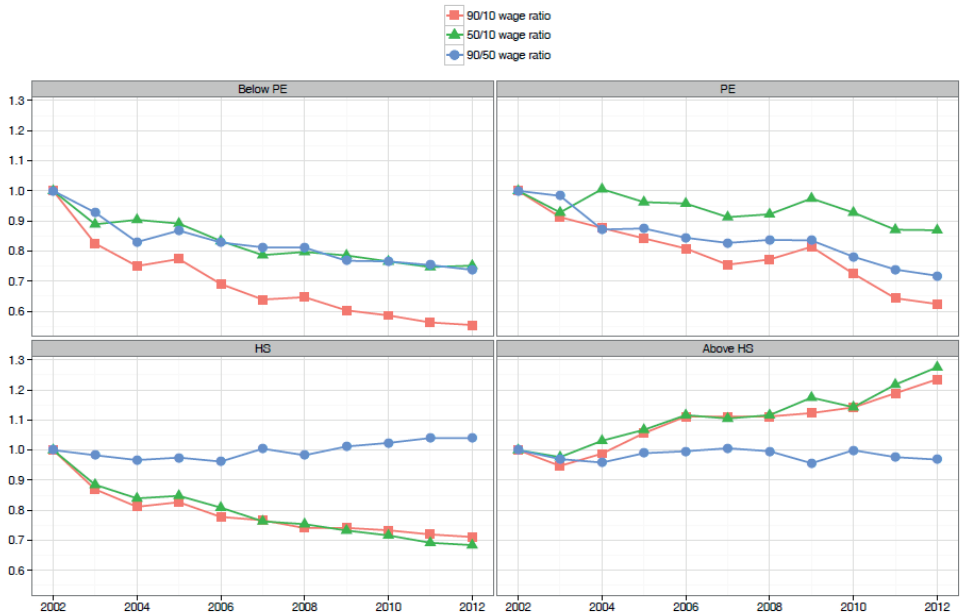
Figure 27: Evolution of wage inequality by broad education groups, 2002-2012, relative to 2002



Note: See note to Figure 19 for the definition of education groups. Source: HLFS.

How do these figures compare internationally? Figure 28 gives the 90/10, 50/10 and 90/50 ratios for all OECD countries, in 2010, using gross earnings of full-time dependent employees. Turkey has the highest 90/50 ratio with 2.9 (the OECD average is 1.94), and the third highest 90/10 ratio with 4.8 after Israel and the USA, who have a ratio of 5 (the OECD average is 3.3). Turkey has a median place for the 50/10 ratio with 1.7 (the OECD average is 1.67). These results imply that wage inequality is relatively more important at the upper tail of the wage distribution in Turkey.

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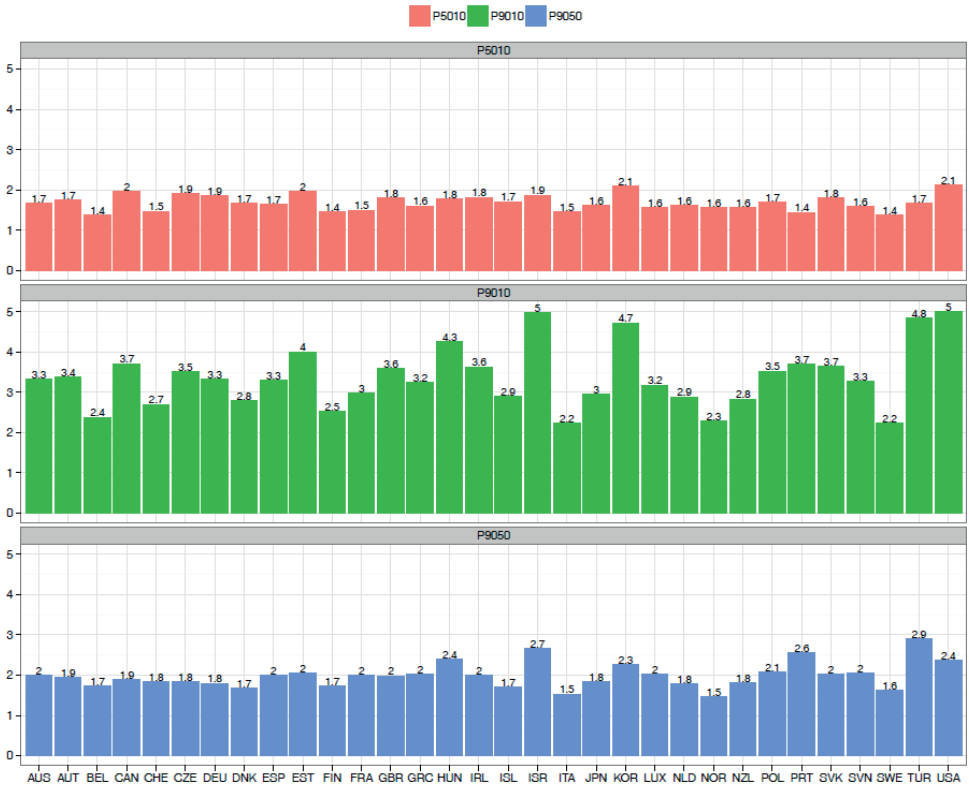
Figure 28: Wage inequality, 2010: Turkey vs OECD



Source: OECD Stat Extracts, http://stats.oecd.org/

Our calculations show that only the 90/10 ratio is positively correlated with age (Figure 29). While 2012 is shown here, 2002 is very similar as well. The 90/50 and 50/10 ratios are almost trendless. In addition, we found that the mean college graduate wage does not decrease at older ages; that is, the wage-age profile is not concave (Figure 22). This implies that not only the mean wage but also the wage dispersion increases with age. There are several possible explanations which amount to the worker self-selection. The ones who stay in the labor market probably have better skills / earning potentials than others. First, the return to unobserved skills may increase with age among college graduates. These unobserved factors may be truly unobservable, like school quality, intrinsic ability, etc. But there is another possibility: these factors may be observable to firms and workers but unobservable to the econometrician, (missing in the HLFS) like on-the-job training, firm-specific human capital, etc. These unobservable factors (in either sense) may be

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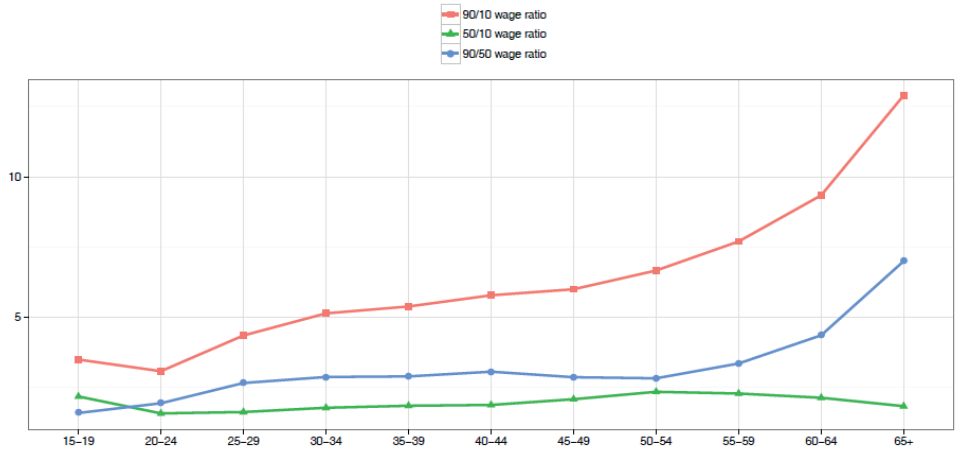
rewarded at increasing rates with age. Second, while prices may be constant, the dispersion in unobserved skills may be growing with age. If factors like on-the-job training or firm-specific human capital are complementary to tenure and/or some unobserved intrinsic quality then the dispersion in unobserved skills may increase with age. Third, the efficiency wage argument may not only apply to college graduates. There may be, for instance, two schemes, one for workers with low earning potentials, and another one for high earning abilities. Fourth, structural transformation may cause an increase in the 90/10 ratio. Services, finance and transportation are high-wage sectors. If older workers move from low-wage sectors to high-wage sectors (which seems to be the case, see Figure 10), and if skill heterogeneity increases with age, one may expect 90/10 inequality to increase.

Figure 29: Wage inequality by age groups, 2012.



Source: HLFS

Bakis and Polat (2015) arrive at two main conclusions looking at wage inequality in the 2000s. First, wage inequality fell mainly due to minimum wage increases. In particular, the hike in 2004 explains most of the decrease in the 90/10 and 50/10 inequality. Second, a standard supply-demand framework with a stable demand curve cannot explain relative wage changes. Instead, Turkeys' structural change (from agriculture to manufacturing and services) seems to be the key to explaining this demand shift towards more educated workers in Turkey, especially between 2004 and 2010.

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Figure 30: Minimum wage versus other wages, 2002-2012.

Note: Average low wage is computed as the weighted average of wages below minimum wage for each year using sampling weights. Source: HLFS, Ministry of Development.

The left panel in Figure 30 gives the growth rates of real minimum and average wages in Turkey. As we see, the minimum wage jumped by 26.6% in 2004 while the average wage changed more gradually by only 3.6%. One might assume that the minimum wage may not have been binding, so the net effect at the lower end of the wage distribution and on wage inequality may be quite limited. However, the right panel shows that this is only partially true because, as the lower line shows, the minimum wage is not 100% binding. From 2003 to 2004, there was an increase in the share of workers earning a wage below monthly minimum wage (from 23.3% to 30%), albeit with a gradual decrease in the following years. Yet, this is only part of the story. The upper line, which represents the ratio of the average low wage to the minimum wage, rose steadily until 2007. As a result, low wages were catching-up with the minimum wage, even when the minimum wage rose substantially, as shown by the middle line on the right panel in Figure 30. Consequently, one can claim that, even if the minimum wage is not completely binding, it serves as a reference wage for low-wage earners (see Bakis and Polat, 2015, for a detailed discussion).

7) Conclusion

The purpose of this paper was to survey labor market trends over the recent period of 2002-2012 in Turkey. Turkey used to have relatively low and decreasing rates of labor force participation compared to other OECD countries. However, this seems to have stopped in 2003, when a recovery

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trend started. This recovery has been stronger for females. Some likely explanations include the change in the retirement laws introduced in 1999 and the continued improvements in educational attainment in the last decade. That is, the share of primary school and college graduates increased substantially, with the improvement again being more pronounced for females. Two well-known characteristics of the Turkish economy are its relatively high shares of self-employment and informality (lack of social security coverage). However, both the share of wage earners and the share of registered workers increased between 2002 and 2012. The main driver behind these improvements seems to be structural transformation in the first half of the 2000s and reallocation of labor from agriculture/informal activities to services/registered activities. Most recently, the share of agricultural employment has increased slightly. Females earn on average lower monthly wages and work fewer hours than males, which results in apparently higher hourly wages for females. However, once the educational composition is taken into account, there is probably a gender wage gap only at lower educational groups. Wage inequality has decreased especially in the first half of 2000s, and either remained constant or increased slightly between 2008-2012. This can be explained by two competing forces. First, the rise in minimum wage decreased wage inequality by boosting low wages. Second, structural transformation caused an employment shift favoring demand for high wage/college workers, which supports higher wages. It appears that the former factor dominated earlier while the latter has been operative more recently.

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COMMENTS BY MURAT KIRDAR

Boğaziçi Üniversitesi

This paper provides a rich overview of certain trends in the Turkish labor market from 2002 through 2012. The elements of the labor market that it addresses can be categorized into four main groups: labor force participation rate and unemployment rates by gender; employment structure, in particular age and sectoral distribution of employment; self-employment and informality; wage structure and wage inequality. The authors use Household Labor Force Surveys of 2002 through 2012 provided by the Turkish Statistical Institute.

An interesting feature of the trend in the labor force participation rate, also reported in other studies, is the rise since 2003. The authors show that the changes in the retirement rules and in the population composition resulting from the improvement in education play an important role in this rise. However, here it is also important to take into consideration the effects of the employment-subsidy program implemented by the government in 2008, according to which payroll taxes were paid by the government—instead of the firm—for newly hired female and all young workers. It is reported that this program had beneficial effects for employment, especially that of women (Balkan et al., 2014; Uysal, 2013).

The authors report an important increase in the share of wage earners and in the share of registered workers, which is important because a sizeable section of the population are unregistered. The authors attribute this to the "structural transformation", which refers the migration of workers from rural to urban areas and the corresponding reallocation of labor from agriculture and informal activities to the services sector. An important feature of this transformation, surprisingly not highlighted by the authors, is that the reallocation was only toward the services sector; the share of the manufacturing sector did not rise in this time period.In terms of wage inequality, the authors find that wage inequality decreased in the first half of 2000s, primarily as a result of the sharp increase in the minimum wages in this period, but remained either constant or slightlyincreased after 2008.

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