BARRIERS TO WOMEN'S EMPLOYMENT AND THE EXTENT OF GENDER INEQUALITY IN THE LABOUR MARKET IN TURKEY

Çiğdem Gedikli

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ABSTRACT

This thesis investigates gender inequalities in employment outcomes in Turkey in the context of low employment rates of women, occupational gender segregation and gender wage differentials. The first empirical chapter of the thesis sheds light on the role of traditional or conservative social norms and culture on women's employment in Turkey based on the data for the years 1998 and 2008. It provides evidence that traditional and conservative values, increasingly, reduce women's likelihood of waged employment and they are also associated with an increased probability of women being in the informal segment of the labour market, either as unpaid family workers or informal waged workers. The second substantive chapter of the thesis points to the extent of occupational gender segregation in Turkey. It shows that women are more likely to be employed in lower-paid jobs and in lower ranked occupations, whereas men remain at an advantaged position both in terms of pay levels or the positions of the occupations they hold in the social hierarchy. The final empirical analysis of the thesis investigates the gender wage gap in Turkey and its evolution between 2002 and 2012. The results present a positive selection into employment for women, indicating that a small portion of women who are in waged work are actually those who have higher productivity levels than average. The thesis, therefore, argues that the relatively low gender wage gap figures for Turkey can be misleading and should be interpreted cautiously. Moreover, although women appear to earn more than men after the 40^{th} quantile, they are still at a disadvantaged position as the labour market does not reward them to the same extent as men. The unfavourable situation of women with high earnings potential is found to be more pronounced in 2012.

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Chapter 1: INTRODUCTION

In addition to being a fundamental goal in terms of human rights and social justice, there is a growing consensus that promoting gender equality is strongly associated with economic development, reduced poverty and increased welfare (McLanahan and Kelly, 2006; Smith and Bettio, 2008; European Commission, 2010; 2012; UN Women, 2015). Although there have been improvements, gender inequality is universal and remains an issue across key economic and social indicators such as education, health, employment, income and gender based violence. This thesis investigates the effect of gender unequal practices on women's employment in Turkey. In addition to the main obstacles such as less human capital acquired by women compared to men, it aims to shed light on the social and cultural values and norms that tolerate or promote gender discriminatory practices and, thereby, limit women's access to employment in many forms. The thesis also sheds light on the extent to which women are segregated into occupations that are associated with low levels of pay and social status and the potential gender wage differentials.

Turkey experienced a rather rapid social and structural transformation after the foundation of the Republic in 1923. Although the shift from agriculture to industry was slow in the early phase of economic modernisation movements, the increase in the share of industrial production accelerated after the 1950s; this has been accompanied by high rates of urbanisation. The extent of the rural-urban migration was massive in that the share of the urban population rose from 26.9 percent in 1955 to 64.5 percent in 2000 (Turkish Statistics Institute [TurkStat], Population Census, 1955; 2000). Starting from the early 1980s, Turkey has become more integrated with the rest of the world resulting from the export-led growth strategies implemented and increased market liberalisation, deregulation of finance and privatisation of state enterprises. From the 1980s onwards, although interrupted by the

1994 and 2001 major currency crises and, to an extent, by the 2008 global crisis, robust economic growth figures are observed in the country. Overall, Turkey has been referred to as a fast-growing "developing" country (International Monetary Fund [IMF], 2014) and is classified as one of the largest middle income economies with a GDP of $822.1, which situates Turkey as the 18th largest economy in the world (http://www.worldbank.org.tr).

As a secular state, women in Turkey were granted equal rights in several key areas at the early phase of the Republic such as equality in divorce, child custody and inheritance and polygamy was banned. Moreover, women's right to vote was granted in the early 1930s, which is earlier than many countries in Europe, as well as elsewhere in the Middle East. The 1924 Turkish Constitution sanctioned primary education as "free and compulsory" for both men and women and the major educational reform undertaken in 1997 increased compulsory education from 5 years to 8 years. As a result of mass schooling, state-sponsored education, campaigns such as "Haydi Kizlar Okula" (Let's go to school, girls)[1] and the 1997 educational reform, significant improvements are observed in female education, though women's educational qualifications are still lower than that of men's. Accordingly, the illiteracy rate amongst women decreased from 62.4 percent in 1980 to 7.6 percent in 2011 whereas the proportion of women with a primary school diploma or more has increased from 32.0 percent to 71.6 percent over the same period (TurkStat, 1980; 2011).[2]

[1] "Haydi Kizlar Okula" is a girls' education campaign launched in 2003 with a collaboration of The Ministry of National Education and UNICEF. It aims at closing the gender gap in primary school enrolment. The campaign first focused on the south-eastern provinces where enrolment rates for girls were the lowest and gradually expanded to the other parts of Turkey (UNICEF, 2015; available at http://www.unicef.org/turkey/pr/ge6.html).

[2] The illiteracy rate was recorded as 22.8 percent in 1980 and 1.4 percent in 2011 for men. The proportion of men with a primary school diploma or more has increased from 64.4 percent to 80.8 percent during the same period. The figures are taken from TurkStat's "Population Census" and "Population and Housing Census" data and are available at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1047.

The efforts to achieve gender equality accelerated, especially after Turkey's ratification of the "Convention on the Elimination of All Forms of Discrimination against Women" (CEDAW) in 1985 together with the accession negotiations with the European Union.[3] These attempts, however, have been criticized on the grounds of not being effective for women's lives to the same extent. Gender discriminatory practices such as unequal access to education between girls and boys, honour killings and forced marriages remained in effect in many areas of the country (Ilkkaracan and Ilkkaracan 1998; Gunduz-Hosgor and Smits, 2006; Ilkkaracan 2012).[4] Moreover, despite the secular and gender egalitarian legal framework adopted since the establishment of the Republic, a discriminatory approach with respect to the gender division of labour persists. Until the 2003 reform, husbands were recognised as the leaders of the family according to the Turkish Civil Code and, accordingly, men were defined as the heads of the household and women as the homemakers (Ilkkkaracan, 2012; Marin, 2015).

Therefore, despite the promising economic growth figures, Turkey's performance in achieving gender equality has been weak. Unsurprisingly, gender equality has always been one of the crucial elements for Turkey's preparations for the European Union (EU) membership. The European Commission has drawn attention to the unsatisfactory performance of Turkey in eliminating discriminatory practices and achieving gender equality; especially in ensuring equal employment opportunities for men and women. For example, according to the Global Gender Gap Index 2014 which has recently been published by the World Economic Forum (see World Economic Forum [WEF], 2014),

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[3] Turkey's relationship with the EU dates back to 1987 when Turkey applied to be a part of European Economic Community. Turkey became a member of the Customs Union in 1995 and obtained a "candidate status" for the EU full-membership in 1999. The accession negotiations with the EU were launched in 2005.

[4] For example, according to the statistics quoted by Nimet Cubukcu (Bas) who is the former minister in charge of Women and Family Affairs, there have been 1,806 women killed in honour killings between 2002 and 2006 (see http://www.hurriyet.com.tr/english/5856641.asp?gid=74). According to Bianet, at least 281 women were killed by men in 2014; for example, due to women seeking divorce or wanting to break up with their partners (see http://bianet.org/bianet/kadin/162306-erkek-siddeti-3-dilde-3-video).

Turkey ranks 125th out of the 142 countries with a score of 0.618 which is the 5th *worst* score amongst the upper-middle income countries. This situates Turkey just above Jordan, Iran and Pakistan and well below the member countries of the EU which Turkey hopes to join.[5] Among the several components of the Gender Gap Index that are related to health, education, economy and politics, Turkey performs particularly poorly and ranks 132nd with regards to the "economic participation and opportunities" mainly due to women's underrepresentation in the labour market.[6]

This thesis, therefore, aims to comment upon some of the most important and interlinked forms of gender unequal practices that result in unfavourable employment outcomes for women. Indeed, economic growth, improvements in women's educational qualifications and the decrease in the fertility rates over time in Turkey do not seem to assist in women's increased representation in the labour market to the expected degree. Employment rates of women remained consistently low in contrast to the increasing employment rates observed amongst the EU and "Organisation for Economic Co-operation and Development" (OECD) members or in countries that have been through similar social/economic transformations.[7]

It is important to uncover the possible explanations for this for several reasons. First of all, women's underrepresentation in the labour market has been one of the major barriers in

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[5] The index scores are 0.7780 for Germany (ranks 12th), 0.7783 for the United Kingdom (ranks 26th). Turkey also performs badly when compared with the new members of the EU. For example, Bulgaria's score is 0.7444 (ranks 22nd) and Croatia has a score of 0.7075 (ranks the 55th). The index takes values between 0 (total inequality) and 1 (total equality).

[6] The "Economic participation and opportunities" component of the Global Gender Gap Index makes use of the information on labour force participation rates of men and women, wage equality in similar work, estimated earnings and the share of legislators, senior officials and managers and the share of professionals and technical workers. The substantially low performance of Turkey is mostly because of the very low labour force participation rates of women, whereas Turkey performs better in terms of wage equality for similar work (see http://reports.weforum.org/global-gender-gap-report-2014/economies/#economy=TUR). The other components of the index are "educational attainment", "health and survival" and "political empowerment". Turkey ranks 105th in terms of "educational attainment" and is one of the countries who ranks as 1st for the "health and survival" and 113rd in "political empowerment".

[7] The employment rates of women have actually fallen in Turkey from 32.6 percent in 1990 to 27.1 percent in 2013 (TurkStat, 1990; 2013).

Turkey's EU membership. Female employment rates of around 27 percent in Turkey fall far behind the "Europe 2020" strategy which envisages female employment rates to be increased to 75 percent amongst member countries by 2020. Furthermore, despite Turkey's current prominence in terms of economic and social development among the Middle East and North Africa (MENA) nations, failure to utilize a significant portion of the labour force has the potential to weaken Turkey's future position in the region.

The first substantive chapter of the thesis (Chapter 3), therefore, explores the determinants of women's employment in Turkey and sheds light on the potential barriers they face in terms of their access to employment. Chapter 3 aims to contribute to the empirical literature on women's employment in Turkey by investigating the role of traditional or conservative social norms and culture, in addition to the common determinants such as education, marital status and the presence of children. Using the data collected by the Turkish Demographic and Health Surveys (TDHS) for the years 1998 (TDHS-98) and 2008 (TDHS-08), a composite index that consists of four dimensions (sub-indices) is generated as a proxy for traditional and conservative values. The sub-indices are developed by using a polychoric Principal Components Analysis (PCA) and they measure the extent of traditional marriages, contraception knowledge and usage, women's tolerance against domestic violence and their attitudes towards gender equality.

Women's employment in four distinct states – waged employment, self-employment, unpaid family work and not working at all – is explored using a multinomial logit model (MNL). By doing so, it is intended to shed light not only on paid work but also on unpaid family work as this represents an important part in women's employment in Turkey. The indices are included as explanatory variables in the MNL models in addition to a rich set of determinants available in the TDHS-98 and TDHS-08.

The results from Chapter 3 provide evidence that, although their effect decreases over time, traditional or conservative social norms and culture persist and hinder women's employment in many ways. It is shown that traditional values reduce a woman's chance of being in waged employment and restrict her employment opportunities to the informal segment of the labour market, either in the role of an unpaid family worker or as an informal waged worker. This negative effect becomes more pronounced over the years under consideration. Most strikingly, although it is smaller than the effect of higher education, the impact of traditional/conservative values is found to be similar in size to the effect of the presence of young children at home, or to household wealth, which are amongst the most common determinants of women's employment. Chapter 3, therefore, shows a strong link between women's employment patterns in Turkey and the social/cultural values prevalent in the country; these values have equally important effects on women's employment, when compared with the standard determinants.

Following the extensive discussion on the barriers to employment opportunities for women, the second substantive chapter (Chapter 4) provides a detailed analysis of occupational gender segregation in the labour market in Turkey, based on the 2010 Household Labour Force Survey undertaken by the Turkish Statistics Institute (TurkStat). The main focus of Chapter 4 is to explore the extent of gender inequality in the differentiation in the occupations that men and women hold. Following the approach taken by Blackburn et al., overall occupational gender segregation is decomposed into horizontal and vertical dimensions (Blackburn et al., 2001; Blackburn and Jarman, 2005; 2006). The vertical dimension of segregation measures the extent of inequality entailed in occupational segregation; for example, the degree to which women are segregated into lower-paid occupations. Horizontal dimension, on the other hand, investigates the differentials in the occupational distribution of women and men without an implication of inequality in terms of a vertical criteria. However, a large horizontal dimension may highlight the limited occupational choices available for them.

While analysing the vertical dimension of segregation, occupations are ranked according to the average pay levels and it is investigated whether it is men or women who are more likely to be employed in lower-paid occupations. Whilst pay is one of the most important rewards generated by employment, Chapter 4 approaches occupational status in a wider context and attempts to investigate the social rewards of holding a particular occupation. Therefore, following the CAMSIS approach ("Cambridge Social Interaction and Stratification Scales", see http://www.camsis.stir.ac.uk and Prandy and Lambert, 2003; Griffiths and Lambert, 2011), a gender-sensitive social stratification scale is constructed based on the 2010 data. Although a CAMSIS scale for Turkey exists, it is based on the 1990 Household Labour Force Survey and a dated occupational classification. It was, therefore, essential to generate a new, updated CAMSIS scale for Turkey by adopting a more recent data set and acknowledge the significant occupational changes associated with industrialisation. The new social stratification scale developed for Turkey presents a very similar stratification structure for men and women, with professionals and corporate managers locating at the highest and manual workers at the lowest end of the social stratification order. Agricultural occupations rank slightly higher for women relative to men.

The Gini coefficient is used to measure the extent of the overall occupational segregation and Somers' D is used to calculate the vertical dimension. The results show that the extent of inequality associated with occupational gender segregation is notable. Women are more likely to be employed in lower-paid jobs and in occupations that rank lower across the overall stratification structure, whereas men remain at an advantaged position both in terms of pay levels or the positions of the occupations they hold in the social hierarchy.

The horizontal component of segregation is found to be larger than the vertical dimension, suggesting that overall differentiation in the employment patterns between men and women owes more to the fact that they are employed in horizontally different occupations. However, although the horizontal dimension may not entail inequality in the form of pay or social stratification, it might be indicative of the social and labour market institutions shaped within the constraints of traditional gender roles that prevent men and women from being employed in gender atypical occupations.

The final substantive chapter of the thesis (Chapter 5) analyses the gender wage gap and its evolution in Turkey by using the 2002 and 2012 Household Labour Force Surveys undertaken by TurkStat. Contrary to the unsuccessful performance of Turkey in terms of the very low employment rates of women, and their segregation into low-paid, less prestigious jobs, very optimistic gender wage gap figures have recently been reported for Turkey. According to the International Labour Office Global Gender Wage Gap data base, mean monthly wages for men and women were almost the same in Turkey in 2010.[8] Similarly, Kaya (2010) notes, on average, a 2.5 percent wage advantage of women over men, using the Structure of Earnings Survey undertaken by TurkStat for 2006. Using the same data as Kaya (2010), Aktas and Uysal (2012) also point to women's wage advantage over men at the mean. However, these figures require further investigation. This is because the substantial gender employment gap in Turkey implies the possibility of non-random selection into employment. The very few women who are in waged work may well be those who are more likely to have the characteristics that are associated with higher wages. The validity of the gender wage gap figures that are not corrected for the possible non-random selection into employment is debatable and, more importantly, may result in the

[8] The International Labour Office (ILO) employs the Structure of Earnings Survey, 2010 undertaken by the Turkish Statistics Institute. Access to data is available at http://www.ilo.org/travail/areasofwork/WCMS_142568/lang--en/index.htm.

potential misinterpretation of gender wage inequalities in Turkey. Chapter 5, therefore, aims to contribute to the literature by providing gender wage gap estimations that are corrected for the possible selection into employment, a crucial practice which has largely been neglected by the gender wage gap research on Turkey.

In order to explore the gender wage differentials across the whole wage distribution, rather than only at the mean, sample selection corrected quantile regressions are estimated separately for men and women by adopting the approach suggested by Buchinsky (1998). Following that, quantile regression decompositions with and without selection correction are performed on the estimated gender wage gap (Machado and Mata, 2005; Albrecht et al., 2009). The results from Chapter 5 show a positive selection into employment for women; women with low wage characteristics are not in waged employment. This suggests that the relatively low gender wage gap figures recorded for Turkey can be misleading and should be analysed cautiously.

In both 2002 and 2012, a greater gender wage gap (to the detriment of women) is observed at the low end of the wage distribution, suggesting a sticky floor effect. However, the labour market in Turkey operates to the advantage of a portion of women located at the bottom of the wage distribution; they receive greater returns than men with the same labour market characteristics at the bottom of the wage distribution. On the other hand, women are shown to have a wage advantage over men after around the 40^{th} quantile in each year, though the wages converge at the very high end of the wage distribution. However, the decomposition results indicate that this is due to women's better labour market characteristics compared to men's. When controlling for the differences in such characteristics, women are found to have notably lower returns than men at the same end of the wage distribution. Thereby, although women at the higher quantiles appear to earn more than men, they are still at a disadvantaged position as the labour market does not reward them to the same extent as men. The unfavourable situation of women with high earnings potential in terms of returns to their labour market characteristics is found to be more pronounced in 2012.

Before presenting the three substantive chapters that investigate the determinants of women's employment with a special focus on the role of social norms and culture, the extent of inequality in occupational gender segregation, and the gender wage gap respectively, the next section (Chapter 2) presents an overview of the key features of the labour market in Turkey and provides some key descriptive statistics.

Chapter 2: AN OVERVIEW OF THE LABOUR MARKET IN TURKEY AND KEY DESCRIPTIVE STATISTICS

In her influential paper, Tansel (1999) characterises the labour market in Turkey as one with "high rates of population and labour force growth, decreasing participation ratios and significantly low levels of female participation in urban areas" (1999: 2). In order to provide an insight into its distinctive labour market characteristics, this chapter provides an overview of the key features of the labour market in Turkey. To fulfil this aim, a brief literature review, descriptive statistics on various labour market indicators and their changes over time are analysed.[9]

Table 2.1 presents some of the main labour market indicators for women and men respectively. There is a substantial gender gap in the labour force participation rates in Turkey and, overall, a declining trend is observed in the participation rates of both men and women. The male labour force participation rates have declined from 79.8 percent in 1980 to 71.5 percent in 2013. Female labour force participation rates, which were already much lower than those for men, have also declined from 45.8 percent in 1980 to 29.7 percent in 2013.[10]

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[9] This chapter benefits from the web database provided by the Turkish Statistics Institute (TurkStat). Unless otherwise specified, the figures presented are based on the Household Labour Force Surveys of the TurkStat that are available at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Moreover, when the data are available, comparisons are made between the OECD and the EU countries, using the data provided by OECD, available at http://stats.oecd.org. Caution must be exercised, though, when making comparisons between the figures before and after 2004 provided by the TurkStat. This is because, TurkStat has revised the population projections and the figures after 2004 are based on the new projections. However, this has not affected the observations on the overall trends in various labour market indicators represented in this chapter.

[10] It is aimed at providing data for the widest range of years possible. It was particularly important to present data between 1980 and 1990 as significant changes have been observed in women's employment between these years. Therefore, when possible, we made use of the Population Census data for the information covering the years before 1990 as this information was not available in the Household Labour Force Survey database.

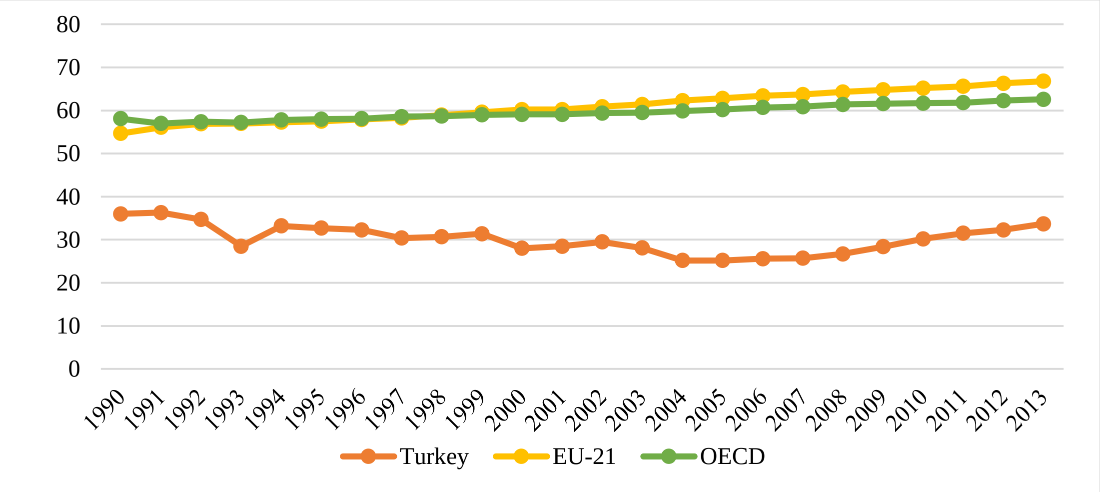
Table 2.1 - Main Labour Market Indicators for Women and Men

	Women				Men			
	LFPR[a]	Employment Rate	U [b] Rate	Non-agricultural U Rate	LFPR	Employment Rate	U Rate	Non-agricultural U Rate
1980[x]	45.8				79.8			
1985[x]	43.6				78.3			
1990	35.3	32.6	7.6	24.1	80.5	74.6	7.3	10.1
1991	33.9	31.4	7.4	26.4	79.5	72.4	9.0	12.8
1992	32.6	30.0	7.8	22.1	79.4	72.6	8.6	12.3
1993	27.5	24.7	10.0	24.7	77.9	71.0	8.9	12.2
1994	30.2	27.5	8.8	23.5	78.6	72.3	8.1	11.1
1995	31.0	28.6	7.9	21.1	78.3	72.8	7.1	9.0
1996	31.0	29.1	6.1	18.9	77.6	72.6	6.4	9.1
1997	27.6	25.0	9.4	22.6	77.2	72.2	6.5	8.6
1998	30.4	28.4	6.6	18.1	77.5	72.3	6.8	9.5
1999	27.6	25.4	8.0	18.4	74.7	69.4	7.1	9.1
2000	26.6	24.9	6.3	13.5	73.7	68.9	6.6	8.4
2001	27.1	25.1	7.5	17.7	72.9	66.5	8.7	11.3
2002	27.9	25.3	9.4	19.8	71.6	63.9	10.7	13.3
2003	26.6	23.9	10.1	18.9	70.4	62.9	10.7	12.6
2004	23.3	20.8	11.0	19.6	70.3	62.7	10.8	12.9
2005	23.3	20.7	11.2	18.7	70.6	63.2	10.5	12.2
2006	23.6	21.0	11.1	17.9	69.9	62.9	9.9	11.3
2007	23.6	21.0	11.0	17.3	69.8	62.7	10.0	11.4
2008	24.5	21.6	11.6	18.1	70.1	62.6	10.7	12.3
2009	26.0	22.3	14.3	21.9	70.5	60.7	13.9	16.0
2010	27.6	24.0	13.0	20.2	70.8	62.7	11.4	13.2
2011	28.8	25.6	11.3	17.7	71.7	65.1	9.2	10.7
2012	29.5	26.3	10.8	16.4	71.0	65.0	8.5	9.9
2013	29.7	27.1	11.9	17.4	71.5	65.2	8.7	10.1

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. *Note: Covers individuals aged 15+. [a]Labour Force Participation Rate, [b] Unemployment. [x]The labour force participation rates for 1980 and 1985 are taken from the Population Census data, available at* http://www.turkstat.gov.tr/PreTablo.do?alt_id=1047 .

The decline in the male labour force participation rates is not peculiar to Turkey, it is also observed in Europe and the United States and is often associated with the combined trends of increasing participation in post-compulsory education and early retirement.[11] However, the very low and stable female labour force participation rates in Turkey contrast with the feminisation of labour observed in many OECD and the EU countries. As seen in Figure 2.1, female labour force participation rates have been declining, contrary to the EU-21 and OECD averages; although a steady rise has been observed since 2008, rates are lower in 2013 than they were in 1975.

Figure 2.1 - Comparison of the Labour Force Participation Rates of Women in Turkey with the EU-21 and OECD averages



Source: OECD.Stat. http://stats.oecd.org. *Note: Covers individuals aged 15 to 64.*

[11] The changes in the family structure and social values challenging the classic male-breadwinner norm, increased labour force attachment of women as a result of improvements in the work/family reconciliation policies accompanied by a decrease in men's labour force attachment and, the fall in the job skills acquired by men (for example, increasingly over time, men hold lower educational qualifications than women) are amongst the most pronounced reasons behind the declining trend observed in the male labour force participation rates in Europe and the US (see, for example, Fernandez and Wong, 2011; Fernandez, 2013; Albanesi and Sahin, 2013; Autor and Wasserman, 2013). For Turkey, on the other hand, this has been explained by longer years of schooling amongst the younger generation, the shift from agriculture to non-agricultural activities and, thereby, changes in the industrial structure and, finally, the early retirement scheme which allowed men to retire after 25 years of service or at the age of 55 and women after 20 years of service or at age 50 (Tansel, 2004b). However, early retirement scheme were abolished in 2001 and the most recent amendments to the law plan to equalise the retirement ages of men and women at the age of 65 by 2048 (Sural, 2007).

The low and stagnant female labour force participation rates and the associated gender labour force participation gaps in Turkey become even more difficult to explain in the context of the improvements in female education over time and the declining fertility rates. Table 2.2a shows the significant improvements in female education in Turkey. The proportion of women who are illiterate or, literate but do not obtain a diploma, decreases substantially from 70.7 percent in 1975 to 18.6 percent in 2013. In addition, the share of women with at least a high school diploma increases over time. Yet, a convergence is observed in the rates of men and women with higher education; the proportions of women and men with higher education are almost the same in 2012 and 2013 (see the last columns of Table 2.2a and Table 2.2b). Overall, however, women are still less-educated than men; for example, even in 2013, 18.6 percent of women are either illiterate or have no educational qualifications compared with 5.8 percent of men. Given the fact that female labour force participation rates are quite responsive to the changes in the level of education (see, for example, Tansel 1994; 1996; 2004a; Dayioglu, 2000; Dayioglu and Kirdar, 2010; Ilkkaracan, 2012), this may well be one of the most important reasons why their labour force participation rates are lower than men’s. Accordingly, as with the standard policy recommendations of the World Bank, United Nations and the OECD, the improvements in women’s educational opportunities have been noted as the main factor in increasing their labour force participation rates (Dayıoglu and Kasnakoglu, 1997; Dayıoglu, 2000; United Nations, 2001; Tunalı and Baslevent 2002; World Bank, 2006; European Commission, 2010; 2013).

Table 2.2a - Educational Distribution of Women

(year)	Illiterate/literate without a diploma	Primary/secondary school	High school	Higher education
1975	70.7	26.0	2.5	0.7
1980	68.0	26.9	3.5	1.6
1985	54.4	38.9	4.9	1.8
1990	45.8	45.2	6.1	2.8
2000	34.9	50.6	9.1	5.4
2008	25.4	48.3	12.2	7.1
2009	24.0	50.4	12.6	8.0
2010	21.0	51.7	13.8	8.6
2011	19.7	52.6	14.5	9.8
2012	19.8	49.8	16.0	11.2
2013	18.6	52.0	14.4	11.9

Source: Population Census data, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1047

Table 2.2b - Educational Distribution of Men

(year)	Illiterate/literate without a diploma	Primary or secondary school	High school	Higher education
1975	41.7	49.8	21.4	7.8
1980	35.6	52.1	22.8	8.9
1985	25.5	59.5	24.2	9.9
1990	18.9	62.9	25.7	7.3
2000	12.3	61.5	27.1	10.2
2008	9.5	52.9	28.5	11.2
2009	8.7	53.6	30.0	12.3
2010	7.0	53.0	31.4	13.3
2011	6.2	52.6	32.8	14.8
2012	4.8	49.4	34.2	11.0
2013	5.8	51.5	35.7	12.0

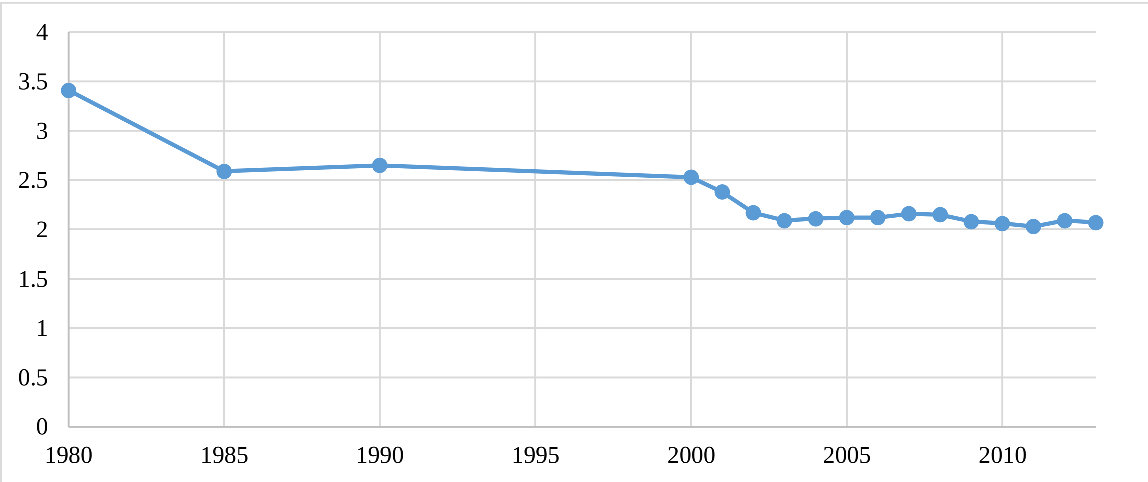
Source: Population Census data, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1047

The improvements in female education in Turkey, however, do not seem to impact upon their labour force participation to the extent that might be anticipated. Nevertheless, as Ilkkaracan (2012) also indicates, the decrease in the gender gap in educational attainment over time has not been associated with a similar reduction in the labour force participation gap between men and women. In line with this argument, despite the comparable proportions of higher education amongst men and women, the labour force participation rate is 86.1 percent amongst men with higher education compared with 72.2 percent for women with higher education at in 2013 (see Tables 2A.1a and 2.A.1b in the Appendix to

Chapter 2). However, as seen in Table 2A.1a in the Appendix, given the notably greater labour force participation rates amongst women with higher education when compared with other educational categories, education stands out as an important factor in enabling women to participate in the labour market. On the other hand, while the higher education group has the greatest labour force participation rates for men too, male labour force participation rates are less sensitive to the various educational categories.

In addition to educational qualifications, fertility, marriage and age are other common determinants of female labour force participation suggested by the literature (see, for example, Scott and Tilly, 1975; Pampel and Tanaka, 1989; Dayioglu, 2000; Tunali and Baslevent, 2002; Blau and Kahn, 2005).[12] As seen in Figure 2.2, fertility rates have been declining in Turkey over time (2.07 children per woman according to the latest data in 2013) and, therefore, does not offer an explanation for the declining female labour force participation rates.

Figure 2.2 - Fertility Rates over Time



Source: TurkStat. Note: The figures for 1980, 1985, 1990 and 2000 are taken from the Population Census data (available at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1047). Note: The annual figures are available only from 2000 onwards and are taken from the General Directorate of Civil Registration and Nationality (available at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1068).

[12] The relationship between fertility and the labour force participation rates of women could not be investigated directly in this chapter, as this information was not available in the TurkStat web database.

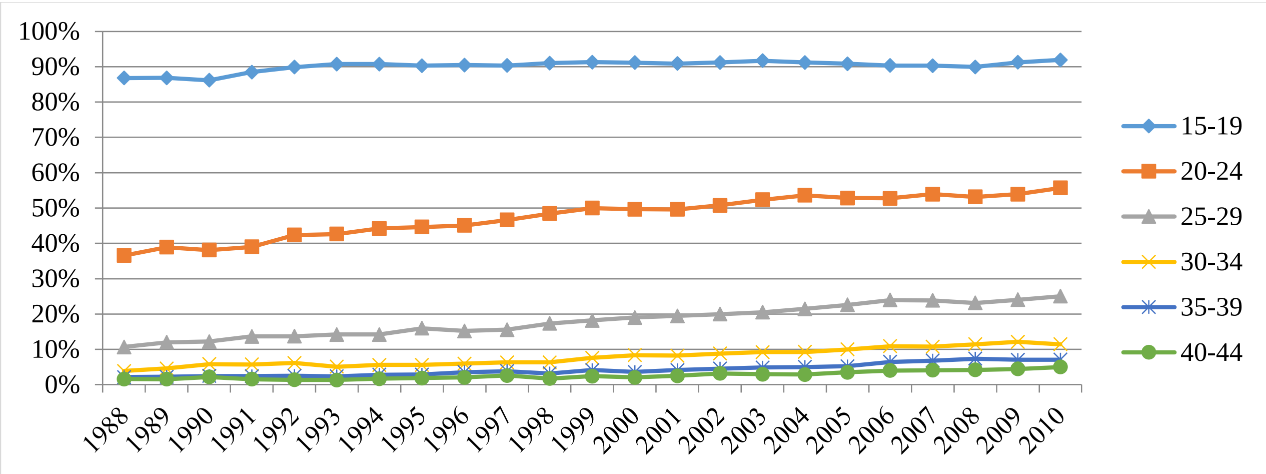
On the other hand, marriage is almost universal and divorce is an unlikely event in Turkey (Dayioglu and Kirdar, 2010). In 2013, only 3.2 percent of women aged 50-54 have never been married, while the divorce rate was 4.3 percent. In line with the discussion provided in Chapter 1 on the prevalence of the traditional division of labour in Turkey where men are regarded as breadwinners and women as homemakers or second earners in the households, it is not surprising to observe significantly lower labour force participation rates for married women (see Table 2A.2 in the Appendix).[13] In contrast, the highest participation rates are observed amongst married men.

Figure 2.3 shows the changes in the percentages of women who have never married by age over time. Although it is still very uncommon, the share of never-married women has risen across all age groups over time. Moreover, a delay in marriage can be observed over the years. The share of never-married women has increased substantially for the 20-24 age group and, to a lesser extent, for the 25-29 age group. Looking at the age-labour force participation rates profile for men and women over the years (see Figure 2.4), a decline in the participation rates for the 15-19 age group is observed as a result of longer years of schooling. This holds for both men and women. On the other hand, in line with the delay in marriage over time, while the highest female labour force participation rates are observed amongst the 20-24 age group in 1990, this shifts to the 25-29 age group in the 2000s. Yet, after the age of 25-29, the participation rates of women decrease and never achieve the rates observed for the 25-29 age group. This contrasts with the female age-labour force participation rates profile observed in the EU and OECD countries. EU-21 and OECD averages indicate the decline in the labour force participation rates of women, potentially due to marriage/family formation, at the 30-34 age group in 1990 (see Figure 2.5). Moreover, this negative effect seems to disappear in the 2000s; women, to an

[13] The lowest labour force participation rates are observed for widowed women, probably because of their relatively older age and the financial support provided by the relatives of the late husband.

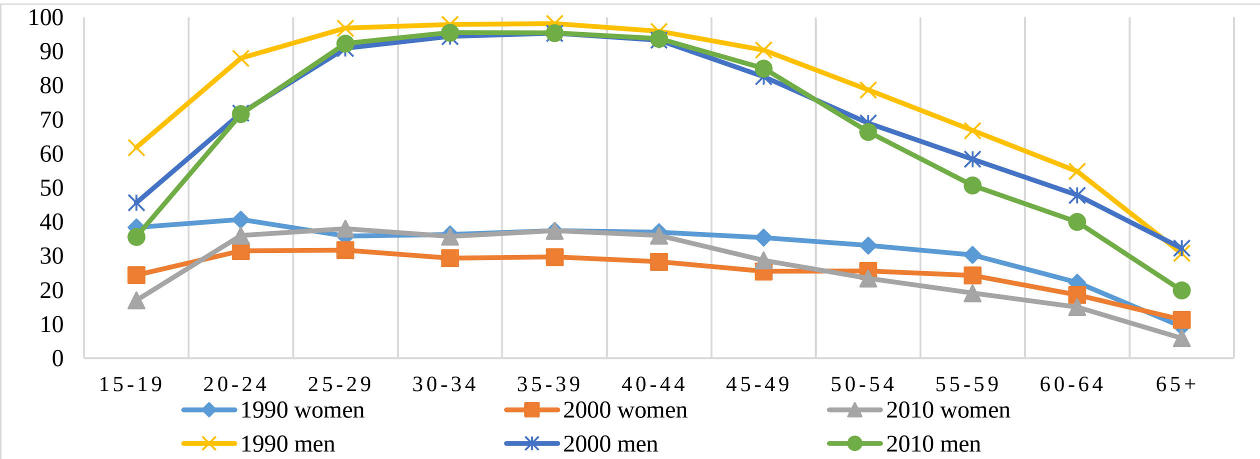
increasing extent, continue to stay in the labour market and their labour force participation rates remain high until the ages of 50-54. Therefore, contrary to the trends observed in the OECD and the EU countries, the labour force attachment of women is weak in Turkey and a portion of women do not return to the labour market after marriage. For men, on the other hand, the age-participation profiles remain unchanged over the years under consideration.

Figure 2.3 - The Percentages of "Never-Married" Women by Age over Time



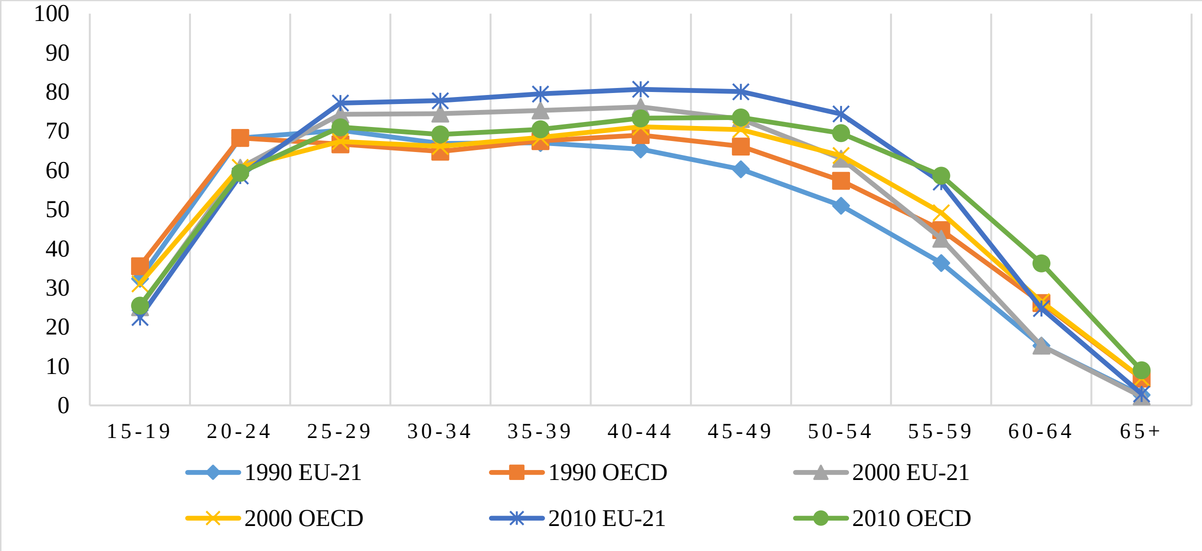
Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. *Note: Covers individuals aged 15+.*

Figure 2.4 - Labour Force Participation Rates of Women and Men by Age Groups, Turkey



Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. *Note: Covers individuals aged 15+.*

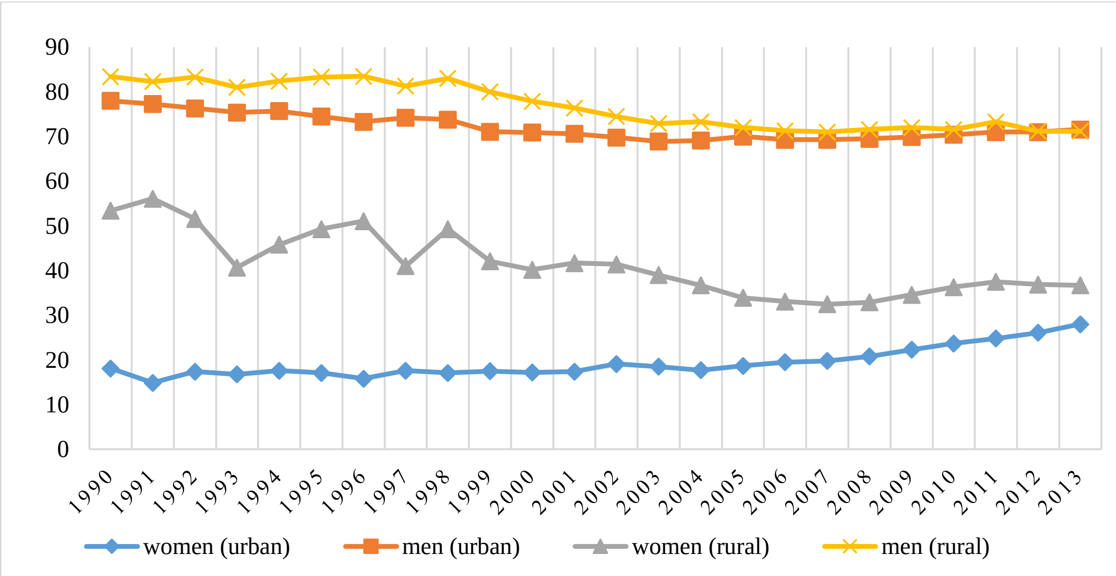
Figure 2.5 - Labour Force Participation Rates of Women by Age Groups, EU-21 and OECD Averages



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

Another important characteristic of the labour market in Turkey is the noteworthy differentials in the labour force participation rates observed in rural and urban areas. Figure 2.6 presents the labour force participation rates for men and women in rural and urban areas (the data are also available in Table 2A.3 in the Appendix). As seen in Figure 2.6, the participation rates in rural areas are higher for both men and women. There is a substantial gap in the participation rates in rural and urban areas, particularly for women. The urban female labour force participation rates are exceptionally low. The participation rates of women in urban areas were greater than 20 percent for the first time in 2008 and the figure has gradually increased since then. On the other hand, a declining trend is observed in the rural labour force participation rates for both men and women, which is more pronounced for women. Yet, the gap in the rural-urban participation rates seems to disappear over time; for men, the rates are almost the same from 2012 onwards. Although the rates are converging, a noteworthy difference remains for women, with the female labour force participation rates at 28 percent in the urban areas and 36.7 percent in rural areas in 2013.

Figure 2.6 - Labour Force Participation Trends of Women and Men in Urban and Rural Areas



Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. *Note: Covers individuals aged 15+.*

In order to explain the overall declining rates of female labour force participation and the rural-urban division, it is crucial to look at the trends in the population. One of the salient characteristics of the population is the mass migration from rural to urban areas since the 1950s. According to the population census data, the share of the urban population increased from around 25 percent in 1955 to almost 65 percent in 2000.[14] Accordingly, as seen in Figure 2.7, whilst the non-institutional[15] working age population has decreased from 1990 to 2010, the urban non-institutional working age population has more than doubled over the last twenty years.[16] Indeed, urbanisation together with rural-urban

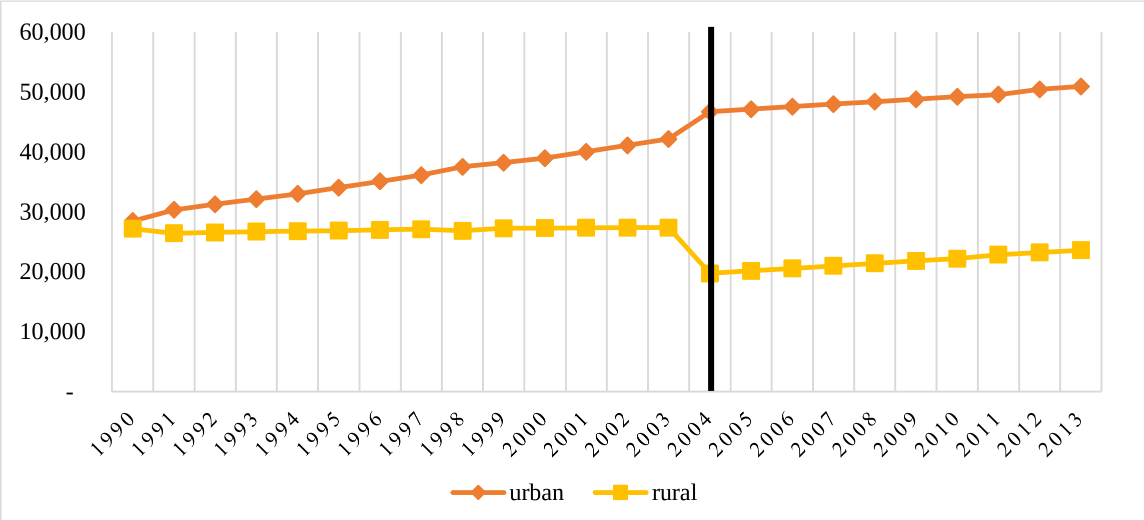
[14] These figures are taken from the Population Census, 1927-2000 undertaken by the TurkStat and available at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1047.

[15] Non-institutional population is a population measure which excludes the residents of schools, dormitories, kindergartens, rest homes for elderly persons, special hospitals, military barracks and recreation quarters for officers. Non-institutional working age population covers aged 15 or over amongst the non-institutional population (Turkstat, 2013).

[16] The sharp decrease and increase from 2003 to 2004 seen in Figure 2.7 in the rural and urban non-institutional population respectively are because of the revision in the population projections of the TurkStat. The figures after 2004 (inclusive) are obtained according to the revised population projections. This actually makes the comparison between the figures before and after 2004 problematic. However, the aim of this chapter is to shed light on the overall trends in the main labour market indicators and the revisions in the statistics have not prevented us from doing so. Nor has this changed the main observations on the trends in

migration and the U-shaped impact of economic development are amongst the common and interlinked explanations provided for the declining female labour force in Turkey (see, for example, Ilkkaracan, 1998; Tansel, 2001a; Gunduz-Hosgor and Smits, 2006; Dayioglu and Kirdar, 2010).

Figure 2.7 - Non-institutional Working Age Population in Urban and Rural Areas



Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. *Note: Population figures are in thousands. Covers individuals aged 15+.*

The faster increase in the urban population is one of the main reasons suggested for the declining labour force participation rates in the country as a whole, since the participation rates are lower in urban areas. Moving from the rural areas had, naturally, a greater impact on the female labour force, considering the extent of the rural-urban gap for women and the substantially lower urban female labour force participation rates (Dayioglu and Kirdar, 2010).

Here, it is also important to note the changing composition of the labour force away from agriculture to non-agricultural activities as a result of the urbanisation process. However, the increase in the non-agricultural sector employment was lower than the share of the

the population. The increase in the rural population is still much lower than the increase in the urban population after 2004.

population entering the labour force in urban areas through mass migration. According to population census data, 7 million non-agricultural jobs were created for men whereas this figure was only 1.3 million for women (Kadın Emeği ve İstihdamı Girişimi, (KEIG) [Women's Labour and Initiative Platform], 2009). Although its share in total employment is declining, agriculture still constitutes a big part of employment in Turkey, particularly for women (see Table 2A.4 in the Appendix for sectoral distribution of female and male employment and see Table 2.1 for the significantly greater non-agricultural unemployment rates amongst women).[17] Therefore, any changes in agricultural employment have had a greater impact on women compared with men.

Agriculture has been based on small-scale family farms in Turkey (Gunduz-Hosgor and Smits, 2006). These farms have mostly been managed by men and, therefore, self-employment has been the common form of employment in rural areas for men. Women, on the other hand, have been working as unpaid family workers on these small scale family farms and received neither cash nor income payment (Baslevent and Onaran, 2003; Gunduz Hosgor and Smits, 2006; Dayioglu and Kirdar, 2010, Ilkkaracan, 2012). This can also be observed in the Appendix Table 2A.5; women are mostly unpaid family workers and men are self-employed in rural areas. However, market liberalisation and the implementation of neoliberal policies since 1980 (especially after 2001), such as the abolition of agricultural subsidies followed by the introduction of direct income support, have resulted in the dissolution of the small scale family farms. This is regarded as one of the fundamental reasons behind the declining female labour force observed in rural areas (see, for example KEIG, 2009; Ilkkaracan, 2012). As seen in Table 2A.5, there has been a substantial decrease in the share of women who are unpaid family workers in rural areas

[17] The disparities in the figures from 2000 to 2005 in Table 2A.4 in the Appendix is because of the different data sources used. As noted earlier, HLFS data do not provide data for the years earlier than 1988.

from 1990 to 2013 (changes in the employment status of men and women in urban areas and in Turkey are available in Table 2A.6 and Table 2A.7 respectively in the Appendix).

It can, therefore, be asserted that women left agricultural employment for several reasons ranging from unfavourable changes in the agricultural policies, mechanisation of agricultural production, migration to big cities and there have not been enough non-agricultural employment opportunities for them. Some of the studies investigating the role of urbanisation on women's employment have also argued that women who used to be unpaid family workers in rural areas devoted themselves to housework instead of participating in the urban labour market (Ilkkaracan, 1998; Baslevent and Onaran, 2003). Accordingly, these women's lower educational attainment and more limited labour market experience, along with the cultural values of the country have been identified as the basic factors that prevented them from joining the urban labour force.

Tables 2.3 and 2.4 show the educational differences in the rural and urban areas. Unfortunately, TurkStat does not provide information on the rural-urban educational differences before 1988, which could provide a better insight into the lower schooling levels in rural populations and how this might hinder their employment in the urban labour market. However, although there are noteworthy improvements, the figures after 1990 indicate that rural women remain less well qualified than urban women. As seen in Appendix Tables 2A.8 and 2A.9, higher education matters more in the urban areas and the urban labour market appears to be almost closed for women without education. To give an example, the participation rates of women who are illiterate or, literate but do not have a diploma, are 7.3 and 13.3 percent in urban areas respectively, whereas these figures are 26.3 and 32.4 percent in rural areas.

Table 2.3 - Educational Distribution of Women and Men in Rural Areas

	WOMEN				MEN			
(year)	Illiterate/ no diploma	Primary/ secondary school	High/ vocational high school	Higher education	Illiterate/ no diploma	Primary/ secondary school	High/ vocational high school	Higher education
1990	48.8	47.8	2.8	0.6	25.3	65.7	6.6	2.4
1995	39.0	56.9	3.6	0.5	16.3	71.8	10.2	1.7
2000	37.6	57.1	4.4	0.9	15.1	71.6	10.8	2.6
2005	39.5	52.2	6.8	1.5	15.1	66.1	15.0	3.8
2010	41.0	50.0	6.5	2.5	14.8	66.2	13.9	5.1

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. *Note: Covers individuals aged 15+.*

Table 2.4 - Educational Distribution of Women and Men in Urban Areas

	Women				Men			
(year)	Illiterate/ no diploma	Primary/ secondary school	High/ vocational high school	Higher education	Illiterate/ no diploma	Primary/ secondary school	High/ vocational high school	Higher education
1990	31.3	54.4	10.9	3.4	12.3	66.1	14.5	7.0
1995	23.6	56.7	15.0	4.6	7.6	63.2	20.9	8.3
2000	18.7	57.1	17.7	6.5	5.7	59.9	24.4	10.0
2005	22.1	53.0	17.5	7.3	7.1	56.4	25.2	11.3
2010	21.2	51.0	17.4	10.4	6.5	55.3	23.7	14.5

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. *Note: Covers individuals aged 15+.*

In line with studies investigating the impact of urbanisation on women's employment, another explanation for the overall declining trend in the female labour force until the late 2000s has been the U-shaped impact of economic development (Tansel, 2001a; Gunduz-Hosgor and Smits, 2006). The U-shaped hypothesis is based on the differing effects of the stages of economic development and modernisation on women's employment. According to Boserup (1970), there is a negligible difference between the productivity levels of men and women in pre-industrialised countries. Moreover, as the biggest share of production is home-based, women could engage in economic activity while carrying out their caring duties at home. On the contrary, at the early phase of industrialisation, the probability of women taking part in the labour force decreases with the specialisation and mechanisation of agricultural activities. Furthermore, women's low educational levels, experience and sex discrimination in the labour market also reduce their probability of becoming economically active (Scott and Tilly, 1975). The upward sloping part of the U-shaped curve has been related to a number of factors observed in the advanced, industrialised economies. Examples include the expansion of the tertiary sector which offers more job opportunities to women, the increasing dependency of households on women's income, lower fertility rates and higher educational levels, and finally, the reduction in the discriminatory practices in the labour market (Boserup, 1970; Oppenheimer, 1970; Davis, 1984; Psacharopoulos and Tzannos, 1989).

According to Tansel (2001a) and Gunduz-Hosgor and Smits (2006), the U-shape hypothesis might explain the low female labour participation rates in Turkey: the country can be considered to be at the intermediate phase of modernisation where the participation rates of women are the lowest. Tansel's study, based on the data for the years 1980, 1985 and 1990, has anticipated an upward trend in the 2000s given the slowdown in the reduction of female labour force participation rates in the 1990s. In addition to the improvements in female education and declining fertility rates, Gunduz-Hosgor and Smits (2006) have noted the expansion of the service sector which might be another indicator of transition to the upward sloping part of the U-shaped curve.

The statistics presented in this Chapter also indicate the rising share of service sector jobs on women's employment (see Table 2A.4 in the Appendix). Looking at the changes in the occupational structure over time presented in the Appendix Tables 2A.10 and 2A.11, women are mostly employed in agricultural occupations, whereas the occupational distribution appears to be more even for men. In line with the arguments on urbanisation/industrialisation and its failure to create job opportunities for women in sectors other than agriculture, while the share of agricultural occupations decline considerably over time, the share of non-agricultural occupations remains stable at least until the 1990s. However, after the 1990s, improvements are observed and, the figures based on the HLFS web database show an increase in the share of professionals and service sector jobs for women over time.[18] Moreover, as shown, the female labour force participation rates have been rising since 2008 and the continuous decline in the rural female labour force participation rates seems to be over as more stable rural labour force participation rates have been observed recently (see Figures 2.1 and 2.6).

However, as also indicated by Gunduz-Hosgor and Smits (2006), while the U-shaped impact of economic development appears to give a plausible explanation, it does not explain why the female labour supply in Turkey remains much lower than the participation rates observed in countries with similar levels of economic development.[19] Moreover, as this research will also argue in the subsequent chapters, the authors note the importance of taking into account the social and cultural factors, which are increasingly limiting women's access to the public domain in Turkey. Therefore, it also remains to be seen whether the recent increase in the female labour force will be sustained.

Studies on women's employment in the Middle East and North Africa Nations (MENA) have noted the strong influence of patriarchal norms on women's employment. Accordingly, the macroeconomic growth patterns in the MENA region which were not

[18] As noted earlier, the HLFS data do not provide information before 1988. In order to shed light on the validity on the arguments on urbanisation and the limited non-agricultural job opportunities, the data from population censuses are used for the figures between 1980 and 2000, the period when women's participation in the labour market declined substantially. The figures after 2000 are taken from the HLFS data as usual. This, of course, limits the comparisons before and after 2000. Moreover, whilst the figures on the occupations are based on ISCO-68 in the population census data, HLFS data are based on ISCO-88. This makes the comparison across the years (before and after 2000) even more problematic. However, the aim is to investigate the extent of agricultural occupations for women and the figures verify the prevalence of the agricultural occupations amongst women. Moreover, although it may not be possible to compare the figures before and after 2000, the declining trend in the agricultural occupations is obvious. A detailed analysis of the occupational structure of the labour market in Turkey will be presented in Chapter 4.

[19] For example, according to OECD database, the labour force participation rates in 2000s have been around 40-50 percent in Chile, Korea and Mexico and around 50 percent in Brazil which, like Turkey, are classified as developing countries in the International Monetary Fund's (IMF) World Economic Outlook Report (IMF, 2014). (The female labour force participation rates were 47.8 percent in Mexico, 54.9 percent in Chile, 55.6 percent in Korea, 60.7 percent in Brazil in 2013. The figures are available at http://stats.oecd.org/#).

compatible with women's employment appear to foster the continuation of the patriarchal family structure where power is in the hands of men and women are dependents (Karshenas and Moghadam, 2001; Olmsted, 2005; Assaad and Arntz, 2005). For example, Karshenas and Moghadam (2001) and Olmsted (2005) indicate that the maintenance of high income levels across the Middle East during the oil boom era of the 1970s and 1980s has meant that families could now afford women's non-participation into market-oriented activities, strengthening the traditional male bread-winner family structure. Similarly, using data for 1988 and 1998, Assaad and Arntz (2005) show how the structural adjustments in Egypt, particularly privatisation, have resulted in women being excluded from waged work in the private sector of the economy, due to women's limited geographic mobility because of their household responsibilities. Although the macroeconomic growth patterns have been different, as Turkey is not a resource-based economy and still a secular country, patriarchal norms are strong. Perhaps this explains part of the resemblance of the female labour supply trends in Turkey to the MENA region where, isolated from the feminisation of labour observed elsewhere, the lowest female employment rates are observed. Yet, Ilkkaracan (2012) notes the similarities in the patterns of women's employment in Turkey and the MENA region. As with the studies for the MENA region, the author has noted the interactions between the economic development strategies adopted in Turkey and patriarchal norms. Accordingly, the industrialisation process that failed to create non-agricultural job-opportunities for women, especially until the 1980s, has been criticised on the grounds of strengthening the male breadwinner norms, and thereby, limiting women's employment in Turkey.

Finally, it is important to take a brief look at the legal framework and question its role in gender unequal employment outcomes. Several steps have been taken in order to promote gender equality and, certainly, Turkey's international commitments such as ensuring compatibility with CEDAW and the accession negotiations with the European Union have played an important role in speeding up these transformations. For example, Article 10 of the Turkish Constitution which envisaged equality before law has been amended in 2004 as "Men and women have equal rights and the State is responsible for the measures to implement those rights". Again with an amendment to the Constitution in 2004, it was made clear that whenever a conflict in gender policy with the national law occurs, international law will apply, thereby, making CEDAW superior to the national law.

With regards to equal employment opportunities and pay, outright discrimination against women in terms of hiring, promotion and wage policies is not legal in Turkey. The Turkish Constitution makes it clear that "There cannot be any discrimination based on language, ethnicity, gender, political alignment, philosophical ideology, religious beliefs and anything else similar in the work environment." (Article 5). With regards to equal pay, the Constitution states: "Of equal or equivalent jobs, there cannot be a disparity of wages based on gender." Moreover, reforms to the Civil Code have established a legal basis on married women's work outside the home by stating "None of the spouses is required to get their partners' permission in their choice of work and profession" (Article 192). Although a detailed discussion will be provided further in the thesis, especially in Chapter 3, the descriptive statistics presented in this chapter, which show the consistently low labour force participation rates of married women, illustrate that having a legal basis for gender equality within the family does not mean that it is practiced in reality.

Despite the improvements in the legal framework discussed above, a "protective" approach towards women remains and constrains women's employment. To give an example, until recently, women could not take up night work. The New Labour Act (adopted in 2002) abandoned this provision, but some others have persisted. For example, women cannot work in sub-aqua or underground works, such as coal mines, and in dangerous and heavy jobs (Sural, 2007). There are also some practices in the law which increase the cost of hiring female workers compared to their male counterparts. For instance, the Labour Law still regards childcare as the responsibility of the mother. The workplaces with more than 100 women workers are supposed to set up nursing rooms and those with 150 women workers or more are supposed to provide day care. As Dayioglu and Kirdar (2010) state, the dependence of the provision of day care on only the number of female workers, instead of on the number of workers in total, causes disparity in the cost of employing women and men.

The prime change in the Labour Law was the extension of the maternity leave from 12 weeks to 16 weeks with the flexibility of using all, but three weeks after the birth. Moreover, the law provided women 6 months of unpaid leave following the end of 16 weeks of paid maternity leave. The most recent draft law involves provisions to extend the sixteen weeks of maternity leave to eighteen weeks at the second birth and twenty weeks for the third birth. In addition, following the end of their maternity leave, women will be able to work part-time up to two months for the first child, four months for the second and six months for the third child or more. This may allow women to maintain their job attachments; however, it can result in firms avoiding hiring female workers. More importantly, in the context of the symbolic three days of paternity leave and lack of any further provisions in this context, the draft law should be criticised as defining women through ‘motherhood’ and appears to incentivise birth rather than increasing women’s labour force participation or their labour market attachment.

This chapter has provided an overview of the key features of the labour market in Turkey and the common explanations suggested by the literature on female employment. In the subsequent chapters, several econometric analyses will be undertaken in order to provide a detailed investigation of the determinants of women’s employment in Turkey. In addition to the factors that limit women's employment opportunities, further inequalities, such as women's tendency to be employed in lower-paid or less-prestigious occupations and how they are less well-rewarded than their male counterparts in terms of wages, will be investigated.

Appendix to Chapter 2

Table 2A.1a - Labour Force Participation Rates of Women by Education Level

(year)	Illiterate	Literate without diploma	Primary School	Secondary School	High School	High/ Vocational High School	Higher Education
1990	31.6	34.8	34.2	19.1	43.7	51.1	80.5
1991	32.4	33.9	34.2	19.2	38.8	49.6	81.1
1992	30.6	30.3	32.6	17.4	40.3	51.4	81.6
1993	24.3	17.5	27.3	14.3	37.2	48.5	78.4
1994	28.5	25.3	32.3	17.2	35.8	42.1	79.9
1995	28.4	25.0	31.8	15.9	34.9	46.4	73.8
1996	27.6	26.6	31.6	14.1	33.0	44.9	72.6
1997	24.2	21.3	28.9	15.7	33.4	49.0	72.7
1998	25.1	22.2	29.4	15.7	32.6	47.1	75.3
1999	26.8	24.9	29.9	17.2	32.2	42.5	71.4
2000	25.2	22.2	24.5	15.3	28.1	42.4	70.1
2001	24.8	24.2	26	15.7	27.2	40.3	70.8
2002	24.4	22.4	26.7	18.4	28.5	39.0	71.5
2003	23.6	21.1	24.8	19.9	25.2	36.4	69.5
2004	16.6	17.9	21.4	20.6	26.1	39.4	70.3
2005	15.6	18.2	20.9	22.7	26.9	36.8	69.1
2006	14.7	18	21.1	22.9	27.9	36.2	68.8
2007	14.4	17.3	20.5	22.7	28.4	36.4	69.4
2008	14.5	18.5	21.1	21.6	29.1	38.3	70.0
2009	15.0	19.2	23.3	22.8	30.4	39.1	70.8
2010	16.3	20.4	25.7	24.6	30.4	39.8	71.0
2011	17.1	21.4	27.5	25.4	30.3	39.2	70.8
2012	16.7	20.7	28.3	27.9	30.6	38.1	70.9
2013	17.4	20.8	29.5	27.5	32.1	39.3	72.2

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Note: Covers individuals aged 15+.

Table 2A.1b - Labour Force Participation Rates of Men by Education Level

(year)	Illiterate	Literate without diploma	Primary School	Secondary School	High School	High/ Vocational High School	Higher Education
1990	62.3	72.2	87.5	61.8	77.8	81.0	90.5
1991	64.5	74.4	87.8	60.5	74.9	80.8	90.7
1992	65.3	70.3	87.5	58.5	76.3	81.1	90.5
1993	63.6	65.7	86.2	56.2	74.3	81.9	89.0
1994	62.1	68.1	86.8	56.8	74.6	81.8	89.7
1995	62.5	67.6	86.0	59.0	73.4	80.9	88.0
1996	62.2	65.7	85.7	59.0	71.0	80.9	86.6
1997	58.6	65.1	85.0	61.9	67.4	80.5	85.0
1998	58.2	64.9	84.9	62.0	69.2	80.6	85.1
1999	54.7	59.2	83.6	61.0	71.4	79.5	84.7
2000	56.7	55.8	81.1	62.8	67.0	79.0	83.2
2001	52.5	53.8	80.2	65.8	67.4	79.0	84.3
2002	48.1	48.5	78.8	68.4	64.6	77.7	84.5
2003	48.7	43.2	77.4	70.0	63.1	78.3	82.7
2004	44.3	48.8	77.1	77.2	67.1	79.9	84.2
2005	41.9	49.5	76.6	81.7	66.6	80.9	83.5
2006	39.2	49.4	75.7	82.0	66.2	79.8	82.6
2007	36.9	49.6	75.0	82.8	64.9	80.6	82.6
2008	36.0	50.7	75.1	82.9	66.2	80.3	82.7
2009	37.1	53.7	75.3	82.8	69.1	81.0	83.1
2010	36.8	55.2	75.1	82.3	68.1	81.2	84.3
2011	37.8	57.5	75.2	82.5	69.7	81.2	85.3
2012	34.0	56.4	74.3	82.2	69.1	80.5	85.1
2013	33.8	58.2	73.3	79.8	70.1	81.3	86.1

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Note: Covers individuals aged 15+.

Table 2A.2 - Labour Force Participation Rates of Women and Men by Marital Status, Turkey

	WOMEN				MEN			
(year)	Single	Married	Divorced	Widowed	Single	Married	Divorced	Widowed
1990	46.6	32.5	41.7	14.4	70.7	84.5	77.1	31.3
1991	4.0	32,1	43.5	14.2	70.5	85.8	79.0	34.1
1992	44.3	30.8	45.7	14.0	68.7	85.9	70.7	32.7
1993	37.5	24.7	42.7	10.9	65.6	84.9	76.8	32.6
1994	42.3	29.3	39.7	14.1	66.7	84.8	72.3	28.5
1995	41.0	29.0	43.7	14.5	64.5	84.9	83.7	34.2
1996	40.9	28.7	40.5	14.1	64.0	84.3	77.7	30.8
1997	38.9	26.8	44.5	13.7	62.9	83.9	75.9	33.7
1998	39.5	27.1	43.3	14.5	62.1	84.4	79.0	32.5
1999	39.9	27.9	46.7	15.3	62.3	82.9	76.6	31.5
2000	35.0	25.2	41.0	11.5	59.4	81.1	72.5	29.7
2001	35.1	25.9	43.5	12.8	58.1	80.3	72.7	31.6
2002	36.8	26.4	42.1	12.4	56.4	79.2	71.0	26.3
2003	35.0	25.3	41.2	11.5	54.9	78.2	69.6	24.5
2004	33,2	21.6	40.9	9.1	56.3	77.5	73.3	23.5
2005	33,6	21.3	42.7	9.2	57.3	77.4	69.7	22.3
2006	34.3	21.5	41.4	8.7	56.9	76.5	66.9	20.1
2007	34.4	21.6	40.6	8.1	57.7	75.9	67.8	21.1
2008	35.3	22.4	42.9	8.6	58.3	76.2	69.1	19.3
2009	36.2	24.3	45.8	9.0	59.5	76.5	71.1	20.7
2010	36.6	26.4	47.8	9.2	59.2	77.0	72.8	19.0
2011	36.5	28.1	49.1	10.1	60.7	77.7	71.2	21.8
2012	35.8	29.3	49.5	9.4	59.9	77.3	72.3	20.4
2013	37.9	30.5	50.9	9.0	61.4	77.3	72.9	19.5

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Note: Covers individuals aged 15+.

Table 2A.3 - Labour Force Participation Rates of Women and Men in Turkey and the Rural-Urban Differences

	Turkey		Urban		Rural	
(year)	Women	Men	Women	Men	Women	Men
1980ˣ	45.8	79.8	-	-	-	-
1985ˣ	43.6	78.3	-	-	-	-
1990	35.3	80.5	18.1	78	53.4	83.4
1991	33.9	79.5	14.9	77.3	56.1	82.3
1992	32.6	79.4	17.4	76.3	51.6	83.3
1993	27.5	77.9	16.8	75.4	40.7	81.0
1994	30.2	78.6	17.6	75.7	45.8	82.4
1995	31.0	78.3	17.1	74.5	49.3	83.3
1996	31.0	77.6	15.8	73.3	51.1	83.5
1997	27.6	77.2	17.6	74.2	41.0	81.3
1998	30.4	77.5	17.1	73.8	49.3	83.0
1999	27.6	74.7	17.5	71.1	42.1	80.0
2000	26.6	73.7	17.2	70.9	40.2	77.9
2001	27.1	72.9	17.4	70.6	41.7	76.4
2002	27.9	71.6	19.1	69.8	41.4	74.5
2003	26.6	70.4	18.5	68.9	39.0	72.9
2004	23.3	70.3	17.7	69.1	36.7	73.3
2005	23.3	70.6	18.7	70.0	33.9	72.0
2006	23.6	69.9	19.5	69.3	33.1	71.3
2007	23.6	69.8	19.8	69.3	32.5	71.0
2008	24.5	70.1	20.8	69.5	32.9	71.6
2009	26.0	70.5	22.3	69.9	34.6	72.0
2010	27.6	70.8	23.7	70.4	36.3	71.6
2011	28.8	71.7	24.8	71.0	37.5	73.3
2012	29.5	71.0	26.1	71.0	36.9	71.2
2013	29.7	71.5	28.0	71.6	36.7	71.2

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Note: Covers individuals aged 15+.ˣThe figures for 1980 and 1985 are taken from Population Census data, http://www.turkstat.gov.tr/PreTablo.do?alt_id=1047. The rural-urban division is not available in the Population Census data.

Table 2A.4 - Sectoral Distribution of Total, Female and Male Employment

	1980	1985	1990	2000	2005	2008	2010	2012
(Total Employment)								
Agriculture	60.0	59.0	53.7	48.4	25.7	23.7	25.2	24.6
Industry	11.6	11.4	12.8	13.4	20.8	21.0	19.9	19.1
Construction	4.1	3.7	5.1	4.6	5.5	5.9	6.3	6.9
Services	23.4	25.5	27.9	33.5	48.0	49.5	48.6	49.4
(Female employment)								
Agriculture	87.3	86.5	82.1	75.6	46.3	42.1	42.4	39.3
Industry	4.5	4.5	6.8	6.7	16.1	14.9	15.0	14.1
Construction	0.1	0.1	0.1	0.2	0.6	0.8	0.9	0.8
Services	7.5	8.7	10.8	17.4	37.0	42.3	41.7	45.8
(Male employment)								
Agriculture	44.0	43.1	37.7	32.9	18.6	17.1	18.3	18.4
Industry	15.7	15.4	16.2	17.1	22.4	23.1	21.8	21.2
Construction	6.5	5.7	7.8	7.1	7.2	7.7	8.5	9.4
Services	32.7	35.1	37.4	42.8	51.7	52.1	48.2	50.9

Source: The figures for 1980, 1985, 1990 and 2000 are taken from Population Census data, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1047. The figures for 2005, 2008, 2010 and 2012 are taken from HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007 .

Table 2A.5 - Employment Status of Women and Men in Rural Areas

	Women				Men			
	Waged worker	Employer	Self-employed	Unpaid Family Worker	Waged worker	Employer	Self-employed	Unpaid Family Worker
1990	9.2	0.1	5.8	85.0	29.5	2.2	46.0	22.3
1991	6.9	0.1	7.0	86.0	27.4	1.7	48.8	22.1
1992	7.0	0.2	8.1	84.8	26.8	2.5	48.7	21.9
1993	4.9	0.0	7.9	87.1	25.5	2.7	46.0	25.7
1994	6.1	0.1	10.8	83.0	26.6	2.4	45.6	25.4
1995	8.0	0.0	7.7	84.3	26.3	2.8	45.1	25.8
1996	7.4	0.1	9.9	82.6	25.7	2.6	46.0	25.7
1997	7.2	0.1	7.7	85.0	26.1	2.9	47.0	24.0
1998	7.2	0.2	7.9	84.8	28.5	2.6	45.0	23.9
1999	8.1	0.2	9.8	81.9	28.0	2.8	45.9	23.2
2000	7.9	0.1	9.1	82.9	27.8	3.1	46.4	22.8
2001	8.4	0.1	9.8	81.7	28.9	2.8	44.9	23.4
2002	9.9	0.2	13.8	76.1	31.3	2.9	45.9	19.9
2003	8.7	0.2	14.7	76.4	28.3	3.0	47.7	21.0
2004	11.3	0.4	15.4	72.9	32.7	3.5	46.1	17.7
2005	11.0	0.1	15.1	73.7	32.4	3.3	48.6	15.7
2006	11.2	0.3	12.0	76.4	30.3	3.1	48.8	17.7
2007	14.2	0.4	17.2	68.2	35.0	3.6	47.1	14.3
2008	15.4	0.4	17.3	66.9	37.8	3.8	45.7	12.7
2009	15.2	0.4	17.3	67.1	38.9	3.8	45.2	12.1
2010	16.0	0.4	15.8	67.8	39.6	4.4	44.4	11.6
2011	15.5	0.4	16.0	68.1	38.8	4.0	44.8	12.4
2012	16.3	0.5	14.9	68.3	40.4	3.9	43.8	11.9
2013	16.8	0.4	13.9	68.9	42.6	3.7	42.3	11.5

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Note: Covers individuals aged 15+.

Table 2A.6 - Employment Status of Women and Men in Urban Areas

	Women				Men			
	Waged worker	Employer	Self-employed	Unpaid Family Worker	Waged worker	Employer	Self-employed	Unpaid Family Worker
1990	74.8	0.9	10.8	13.4	66.6	7.7	21.2	4.4
1991	74.7	0.9	10.8	13.5	66.1	8.2	21.4	4.3
1992	75.9	1.2	11.0	12.0	65.9	9.9	19.9	4.3
1993	78.9	1.7	9.2	10.3	65.3	11.2	18.8	4.7
1994	76.1	1.8	10.8	11.4	64.9	12.0	18.0	5.1
1995	79.5	1.7	9.1	9.7	66.0	12.3	17.3	4.4
1996	74.0	1.4	10.5	14.1	66.3	11.9	17.5	4.3
1997	76.7	2.0	9.9	11.4	67.0	11.3	17.2	4.5
1998	78.9	2.0	6.9	12.2	67.9	11.7	16.2	4.2
1999	80.5	2.1	8.0	9.5	69.0	10.6	16.9	3.5
2000	82.0	2.2	6.6	9.1	68.6	11.8	15.8	3.8
2001	77.8	1.7	8.9	11.6	68.9	10.3	16.7	4.0
2002	80.9	1.7	8.3	9.0	70.0	9.6	17.0	3.3
2003	79.3	1.6	9.4	9.7	70.2	10.1	16.3	3.5
2004	80.6	2.0	7.5	9.9	70.9	10.2	15.6	3.3
2005	81.6	1.6	7.4	9.4	71.4	8.9	16.7	3.0
2006	79.3	1.6	7.3	11.7	70.4	8.1	18.4	3.1
2007	79.1	1.5	9.4	10.0	70.8	8.5	18.1	2.6
2008	80.6	2.1	8.5	8.8	71.8	8.6	17.2	2.3
2009	82.9	2.2	6.8	8.1	73.5	8.7	15.8	2.0
2010	82.7	2.2	7.2	7.9	74.4	8.8	14.8	2.0
2011	79.7	2.1	10.1	8.1	74.6	8.9	14.4	2.2
2012	78.2	2.0	11.1	8.8	76.2	8.3	13.6	2.0
2013	79.3	1.9	9.9	8.8	76.8	8.2	13.2	1.7

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Note: Covers individuals aged 15+.

Table 2A.7 - Employment Status of Women and Men, Turkey

	Women				Men			
	Waged worker	Employer	Self-employed	Unpaid Family Worker	Waged worker	Employer	Self-employed	Unpaid Family Worker
1990	22.7	0.2	6.8	70.2	47.8	4.9	33.8	13.5
1991	20.7	0.2	7.8	71.2	46.5	4.9	35.3	13.3
1992	21.7	0.4	8.7	69.2	46.5	6.3	34.2	13.0
1993	20.1	0.4	8.2	71.3	45.8	7.1	32.1	15.0
1994	23.3	0.5	10.8	65.5	46.7	7.4	31.2	14.7
1995	27.7	0.5	8.1	63.7	47.3	7.8	30.5	14.5
1996	25.3	0.4	10.1	64.1	47.3	7.6	30.8	14.3
1997	26.0	0.7	8.3	65.0	47.9	7.3	31.2	13.6
1998	26.4	0.6	7.7	65.4	49.5	7.5	29.6	13.4
1999	30.0	0.8	9.2	60.0	50.2	7.0	30.2	12.6
2000	30.2	0.8	8.3	60.7	50.2	7.8	29.6	12.4
2001	29.9	0.6	9.6	59.9	51.1	7.0	29.3	12.7
2002	35.3	0.7	11.8	52.1	53.5	6.8	29.4	10.4
2003	33.2	0.7	12.9	53.3	52.5	7.1	29.5	10.8
2004	37.0	1.0	12.5	49.6	54.9	7.4	28.4	9.3
2005	38.1	0.7	12.2	49.0	55.5	6.6	29.7	8.2
2006	44.8	1.0	9.7	44.5	57.8	6.5	28.0	7.7
2007	48.3	1.0	13.1	37.6	60.0	7.0	26.9	6.1
2008	50.8	1.3	12.5	35.4	61.7	7.2	25.7	5.4
2009	52.4	1.4	11.5	34.6	63.2	7.2	24.5	5.0
2010	53.2	1.4	11.0	34.4	63.9	7.5	23.8	4.9
2011	51.1	1.3	12.8	34.8	63.4	7.3	23.9	5.4
2012	50.7	1.3	12.8	35.2	64.9	6.9	23.0	5.1
2013	51.6	1.2	11.7	35.5	65.8	6.8	22.6	4.9

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Note: Covers individuals aged 15+.

Table 2A.8 - Labour Force Participation Rates Women by Educational Level in Rural Areas

(year)	Illiterate	Literate without diploma	Primary School	Secondary School	High School	High/ Vocational High School	Higher Education
1990	47.6	55.8	56.4	27.4	55.9	72.0	92.3
1991	50.1	60.6	60.6	26.6	50.4	76.7	89.8
1992	47.3	49.3	57.3	28.6	47.8	64.8	88.1
1993	37.3	28.3	45.5	25.1	44.7	66.2	88.7
1994	42.7	45.7	54.5	28.6	50.9	58.5	88.1
1995	43.9	44.7	55.0	27.4	46.4	57.1	80.7
1996	43.7	48.8	56.0	23.2	44.0	60.2	71.0
1997	39.0	40.9	49.9	23.4	47.4	60.9	75.5
1998	41.2	43.7	51.9	25.1	41.9	61.3	76.9
1999	42.5	45.2	51.8	28.6	45.7	52.5	71.5
2000	38.2	39.2	42.5	21.3	32.4	54.9	75.5
2001	37.5	43.0	45.6	22.1	34.5	47.5	77.8
2002	37.8	40.1	45.1	24.0	31.9	43.8	78.8
2003	37.6	36.8	41.4	26.2	28.4	38.6	71.4
2004	30.5	33.4	41.9	32.6	29.5	47.4	71.7
2005	27.3	31.9	39.1	33.7	30.4	41.7	70.1
2006	25.5	30.1	39.3	34.1	30.0	42.5	68.6
2007	24.5	27.9	38.9	34.5	30.6	44.4	72.0
2008	24.4	31.2	38.3	34.7	30.7	45.0	72.1
2009	24.8	31.1	42.0	38.9	35.2	44.7	74.9
2010	26.6	32.3	45.2	38.5	34.6	43.6	71.9
2011	27.8	34.2	47.8	37.6	34.3	42.6	69.0
2012	26.6	33.8	47.5	41.8	33.7	40.7	68.2
2013	26.3	32.4	46.5	36.4	33.8	42.3	70.1

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Note: Covers individuals aged 15+.

Table 2A.9 - Labour Force Participation Rates of Women by Educational Level in Urban Areas

(year)	Illiterate	Literate without diploma	Primary School	Secondary School	High School	High/ Vocational High School	Higher Education
1990	6.9	8.9	13.3	16.1	40.4	47.3	78.5
1991	5.3	7.6	11.4	17.3	37.0	45.4	79.5
1992	6.7	9.8	12.0	14.3	38.8	49.4	80.5
1993	4.9	6.8	11.5	11.4	35.8	45.4	76.9
1994	6.5	9.0	13.1	14.0	33.3	39.9	78.9
1995	6.8	6.8	11.4	12.0	32.7	45.0	73.1
1996	5.9	6.9	10.1	11.1	30.8	41.7	72.7
1997	5.2	6.0	10.4	13.2	30.6	46.7	72.5
1998	5.4	6.3	9.7	12.6	30.8	44.4	75.1
1999	5.5	8.3	11.8	13.7	29.3	40.4	71.4
2000	5.1	7.9	10.4	13.6	27.5	39.9	69.6
2001	5.4	7.8	11.5	14.0	26.1	39.0	70.2
2002	5.8	7.9	12.7	16.6	27.9	38.0	70.6
2003	5.5	8.5	11.8	17.9	24.6	36.0	69.3
2004	5.4	8.4	11.8	18.3	25.7	38.4	70.2
2005	6.1	9.4	12.6	20.3	26.3	36.0	69.0
2006	5.4	10.0	13.0	20.3	27.5	35.3	68.8
2007	5.1	10.4	12.2	20.6	28.0	35.2	69.2
2008	5.4	10.3	13.1	19.2	28.9	37.3	69.8
2009	5.7	11.2	14.7	19.8	29.6	38.3	70.4
2010	6.2	12.6	16.7	22.0	29.7	39.2	70.9
2011	6.5	12.6	17.6	23.1	29.7	38.6	71.0
2012	6.1	11.9	18.9	25.1	30.1	37.7	71.1
2013	7.3	13.3	20.7	25.5	31.7	38.8	72.4

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007. Note: Covers individuals aged 15+.

Table 2A.10 - Occupational Distribution of Women and Men (1980 to 2000)

	Women				Men			
(ISCO-68)	1980	1985	1990	2000	1980	1985	1990	2000
Scientific, technical, professional and related workers	3.7	4.0	4.8	6.9	5.0	5.5	5.9	7.5
Administrative, executive and managerial workers	0.1	0.1	0.2	0.4	1.3	1.2	1.5	2.0
Clerical and related workers	3.1	3.2	3.9	6.5	3.7	3.8	4.2	5.6
Sales workers	0.5	0.8	1.1	2.3	6.5	7.1	8.1	8.4
Service workers	1.0	1.2	1.6	2.8	7.2	7.8	8.7	10.1
Agricultural, animal husbandry and forestry workers, fishermen and hunters	87.1	86.3	82.1	75.7	43.8	42.9	37.6	33.0
Non-agricultural production and related workers, transport, equipment	4.5	4.5	6.4	5.5	32.3	31.7	34.0	33.3
Workers not classifiable by occupation	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.1

Source: Population Census data, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1047.

Table 2A.11 - Occupational Distribution of Women and Men (2005 to 2012)

	Women				Men			
(ISCO-88)	2005	2008	2010	2012	2005	2008	2010	2012
Legislators, senior officials and managers	3.0	3.3	2.9	3.0	12.8	10.5	10.5	9.7
Professionals	9.1	9.3	9.8	10.7	5.9	5.1	6.0	6.6
Technicians and associate professionals	7.2	8.4	6.8	7.3	5.5	6.6	5.6	5.9
Clerks	8.8	10.4	10.9	10.6	4.8	5.3	5.4	5.5
Service workers, shop and market sales workers	7.9	9.8	9.9	11.9	11.7	12.9	13.1	13.2
Skilled agricultural and fishery workers	39.2	32.0	32.8	28.8	16.7	14.9	16.1	15.8
Craft and related trades workers	6.6	5.1	5.9	4.4	18.1	17.5	16.7	16.5
Plant, machine operators and assemblers	4.3	3.7	3.6	3.4	12.8	13.3	13.0	13.1
Elementary occupations	13.9	17.9	18.3	20.0	11.6	13.6	13.6	13.8

Source: HLFS web database, TurkStat. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007 .

Chapter 3: THE ROLE OF SOCIAL NORMS AND CULTURE ON WOMEN'S EMPLOYMENT IN TURKEY

3.1 Introduction

Labour market statistics for most countries in the world show a closing of the gender gap in labour force participation rates owing to an increased representation of women in paid employment. However, the extent to which this can be attributable to a more gender equal labour market and improvements in women's economic and social status is debatable as paid employment does not always imply woman's increased control over her income, nor does it mean that she participates in economic decisions or fulfils her needs (Agarwal, 1997; Elson, 1999; Koggel, 2003; Olmsted, 2005). Employment may not necessarily be rewarding and a way to achieve autonomy and fulfilment for a woman, given the double burden of paid and unpaid work, unfavourable working conditions and the social stigma of working outside the home (Bespinar, 2010; Ilkkaracan, 2012; Bahramitash and Olmsted, 2014). This chapter, therefore, aims to contribute to the literature by investigating the link between women's employment patterns in Turkey and the traditional or conservative social norms and culture in the country.

As presented in the previous chapter, despite economic growth and significant improvements in female educational attainment, the employment rates of women have actually fallen in Turkey over the last twenty years from 32.6 percent in 1990 to 27.1 percent in 2013 (TurkStat, 1990; 2013). The male employment rate was 65.2 percent in 2013, resulting in a gender employment gap at 38.1 percentage points which is, undoubtedly, one of the highest in the world (see International Labour Organization [ILO], 2014] for a global comparison). Among women in the workforce, the majority work as unpaid family workers in rural agricultural activities. The rates in rural areas are also declining, but remain much higher than those of women in urban areas.[20]

Social norms and traditions may hinder women's ability to become economically active in many ways. In this chapter, the prevalence of traditional marriages, awareness and use of contraception, women's tolerance against domestic violence and their attitudes towards traditional gender roles are all explored. Accordingly, a composite index is developed which consists of four sub-indices capturing these elements. The sub-indices are estimated by a polychoric Principal Component Analysis based on the data collected by the Turkish Demographic and Health Surveys for the years 1998 and 2008 (TDHS-98, TDHS-08). The employment status of women, on the other hand, is analysed by a multinomial logit model that allows consideration of four distinct employment outcomes. That is, "working as a wage worker", "working in self-employment", "working as an unpaid family worker", and "not working". In order to investigate their role on women's consistently low employment rates in Turkey, the indices are included as explanatory variables, in addition to the main determinants found in the previous literature, in the multinomial logit model.

3.2 Literature Review

Social and cultural values reinforce the traditional gendered division of labour at home and in the labour market. Regardless of the country examined, women undertake a disproportionate share of housework and caregiving activities. Evidence based on time-use or equivalent surveys shows that the rise in labour force participation rates of women in many developed countries has not been accompanied by an equal fall in the time they allocate to unpaid domestic work (Kan, 2008; Sevilla-Sanz et al., 2010). Moreover, the time men devote to housework has shown to be unaffected by women's earnings and

[20] The urban female employment rate was 23.4 percent in 2013 whilst the figure was 35.0 percent in rural areas (TurkStat, 2013).

remains stable over their lifetime stages such as, marriage or birth of a child (see, for example, Bittman et al., 2003; Baxter et al., 2008 for the United States and Australia, Corrasco and Domínguez, 2011 for Spain). Studies on developing countries, on the other hand, draw attention to how substantial inequalities in the division of unpaid, domestic activities between men and women at home limit women's access to opportunities in the labour market, regardless of the further inequalities that the labour market might bring (see Floro and Komatsu, 2011 and Hirway and Jose, 2011 for a discussion on South Africa and India respectively).

One approach has been to utilise attitudinal questions in cross-country or national surveys which could be used as proxies for social norms, beliefs and gender role attitudes. These studies all have noted the negative impact of "traditional" attitudes upon women's employment (Antecol, 2003; Fortin, 2005; Contreras and Plaza, 2010). They typically involve including dummy variables generated from each attitudinal question as explanatory variables, or taking the averages of women's responses to these questions, or by simply including a single dummy which categorises a woman as traditional if she agrees with at least one of the attitudinal questions. However, this can be problematic as it not only gives equal weights to the attitudinal questions included in the analysis, but also considers that a woman who agrees with only one of the statements and a woman who agrees with all of them are equally influenced by traditional values. Consequently, this approach oversimplifies the extent and multiplicity of social norms and traditional gender role attitudes and, therefore, better measures are needed.

Whilst Turkey's secular state granted many equal rights for women - illegalisation of polygamy and the establishment of equality in divorce, child custody and inheritance and voting rights - many argue that the opportunities for women generated by these reforms were not equally shared. According to Gunduz-Hosgor and Smits (2006), while the policies aimed at the emancipation of women generated a small group of highly educated and economically active women in the urban areas of the country, they did not impact on rural women's lives to the same extent. The incidence of honour killings, marrying with only a religious ceremony, disapproval of premarital sexual intercourse, and women's limited freedom of movement remain in place in many areas of the country, particularly, in rural areas (Ilkkaracan, 1998; Ilkkaracan and Ilkkaracan, 1998; Gunduz-Hosgor and Smits, 2006). The founding principles of the Republic are now being challenged by a trend of conservatism; a religious conservative party, the Justice and Development Party (AKP), came to power for the first time in 2002 and was re-elected in 2011.[21] Although AKP lost its parliamentary majority in the latest general elections (which took place on 7 June 2015), it remained as the largest party in the parliament with a voting share of 40.9 percent.[22]

The impediments that traditional or conservative values might impose on women's employment in Turkey have mostly been explored using qualitative research. Among these studies, both Ilkkaracan (1998) and Dedeoglu (2010) argue that traditional gender roles, ascribing women as mothers and housewives and men as breadwinners, have a fundamental impact on women's non-participation in the labour market. However, quantitative evidence on the role of traditional values in Turkey is limited. While analysing the U-shaped impact of economic development on women's employment, Gunduz-Hosgor and Smits (2006) briefly touch upon the role of traditional values in limiting women's access to formal work. Goksel (2012) provides an important analysis of the effect of conservatism on women's labour force participation decisions; however, the data used to

[21] Another religious conservative party, the Welfare Party (RP) governed with a coalition partner between 1997 and 1998. However, the constitutional court dissolved the party on the grounds of violating the principle of secularism in the constitution in 1998.

[22] AKP continues to be the governing party as a coalition government has not been formed yet. An early election will be considered if a coalition government cannot be formed.

form the conservatism index does not include information on whether the woman is working or not. In order to analyse the impact of attitudes on employment over time, the author imports the index to other data sets which include information on women's work for the years 1994, 2003, and 2006, matching the data by age and region. As a consequence, the index values are assumed to stay constant over a long period of time. That is, a woman aged 50 in an urban area of region X in 2006 has the same level of conservatism as the woman with same characteristics in 1994. Therefore, it ignores the social and political changes in Turkey over the last twenty years, which are likely to have an impact on the level of conservatism.

Overall, whilst there is a general consensus that traditional values are important factors which limit women's employment in Turkey, there is insufficient evidence to support this or to quantify the impact. This chapter, therefore, aims to contribute to the literature by providing an extensive analysis of the role of traditional or conservative social norms and culture on the low and stagnant employment rates of women in the country. Accordingly, it builds on the quantitative research that utilises national surveys with information on labour force participation and attitudinal questions that could be used as a proxy for such values. In addition to standard variables such as age, education, marital status and the presence of children, the proxies for social norms and culture are included in the analysis as determinants of women's employment status. More importantly, by adopting more extensive measures at different points in time, it is possible to track any changes in the effect of traditional values over time; therefore shedding light on many important aspects that remain uncovered by the limited quantitative work on the topic.

3.3 Methodology and Data

3.3.1 A Multinomial Logit Model

A multinomial logit (MNL) model is employed in order to shed light not only on paid work but on all forms of employment, including unpaid family labour, as this represents a significant part of women's employment in Turkey. It is a challenge to fully capture women's unpaid work as survey designs tend to only recognise market-oriented activities as work. An advantage of the TDHS surveys is that they pay particular attention to identifying women in unpaid family work and the extent of the informal sector. Accordingly, women undertaking unpaid work in family farms and businesses, activities such as weaving, embroidery or making clothes, or domestic work on a paid basis; for example, looking after children or working as a cleaner, are all counted as work. However, as with other studies, unpaid caring activities are not counted as work in the TDHS.[23] As argued extensively in feminist economics literature, unpaid, caring activities involve work although they are not market-oriented. Moreover, the "reproductive economy" – unpaid, un-marketed caring work - is crucial as it makes a fundamental contribution to the reproduction of the market-oriented "productive economy" (Elson 1999: 612). Nevertheless, it is still important to include unpaid family workers in the analysis, utilising the information provided by TDHS surveys, rather than ignoring them.

Accordingly, a MNL is employed which allows for four distinct states of employment status for women that are coded as follows:

0 = not working

1 = waged worker

[23] In order to identify whether a woman is working or not, the question: "Aside from your own housework, have you done any paid work in the last seven days?" is utilised, therefore, women's unpaid domestic activities are automatically excluded.

2 = self-employed

3= unpaid family worker

The model is defined as;

$$P_{ki} = \frac{\exp(\phi_k' X_{ki})}{\exp(\phi_k' X_{0i})+\exp(\phi_k' X_{1i})+\exp(\phi_k' X_{2i})+\exp(\phi_k' X_{3i})} \qquad k = 0, 1, 2, 3$$

where P_{ki} is the probability of i_{th} woman being in the k_{th}employment status, ϕ_k' is the parameter vector and X_{ki} is a vector of explanatory variables. The model ensures that $0 < P_{ki} < 1$ and $\sum_{k=1}^{3} P_{ki} = 1$.[24]

3.3.2 Data and Empirical Specification

The empirical analysis is based on Turkish Demographic and Health Surveys (TDHS) undertaken by the Hacettepe University Institute of Population Studies for the years 1998 and 2008 (TDHS-98, TDHS-08). These surveys implement fully comparable standards introduced by the worldwide Demographic and Health Surveys (MEASURE/DHS+) program which aims to provide data and analysis on fertility, family planning, maternal and child health, gender, HIV/AIDS, malaria and nutrition in developing countries. The TDHS surveys collect household data as well as individual level data consisting of eligible women selected from the household sample; it is this individual data which is used in this chapter.

The TDHS women's surveys consist of ever-married women aged 15 to 49. Although TDHS-98 includes partial data for never-married women[25], this was not true for TDHS-08; therefore, in order to ensure comparison with 2008, they were not included in the analysis.

[24] The MNL model relies on the assumption of the independence of irrelevant alternatives (IIA). A Hausman test is performed which has not rejected the IIA assumption. Therefore, there was no need to use a model which relaxes the IIA assumption such as multinomial probit which is qualitatively similar to MNL model but computationally burdensome (Cameron and Trivedi, 2009: 503) A full mathematical formula for the MNL can be found in McFadden (1973).

[25] Crucially, this excludes key data necessary for developing the indices.

For both data sets, women who did not report current labour force status are excluded from the sample.[26] The final samples contain 5,394 and 6,776 ever-married women for the years 1998 and 2008. Among them, only 1,798 (33.33 percent) and 2,070 (30.54 percent) women are employed in 1998 and 2008 respectively. Unpaid family work is the dominant form of employment in 1998, whereas the proportion of waged workers becomes slightly bigger than that of unpaid family workers by 2008 (see Table 3.1 at the end of this section).

It is a common practice to attribute the under-representation of women in the labour market to their lower educational levels or less labour market experience (Dayioglu, 2000; Tansel, 2001a; Ince and Demir, 2006). This "overly" neoclassical approach (Humphries and Sarasua 2012: 54) is challenged in several ways in this chapter. Although education has a crucial role in enabling women to take part in the labour market and, thereby, included as a determinant of women's employment in this chapter, Ilkkaracan (2012) shows that the convergence in the proportion of men and women with higher education has not been accompanied by a closing of the gap between their labour force participation rates in Turkey. There are clearly other important determinants.

The presence and the number of young children at home remain amongst the most important barriers for women in reconciling employment and unpaid domestic activities (Corrasco and Domínguez, 2011; Borderías, 2013). Considering the crucial role of childcare policies on women's employment (see Erhel and Guergoat-Larivière, 2013), the effect may be more pronounced in Turkey where the provision or subsidies for formal childcare and pre-school education are limited. Given the small number of public pre-schools or childcare services, it is mostly high-income families that are able to enrol their

[26] These exclusions resulted in very small changes in the sample size and no groups were disproportionately affected by the reduction in the sample size.

children in private childcare institutions (Ilkkaracan, 2012). Moreover, the very limited provisions of parental leave in Turkish law rely on women's inactivity (see the discussion on the legal framework provided on pages 27 to 29 in Chapter 2). Therefore, in order to capture these factors, dummies for the presence and number of children under age 6 are included in the analysis.

Economic hardship can be another important factor in women's employment. Bespinar (2010) and Ilkkaracan (2012) note that financial problems have been the major reason behind women's work outside the home in Turkey. On the other hand, Bahramitash and Olmsted (2014) emphasise the diversity amongst low-income women's perceptions of paid employment. Their qualitative study of women in paid work in Tehran revealed that whilst economic need has been the driving force for paid employment, half reported that they would still work even if they were not constrained by economic hardship. In the light of these findings, it is important to provide further evidence on the complex link between financial need and women's employment decisions.

There is no information on non-labour income available in the data sets used in this chapter. However, the DHS surveys usually provide a wealth index that can be used as a proxy for permanent income. Accordingly, there is a wealth index in TDHS-08 and, whilst this is not available in TDHS-98, the variables that are typically employed to construct the wealth indices (such as the type of flooring, having electricity/radio/television at home) for the countries by DHS are available in TDHS-98. Therefore, following the methodology employed in the DHS surveys, a wealth index is also constructed for the 1998 data by using basic Principal Component Analysis (PCA) based on all the information on assets and utility services available in a household that can be used as indicators of household wealth.[27] The full list of indicator variables used in developing the index can be found in the Appendix to Chapter 3 (Appendix 3A.1).

In the standard DHS surveys (as well as in TDHS-08), household wealth (wealth index) is a categorical variable. Women in the sample are ranked according to the wealth index value assigned for their households and the distribution is divided into five categories (20 percent sections) denoting women living in the poorest, poor, middle, richer and the richest families. The same has been applied to the 1998 data. The household wealth categories are included as independent variables in the MNL models.

In order to investigate the effect of traditional male breadwinner/female homemaker household types on women's employment, dummies indicating whether women are not currently married and whether they are the head of the household are included in the model. Given the gendered division of labour at the household level, it can be expected that women without a "breadwinner" to provide for them are more likely to be employed.[28] Finally, the analysis also controls for potential rural-urban and regional differentials in women's employment.

The impact of many of these factors may differ across employment outcomes. For example, marriage and having children, both regarded as the main barriers for modern women's entry in the labour market, may not have a significant impact on women's probability of being unpaid family workers as they are likely to work with their husbands in family farms. For example, Abeledo (2012) and Grantham (2012) provide historical evidence on how marriage was not always a constraint for women's employment,

[27] See Rutstein and Johnson (2004) for a detailed information on the construction of a wealth index for the DHS data sets. More details on PCA are provided in the Section 3.5 explaining the construction of the indices for social norms and culture.

[28] In this context, the overall demographic composition of the household can be decisive in women's employment. The effects of several other household composition variables, such as the relative presence of adult women and men, female: male child ratio, the presence of elderly/grandmother, are all tested (see Spierings, 2014). However, none of them had a statistically significant effect on women's employment, perhaps due to a rich set of explanatory variables such as the traditional marriage index capture these factors.

especially for those living in households engaging in farming. Childcare might matter less for unpaid family workers considering the traditional, extended rural families where caring activities might be shared with other household members or neighbours (Borderías, 2013). The analysis of women's employment in four states, therefore, helps to answer such questions and challenge the standard conclusions about the factors hindering women's employment.

Table 3.1 presents descriptive statistics for the determinants discussed above amongst the total sample and the sub-samples of interest. When examining the educational levels of women in the final total samples, it is seen that in both years the vast majority of women do not have more than primary school education. The share of women with no education has decreased over the decade but remains at 12.74 percent in 2008. Unpaid family workers have the lowest levels of educational attainment. Apart from unpaid family workers, there are notable changes across the years in the proportions of women with relatively higher educational levels; self-employed and waged workers seem to have become better educated. There is a remarkable increase from 1998 to 2008 in the proportion of waged workers with higher education (from 29.07 percent to 47.11 percent). There has also been a noteworthy rise in the share of women with higher education who are not working, from 1.95 percent in 1998 to 19.27 percent in 2008. This finding might be an indicative of the increase in the unemployment rates among the university graduates in Turkey.[29]

It is seen that the ever-married sample predominantly consists of "currently" married women, this being around 95 percent of the total sample in each year. In addition, a slight decrease is observed from 1998 to 2008 in the proportion of women living in households

[29] The unemployment rate among university graduates has increased from 5.9 percent in 2000 to 8.1 percent in 2008 for men while this figure has increased from 9.1 percent to 14.3 percent for women at the same time period (TurkStat, 2000; 2008, http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007, the figures cover individuals age 15 plus).

where there are no pre-school children. Yet again, half of the women live in the families with children under the age of six and the proportion is the lowest amongst the waged workers. Female household headship is uncommon and, not surprisingly, the highest shares of household headship are observed amongst women who are self-employed and waged workers. Looking at the wealth index quintiles, it is seen that a large proportion of unpaid family workers belong to the poorest group (45.96 percent in 1998 and 34.63 percent in 2008), whereas a considerable share of waged workers are located in the richest group (41.78 percent in 1998 and 42.00 percent in 2008).

Finally, in terms of the regional/locational controls, the highest non-participation rates are observed in the East in both years. Eastern Turkey can be said to be the least developed part of the country. Previous research indicated the disadvantaged position of women in the East in terms of social and economic well-being (see, for instance, Gunduz Hosgor and Smits, 2007). Of the very low rates of female employment rates in the East, unpaid family workers constitute the largest share. Not surprisingly, unpaid family workers mostly reside in the countryside. On the other hand, the highest proportions of self-employed and waged workers are observed in the cities. In parallel, self and waged employment are notably more common amongst women located in the West, reflecting the higher development and better socio-economic conditions in the western parts of Turkey.

In addition to all the variables discussed above, a composite index is developed in order to capture the further aspects of traditional or conservative values. A detailed explanation on the conceptual framework and the construction of the index and the associated sub-indices are provided in the next section.

Table 3.1 - Variable Definitions and Descriptive Statistics

	Total Sample		Not working		Wage worker		Self-employed		Unpaid family worker	
	1998	2008	1998	2008	1998	2008	1998	2008	1998	2008
Age in years (averages)[a]	32.72	34.22	32.01	33.48	34.42	35.12	34.1	36.26	33.82	36.34
	(0.12)	(0.12)	(0.16)	(0.15)	(0.34)	(0.29)	(0.4)	(0.38)	(0.33)	(0.34)
Women's education (%)										
No education *(reference category)*	20.52	12.74	21.55	13.49	14.03	7.92	15.56	9.27	23.63	16.41
Incomplete primary	5.54	4.77	5.52	5.25	2.39	3.30	7.06	4.82	7.27	3.77
Complete primary	51.53	49.72	51.24	49.64	32.44	33.10	57.22	52.55	64.70	70.06
Incomplete secondary	8.21	2.18	9.72	2.19	4.45	2.24	10.56	1.83	3.01	2.24
Complete secondary	9.33	8.88	10.02	10.17	17.63	6.33	6.68	9.00	1.13	4.44
Higher Education	4.87	21.71	1.95	19.27	29.07	47.11	2.93	22.53	0.25	3.08
Marital Status (%)										
Currently Married *(reference category)*	95.92	95.32	96.92	96.27	89.93	92.39	92.37	89.14	98.00	96.84
Formerly Married	4.08	4.68	3.08	3.73	10.07	7.61	7.63	10.86	2.00	3.16
Presence of child under age 6 (%)										
No children under age 6 *(reference category)*	49.02	54.79	45.59	49.96	64.43	68.33	59.58	67.83	46.77	58.90
1 or 2 child under age 6	46.60	42.14	49.84	46.71	34.74	30.08	38.99	31.68	45.32	36.25
More than 2 children under age 6	4.38	3.07	4.57	3.33	0.83	1.60	1.44	0.49	7.91	4.85
Head of household	3.64	4.33	3.09	3.63	8.13	6.55	7.60	10.65	0.47	2.14
Household Wealth (Wealth index) (%)										
Poorest *(reference category)*	19.53	15.08	14.45	12.70	14.52	12.98	20.13	10.02	45.96	34.63
Poorer	19.91	19.08	18.67	19.00	12.71	11.77	17.51	16.98	32.34	30.16
Middle	19.53	20.85	21.69	22.10	12.07	14.21	22.85	21.66	13.80	21.55
Richer	20.68	22.04	24.25	24.26	18.92	19.04	23.26	26.44	4.64	10.26
Richest	20.34	22.95	20.94	21.94	41.78	42.00	16.26	24.90	3.26	3.39

Source: Turkish Demographic and Health Surveys, 1998; 2008 (TDHS-98; TDHS-08). Sample weights are used. [a]*Standard errors for "age" are in parenthesis.*

Table 3.1 (continued)

Region (%)										
West *(reference category)*	38.87	43.69	39.53	42.30	54.31	56.02	42.76	55.23	21.74	29.79
South	14.45	11.79	15.76	12.00	11.94	12.54	11.62	10.42	12.03	10.37
Central	24.25	22.44	22.22	23.17	21.69	17.72	28.30	18.33	33.28	26.44
North	7.63	6.56	4.78	4.36	5.34	5.81	8.49	8.61	21.86	19.47
East	14.79	15.51	17.71	18.17	6.72	7.90	8.84	7.42	11.09	13.93
Current location (%)										
City *(reference category)*	54.84	54.24	63.35	59.80	65.88	58.71	52.40	58.05	8.97	13.39
Town	14.04	20.06	15.50	20.99	11.41	19.19	15.53	23.21	8.65	13.87
Countryside	31.12	25.70	21.15	19.20	22.70	22.10	32.06	18.74	82.38	72.74
Number of observations	5,394	6776	3,596	4,706	559	873	433	402	806	795
Percentage in total	100	100	66.10	67.70	11.40	14.66	7.91	6.24	14.59	11.40

Source: Turkish Demographic and Health Surveys, 1998; 2008 (TDHS-98; TDHS-08). Sample weights are used.

3.4 The Composition of the Sub-indices

Defining gender roles and behaviours that are deemed as appropriate in a society whilst restricting women's agency and their ability to negotiate for their rights; limiting women's decision making powers by undervaluing their contributions and needs; ascribing women's main responsibility as caregiving; setting barriers or completely blocking women's work outside home or labelling the "suitable" types of jobs for women are all examples on how traditional or conservative social norms and culture can hinder women's bargaining powers, their mobility and, eventually, affect their potential employment outcomes (Agarwal, 1997; Elson, 1999; Jütting and Morrisson, 2005; Olmsted, 2005; Kabeer et al., 2011). Given the available information in the TDHS data sets, four separate dimensions of social norms and culture are conceptualised; these are, the effect of traditional marriages, awareness and use of contraception, women's tolerance against domestic violence and their attitudes towards gender equality.

Social norms operate at every sphere of women's lives and one form undoubtedly manifests itself through their effect on women's marriages. The first sub-index, the "traditional marriage" (TM) index, aims to capture some of the main elements of traditional marriages such as the approval of early marriage/motherhood or payment of a bride price[30]. Such practices, by limiting women's access to education, negatively influencing women's decision-making powers and positions in the families, and defining women as dependents of their husbands, can all restrict women's access to paid employment or limit their employment options to home-based, unwaged or informal work (Dedeoglu, 2010; Spierings, 2014). Traditional marriages may indeed increase women's probabilities of being unpaid family workers, as marrying young or having a kinship with

[30] Unlike a dowry, which is paid to the groom or bride to establish a new house, the bride price is money or a property given by the groom or his family to the bride's family by virtue of the marriage of their daughters with the groom.

their husbands can be a common practice in rural areas (Gunduz-Hosgor and Smits, 2006). Moreover, by paying a bride price to a woman`s family, the husband or his family actually invest in a woman in order to use her as a workforce. Several variables are used to build up this index: dummy variables that take the value of 1 if women were below the age of 19 at their first marriage; if they were less than 19 years old when they had their first child; if their consent for marriage were not asked by their families, are generated. These variables are expected to reflect on the prevalence of early and forced marriages and early childbearing in Turkey. In addition, dummies indicating whether a bride price was paid at the marriage, whether women have a kinship with their husbands, and a categorical variable indicating the prevalence of extended families[31], are used to probe the extent of traditional marriages. Finally, another categorical variable which is assigned a score of 0 if there was only civil marriage, 0.5 if there was both a civil and religious marriage and 1 if there was only a religious marriage is included.

Social norms and culture might restrict women's reproductive autonomy through opposing the use of contraception and limiting access to contraceptives. In return, this may influence their employment status, given the strong relationship between motherhood and employment (Anxo et al., 2007; Erhel and Guergoat-Larivière, 2013). Along with the lack of affordable childcare services and work-family reconciliation policies in Turkey, constraints on women's reproductive autonomy can have marked importance; particularly, for women's access to waged work outside the home. Therefore, the second sub-index, "contraception knowledge and usage" (CK), aims at capturing whether women are aware of contraception methods and, whether this knowledge impacts on their usage. This index makes use of three different categorical variables. The first is contraception knowledge which is assigned a value of 0 if a woman knows modern methods, 0.5 if she only knows

[31] The variable takes a score of 0 for nuclear families and, 0.5 and 1 for the households with 5-10 and more than 10 people respectively.

traditional methods and 1 if she does not know of any method. A value of 0 is given to the next categorical variable if a woman has ever used a modern method, 0.5 if she has used a traditional method and 1 if she has never used a contraception method in her lifetime. The final variable relates to the current contraception method and takes the value of 0 if a woman is currently using a modern method, 0.5 if she is currently using a traditional method and 1 if she is not using any method.[32]

The last two sub-indices shed light on internalised and/or normalised gender roles and discriminatory practices. The third sub-index, "attitudes towards domestic violence" (DV), intends to address the power relations within the households through the extent of acceptance of domestic violence by the woman herself. The index makes use of the answers to the questions asking whether the respondent justifies a husband in beating his wife when she i) burns food, ii) neglects childcare, iii) argues with her husband, iii) spends money needlessly, iv) refuses sexual intercourse. The variables are categorical and are awarded a score of 0 if a woman does not agree with the statements, 0.5 if she doesn`t know or she thinks it depends on the situation, 1 if she agrees. Women who answered "don`t know/depends" to the questions are not excluded from the analysis since they may also represent a position taken against domestic violence. A lower score is given to women who answer the question as "don`t know/depends" than for the ones who agree with the statement; because their position may be regarded as slightly stronger relative to women who directly justify domestic violence.

[32] The main limitation of the CK index is that the variables chosen to develop the index might be an indicative of age or desire of children rather than a proxy for traditional values. It would have been very useful if TDHS surveys contained further information that could be used as proxies for women's reproductive autonomy such as their and their partners' attitudes towards contraceptives. Although there is a possibility that the index is a weak proxy, considering the growing conservative official discourses on women's reproductive autonomy, it is worth testing in this analysis. A ban on abortion was on the policy agenda in 2012 when Prime Minister Recep Tayyip Erdogan referenced abortion as "murder" in one of his speeches. Further information on Erdogan's speech is available at http://www.bbc.co.uk/news/world-europe-18297760; http://www.hurriyetdailynews.com/abortion-banned-in-turkish-state-hospitals-health-group-claims-.aspx?pageID=238&nID=63512&NewsCatID=341.

In order to expand the investigation on internalised values, a final attitudinal index, “attitudes towards gender equality” (GE), is generated. This index captures the levels of female emancipation within the households more directly by analysing whether women think that men are superior to women. Categorical variables are formed using the answers to the following statements: “important decisions should be made by men”, “men are usually wiser than women”, “a woman should not argue with her husband even if she does not agree with him” and “it is always better for the male child to have education than the female child”. Similar to the DV index, 0, 0.5 and 1 point is given respectively to those who disagree with the statements, who answered as “don`t know/depends” and who agree with the statements.

It is difficult to infer a clear-cut relationship between these attitudinal indices and women’s employment status. The motivations behind women’s tolerance towards discriminatory practices can be various; for example, fear or a belief in having no other choice (Agarwal, 1997), or escape from the additional burdens of economic responsibilities. For example, based on interviews with women living in Istanbul, Turkey, Bespinar (2010) notes supportive attitudes towards the male breadwinner norm amongst working class women as long as men provide everything a family needs. However, when financial constraints are substantial, given the prevalence of traditional values, these women prefer working in “clean” workplaces – the workplaces that will not affect their reputation and namus (honour) badly –, or they negotiate or make concessions in order to be able to work outside home; such as, wearing a long topcoat and a headscarf while going to their workplaces (2010: 526).

In the light of these results, the relationship between women’s attitudes towards domestic violence and gender equality and their employment status can be complex. Women’s supportive attitudes towards gender unequal norms may prevent them from working outside the home and, if they are employed, it might be home-based or with other family members. This may be reflected in a positive effect of these indices on being unpaid family workers and maybe self-employed. However, it is equally possible that these values do not act as barriers for women's waged work; particularly to the informal segment of waged employment.

Finally, it is important to note that TDHS surveys provide information on whether women were alone during the interview. This information is crucial since it is possible that women may not have been honest while responding the questions if their husbands or elders in the family were with them during the interview. Consequently, this may blur our analysis on the prevalence of traditional values. In TDHS-98, only 3.31 percent of women were with their husbands or other male members of the household and/or with their mothers and mothers-in-law during the interview, while this proportion is larger for TDHS-08 data at 12.84 percent. In terms of the reliability of data, 1.85 percent of responses were recorded as poor in TDHS-08 compared to 3.31 percent in TDHS-98.[33] Although it is not possible to be fully confident about the reliability of the information collected in surveys of this nature, these statistics are reassuring. However, for precautionary purposes, a dummy variable indicating whether women were alone during the interview is included in the MNL models in order to control for such possibilities.

3.5 Construction of the Composite Index

The approach and the methodology taken in the Organisation for Economic Co-operation and Development (OECD) Centre`s "Social Institutions and Gender Index" (SIGI) have

[33] The information about the reliability of responses is subject to interviewers' interpretations. The majority of the interviewers in TDHS-98 were university graduates whilst all were university graduates for TDHS-08. Interviewers were given three weeks of training related to demographics of Turkey, family planning, mother and child health, questionnaire training, field practice in areas not covered in the survey etc. by the members of Hacettepe Institute for Population Studies (Hacettepe Institute for Population Studies, 1999; 2009).

been the reference point in the construction of the indices (Branisa et al., 2009; 2013).[34] The first step in developing a composite index involves selection of the variables that are strongly related to the conceptual framework of what they aim to capture. As explained in the previous section, the extent of the social norms and culture is investigated in four sub-indices and within the indices, variables are selected in a way to ensure that they are related to one separate dimension. However, in order to eliminate the potential concerns about the interrelationships between the variables, a common practice is to check the level of correlation between the variables within the indices using Kendall tau-b coefficient.[35] Values of tau-b range from -1 (perfect negative association) to +1 (perfect positive association) and a value of 0 indicates no association. The results of Kendall tau-b are presented in Appendix 3A.3. It is seen that the variables within each index are statistically associated with each other.[36]

After checking the correlation between the variables used in building the sub-indices, the next step is to aggregate the variables within each sub-index with a plausible weighting scheme. In other words, to extract the common information inherited in the variables within the indices. This is achieved with "polychoric" PCA introduced by Kolenikov and Angeles (2004; 2009).[37] Accordingly, the first principal component (FPC) is used as a

[34] Based on several measures ranging from household to country-level discriminatory practices (e.g. laws and institutions), SIGI provides a composite measure of gender equality for countries that consists of the sub-indices of Discriminatory Family Code, Restricted Physical Integrity, Son bias, Restricted Resources and Assets and Restricted Civil Liberties (see OECD, 2009).

[35] Kendall tau-b is used as the majority of the index variables are ordinal and this makes adjustments for the ties that are common in discrete data (Agresti, 1984).

[36] As indicated in the user guide prepared by OECD, the sub-groups that are part of a multidimensional concept do not necessarily have to be statistically independent of each other (OECD, 2008: 22). Therefore, the investigation of the social norms and culture in four sub-indices does not mean that the variables used across the indices should not be correlated with each other. Nor does this mean that the sub-indices should be statistically independent of each other. The correlations between the sub-indices are presented in Table 3A.5 (Appendix 3A.3) (Kendall tau-b across all the variables used are also provided in Table 3A.6a and 3A.6b). The correlations between the sub-indices are not very high and the highest correlation is observed between the two attitudinal indices. The low correlations between the sub-indices can be an indicative that it is important to investigate their individual effects on women's employment.

[37] Rather than basic PCA which is valid for normally distributed variables, a polychoric PCA is employed because, as previously indicated, some of the variables used within the indices are ordinal. Full mathematical derivation of polychoric PCA can be found in Kolenikov and Angeles (2004; 2009).

proxy for the common information of the variables within the indices. FPC is the weighted sum of the standardised original variables that captures the greatest variance and obtains the largest amount of the information in the data (Kolenikov and Angeles, 2004: 7).[38] Thereby, each variable used within the indices is assigned a different weight depending on the correlations between them. In order to facilitate interpretation, each sub-index is then rescaled between 0 and 1. Given the way the variables are coded, the index values increase when women are more under the influence of traditional or conservative values with 0 indicating the most liberal and 1 the most traditional or conservative.

Following the SIGI approach, the composite index is calculated by taking an un-weighted average of a non-linear function of the sub-indices. That is,

$$composite\ index = \frac{1}{4}(TM\ index)^2 + \frac{1}{4}(CK\ index)^2 + \frac{1}{4}(DV\ index)^2 + \frac{1}{4}(GE\ index)^2$$

Equal weights given to sub-indices indicate that no dimension is more important than the other and non-linearity enables a degree of non-compensability between the sub-indices. That is, a higher score in one dimension can only partly be compensated by a lower score in another dimension. Moreover, non-linearity ensures that a high discriminatory practice is penalized in each dimension (Branisa et al., 2009).[39] The mean values of the composite index and the associated sub-indices are provided in Table 3.2.[40] Further descriptive

[38] The proportion explained by the FPC is 40.36 (40.95) percent for TM index, 80.30 (77.56) for CK index, 76.07 (81.28) for DV index and 74.51 (60.24) percent for GE index in 1998 (2008). The standardisation of the ordinal categorical variables are obtained by an ordered probit model in PCA.

[39] As noted by Branisa et al. (2009), even when equal weights are given to each dimension (sub-index), the sub-index with the greatest variance will have the largest impact on the composite index value. In our case, the variances of the four sub-indices are similar in size (Table 3.2 shows the mean values and the standard deviations of the sub-indices).

[40] The composite index and its sub-indices developed in this chapter should be evaluated within the constraints of the data employed. Surely, more dimensions could have been explored or the explored dimensions could have been better captured if more data were available. There are many important aspects that still remain uncovered; for example, women’s limited control over resources such as land or dwelling, or the practices limiting women’s mobility and freedom of movement by preventing their access to public space. In addition, even if some potential variables, such as final say on control over money or whether women can sell assets without permission or have their own bank account, appeared in the data sets and

statistics for the variables used in building up the sub-indices are provided in Appendix 3A.4 (Tables 3A.7 to 3A.10).

could well be used to enrich the indices, there were either no observations or the information was not available for both years.

Table 3.2 - Mean Values of the Composite Index and the Associated Sub-Indices among the Whole Sample and according to Employment Status

	1998					2008				
	Whole sample	Not working	Waged worker	Self-employed	Unpaid family worker	Whole sample	Not working	Waged worker	Self-employed	Unpaid family worker
Composite Index	0.169 (0.157)	0.164 (0.154)	0.117 (0.149)	0.157 (0.147)	0.232 (0.162)	0.096 (0.108)	0.097 (0.105)	0.070 (0.102)	0.078 (0.093)	0.130 (0.124)
(sub-indices)										
TM index	0.339 (0.203)	0.345 (0.204)	0.240 (0.187)	0.326 (0.191)	0.392 (0.190)	0.284 (0.187)	0.290 (0.186)	0.215 (0.173)	0.248 (0.172)	0.339 (0.192)
CK index	0.247 (0.242)	0.257 (0.249)	0.200 (0.216)	0.199 (0.225)	0.262 (0.232)	0.191 (0.210)	0.195 (0.212)	0.161 (0.199)	0.176 (0.197)	0.208 (0.214)
DV index	0.231 (0.292)	0.214 (0.281)	0.165 (0.280)	0.236 (0.293)	0.348 (0.317)	0.115 (0.233)	0.112 (0.229)	0.087 (0.212)	0.087 (0.200)	0.179 (0.279)
GE index	0.368 (0.352)	0.352 (0.344)	0.251 (0.346)	0.371 (0.341)	0.522 (0.349)	0.226 (0.264)	0.228 (0.261)	0.163 (0.243)	0.200 (0.253)	0.296 (0.288)

Source: TDHS-98; TDHS-08. Standard deviations are in parenthesis.

The mean composite index value is 0.169 in 1998, and decreases substantially to 0.096 in 2008, suggesting a decline in the incidence of these traditional and cultural values in Turkey over the years under consideration.[41] The "worst" performance in 1998 is observed in the GE index with a score of 0.368 and in 2008 it is the TM index with a score of 0.284

Unpaid family workers are those under the greatest influence of traditional and cultural values. The highest composite and the sub-index scores are observed for this group for each year and their scores are particularly high in the GE index (0.522 in 1998; 0.296 in 2008) and the TM index (0.392 in 1998; 0.339 in 2008). In addition, compared to noteworthy improvements in the overall and other sub-indices, the scores from the TM index are relatively stable across the years, particularly for waged workers (0.240 in 1998; 0.215 in 2008). The results indicate that whilst women have increasingly more liberal attitudes concerning domestic violence and gender equality, conservative or traditional values, especially in the form of traditional marriages, still prevail in Turkey.

3.6 Estimation Results

The results from the MNL models for 1998 and 2008 are presented in Table 3.3. The Table shows the marginal effects of each explanatory variable on women's probability of being in waged work, self-employment and unpaid family work, when all variables are set at their mean values. Before an extensive discussion on the role of social norms and culture on women's employment in Turkey, this section briefly examines the effect of several variables that are commonly used as the determinants of women's employment.

Higher education stands out as one of the most important determinants of women's waged employment. The probability of waged employment (rather than self-employment, unpaid

[41] Turkey's score from SIGI was 0.103 in 2014, characterizing Turkey within the "low levels of discrimination" category. The other countries in this category include, for example, Lithuania (0.042), Brazil (0.042), and Romania (0.068). However, Turkey was noted as having one of the highest prevalence of early marriage and intimate partner violence and the lowest representation of women in the parliament. These results can be found at http://genderindex.org/.

family work or not working at all) is 0.349 points greater for women with higher education than women with no education in 1998 ($p < 0.01$), when all other variables are set at their means. On the other hand, higher education appears to be a prerequisite for waged employment in 2008 (the only statistically significant marginal effect is observed for the higher education category). Moreover, the positive marginal effect of higher education on the likelihood of waged employment drops to 0.167 in 2008 which is substantially lower when compared with 1998. Perhaps the expansion of female education means that, given the employment opportunities available, being highly educated no longer generates the same advantage for women as before. Women who have some sort of education are more likely to be self-employed relative to women without any education in 1998, whilst this effect disappears in 2008. Aside from educational categories having mostly statistically insignificant effects, having higher education reduces the probability of unpaid family work by 0.039 points in 2008.

The presence of pre-school children in the household reduces the likelihood of waged and self-employment in 1998 and the effect rises with the number of young children. The negative effect of motherhood on waged employment remains across the decade and, having 1-2 children under age 6 is associated with an even lower probability of being a waged worker in 2008, compared to 1998. It can, therefore, be suggested that in the absence of improvements in terms of childcare support by the State and the lack of an adequate work and family reconciliation policies, pre-school children increasingly hinder women's access to waged employment in Turkey. Unsurprisingly, the presence/number of pre-school children do not have a statistically significant impact on unpaid family workers in each year. These results are unsurprising as these women are more likely to live in extended families where child-care can be provided by older or co-residential relatives (Borderias, 2013)

Living in wealthier households decreases the likelihood of all forms of employment, particularly waged employment (except for the self-employment category in 2008). Therefore, as with the early studies (Bespinar, 2010; Ilkkaracan, 2012), economic need acts as an important push factor for women's employment in Turkey. Women who are not currently married are more likely to be in waged employment. In line with the findings of Abeledo (2012) and Grantham (2012) on how marriage was less of a constraint in the past for women engaging in farming and working with their husbands, marriage does not appear to be a constraint for being an unpaid family worker. Furthermore, women who are the heads of the households are more likely to be in self-employment. It can, therefore, be suggested that female household heads who are managing the income generation for the whole family, in addition to housework and caregiving activities, might be more likely to engage in self-employment as it may offer more flexible, mostly part-time and home-based economic activities (Chant, 2003).

Table 3.3 - MNL Results: Marginal Effects at the Means (MEMs)

	Waged worker				Self-employed				Unpaid family worker			
	1998		2008		1998		2008		1998		2008	
Age	0.003***	(0.00)	0.000	(0.00)	0.001*	(0.00)	0.002***	(0.00)	0.002***	(0.00)	0.002***	(0.00)
Women's education (ref.: No education)												
Incomplete primary	-0.017	(0.03)	0.025	(0.03)	0.057***	(0.02)	0.006	(0.02)	0.006	(0.01)	-0.015	(0.01)
Complete primary	0.001	(0.02)	0.001	(0.02)	0.051***	(0.01)	0.009	(0.01)	0.034***	(0.01)	0.018**	(0.01)
Incomplete secondary	0.004	(0.03)	0.045	(0.04)	0.076***	(0.02)	0.000	(0.03)	0.015	(0.02)	0.030	(0.02)
Complete secondary	0.155***	(0.02)	0.008	(0.03)	0.034	(0.03)	0.019	(0.02)	-0.037	(0.02)	-0.013	(0.01)
Higher Education	0.349***	(0.03)	0.167***	(0.02)	0.064*	(0.04)	0.009	(0.02)	-0.025	(0.05)	-0.039***	(0.01)
Household wealth quintiles (ref.: poorest quintile)												
Poorer	-0.043*	(0.02)	-0.074***	(0.02)	-0.032*	(0.02)	0.000	(0.02)	-0.012	(0.01)	-0.021**	(0.01)
Middle	-0.085***	(0.02)	-0.102***	(0.02)	-0.035*	(0.02)	-0.003	(0.02)	-0.051***	(0.01)	-0.036***	(0.01)
Richer	-0.085***	(0.03)	-0.107***	(0.02)	-0.038*	(0.02)	-0.012	(0.02)	-0.088***	(0.01)	-0.063***	(0.01)
Richest	-0.100***	(0.03)	-0.051*	(0.03)	-0.077***	(0.02)	-0.023	(0.02)	-0.082***	(0.02)	-0.085***	(0.01)
Presence of child under age 6 (ref.: No children under age 6)												
1-2 child under age 6	-0.043***	(0.01)	-0.084***	(0.01)	-0.032***	(0.01)	-0.014	(0.01)	-0.004	(0.01)	-0.005	(0.01)
More than 2 children under age 6	-0.101**	(0.04)	-0.061**	(0.03)	-0.116***	(0.04)	-0.041	(0.03)	0.030**	(0.01)	0.004	(0.01)
Formerly married	0.126***	(0.03)	0.067***	(0.02)	0.019	(0.03)	0.027	(0.02)	-0.017	(0.02)	-0.021	(0.02)
Household head	-0.044	(0.03)	0.022	(0.03)	0.101***	(0.03)	0.050***	(0.02)	-0.119***	(0.03)	-0.029	(0.02)
Composite index (ref.: least traditional/conservative quintile)												
Less	-0.027	(0.02)	-0.058***	(0.02)	-0.023	(0.02)	-0.024*	(0.01)	0.011	(0.01)	-0.013	(0.01)
Middle	-0.034*	(0.02)	-0.070***	(0.02)	0.003	(0.02)	-0.025*	(0.01)	0.022**	(0.01)	0.006	(0.01)
More	-0.011	(0.02)	-0.084***	(0.02)	-0.010	(0.02)	-0.005	(0.01)	0.038***	(0.01)	0.000	(0.01)
Most	-0.010	(0.02)	-0.054***	(0.02)	-0.008	(0.02)	-0.025*	(0.01)	0.036***	(0.01)	0.002	(0.01)

*Standard errors are in parenthesis. Reference Category: Not working. Controls are included for region, living in city and the presence of others during the interview. MEMs for the control variables can be found in Table 3A.11 in Appendix 3A.5. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

3.6.1 The Effect of Social Norms and Culture

With the aim of probing the overall effect of social norms and culture, women are ranked according to their associated composite index scores and categorized into five groups, ranging from the least to the most traditional or conservative. The least traditional/conservative quintile is used as a reference category.

It is seen that social norms and culture mostly manifest themselves through their effect on women's waged employment and unpaid work. In contrast to the mostly insignificant impact in 1998, traditional values strongly reduce women's chances of being waged workers in 2008. Moreover, the extent of the negative effect increases in each quintile; that is, when women are more under the influence of these values. For example, women in the more traditional/conservative quintile are 0.084 points less likely to be waged workers compared to those in the least traditional/conservative group ($p<0.01$), although the extent is somewhat lower in the most traditional/conservative quintile. To a lesser extent, these values also reduce the probability of self-employment. The likelihood of being in unpaid family work increases when women are more affected by traditional and conservative norms. Compared to the women in the most liberal quintile, women in the most traditional quintile are around 0.036 points more likely to be unpaid family workers in 1998. This effect disappears in 2008.

Although it is smaller than the impact of higher education, the effect of traditional/conservative values appears to be similar in size to the effect of a certain level of education or, having pre-school children or the wealth of a household. The results, therefore, reveal that these values have comparable effects with the main determinants and are equally crucial for women's employment in Turkey. In order to provide further evidence and investigate the potential differentials in their contributions to women's employment status, the individual effects of each sub-indices are also investigated. The marginal effects of the sub-indices are presented in Table 3.4.[42]

Amongst the various social/cultural indices, the TM index appears to have the most powerful explanatory role on women's employment. As expected, traditional marriages increase the likelihood of unpaid family work and the effect is greater in 2008; the TM index is associated with a 0.038 point rise in the probability of being an unpaid family worker and this figure increases to 0.053 points in 2008 ($p<0.05$ and $p<0.01$ respectively). The noteworthy increase in the marginal effect in 2008 could be because there is no other choice than being an unpaid family worker for women who are still under the influence of traditional marriages by 2008; for instance, those who are still being used as a commodity under the concept of bride price. In parallel, traditional marriages are associated with a much lower chance of women being in waged employment, by 0.077 points in 2008.

As expected, limited knowledge and use of contraceptives (reflected as a high CK index score) are associated with a lower probability of waged and self-employment in 1998 and the effect is more pronounced for waged workers in 2008. Amongst the attitudinal indices, the GE index does not have a significant impact on any form of employment in each year. However, the DV index increases the probability of being an unpaid family worker by 0.024 points in 1998. Whilst the index is no longer significant for the unpaid family worker category, interestingly, it has a positive effect on being a waged worker in 2008 (with a marginal effect of 0.049 points at $p<0.05$). In order to shed light on this result, for exploratory purposes, a MNL model is estimated in five categories in which wage employment is further divided into formal and informal waged workers. Indeed, the DV index was no longer significant for formal waged workers whilst the effect was positive

[42] MEMs for the full specification can be found in Appendix 3A.5 (Table 3A.12).

and significant for informal waged workers.[43] Thereby, the positive marginal effect of the DV index is probably because of the dominating effect of informal waged employment.

Although declining in number, a portion of women internalise or normalise unequal power relations in the household by tolerating or justifying domestic violence in 2008. These women are more likely to be pushed into the informal segment of the waged employment where their work is mostly invisible and less-valued (Dedeoglu, 2010). Their position can be more disadvantageous than the unpaid family workers in 1998; because, in addition to the likelihood of being exploited and undervalued by the family members, they are further exploited in the labour market.

[43] Informality was captured by the information on whether women were registered in a social security system. The marginal effect was 0.025 ($p<0.05$) for being an informal waged worker. The overall results from the MNL in five categories can be found in Table 3A.15 in the Appendix 3A.5. It could also have been useful to investigate the type of occupations of these women; however, this was not possible due to data constraints.

Table 3.4-MEMs of the Sub-indices

	Waged worker				Self-employed				Unpaid family workers			
	1998		2008		1998		2008		1998		2008	
TM index	-0.052	(0.03)	-0.077**	(0.04)	0.005	(0.03)	-0.009	(0.03)	0.038**	(0.02)	0.053***	(0.02)
CK index	-0.040*	(0.02)	-0.062**	(0.03)	-0.085***	(0.02)	-0.006	(0.02)	-0.005	(0.01)	-0.007	(0.01)
DV index	0.032	(0.02)	0.049**	(0.02)	0.018	(0.02)	-0.014	(0.02)	0.024**	(0.01)	0.014	(0.01)
GE index	0.009	(0.02)	-0.030	(0.02)	0.007	(0.02)	0.000	(0.02)	0.016	(0.01)	-0.006	(0.01)

*Standard errors are in parenthesis. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

3.6.2 A Note on Endogeneity

The innovation in this chapter is the consideration of the impact of traditional or conservative values upon female employment outcomes. However, while traditional or conservative values may have an impact on women's employment, it is also possible that women's employment affects these values – a potential endogeneity problem. If endogeneity is present, the estimates presented above may be biased and, thereby, not reliable. This section is, therefore, allocated to investigate the possibility of endogeneity in the analyses performed throughout the Chapter.

As TDHS surveys are cross-sectional data sets, an Instrumental Variables (IV) approach can be employed as a solution to the potential endogeneity problem. However, there are two limitations: (i) identifying suitable instruments, and (ii) an IV approach is not directly compatible with MNL, therefore, requiring a series of binary models instead. In order to tackle the second limitation, although not ideal, one can generate binary outcome variables for women's employment status and estimate a probit model with an (continuous) endogeneous variable (see Cameron and Trivedi, 2009: 503).

A potential instrument could be parental education. Several studies note the importance of parental education and/or the presence of working mothers in the formation and the intergenerational transmission of traditional values (Vella, 1994; Bisin and Verdier, 2000; Fernandez et al., 2004). However, data on levels of parental education, that might be considered the most suitable instrument for social norms, is only available for TDHS-08. Therefore, we attempt a test for endogeneity using four binary variables derived from the multinomial outcomes for 2008.[44]

[44] Accordingly, dummy variables indicating whether the parents of women do not have any sort of education are used as instruments for social norms and culture. Women whose parents are not educated might be more likely to be under the influence of traditional values but parental education does not have a direct impact on women's employment outcomes.

Initially, since our aim is to test whether women's employment and traditional values are endogenously determined, a binary outcome variable is defined indicating whether women are employed (in all forms) or not. Following that, a probit model is estimated where the endogenous regressor - the composite index developed as a proxy for social norms and culture (a continuous variable with the lowest value of 0 and the highest value of 1) - is instrumented by parental education.[45] Although we usually failed to reject the null hypothesis of "no endogeneity", the results were not reassuring. [46] As seen in Table 3.5 (the first column), counterintuitive results were observed, such as having no education increasing the likelihood of employment.

In order to further investigate the possibility of endogeneity, a series of binary outcome variables from the multinomial outcomes are generated (for example, 1=waged worker 0 otherwise or 1=self-employed 0 otherwise) and models estimated using IV (see the last three columns of Table 3.5). However, these forced binary representations result in substantial heterogeneity outside the employment states. For example, when the employment status is self-employed, those who are not self-employed include women who are not working and women in paid and unpaid work. The results, therefore, were again not robust. Moreover, the Wald test failed to reject the null hypothesis of no endogeneity for waged workers, suggesting that there is no need to employ an IV-approach.

[45] This is performed by the "ivprobit" command in Stata 12 (StataCorp., 2011). The reason to employ the continuous form of the composite index, rather than the categorical version employed in the MNL, is because the ivprobit requires continuous endogenous regressors.

[46] Also, the robustness of the results are questionable as convergence was achieved at the 66th iteration, rather than the twenty or fewer iterations for an optimal solution (Borderías, 2013).

Table 3.5 – Results from the IV approach

	Employed (in all forms)		Waged worker		Self-employed		Unpaid family worker	
Composite index	-10.091***	(0.738)	-3.774	(4.734)	-9.618***	(1.272)	-9.238***	(1.234)
Age	-0.052	(0.033)	0.117	(0.088)	-0.023	(0.050)	-0.108***	(0.024)
Age squared	0.001**	(0.000)	-0.002	(0.001)	0.000	(0.001)	0.002***	(0.000)
Women's education (ref.: No education)								
Incomplete primary	-0.306***	(0.070)	-0.012	(0.193)	-0.262**	(0.102)	-0.342***	(0.082)
Complete primary	-0.643***	(0.077)	-0.277	(0.330)	-0.622***	(0.115)	-0.532***	(0.121)
Incomplete secondary	-0.807***	(0.140)	-0.151	(0.484)	-0.863***	(0.179)	-0.696***	(0.194)
Complete secondary	-0.911***	(0.098)	-0.297	(0.458)	-0.805***	(0.166)	-0.916***	(0.126)
Higher Education	-0.813***	(0.162)	0.39	(0.637)	-1.013***	(0.161)	-1.176***	(0.114)
Household wealth quintiles (ref.: poorest quintile)								
Poorer	-0.436***	(0.045)	-0.36	(0.135)	-0.307***	(0.074)	-0.382***	(0.053)
Middle	-0.669***	(0.051)	-0.532	(0.194)	-0.462***	(0.092)	-0.595***	(0.061)
Richer	-0.817***	(0.060)	-0.564	(0.227)	-0.555***	(0.098)	-0.813***	(0.066)
Richest	-0.816***	(0.062)	-0.318	(0.299)	-0.680***	(0.098)	-1.042***	(0.096)
Presence of child under age 6 (ref.: No children under age 6)								
1 or 2 child under age 6	-0.182***	(0.043)	-0.353***	(0.053)	-0.097**	(0.042)	-0.094**	(0.041)
More than 2 children	0.18**	(0.089)	-0.109	(0.204)	0.149	(0.142)	0.245***	(0.094)
Household head	0.018	(0.092)	0.043	(0.127)	0.148	(0.125)	-0.213	(0.130)
Formerly Married	0.359***	(0.081)	0.337**	(0.146)	0.363***	(0.098)	0.166	(0.123)
Constant	2.435***	(0.728)	-2.009	(2.407)	1.239	(1.322)	2.365***	(0.856)
p-Value, Wald test of exogeneity	0.000		0.4610		0.0013		0.0003	

*Standard errors are in parenthesis. Controls are included for region, living in city and the presence of others during the interview. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Although not ideal, another way to deal with the problem of endogeneity could be to generate a local average index value and use this variable as an instrument for a woman`s own index value (excluding her own index value while calculating the local averages). The advantage of this approach is that the data is available for both 1998 and 2008. A detailed discussion, the results from several additional attempts using the local averages and a discussion about several other ways of tackling endogeneity are presented in the Appendix 3A.2. A body of evidence provided from many different analyses using local average index values as instruments lead us to believe that our original thought on exogeneity is valid. Overall, although it has been very useful to explore local averages, parental education remains as our preferred instrument.

Overall, in light of the several analyses performed, it can be concluded that it is not possible to be entirely sure about the presence of endogeneity. However, as argued powerfully by Moffit (2005) and Connelly et al. (2006), endogeneity is always present to an extent and it is not easy to have theoretically sound instruments. Moreover, it is not ideal to perform an IV approach with the binary outcome variables generated from the multinomial outcomes due to enormous heterogeneity outside the employment states.

While analysing the effect of fertility on women's employment in Brazil, Connelly et al. (2006) provide an extensive discussion on endogeneity bias and ways to overcome the problem. They conclude that, given the lack of sound theoretical instruments, researchers must either choose to investigate the relationship between two variables in a reduced form or take the risk of endogeneity bias, by including a potentially endogeneous variable in their analysis. They argue that the consequence of the former would often be "to exclude potentially endogeneous policy relevant variables, the very variables that can make a difference in the economic lives of women and children" (2006: 562). This chapter takes a similar view, believing that social norms and culture play a crucial role in women's employment, thereby risking endogeneity bias by including proxies in the analysis. However, the fact that female employment has remained stagnant in Turkey, despite improvements in women's education and in the context of growing social conservatism, provides a strong prior on the causality between women's employment and social norms and culture.

While analysing the reverse pattern - the effect of women's employment on gender norms and stereotypes - Seguino (2007) suggests that an increase in women's economic activity will lead to supportive attitudes towards gender equality and enhance women's status, albeit with a time lag. This is because it will take time for the improvements in women's employment to change the traditional gender roles. Therefore, it is plausible to assert that, given the low and stagnant female labour force participation rates in Turkey, it will take longer for women's participation in the labour market to change traditional or conservative values, than for these values to affect women's employment outcomes. Accordingly, it is suggested that social norms and culture determine women's employment status in the short-run, while acknowledging the long-run effect of women's employment on traditional gender roles.[47] In line with this argument, it can also be asserted that the indices that rely on past information; namely, the TM and the CK index, can be justified in providing a more robust causal link as they are predetermined.[48] Consequently, the results presented in this chapter can either be evaluated as the short-term effect of traditional or conservative values on women's employment or as the correlation between the two.

[47] See Contreras and Plaza (2010) for a similar discussion for the Chilean labour market.

[48] This argument is also supported by Jütting (2003) and Morrison and Jütting (2004). The authors indicate that the measures on traditions that make use of the age of marriage, polygamy or, overall, laws and practices that are centuries old and women`s economic roles are exogenously determined. Therefore, another ivprobit is performed where the model is estimated assuming that TM and the CK indices are exogeneous whereas the DV and the GE indices are instrumented by their local averages for both years. The ivprobit results rejected the presence of endogeneity. The results using this approach are presented in the Appendix 3A.2 along with the further strategies to tackle endogeneity.

3.7 Conclusion

Central to this chapter was an investigation of whether traditional or conservative values provide an additional explanation for the low and stagnant employment rates of women in Turkey. Based on the TDHS surveys for the years 1998 and 2008, a composite index is formed that consists of four sub-indices measuring the degree of traditional marriages, awareness and use of contraception, women's tolerance against domestic violence and their attitudes towards gender equality. It is shown that, overall, there are improvements in the extent of traditional and cultural values with the index value decreasing from 0.169 in 1998 to 0.096 in 2008. However, although it is decreasing in prevalence over time, traditional marriages are still practiced and a considerable proportion of women continue to internalise traditional gender roles and have accepting attitudes towards domestic violence.

The MNL results show that, even after controlling for the main determinants of female employment, such as age, education, marital status and the presence of children, a link between the traditional or conservative social norms and culture and employment outcomes persists. Traditional and conservative values strongly influence women's employment in Turkey and the effect becomes more pronounced over the years under consideration. It is shown that, whilst traditional and conservative social norms and culture reduce women's likelihood of waged employment, they are also associated with limiting women's economic opportunities to the informal segment of the labour market, either in the role of unpaid family workers or as informal waged workers.

These results suggest that the policies aiming at increasing women's employment rates in Turkey should recognise that social and cultural factors, especially the discriminatory practices such as early marriages and bride price, along with tolerance towards domestic violence, hinder women's employment in many forms. An improvement in women's economic and social status requires a shift in the labour market institutions together with social institutions - laws, codes of conduct, social norms and traditions - towards a more gender equal perspective. The objective should, therefore, be to promote gender equal, egalitarian social and cultural norms and legal codes in every step of policy decisions. Given the low and stagnant employment rates of women, the labour market in Turkey fails to utilise a significant portion of the labour force and, thereby, undermines productivity. Accordingly, work and family policies relying on women's inactivity should be challenged and affordable and accessible childcare and care for the elderly, along with parental leave provisions that enable men and women to share domestic work should urgently be included in the policy agenda.

Appendix to Chapter 3

3A.1

Full List of Indicator Variables that are used in the Construction of the Wealth Index for 1998

1) the source of drinking water (piped into residence/garden; public tap; well in residence/garden; public well; piped surface water in house/garden; spring/public fountain, river, stream; tanker truck; bottled water/demi john; water station),
2) the type of toilet facility (own flush toilet; shared flush toilet; open pit toilet; closed pit latrine; no facility, bush),
3) the source of heating in the household (radiator (central heating); radiator (private); natural gas stove; stove (coal, wood)),
4) the main floor material of the house (earth; wood planks; parquet or polished wood; cement; carpet; marley; mozaic),
5) having a television, refrigerator, gas or electric oven, dishwasher, washing machine, vacuum cleaner, video recorder, camera, cd player, mobile phone, computer, telephone in the household,
6) car ownership,
7) whether the house is owned, rented, or whether the household is lodging or paying no rent,
8) the number of sleeping rooms (adjusted by the size of the household).

3A.2

Further Arguments on Endogeneity

Two additional strategies are explored in order to eliminate the problem of endogeneity. The first has been to aggregate the data within provinces (81 provinces in total which is the most detailed level available in the data sets) and, rather than the individual indices, investigate the effects of these “local” average indices on women`s employment. The marginal effects obtained from the multinomial logit models estimated accordingly are shown in Tables 1 and 2. As seen in the Tables, counterintuitive results are observed when the local average index values are used.

Compared to the results with the individual sub-indices (as presented in Table 3.4 on page 72 in the thesis – full specification in Table 3A.12 on page 146), the estimates are substantially different when the local average indices are used as explanatory variables. To summarise, it is seen that the local traditional marriage index (Local TM index hereafter) has a statistically significant negative effect on all forms of employment in each year. The Local Gender Equality index (local GE index hereafter) has a statistically significant positive effect on being an unpaid family worker and self-employed in 1998. The local GE index is statistically significant only for unpaid family work in 2008 and, contrary to the results observed in 1998, it decreases the chance of unpaid family work. The Local Domestic Violence index (local DV index hereafter) is statistically significant only for unpaid family work in both years; it has a positive effect on being an unpaid family worker in 2008 while the effect is negative in 1998. The marginal effect of the contraception knowledge and usage index (Local CK index hereafter) is positive for waged workers in both years, whereas the effect is negative for self-employed and unpaid family workers.

Table 1 - 1998 -Marginal effects obtained from multinomial logit estimated with the local average indices

	Waged worker			Self-employed			Unpaid family worker		
	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z
Age	0.003	0.001	0	0.001	0.001	0.158	0.002	0.000	0
Women's education (ref.: No education)									
Incomplete primary	-0.017	0.026	0.522	0.045	0.021	0.033	-0.002	0.014	0.882
Complete primary	-0.002	0.015	0.909	0.034	0.014	0.018	0.019	0.009	0.031
Incomplete secondary	0.004	0.025	0.874	0.056	0.020	0.005	-0.012	0.018	0.521
Complete secondary	0.149	0.020	0	0.015	0.023	0.507	-0.066	0.026	0.011
Higher Education	0.346	0.029	0	0.050	0.036	0.161	-0.064	0.055	0.237
Household wealth quintiles (ref.: poorest quintile)									
Poorer	-0.041	0.022	0.063	-0.033	0.018	0.062	-0.027	0.014	0.056
Middle	-0.076	0.022	0.001	-0.027	0.019	0.145	-0.069	0.015	0
Richer	-0.071	0.024	0.002	-0.025	0.020	0.227	-0.114	0.016	0
Richest	-0.078	0.025	0.002	-0.059	0.021	0.005	-0.112	0.019	0
Presence of child under age 6 (ref.: No children under age 6)									
1-2 child under age 6	-0.041	0.011	0	-0.030	0.011	0.005	-0.001	0.008	0.866
More than 2 children under age 6	-0.096	0.041	0.02	-0.100	0.038	0.009	0.053	0.015	0
Formerly married	0.126	0.025	0	0.020	0.026	0.443	-0.008	0.024	0.738
Household head	-0.045	0.029	0.116	0.096	0.025	0	-0.141	0.038	0
Local Average Indices									
Local TM index	-0.714	0.116	0	-0.212	0.102	0.038	-0.315	0.071	0
Local GE index	-0.073	0.084	0.388	0.189	0.076	0.013	0.289	0.052	0
Local DV index	0.199	0.101	0.048	0.018	0.088	0.838	-0.178	0.056	0.002
Local CK index	0.470	0.115	0	-0.369	0.110	0.001	-0.184	0.070	0.008

Controls are included for, living in city and the presence of others during the interview.

Table - 2- 2008 -Marginal effects obtained from multinomial logit estimated with the local average indices

	Waged worker			Self-employed			Unpaid family worker		
	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z
Age	0.001	0.001	0.341	0.002	0.001	0	0.003	0.000	0
Women's education (ref.: No education)									
Incomplete primary	0.017	0.027	0.523	0.006	0.020	0.748	-0.018	0.013	0.167
Complete primary	-0.007	0.018	0.709	0.008	0.013	0.512	0.017	0.008	0.027
Incomplete secondary	0.044	0.037	0.236	0.001	0.028	0.982	0.025	0.020	0.212
Complete secondary	0.003	0.026	0.92	0.019	0.018	0.283	-0.018	0.014	0.221
Higher Education	0.176	0.021	0	0.013	0.016	0.404	-0.042	0.015	0.005
Household wealth quintiles (ref.: poorest quintile)									
Poorer	-0.074	0.021	0.001	-0.009	0.016	0.555	-0.010	0.011	0.355
Middle	-0.101	0.022	0	-0.011	0.016	0.501	-0.018	0.012	0.146
Richer	-0.100	0.023	0	-0.022	0.017	0.192	-0.054	0.013	0
Richest	-0.034	0.027	0.207	-0.034	0.017	0.046	-0.083	0.013	0
Presence of child under age 6 (ref.: No children under age 6)									
1-2 child under age 6	-0.078	0.012	0	-0.011	0.009	0.202	-0.005	0.007	0.501
More than 2 children under age 6	-0.049	0.032	0.119	-0.031	0.033	0.348	0.004	0.013	0.741
Formerly married	0.050	0.025	0.047	0.023	0.018	0.206	-0.018	0.019	0.345
Household head	0.025	0.028	0.376	0.049	0.019	0.011	-0.035	0.022	0.111
Local Average Indices									
Local TM index	-0.731	0.117	0	-0.187	0.091	0.041	-0.185	0.055	0.001
Local GE index	-0.025	0.110	0.82	-0.128	0.086	0.139	-0.228	0.061	0
Local DV index	0.093	0.148	0.53	0.126	0.120	0.292	0.308	0.073	0
Local CK index	0.386	0.148	0.009	-0.252	0.123	0.041	-0.137	0.072	0.059

Controls are included for, living in city and the presence of others during the interview.

Although explanations could be found for the negative impact on women's employment of living in the provinces where traditional marriages are common, the marginal effects of the other sub-indices, especially the local CK index, are more difficult to interpret. Given the way the indices are constructed, a higher CK index value states that the woman has less knowledge and usage of contraceptives. Therefore, a positive marginal effect obtained from the local CK index for the waged workers indicates that living in areas where women know less about contraceptives, are less likely to have ever used or currently use contraceptives increases women's chances of being in waged employment. On the contrary, this is associated with an increased probability of being in self-employment or unpaid family work. It is difficult to find a valid explanation for this result as contraception knowledge and usage would be expected to matter most for the waged employment where the extent of work-family conflict is the greatest.

These counterintuitive results lead to some reflection about whether local indices actually capture what they intend to measure in the context of Turkey. As indicated earlier in the thesis (see Chapter 2), Turkey has witnessed high levels of internal migration since the 1950s. Given the high rates of internal migration in the country, only a very small portion could be expected to live in the same province where they spent their childhood. For example, a quick look at the sample (benefiting from the information available on the years lived in the place of residence) shows that, only around 34 percent of the sample has always stayed in the same place of residence for their entire life. This finding is consistent with our expectations on high mobility rates in Turkey. Based on a body of evidence that the cultural and traditional values are mainly formed during childhood through the communities they live in (see, for example, Cornwall, 1989; Erickson 1992; Hayes and Pittelkow 1993), it becomes problematic to use local average index values based on the current place of residence as proxies for social norms and culture. Moreover, due to high rates of internal migration, attitudes towards traditional or conservative values across provinces could be expected to be highly heterogeneous, especially in the large provinces that receive the greatest rates of internal migration. Thereby, aggregating data may result in a loss of information on the extent of the social and cultural values amongst individuals. Given this, it is also believed that aggregating the indices, especially the DV and GE indices, may not be a good strategy as they are very much based on women's individual thoughts. Aggregating these indices may blur their meaning and result in overlooking the extent of the differentials in the individual thoughts of women towards traditional gender roles. Although arguable, it may still be worth aggregating the TM index as it can be a good proxy for the extent of traditional marriages in the communities, it relies on past information (thereby mobility would not matter) and, it is not based on actual events or personal experience. However, it is believed that aggregating the others may not be satisfactory.

Further Multinomial Logit Models

Based on the concerns explained above, for exploratory purposes and in order to see the variation across the models, further multinomial logit models are estimated as follows: *i)* with only local TM index and, *ii)* with local TM and with individual indices (DV, GE and CK). Although the interesting positive effect of the CK index on women`s employment disappears in the second specification, the significance and the explanatory power of these exploratory models were weak. Again, these attempts did not seem to offer a satisfactory solution for the endogeneity problem. Before explaining the next strategy followed by using an IV approach, the multinomial logit results from these exploratory models are provided below.

MNL Results with only Local TM Index: Marginal Effects at the Means (MEMs), 1998

	Waged worker			Self-employed			Unpaid family worker		
	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z
Age	0.00305	0.001	0	0.001	0.000	0.113	0.003	0.000	0
Women's education (ref.: No education)									
Incomplete primary	-0.021	0.026	0.411	0.054	0.021	0.011	0.001	0.014	0.942
Complete primary	-0.003	0.015	0.789	0.046	0.014	0.001	0.023	0.009	0.01
Incomplete secondary	0.001	0.025	0.987	0.069	0.020	0.001	-0.009	0.019	0.638
Complete secondary	0.147	0.020	0	0.028	0.023	0.223	-0.063	0.027	0.019
Higher Education	0.342	0.028	0	0.065	0.036	0.075	-0.061	0.056	0.274
Household wealth quintiles (ref.: poorest quintile)									
Poorer	-0.047	0.022	0.034	-0.036	0.018	0.051	-0.026	0.015	0.069
Middle	-0.083	0.022	0	-0.032	0.019	0.094	-0.074	0.015	0
Richer	-0.081	0.023	0.001	-0.035	0.020	0.081	-0.122	0.016	0
Richest	-0.090	0.025	0	-0.072	0.020	0	-0.122	0.018	0
Presence of child under age 6 (ref.: No children under age 6)									
1-2 child under age 6	-0.041	0.011	0	-0.030	0.010	0.005	-0.001	0.008	0.899
More than 2 children under age 6	-0.094	0.042	0.024	-0.103	0.039	0.009	0.052	0.015	0.001
Formerly married	0.123	0.025	0	0.015	0.026	0.556	-0.007	0.025	0.765
Household head	-0.042	0.029	0.142	0.101	0.026	0	-0.139	0.039	0
Local TM index	-0.367	0.073	0	-0.261	0.068	0	-0.320	0.048	0

Reference Category: Not working. Controls are included for region, living in city and the presence of others during the interview

MNL Results with only Local TM Index: Marginal Effects at the Means (MEMs), 2008

	Waged worker			Self-employed			Unpaid family worker		
	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z
Age	0.001	0.001	0.311	0.002	0.001	0.001	0.003	0.000	0
Women's education (ref.: No education)									
Incomplete primary	0.016	0.027	0.541	0.006	0.020	0.767	-0.020	0.013	0.121
Complete primary	-0.011	0.018	0.541	0.010	0.013	0.452	0.018	0.008	0.021
Incomplete secondary	0.041	0.037	0.265	0.001	0.028	0.976	0.027	0.020	0.178
Complete secondary	-0.001	0.026	0.985	0.020	0.018	0.252	-0.016	0.014	0.27
Higher Education	0.174	0.021	0	0.014	0.016	0.4	-0.042	0.015	0.005
Household wealth quintiles (ref.: poorest quintile)									
Poorer	-0.078	0.022	0	-0.010	0.016	0.537	-0.012	0.011	0.253
Middle	-0.106	0.022	0	-0.010	0.016	0.536	-0.017	0.012	0.166
Richer	-0.106	0.023	0	-0.019	0.016	0.25	-0.051	0.012	0
Richest	-0.043	0.027	0.108	-0.029	0.017	0.081	-0.080	0.013	0
Presence of child under age 6 (ref.: No children under age 6)									
1-2 child under age 6	-0.078	0.012	0	-0.012	0.009	0.187	-0.004	0.007	0.569
More than 2 children under age 6	-0.044	0.032	0.164	-0.034	0.033	0.304	0.004	0.013	0.777
Formerly married	0.050	0.025	0.049	0.024	0.018	0.198	-0.016	0.019	0.401
Household head	0.025	0.028	0.37	0.049	0.019	0.01	-0.039	0.022	0.079
Local TM index	-0.566	0.078	0	-0.259	0.060	0	-0.143	0.040	0

Reference Category: Not working. Controls are included for region, living in city and the presence of others during the interview.

MNL Results with Local TM Index, Individual GE, DV and CK Indices: Marginal Effects at the Means (MEMs), 1998

	Waged worker			Self-employed			Unpaid family work		
	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z
Age	0.003	0.001	0	0.001	0.001	0.4	0.002	0.000	0
Women's education (ref.: No education)									
Incomplete primary	-0.020	0.027	0.457	0.049	0.020	0.017	0.003	0.014	0.816
Complete primary	-0.002	0.015	0.872	0.040	0.014	0.004	0.030	0.009	0.001
Incomplete secondary	0.006	0.026	0.807	0.065	0.020	0.001	0.012	0.018	0.487
Complete secondary	0.160	0.022	0	0.029	0.023	0.213	-0.044	0.025	0.077
Higher Education	0.357	0.030	0	0.058	0.035	0.098	-0.042	0.051	0.415
Household wealth quintiles (ref.: poorest quintile)									
Poorer	-0.049	0.023	0.035	-0.041	0.019	0.029	-0.026	0.014	0.065
Middle	-0.089	0.024	0	-0.046	0.020	0.021	-0.072	0.015	0
Richer	-0.088	0.025	0	-0.050	0.021	0.019	-0.112	0.016	0
Richest	-0.101	0.026	0	-0.085	0.021	0	-0.112	0.018	0
Presence of child under age 6 (ref.: No children under age 6)									
1-2 child under age 6	-0.043	0.011	0	-0.034	0.011	0.001	-0.006	0.007	0.402
More than 2 children under age 6	-0.094	0.042	0.025	-0.104	0.037	0.005	0.041	0.014	0.005
Formerly married	0.130	0.026	0	0.033	0.026	0.191	-0.013	0.023	0.569
Household head	-0.043	0.029	0.139	0.093	0.025	0	-0.132	0.036	0
Indices									
Local TM index	-0.162	0.103	0.115	-0.162	0.103	0.115	-0.323	0.063	0
GE index	0.008	0.019	0.669	0.008	0.019	0.669	0.020	0.010	0.055
DV index	0.030	0.022	0.163	0.030	0.022	0.163	0.026	0.012	0.024
CK index	-0.036	0.023	0.128	-0.036	0.023	0.128	-0.001	0.014	0.936

Reference Category: Not working. Controls are included for region, living in city and the presence of others during the interview.

MNL Results with Local TM Index, Individual GE, DV and CK Indices: Marginal Effects at the Means (MEMs), 2008

	Waged worker			Self-employed			Unpaid family work		
	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z	dy/dx	Std. Err.	P>z
Age	0.001	0.001	0.441	0.002	0.001	0.001	0.002	0.000	0
Women's education (ref.: No education)									
Incomplete primary	0.017	0.026	0.504	0.005	0.020	0.797	-0.019	0.013	0.15
Complete primary	-0.012	0.018	0.497	0.008	0.013	0.545	0.019	0.008	0.014
Incomplete secondary	0.038	0.037	0.298	-0.002	0.029	0.954	0.029	0.020	0.145
Complete secondary	-0.003	0.026	0.911	0.018	0.018	0.319	-0.014	0.014	0.325
Higher Education	0.168	0.022	0	0.011	0.016	0.5	-0.040	0.015	0.009
Household wealth quintiles (ref.: poorest quintile)									
Poorer	-0.080	0.022	0	-0.010	0.016	0.51	-0.012	0.011	0.277
Middle	-0.107	0.022	0	-0.011	0.016	0.486	-0.016	0.012	0.181
Richer	-0.109	0.023	0	-0.020	0.017	0.217	-0.050	0.012	0
Richest	-0.048	0.027	0.074	-0.031	0.017	0.068	-0.079	0.013	0
Presence of child under age 6 (ref.: No children under age 6)									
1-2 child under age 6	-0.079	0.012	0	-0.012	0.009	0.184	-0.005	0.007	0.489
More than 2 children under age 6	-0.046	0.031	0.137	-0.033	0.033	0.314	0.002	0.013	0.908
Formerly married	0.058	0.025	0.022	0.024	0.019	0.195	-0.014	0.019	0.468
Household head	0.024	0.028	0.383	0.049	0.019	0.01	-0.038	0.022	0.083
Indices									
Local TM index	-0.566	0.077	0	-0.257	0.060	0	-0.150	0.040	0
GE index	-0.039	0.023	0.092	-0.004	0.016	0.81	-0.006	0.011	0.548
DV index	0.052	0.025	0.036	-0.013	0.020	0.529	0.026	0.011	0.018
CK index	-0.050	0.025	0.048	-0.002	0.020	0.91	-0.009	0.013	0.482

Reference Category: Not working. Controls are included for region, living in city and the presence of others during the interview.

IV approach

As the results obtained from the multinomial logit models with local averages of the indices were not satisfactory, we attempt further analyses with an IV approach. Accordingly, the overall composite index as well as the associated sub-indices are instrumented by their local averages (excluding individual`s own index value when calculating the local averages).

Initially, endogeneity is tested when the composite index is instrumented by its local average. Taking the same order as in the main text, the ivprobit models are first estimated by generating a binary variable that equals to 1 if a woman was employed (in all forms) and 0 otherwise. Following that, the ivprobit models are estimated with the binary outcome variables generated from the multinomial outcomes as follows: i) 1= waged work; 0 = otherwise (all forms of employment statuses); ii) 1= waged worker; 0 = otherwise (i.e. self-employed, unpaid family worker, not working), iii) 1= self-employed; 0 = otherwise, iv) 1= unpaid family worker; 0 = otherwise. The results from this first attempt provided strong evidence of exogeneity. We fail to reject the assumption of “no endogeneity” in most cases, with the exception of unpaid family workers in 1998 and for work (in all forms) in 2008. In parallel with this, the model estimates were mostly not statistically significant. Therefore, the first attempt with the composite index supports the assumption that women`s employment and traditional values in various forms are exogenously determined. These results are provided in the tables below:

1998- ivprobit with composite indices

1. ***Dependent variable – work (in all forms)=1, not working=0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Composite Index (instrumented)	-0.95128	1.32856	-0.72	0.474	-3.55521	1.652645
Age	0.119539	0.026425	4.52	0	0.067746	0.171331
Age squared	-0.00153	0.000385	-3.97	0	-0.00228	-0.00077
Women's education (ref.: No education)						
Incomplete primary	0.098178	0.099969	0.98	0.326	-0.09776	0.294112
Complete primary	0.180606	0.131268	1.38	0.169	-0.07667	0.437888
Incomplete secondary	0.122658	0.212313	0.58	0.563	-0.29347	0.538784
Complete secondary	0.476977	0.235877	2.02	0.043	0.014666	0.939288
Higher Education	1.615994	0.290658	5.56	0	1.046315	2.185674
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.28174	0.087035	-3.24	0.001	-0.45233	-0.11116
Middle	-0.61818	0.128955	-4.79	0	-0.87093	-0.36543
Richer	-0.79767	0.154367	-5.17	0	-1.10022	-0.49511
Richest	-0.97544	0.170511	-5.72	0	-1.30964	-0.64124
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.21895	0.045164	-4.85	0	-0.30747	-0.13043
More than 2 children under age 6	-0.17767	0.110767	-1.6	0.109	-0.39477	0.039429
Formerly married	0.436069	0.123482	3.53	0	0.194048	0.67809
Household head	-0.09477	0.131883	-0.72	0.472	-0.35326	0.163712
Constant	-2.21816	0.782079	-2.84	0.005	-3.75101	-0.68531
/athrho	0.160236	0.167068	0.96	0.338	-0.16721	0.487683
/lnsigma	-2.09963	0.009672	-217.09	0	-2.11858	-2.08067
rho	0.158879	0.162851			-0.16567	0.452376
sigma	0.122502	0.001185			0.120202	0.124847
Wald test of exogeneity (/athrho = 0): chi2(1)= 0.92 Prob > chi2 = 0.3375						

Controls are included for region, living in city and the presence of others during the interview

2. ***Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Composite Index (instrumented)	2.207384	1.74659	1.26	0.206	-1.21587	5.630638
Age	0.180403	0.029349	6.15	0	0.122879	0.237927
Age squared	-0.00252	0.000433	-5.81	0	-0.00336	-0.00167
Women's education (ref.: No education)						
Incomplete primary	-0.03203	0.142441	-0.22	0.822	-0.31121	0.247151
Complete primary	0.151957	0.167559	0.91	0.364	-0.17645	0.480366
Incomplete secondary	0.310644	0.274627	1.13	0.258	-0.22762	0.848902
Complete secondary	1.164717	0.243507	4.78	0	0.687452	1.641982
Higher Education	2.407296	0.216051	11.14	0	1.983845	2.830748
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.04457	0.128662	-0.35	0.729	-0.29674	0.2076
Middle	-0.13408	0.203864	-0.66	0.511	-0.53365	0.265488
Richer	-0.11015	0.24238	-0.45	0.649	-0.58521	0.364904
Richest	-0.16013	0.269494	-0.59	0.552	-0.68832	0.368072
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.20571	0.065093	-3.16	0.002	-0.33329	-0.07813
More than 2 children under age 6	-0.53608	0.185822	-2.88	0.004	-0.90029	-0.17188
Formerly married	0.614982	0.168055	3.66	0	0.2856	0.944364
Household head	-0.25474	0.168161	-1.51	0.13	-0.58433	0.074846
_cons	-4.61018	0.785111	-5.87	0	-6.14897	-3.07139
/athrho	-0.25801	0.231503	-1.11	0.265	-0.71175	0.195724
/lnsigma	-2.09963	0.009672	-217.09	0	-2.11858	-2.08067
rho	-0.25244	0.216751			-0.61177	0.193262
sigma	0.122502	0.001185			0.120202	0.124847
Wald test of exogeneity (/athrho = 0): chi2(1) = 1.24 Prob > chi2 = 0.2651						

Controls are included for region, living in city and the presence of others during the interview

3. *Dependent variable: self-employed=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Composite Index (instrumented)	0.383126	1.806616	0.21	0.832	-3.15778	3.924029
Age	0.113566	0.032684	3.47	0.001	0.049507	0.177624
Age squared	-0.00164	0.000481	-3.4	0.001	-0.00258	-0.00069
Women's education (ref.: No education)						
Incomplete primary	0.299794	0.126836	2.36	0.018	0.0512	0.548388
Complete primary	0.263283	0.167043	1.58	0.115	-0.06411	0.590681
Incomplete secondary	0.427634	0.271573	1.57	0.115	-0.10464	0.959908
Complete secondary	0.166876	0.301749	0.55	0.58	-0.42454	0.758292
Higher Education	-0.01671	0.349556	-0.05	0.962	-0.70183	0.668406
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.12994	0.12658	-1.03	0.305	-0.37804	0.118147
Middle	-0.08838	0.191335	-0.46	0.644	-0.46339	0.286627
Richer	-0.0831	0.230041	-0.36	0.718	-0.53397	0.367777
Richest	-0.34516	0.260975	-1.32	0.186	-0.85666	0.16634
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.16777	0.062394	-2.69	0.007	-0.29006	-0.04548
More than 2 children under age 6	-0.64192	0.193283	-3.32	0.001	-1.02075	-0.26309
Formerly married	0.040628	0.164474	0.25	0.805	-0.28173	0.362991
Household head	0.60419	0.153849	3.93	0	0.302653	0.905728
Constant	-3.21748	0.949892	-3.39	0.001	-5.07923	-1.35572
/athrho	-0.05991	0.223396	-0.27	0.789	-0.49775	0.37794
/lnsigma	-2.09963	0.009672	-217.09	0	-2.11858	-2.08067
rho	-0.05984	0.222596			-0.46035	0.360917
sigma	0.122502	0.001185			0.120202	0.124847
Wald test of exogeneity (/athrho = 0): chi2(1) = 0.07 Prob > chi2 = 0.7886						

Controls are included for region, living in city and the presence of others during the interview

4. *Dependent variable: unpaid family worker =1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Composite Index (instrumented)	-3.84348	1.172582	-3.28	0.001	-6.1417	-1.54526
Age	-0.02081	0.026285	-0.79	0.428	-0.07233	0.030705
Age squared	0.000546	0.000375	1.46	0.145	-0.00019	0.00128
Women's education (ref.: No education)						
Incomplete primary	-0.10084	0.106342	-0.95	0.343	-0.30926	0.107589
Complete primary	-0.12335	0.134267	-0.92	0.358	-0.38651	0.139812
Incomplete secondary	-0.51051	0.202598	-2.52	0.012	-0.90759	-0.11342
Complete secondary	-0.81504	0.210006	-3.88	0	-1.22664	-0.40344
Higher Education	-1.11265	0.287797	-3.87	0	-1.67672	-0.54858
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.30907	0.079087	-3.91	0	-0.46408	-0.15407
Middle	-0.74518	0.100847	-7.39	0	-0.94283	-0.54752
Richer	-1.17511	0.111442	-10.54	0	-1.39353	-0.95669
Richest	-1.18724	0.139831	-8.49	0	-1.46131	-0.91318
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.0715	0.053209	-1.34	0.179	-0.17578	0.032792
More than 2 children under age 6	0.314826	0.104526	3.01	0.003	0.109958	0.519693
Formerly married	0.003479	0.1714	0.02	0.984	-0.33246	0.339416
Household head	-0.99459	0.250526	-3.97	0	-1.48561	-0.50357
/athrho	0.589305	0.193251	3.05	0.002	0.210541	0.96807
/lnsigma	-2.09963	0.009672	-217.09	0	-2.11858	-2.08067
rho	0.529396	0.13909			0.207484	0.747855
sigma	0.122502	0.001185			0.120202	0.124847
Wald test of exogeneity (/athrho = 0): chi2(1) = 9.30 Prob > chi2 = 0.0023						

Controls are included for region, living in city and the presence of others during the interview

2008- ivprobit with composite indices

1. ***Dependent variable – work (in all forms)=1, not working=0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Composite Index (instrumented)	-3.05085	1.599237	-1.91	0.056	-6.18529	0.083601
Age	0.119545	0.032198	3.71	0	0.056439	0.182652
Age squared	-0.00152	0.000465	-3.27	0.001	-0.00243	-0.00061
Women's education (ref.: No education)						
Incomplete primary	-0.08965	0.097476	-0.92	0.358	-0.2807	0.101401
Complete primary	-0.11109	0.126219	-0.88	0.379	-0.35848	0.136293
Incomplete secondary	-0.06216	0.200708	-0.31	0.757	-0.45554	0.331225
Complete secondary	-0.25063	0.170145	-1.47	0.141	-0.5841	0.08285
Higher Education	0.223794	0.208057	1.08	0.282	-0.18399	0.631578
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.31145	0.070057	-4.45	0	-0.44876	-0.17415
Middle	-0.49654	0.088722	-5.6	0	-0.67044	-0.32265
Richer	-0.66355	0.096586	-6.87	0	-0.85285	-0.47424
Richest	-0.54507	0.114504	-4.76	0	-0.7695	-0.32065
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.27227	0.040506	-6.72	0	-0.35166	-0.19288
More than 2 children under age 6	-0.12131	0.110321	-1.1	0.271	-0.33754	0.094914
Formerly married	0.250906	0.104843	2.39	0.017	0.045419	0.456394
Household head	0.113809	0.109131	1.04	0.297	-0.10008	0.327701
_cons	-1.95231	0.816566	-2.39	0.017	-3.55275	-0.35187
/athrho	0.289937	0.151921	1.91	0.056	-0.00782	0.587697
/lnsigma	-2.43912	0.00859	-283.95	0	-2.45596	-2.42229
rho	0.282077	0.139833			-0.00782	0.528237
sigma	0.087237	0.000749			0.085781	0.088719
Wald test of exogeneity (/athrho = 0): chi2(1) = 3.64 Prob > chi2 = 0.0563						

Controls are included for region, living in city and the presence of others during the interview

2. ***Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Composite Index (instrumented)	-2.39018	2.170702	-1.1	0.271	-6.64468	1.864317
Age	0.140714	0.041427	3.4	0.001	0.059519	0.22191
Age squared	-0.00203	0.000608	-3.34	0.001	-0.00322	-0.00084
Women’s education (ref.: No education)						
Incomplete primary	0.035411	0.129877	0.27	0.785	-0.21914	0.289965
Complete primary	-0.18378	0.164564	-1.12	0.264	-0.50632	0.138764
Incomplete secondary	-0.02023	0.256671	-0.08	0.937	-0.5233	0.482832
Complete secondary	-0.16705	0.228729	-0.73	0.465	-0.61535	0.281247
Higher Education	0.564369	0.281279	2.01	0.045	0.013071	1.115666
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.30905	0.094014	-3.29	0.001	-0.49332	-0.12479
Middle	-0.45664	0.121778	-3.75	0	-0.69532	-0.21796
Richer	-0.47494	0.13679	-3.47	0.001	-0.74304	-0.20684
Richest	-0.20967	0.162487	-1.29	0.197	-0.52814	0.108798
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.35674	0.049997	-7.14	0	-0.45473	-0.25875
More than 2 children under age 6	-0.15686	0.144607	-1.08	0.278	-0.44029	0.12656
Formerly married	0.309446	0.122519	2.53	0.012	0.069314	0.549579
Household head	0.048454	0.125562	0.39	0.7	-0.19764	0.294551
Constant	-2.69502	1.073612	-2.51	0.012	-4.79926	-0.59078
/athrho	0.213709	0.199281	1.07	0.284	-0.17687	0.604292
/lnsigma	-2.43912	0.00859	-283.95	0	-2.45596	-2.42229
rho	0.210514	0.190449			-0.17505	0.540097
sigma	0.087237	0.000749			0.085781	0.088719
Wald test of exogeneity (/athrho = 0): chi2(1) = 1.15 Prob > chi2 = 0.2835						

Controls are included for region, living in city and the presence of others during the interview

3. Dependent variable: self-employed=1, 0 otherwise

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Composite Index (instrumented)	-3.76767	2.450931	-1.54	0.124	-8.57141	1.036068
Age	0.12288	0.052137	2.36	0.018	0.020692	0.225067
Age squared	-0.0016	0.000749	-2.13	0.033	-0.00307	-0.00013
Women's education (ref.: No education)						
Incomplete primary	-0.05761	0.152346	-0.38	0.705	-0.35621	0.240979
Complete primary	-0.17936	0.190589	-0.94	0.347	-0.55291	0.194188
Incomplete secondary	-0.30612	0.292569	-1.05	0.295	-0.87955	0.267303
Complete secondary	-0.18334	0.263307	-0.7	0.486	-0.69941	0.332732
Higher Education	-0.35197	0.285527	-1.23	0.218	-0.91159	0.20765
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.17047	0.114591	-1.49	0.137	-0.39507	0.054121
Middle	-0.24494	0.146207	-1.68	0.094	-0.5315	0.041622
Richer	-0.32293	0.161411	-2	0.045	-0.6393	-0.00657
Richest	-0.45682	0.17504	-2.61	0.009	-0.79989	-0.11374
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.08988	0.060976	-1.47	0.14	-0.20939	0.029633
More than 2 children under age 6	-0.06645	0.20757	-0.32	0.749	-0.47328	0.340381
Formerly married	0.261187	0.143977	1.81	0.07	-0.021	0.543377
Household head	0.323739	0.143215	2.26	0.024	0.043043	0.604435
Constant	-2.83851	1.367331	-2.08	0.038	-5.51843	-0.15859
/athrho	0.328502	0.239254	1.37	0.17	-0.14043	0.797431
/lnsigma	-2.43912	0.00859	-283.95	0	-2.45596	-2.42229
rho	0.317174	0.215185			-0.13951	0.662598
sigma	0.087237	0.000749			0.085781	0.088719
Wald test of exogeneity (/athrho = 0): chi2(1) = 1.89 Prob > chi2 = 0.1697						

Controls are included for region, living in city and the presence of others during the interview

4. *Dependent variable: unpaid family worker =1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Composite Index (instrumented)	-1.33437	2.199509	-0.61	0.544	-5.64532	2.976592
Age	-0.00587	0.036602	-0.16	0.873	-0.07761	0.065867
Age squared	0.000399	0.000529	0.75	0.451	-0.00064	0.001437
Women's education (ref.: No education)						
Incomplete primary	-0.15688	0.125652	-1.25	0.212	-0.40316	0.089392
Complete primary	0.067791	0.170294	0.4	0.691	-0.26598	0.401561
Incomplete secondary	0.094079	0.270119	0.35	0.728	-0.43534	0.623502
Complete secondary	-0.27986	0.231435	-1.21	0.227	-0.73347	0.173739
Higher Education	-0.52195	0.256261	-2.04	0.042	-1.02421	-0.01969
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.14668	0.094964	-1.54	0.122	-0.3328	0.039449
Middle	-0.26697	0.127067	-2.1	0.036	-0.51601	-0.01792
Richer	-0.52316	0.142336	-3.68	0	-0.80214	-0.24419
Richest	-0.81785	0.16801	-4.87	0	-1.14714	-0.48855
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.07238	0.058344	-1.24	0.215	-0.18673	0.041971
More than 2 children under age 6	0.007229	0.132119	0.05	0.956	-0.25172	0.266177
Formerly married	-0.13037	0.168293	-0.77	0.439	-0.46022	0.199474
Household head	-0.34386	0.184194	-1.87	0.062	-0.70488	0.017151
Constant	-1.50006	1.000587	-1.5	0.134	-3.46118	0.461052
/athrho	0.141032	0.196964	0.72	0.474	-0.24501	0.527075
/lnsigma	-2.43912	0.00859	-283.95	0	-2.45596	-2.42229
rho	0.140105	0.193098			-0.24022	0.483142
sigma	0.087237	0.000749			0.085781	0.088719
Wald test of exogeneity (/athrho = 0): chi2(1) = 0.51 Prob > chi2 = 0.4740						

Controls are included for region, living in city and the presence of others during the interview

In the next step, an ivprobit was performed with the individual sub-indices being instrumented by their local averages.[49] The assumption of no endogeneity was still valid for the 2008 data; however, exogeneity no longer held for the 1998 data. It is important to explore the results in the 1998 data though. The coefficients for the DV and GE indices were almost always insignificant. Moreover, as with the multinomial logit models using the individual indices described above, the results from the CK index remained counterintuitive. That is, the instrumented CK index had a positive effect on being employed in all forms or being in waged employment. In other words, knowing less about contraceptives and/or not having used them appeared to increase women`s chances of being employed, particularly in the form of waged worker. This finding again leads us to refer back to our earlier argument that provincial local indices may not be a good proxy for social norms and culture and, thereby, using them as instruments may not be satisfactory. Before presenting the further exploratory models with IV approach, the tables from the ivprobit estimates with the individual indices are provided below:

[49] Two-step estimator is used rather than the maximum likelihood estimation (MLE) when ivprobit is performed with the sub-indices instrumented by their local averages. This is because, convergence was not achieved when MLE was used.

1998 - ivprobit estimates with the individual sub-indices instrumented by their local averages (excluding the index value of the individual herself)

1. ***Dependent variable – work (in all forms)=1, not working=0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	0.902549	0.998998	0.9	0.366	-1.05545	2.860549
DV index (instrumented)	1.727896	1.245417	1.39	0.165	-0.71308	4.168869
TM index (instrumented)	-7.05883	1.603999	-4.4	0	-10.2026	-3.91505
CK index (instrumented)	3.380575	1.874569	1.8	0.071	-0.29351	7.054663
Age	0.18727	0.091842	2.04	0.041	0.007264	0.367277
Age squared	-0.00238	0.001275	-1.86	0.062	-0.00488	0.000122
Women's education (ref.: No education)						
Incomplete primary	0.190387	0.165999	1.15	0.251	-0.13497	0.515739
Complete primary	-0.03216	0.202562	-0.16	0.874	-0.42917	0.364859
Incomplete secondary	-0.00834	0.358483	-0.02	0.981	-0.71095	0.694273
Complete secondary	-0.24194	0.421731	-0.57	0.566	-1.06852	0.584634
Higher Education	0.729871	0.501238	1.46	0.145	-0.25254	1.71228
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.02493	0.174102	-0.14	0.886	-0.36616	0.316308
Middle	-0.07103	0.293659	-0.24	0.809	-0.64659	0.504533
Richer	-0.05177	0.370663	-0.14	0.889	-0.77825	0.674716
Richest	-0.12547	0.420872	-0.3	0.766	-0.95036	0.699427
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	0.046137	0.148609	0.31	0.756	-0.24513	0.337406
More than 2 children under age 6	0.439425	0.222645	1.97	0.048	0.003048	0.875802
Formerly married	-0.04068	0.366584	-0.11	0.912	-0.75917	0.677815
Household head	-0.22806	0.205472	-1.11	0.267	-0.63078	0.174653
Constant	-3.38982	2.336436	-1.45	0.147	-7.96915	1.18951
Wald test of exogeneity: chi2(4) = 62.08 Prob > chi2 = 0.0000						

2. ***Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-0.17532	1.389403	-0.13	0.9	-2.8985	2.54786
DV index (instrumented)	3.224082	1.757651	1.83	0.067	-0.22085	6.669015
TM index (instrumented)	-5.92606	2.283876	-2.59	0.009	-10.4024	-1.44974
CK index (instrumented)	7.890911	2.661318	2.97	0.003	2.674825	13.107
Age	0.493471	0.130818	3.77	0	0.237072	0.74987
Age squared	-0.00675	0.001815	-3.72	0	-0.01031	-0.0032
Women's education (ref.: No education)						
Incomplete primary	0.212746	0.237368	0.9	0.37	-0.25249	0.677978
Complete primary	0.06387	0.285833	0.22	0.823	-0.49635	0.624091
Incomplete secondary	0.240448	0.504572	0.48	0.634	-0.74849	1.22939
Complete secondary	0.506952	0.592962	0.85	0.393	-0.65523	1.669137
Higher Education	1.723918	0.702604	2.45	0.014	0.346839	3.100997
Household wealth quintiles (ref.: poorest quintile)						
Poorer	0.363005	0.244272	1.49	0.137	-0.11576	0.841768
Middle	0.608444	0.412437	1.48	0.14	-0.19992	1.416806
Richer	0.85144	0.519841	1.64	0.101	-0.16743	1.87031
Richest	0.903706	0.589287	1.53	0.125	-0.25128	2.058687
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	0.334168	0.209839	1.59	0.111	-0.07711	0.745446
More than 2 children under age 6	0.184183	0.339675	0.54	0.588	-0.48157	0.849933
Formerly married	-0.59676	0.509152	-1.17	0.241	-1.59468	0.40116
Household head	-0.38698	0.276805	-1.4	0.162	-0.92951	0.155548
Constant	-11.1438	3.311811	-3.36	0.001	-17.6348	-4.65274
Wald test of exogeneity: chi2(4) = 23.20 Prob > chi2 = 0.0001						

3. *Dependent variable: self-employed=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	1.070179	0.929061	1.15	0.249	-0.75075	2.891104
DV index (instrumented)	0.55173	1.166746	0.47	0.636	-1.73505	2.838511
TM index (instrumented)	-2.37444	1.511092	-1.57	0.116	-5.33613	0.587241
CK index (instrumented)	-1.59528	1.786596	-0.89	0.372	-5.09694	1.906382
Age	-0.02296	0.088482	-0.26	0.795	-0.19638	0.150461
Age squared	0.000262	0.001229	0.21	0.831	-0.00215	0.00267
Women's education (ref.: No education)						
Incomplete primary	0.2239	0.15222	1.47	0.141	-0.07445	0.522246
Complete primary	0.070012	0.192069	0.36	0.715	-0.30644	0.446461
Incomplete secondary	0.280228	0.335563	0.84	0.404	-0.37746	0.937919
Complete secondary	-0.12295	0.402487	-0.31	0.76	-0.91181	0.665915
Higher Education	-0.39759	0.483496	-0.82	0.411	-1.34523	0.550043
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.18183	0.164116	-1.11	0.268	-0.5035	0.139827
Middle	-0.08861	0.273099	-0.32	0.746	-0.62387	0.446656
Richer	-0.03321	0.343991	-0.1	0.923	-0.70742	0.641001
Richest	-0.25379	0.39193	-0.65	0.517	-1.02196	0.514381
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.26778	0.140879	-1.9	0.057	-0.5439	0.00834
More than 2 children under age 6	-0.51129	0.249853	-2.05	0.041	-1.00099	-0.02159
Formerly married	0.396172	0.343185	1.15	0.248	-0.27646	1.068803
Household head	0.541808	0.168341	3.22	0.001	0.211867	0.87175
Constant	-0.14208	2.241592	-0.06	0.949	-4.53552	4.251357
Wald test of exogeneity: chi2(4) = 22.37 Prob > chi2 = 0.0002						

4. *Dependent variable: unpaid family work=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	0.285545	0.962935	0.3	0.767	-1.60177	2.172863
DV index (instrumented)	-0.06553	1.158442	-0.06	0.955	-2.33604	2.20497
TM index (instrumented)	-5.63951	1.513302	-3.73	0	-8.60553	-2.67349
CK index (instrumented)	-0.10032	1.78829	-0.06	0.955	-3.60531	3.404661
Age	-0.09021	0.089482	-1.01	0.313	-0.2656	0.085167
Age squared	0.001618	0.001245	1.3	0.194	-0.00082	0.004057
Women's education (ref.: No education)						
Incomplete primary	-0.12738	0.15923	-0.8	0.424	-0.43946	0.184709
Complete primary	-0.35255	0.199768	-1.76	0.078	-0.74409	0.038987
Incomplete secondary	-0.79573	0.362858	-2.19	0.028	-1.50692	-0.08454
Complete secondary	-1.56436	0.431412	-3.63	0	-2.40992	-0.71881
Higher Education	-2.13307	0.55176	-3.87	0	-3.2145	-1.05164
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.24091	0.165126	-1.46	0.145	-0.56456	0.082727
Middle	-0.59636	0.284982	-2.09	0.036	-1.15492	-0.03781
Richer	-1.00357	0.364195	-2.76	0.006	-1.71738	-0.28976
Richest	-0.97769	0.416811	-2.35	0.019	-1.79462	-0.16075
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.03088	0.142922	-0.22	0.829	-0.311	0.249244
More than 2 children under age 6	0.715583	0.20447	3.5	0	0.314829	1.116337
Formerly married	-0.00984	0.368317	-0.03	0.979	-0.73173	0.712043
Household head	-1.29741	0.29576	-4.39	0	-1.87709	-0.71773
Constant	1.83388	2.298971	0.8	0.425	-2.67202	6.339779
Wald test of exogeneity: chi2(4) = 37.18 Prob > chi2 = 0.0000						

2008 - ivprobit with individual sub-indices instrumented by their local averages (excluding the index value of the individual herself)

1. ***Dependent variable – work (in all forms)=1, not working=0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-1.55895	1.516355	-1.03	0.304	-4.53095	1.413055
DV index (instrumented)	1.557951	1.726158	0.9	0.367	-1.82526	4.941158
TM index (instrumented)	-2.68864	2.588834	-1.04	0.299	-7.76266	2.385379
CK index (instrumented)	-3.02163	1.382721	-2.19	0.029	-5.73172	-0.31155
Age	-0.04842	0.111124	-0.44	0.663	-0.26622	0.169377
Age squared	0.000765	0.001553	0.49	0.623	-0.00228	0.003809
Women's education (ref.: No education)						
Incomplete primary	-0.13597	0.121197	-1.12	0.262	-0.37351	0.101571
Complete primary	-0.33175	0.29145	-1.14	0.255	-0.90298	0.239483
Incomplete secondary	-0.37492	0.422035	-0.89	0.374	-1.2021	0.452251
Complete secondary	-0.55169	0.438295	-1.26	0.208	-1.41073	0.307357
Higher Education	-0.29446	0.659031	-0.45	0.655	-1.58614	0.997218
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.41393	0.140811	-2.94	0.003	-0.68991	-0.13794
Middle	-0.67508	0.220658	-3.06	0.002	-1.10756	-0.24259
Richer	-0.87102	0.25298	-3.44	0.001	-1.36685	-0.37519
Richest	-0.82134	0.299544	-2.74	0.006	-1.40844	-0.23425
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.46951	0.105159	-4.46	0	-0.67562	-0.2634
More than 2 children under age 6	-0.1928	0.135598	-1.42	0.155	-0.45857	0.072965
Formerly married	0.785659	0.297968	2.64	0.008	0.201653	1.369665
Household head	0.156114	0.129494	1.21	0.228	-0.09769	0.409918
Constant	2.532834	3.235911	0.78	0.434	-3.80944	8.875103
Wald test of exogeneity: chi2(4) = 6.65 Prob > chi2 = 0.1555						

2. ***Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-0.88832	1.910272	-0.47	0.642	-4.63239	2.855745
DV index (instrumented)	1.542693	2.201458	0.7	0.483	-2.77209	5.857471
TM index (instrumented)	-5.20149	3.310642	-1.57	0.116	-11.6902	1.287245
CK index (instrumented)	2.377102	1.783437	1.33	0.183	-1.11837	5.872574
Age	0.16459	0.141708	1.16	0.245	-0.11315	0.442332
Age squared	-0.00235	0.00198	-1.19	0.235	-0.00623	0.001529
Women's education (ref.: No education)						
Incomplete primary	0.039915	0.156754	0.25	0.799	-0.26732	0.347146
Complete primary	-0.36432	0.370682	-0.98	0.326	-1.09085	0.362202
Incomplete secondary	-0.21932	0.533201	-0.41	0.681	-1.26438	0.825732
Complete secondary	-0.49218	0.556383	-0.88	0.376	-1.58267	0.598312
Higher Education	-0.09111	0.835828	-0.11	0.913	-1.7293	1.547084
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.36453	0.180487	-2.02	0.043	-0.71828	-0.01078
Middle	-0.56673	0.281306	-2.01	0.044	-1.11808	-0.01538
Richer	-0.56877	0.321703	-1.77	0.077	-1.1993	0.061753
Richest	-0.23912	0.379886	-0.63	0.529	-0.98368	0.505445
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.20897	0.134241	-1.56	0.12	-0.47207	0.05414
More than 2 children under age 6	0.022295	0.177023	0.13	0.9	-0.32466	0.369254
Formerly married	-0.09796	0.377979	-0.26	0.796	-0.83878	0.642867
Household head	0.117063	0.15455	0.76	0.449	-0.18585	0.419975
Constant	-2.15869	4.11549	-0.52	0.6	-10.2249	5.907523
Wald test of exogeneity: chi2(4) = 10.27 Prob > chi2 = 0.0361						

3. *Dependent variable: self-employed=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-1.44242	2.361551	-0.61	0.541	-6.07098	3.186132
DV index (instrumented)	0.567046	2.764967	0.21	0.838	-4.85219	5.986281
TM index (instrumented)	-1.24887	4.076851	-0.31	0.759	-9.23935	6.741611
CK index (instrumented)	-5.12978	2.223965	-2.31	0.021	-9.48867	-0.77089
Age	-0.09992	0.176298	-0.57	0.571	-0.44546	0.245614
Age squared	0.001421	0.002461	0.58	0.564	-0.0034	0.006245
Women's education (ref.: No education)						
Incomplete primary	-0.13966	0.187562	-0.74	0.457	-0.50727	0.227955
Complete primary	-0.39701	0.452144	-0.88	0.38	-1.2832	0.489173
Incomplete secondary	-0.64086	0.653282	-0.98	0.327	-1.92127	0.639545
Complete secondary	-0.42164	0.678586	-0.62	0.534	-1.75164	0.908368
Higher Education	-0.7544	1.026444	-0.73	0.462	-2.7662	1.257389
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.26423	0.220298	-1.2	0.23	-0.69601	0.167545
Middle	-0.40747	0.34335	-1.19	0.235	-1.08042	0.265484
Richer	-0.5277	0.39271	-1.34	0.179	-1.2974	0.241997
Richest	-0.79219	0.465256	-1.7	0.089	-1.70407	0.119696
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.40622	0.166484	-2.44	0.015	-0.73253	-0.07992
More than 2 children under age 6	-0.21676	0.243723	-0.89	0.374	-0.69445	0.260928
Formerly married	1.149827	0.46951	2.45	0.014	0.229604	2.07005
Household head	0.356997	0.172035	2.08	0.038	0.019814	0.69418
womaninterviewed_alone	0.082258	0.103291	0.8	0.426	-0.12019	0.284705
Constant	2.588724	5.107244	0.51	0.612	-7.42129	12.59874
Wald test of exogeneity: chi2(4) = 6.68 Prob > chi2 = 0.1535						

4. *Dependent variable: unpaid family work=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-0.76339	1.789169	-0.43	0.67	-4.27009	2.743319
DV index (instrumented)	0.598462	2.021375	0.3	0.767	-3.36336	4.560285
TM index (instrumented)	0.572695	3.059491	0.19	0.852	-5.4238	6.569188
CK index (instrumented)	-3.30284	1.572634	-2.1	0.036	-6.38515	-0.22053
Age	-0.13649	0.129967	-1.05	0.294	-0.39122	0.118243
Age squared	0.002164	0.001817	1.19	0.234	-0.0014	0.005726
Women's education (ref.: No education)						
Incomplete primary	-0.17581	0.14486	-1.21	0.225	-0.45973	0.10811
Complete primary	0.025123	0.346581	0.07	0.942	-0.65416	0.704409
Incomplete secondary	-0.00063	0.504896	0	0.999	-0.99021	0.988945
Complete secondary	-0.30966	0.523755	-0.59	0.554	-1.3362	0.716879
Higher Education	-0.54507	0.786715	-0.69	0.488	-2.087	0.996863
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.17569	0.164539	-1.07	0.286	-0.49818	0.146796
Middle	-0.3157	0.260691	-1.21	0.226	-0.82664	0.195249
Richer	-0.59705	0.300091	-1.99	0.047	-1.18522	-0.00889
Richest	-0.9735	0.360423	-2.7	0.007	-1.67991	-0.26708
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.28188	0.123098	-2.29	0.022	-0.52315	-0.04062
More than 2 children under age 6	-0.15682	0.155937	-1.01	0.315	-0.46245	0.148814
Formerly married	0.442142	0.352807	1.25	0.21	-0.24935	1.133631
Household head	-0.35617	0.197171	-1.81	0.071	-0.74262	0.030274
Constant	1.360912	3.805882	0.36	0.721	-6.09848	8.820303
Wald test of exogeneity: chi2(4) = 5.60 Prob > chi2 = 0.2313						

Further Models with the IV approach

Based on the concerns about the local average indices not being good proxies for social norms and culture, further exploratory strategies, same as the ones investigated using the mlogit estimates described above, are adopted. Accordingly, the models are estimated for both the 1998 and 2008 data using only the individual TM index which is instrumented by its local average, based on the argument that aggregating local TM can still be plausible. In addition, another model is estimated where a local TM index is used and, the other individual indices (DV, GE and CK) are instrumented by their local averages. Once again, we fail to reject the null hypothesis of "no endogeneity" in almost all the empirical specifications and for all forms of employment in 2008. However, the endogeneity usually remains as a problem for 1998 data, although it is shown that traditional values and women`s waged employment together with unpaid family work were exogenously determined. Nevertheless, the inexplicable positive effect of the CK index on women`s (waged) employment persisted. The results from these further models are provided below:

1998- ivprobit estimates with only TM index instrumented by its local average

1. ***Dependent variable – work (in all forms)=1, not working=0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
TM index (instrumented)	-4.95764	0.933377	-5.31	0	-6.78702	-3.12825
Age	0.032312	0.028726	1.12	0.261	-0.02399	0.088615
Age squared	-0.00023	0.000427	-0.55	0.586	-0.00107	0.000604
Women’s education (ref.: No education)						
Incomplete primary	0.001264	0.109521	0.01	0.991	-0.21339	0.215922
Complete primary	-0.27788	0.121138	-2.29	0.022	-0.51531	-0.04046
Incomplete secondary	-0.52935	0.182243	-2.9	0.004	-0.88654	-0.17216
Complete secondary	-0.58077	0.250708	-2.32	0.021	-1.07215	-0.08939
Higher Education	0.338976	0.306028	1.11	0.268	-0.26083	0.938779
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.3485	0.074773	-4.66	0	-0.49505	-0.20195
Middle	-0.69826	0.08474	-8.24	0	-0.86435	-0.53217
Richer	-0.86802	0.09464	-9.17	0	-1.05351	-0.68252
Richest	-1.05527	0.111055	-9.5	0	-1.27294	-0.83761
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.19334	0.052789	-3.66	0	-0.2968	-0.08987
More than 2 children under age 6	0.222424	0.143996	1.54	0.122	-0.0598	0.504652
Formerly married	0.532629	0.14517	3.67	0	0.248101	0.817156
Household head	-0.22914	0.15813	-1.45	0.147	-0.53907	0.080791
Constant	0.129699	0.761709	0.17	0.865	-1.36322	1.622621
Wald test of exogeneity: chi2(1) = 41.21 Prob > chi2 = 0.0000						

2. ***Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
TM index (instrumented)	-1.07081	1.151799	-0.93	0.353	-3.32829	1.186676
Age	0.141785	0.036303	3.91	0	0.070633	0.212937
Age squared	-0.00195	0.000535	-3.64	0	-0.00299	-0.0009
Women's education (ref.: No education)						
Incomplete primary	-0.1257	0.137663	-0.91	0.361	-0.39551	0.144119
Complete primary	-0.15296	0.147898	-1.03	0.301	-0.44283	0.136917
Incomplete secondary	-0.16865	0.224441	-0.75	0.452	-0.60855	0.271245
Complete secondary	0.591645	0.302325	1.96	0.05	-0.0009	1.184191
Higher Education	1.79205	0.364784	4.91	0	1.077087	2.507013
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.18187	0.08985	-2.02	0.043	-0.35798	-0.00577
Middle	-0.38281	0.103093	-3.71	0	-0.58486	-0.18075
Richer	-0.40699	0.112664	-3.61	0	-0.62781	-0.18618
Richest	-0.48621	0.127767	-3.81	0	-0.73663	-0.23579
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.22832	0.06059	-3.77	0	-0.34708	-0.10957
More than 2 children under age 6	-0.3873	0.216003	-1.79	0.073	-0.81066	0.036054
Formerly married	0.733982	0.144138	5.09	0	0.451477	1.016487
Household head	-0.3303	0.168687	-1.96	0.05	-0.66092	0.00032
Constant	-2.93356	0.943654	-3.11	0.002	-4.78309	-1.08404
Wald test of exogeneity: chi2(1) = 0.55 Prob > chi2 = 0.4584						

3. *Dependent variable: self-employed=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
TM index (instrumented)	-3.18562	1.133894	-2.81	0.005	-5.40801	-0.96323
Age	0.043492	0.035617	1.22	0.222	-0.02632	0.113301
Age squared	-0.00061	0.000528	-1.15	0.252	-0.00164	0.00043
Women's education (ref.: No education)						
Incomplete primary	0.214112	0.125821	1.7	0.089	-0.03249	0.460715
Complete primary	-0.11247	0.146315	-0.77	0.442	-0.39924	0.174307
Incomplete secondary	-0.12759	0.21505	-0.59	0.553	-0.54908	0.293897
Complete secondary	-0.67089	0.306265	-2.19	0.028	-1.27116	-0.07063
Higher Education	-1.01171	0.379683	-2.66	0.008	-1.75588	-0.26755
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.21432	0.091804	-2.33	0.02	-0.39425	-0.03439
Middle	-0.21798	0.100893	-2.16	0.031	-0.41573	-0.02024
Richer	-0.22778	0.109884	-2.07	0.038	-0.44315	-0.01241
Richest	-0.50717	0.132029	-3.84	0	-0.76594	-0.2484
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.15787	0.062199	-2.54	0.011	-0.27978	-0.03596
More than 2 children under age 6	-0.35478	0.21618	-1.64	0.101	-0.77848	0.068927
Formerly married	0.13256	0.164278	0.81	0.42	-0.18942	0.454538
Household head	0.498433	0.165412	3.01	0.003	0.174231	0.822636
Constant	-0.65914	0.933764	-0.71	0.48	-2.48928	1.171008
Wald test of exogeneity: chi2(1) = 8.80 Prob > chi2 = 0.0030						

4. *Dependent variable: unpaid family worker =1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
TM index (instrumented)	-5.53684	1.166963	-4.74	0	-7.82404	-3.24963
Age	-0.08478	0.035572	-2.38	0.017	-0.15449	-0.01506
Age squared	0.001546	0.000529	2.92	0.003	0.000509	0.002583
Women's education (ref.: No education)						
Incomplete primary	-0.13132	0.131625	-1	0.318	-0.3893	0.126661
Complete primary	-0.36921	0.148874	-2.48	0.013	-0.661	-0.07743
Incomplete secondary	-0.85412	0.233978	-3.65	0	-1.31271	-0.39553
Complete secondary	-1.62079	0.332369	-4.88	0	-2.27222	-0.96936
Higher Education	-2.19412	0.454649	-4.83	0	-3.08521	-1.30302
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.25223	0.084106	-3	0.003	-0.41707	-0.08738
Middle	-0.62573	0.098681	-6.34	0	-0.81914	-0.43231
Richer	-1.04359	0.122892	-8.49	0	-1.28445	-0.80273
Richest	-1.03101	0.150828	-6.84	0	-1.32663	-0.73539
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.02579	0.066967	-0.39	0.7	-0.15704	0.105464
More than 2 children under age 6	0.708792	0.16857	4.2	0	0.378401	1.039182
Formerly married	-0.02432	0.208222	-0.12	0.907	-0.43243	0.383789
Household head	-1.26201	0.290994	-4.34	0	-1.83235	-0.69167
_cons	0.668256	0.945498	0.71	0.48	-1.18489	2.521397
Wald test of exogeneity: chi2(1) = 33.09 Prob > chi2 = 0.0000						

2008- ivprobit estimates with only TM index instrumented by its local average

1. ***Dependent variable – work (in all forms)=1, not working=0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
TM index (instrumented)	-1.08511	0.961692	-1.13	0.259	-2.96999	0.799771
Age	0.140723	0.027887	5.05	0	0.086066	0.195381
Age squared	-0.00184	0.000395	-4.67	0	-0.00262	-0.00107
Women's education (ref.: No education)						
Incomplete primary	-0.04863	0.098208	-0.5	0.621	-0.24111	0.143858
Complete primary	-0.01026	0.114323	-0.09	0.929	-0.23433	0.213813
Incomplete secondary	0.085831	0.179896	0.48	0.633	-0.26676	0.438421
Complete secondary	-0.11684	0.156872	-0.74	0.456	-0.42431	0.190619
Higher Education	0.337018	0.223599	1.51	0.132	-0.10123	0.775265
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.26539	0.068621	-3.87	0	-0.39989	-0.1309
Middle	-0.4331	0.089268	-4.85	0	-0.60807	-0.25814
Richer	-0.58552	0.094353	-6.21	0	-0.77045	-0.40059
Richest	-0.44121	0.101349	-4.35	0	-0.63985	-0.24257
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.26376	0.041638	-6.33	0	-0.34537	-0.18215
More than 2 children under age 6	-0.14522	0.116889	-1.24	0.214	-0.37432	0.083873
Formerly married	0.194808	0.102255	1.91	0.057	-0.00561	0.395225
Household head	0.145539	0.111358	1.31	0.191	-0.07272	0.363797
_cons	-3.10459	0.800384	-3.88	0	-4.67332	-1.53587
Wald test of exogeneity: chi2(1) = 1.55 Prob > chi2 = 0.2126						

2. *Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
TM index (instrumented)	-3.10061	1.278153	-2.43	0.015	-5.60575	-0.59548
Age	0.108458	0.036835	2.94	0.003	0.036263	0.180654
Age squared	-0.00161	0.000521	-3.1	0.002	-0.00263	-0.00059
Women's education (ref.: No education)						
Incomplete primary	-0.03717	0.128928	-0.29	0.773	-0.28986	0.215527
Complete primary	-0.3438	0.152255	-2.26	0.024	-0.64222	-0.04539
Incomplete secondary	-0.19439	0.229395	-0.85	0.397	-0.644	0.255216
Complete secondary	-0.37274	0.207551	-1.8	0.073	-0.77953	0.034049
Higher Education	0.15771	0.294672	0.54	0.593	-0.41984	0.735256
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.35637	0.090757	-3.93	0	-0.53425	-0.17849
Middle	-0.54527	0.117416	-4.64	0	-0.7754	-0.31514
Richer	-0.5516	0.122411	-4.51	0	-0.79152	-0.31167
Richest	-0.26634	0.128785	-2.07	0.039	-0.51875	-0.01392
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.3523	0.052385	-6.73	0	-0.45497	-0.24962
More than 2 children under age 6	-0.03035	0.155412	-0.2	0.845	-0.33495	0.274254
Formerly married	0.313028	0.120859	2.59	0.01	0.076148	0.549907
Household head	0.088878	0.131965	0.67	0.501	-0.16977	0.347523
Constant	-1.51837	1.060364	-1.43	0.152	-3.59664	0.559908
Wald test of exogeneity: chi2(1) = 5.31 Prob > chi2 = 0.0212						

3. *Dependent variable: self-employed=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
TM index (instrumented)	-0.75248	1.495924	-0.5	0.615	-3.68444	2.179474
Age	0.163085	0.044363	3.68	0	0.076134	0.250035
Age squared	-0.0022	0.000623	-3.53	0	-0.00342	-0.00098
Women's education (ref.: No education)						
Incomplete primary	0.022752	0.153847	0.15	0.882	-0.27878	0.324286
Complete primary	0.000888	0.176717	0.01	0.996	-0.34547	0.347245
Incomplete secondary	-0.06193	0.274183	-0.23	0.821	-0.59932	0.475458
Complete secondary	0.064426	0.237714	0.27	0.786	-0.40149	0.530337
Higher Education	-0.11338	0.345152	-0.33	0.743	-0.78987	0.563101
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.08523	0.108804	-0.78	0.433	-0.29849	0.128017
Middle	-0.11617	0.136112	-0.85	0.393	-0.38294	0.150606
Richer	-0.1698	0.14261	-1.19	0.234	-0.44931	0.109712
Richest	-0.28589	0.152891	-1.87	0.061	-0.58555	0.013765
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.07086	0.062593	-1.13	0.258	-0.19354	0.051817
More than 2 children under age 6	-0.13862	0.222018	-0.62	0.532	-0.57377	0.29653
Formerly married	0.179143	0.140483	1.28	0.202	-0.0962	0.454486
Household head	0.369298	0.143192	2.58	0.01	0.088647	0.649948
Constant	-3.574	1.253215	-2.85	0.004	-6.03025	-1.11774
Wald test of exogeneity: chi2(1) = 0.20 Prob > chi2 = 0.6566						

4. *Dependent variable: unpaid family worker =1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
TM index (instrumented)	1.059864	1.237152	0.86	0.392	-1.36491	3.484637
Age	0.032925	0.035941	0.92	0.36	-0.03752	0.103368
Age squared	-0.00015	0.000508	-0.3	0.765	-0.00115	0.000843
Women's education (ref.: No education)						
Incomplete primary	-0.07229	0.124087	-0.58	0.56	-0.31549	0.170919
Complete primary	0.266761	0.145342	1.84	0.066	-0.0181	0.551626
Incomplete secondary	0.34953	0.234249	1.49	0.136	-0.10959	0.808649
Complete secondary	-0.02293	0.207079	-0.11	0.912	-0.42879	0.382942
Higher Education	-0.15582	0.297187	-0.52	0.6	-0.7383	0.426654
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.06623	0.082571	-0.8	0.423	-0.22806	0.095608
Middle	-0.14075	0.111302	-1.26	0.206	-0.35889	0.077401
Richer	-0.38884	0.121811	-3.19	0.001	-0.62758	-0.15009
Richest	-0.67842	0.147067	-4.61	0	-0.96666	-0.39017
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.06568	0.057737	-1.14	0.255	-0.17884	0.047482
More than 2 children under age 6	-0.1002	0.14187	-0.71	0.48	-0.37826	0.177863
Formerly married	-0.17997	0.157936	-1.14	0.254	-0.48952	0.129578
Household head	-0.35891	0.186462	-1.92	0.054	-0.72437	0.006544
Constant	-3.86892	1.030967	-3.75	0	-5.88958	-1.84826
Wald test of exogeneity: chi2(1) = 0.26 Prob > chi2 = 0.6124						

1998 ivprobit with local TM index and the other individual sub-indices instrumented by their local averages (excluding the index value of the individual herself)

1) ***Dependent variable – work (in all forms)=1, not working=0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Local TM index	-3.62921	0.75457	-4.81	0	-5.10814	-2.15028
GE index (instrumented)	1.656462	0.979767	1.69	0.091	-0.26385	3.576771
DV index (instrumented)	2.780789	1.227077	2.27	0.023	0.375762	5.185815
CK index (instrumented)	4.144162	1.840114	2.25	0.024	0.537603	7.75072
Age	0.371003	0.107441	3.45	0.001	0.160423	0.581583
Age squared	-0.00511	0.001508	-3.39	0.001	-0.00806	-0.00215
Women's education (ref.: No education)						
Incomplete primary	0.433874	0.172802	2.51	0.012	0.095188	0.77256
Complete primary	0.901446	0.224831	4.01	0	0.460786	1.342107
Incomplete secondary	1.508868	0.415917	3.63	0	0.693686	2.32405
Complete secondary	1.890777	0.412923	4.58	0	1.081463	2.700092
Higher Education	3.271274	0.494114	6.62	0	2.302828	4.23972
Household wealth quintiles (ref.: poorest quintile)						
Poorer	0.215496	0.187303	1.15	0.25	-0.15161	0.582602
Middle	0.388738	0.325338	1.19	0.232	-0.24891	1.026388
Richer	0.523998	0.411105	1.27	0.202	-0.28175	1.329749
Richest	0.545446	0.467959	1.17	0.244	-0.37174	1.462629
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	0.082399	0.142512	0.58	0.563	-0.19692	0.361717
More than 2 children under age 6	-0.08464	0.151226	-0.56	0.576	-0.38103	0.211763
Formerly married	-0.35209	0.377476	-0.93	0.351	-1.09193	0.387746
Household head	0.012307	0.191756	0.06	0.949	-0.36353	0.388142
Constant	-9.81611	2.769112	-3.54	0	-15.2435	-4.38875
Wald test of exogeneity: chi2(3) = 23.61 Prob > chi2 = 0.0000						

2. ***Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Local TM index	-3.09733	1.154537	-2.68	0.007	-5.36018	-0.83448
GE index (instrumented)	0.4668	1.463954	0.32	0.75	-2.4025	3.336098
DV index (instrumented)	4.137627	1.862821	2.22	0.026	0.486565	7.788688
CK index (instrumented)	8.594146	2.808342	3.06	0.002	3.089896	14.0984
Age	0.649344	0.164354	3.95	0	0.327217	0.971472
Age squared	-0.00906	0.002306	-3.93	0	-0.01358	-0.00454
Women's education (ref.: No education)						
Incomplete primary	0.421572	0.265195	1.59	0.112	-0.0982	0.941345
Complete primary	0.854742	0.339779	2.52	0.012	0.188788	1.520696
Incomplete secondary	1.526866	0.62798	2.43	0.015	0.296047	2.757685
Complete secondary	2.313301	0.620358	3.73	0	1.097422	3.529181
Higher Education	3.87337	0.740511	5.23	0	2.421995	5.324745
Household wealth quintiles (ref.: poorest quintile)						
Poorer	0.56937	0.28332	2.01	0.044	0.014073	1.124667
Middle	1.004801	0.492406	2.04	0.041	0.039704	1.969899
Richer	1.347141	0.621615	2.17	0.03	0.128799	2.565483
Richest	1.48076	0.706982	2.09	0.036	0.095101	2.86642
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	0.371952	0.216375	1.72	0.086	-0.05213	0.796039
More than 2 children under age 6	-0.24472	0.259055	-0.94	0.345	-0.75246	0.263019
Formerly married	-0.86839	0.566417	-1.53	0.125	-1.97854	0.241771
Household head	-0.18619	0.278738	-0.67	0.504	-0.73251	0.360126
Constant	-15.9709	4.217483	-3.79	0	-24.237	-7.70481
Wald test of exogeneity: chi2(3) = 24.24 Prob > chi2 = 0.0000						

3. *Dependent variable: self-employed=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Local TM index	-1.31453	0.753693	-1.74	0.081	-2.79174	0.162685
GE index (instrumented)	1.363707	0.963324	1.42	0.157	-0.52437	3.251787
DV index (instrumented)	0.966569	1.213624	0.8	0.426	-1.41209	3.345229
CK index (instrumented)	-1.18358	1.853404	-0.64	0.523	-4.81619	2.449023
Age	0.047663	0.108152	0.44	0.659	-0.16431	0.259637
Age squared	-0.00078	0.001517	-0.51	0.607	-0.00375	0.002193
Women's education (ref.: No education)						
Incomplete primary	0.315937	0.168411	1.88	0.061	-0.01414	0.646016
Complete primary	0.401883	0.22158	1.81	0.07	-0.03241	0.836172
Incomplete secondary	0.823377	0.405111	2.03	0.042	0.029375	1.617379
Complete secondary	0.626998	0.405114	1.55	0.122	-0.16701	1.421006
Higher Education	0.496618	0.491058	1.01	0.312	-0.46584	1.459075
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.08546	0.186161	-0.46	0.646	-0.45033	0.279405
Middle	0.093247	0.31962	0.29	0.77	-0.5332	0.719691
Richer	0.194993	0.403101	0.48	0.629	-0.59507	0.985056
Richest	0.011472	0.459793	0.02	0.98	-0.88971	0.912649
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.24532	0.14289	-1.72	0.086	-0.52538	0.034743
More than 2 children under age 6	-0.68332	0.202999	-3.37	0.001	-1.08119	-0.28545
Formerly married	0.262813	0.374292	0.7	0.483	-0.47078	0.996411
Household head	0.62641	0.165698	3.78	0	0.301647	0.951172
Constant	-2.17771	2.771984	-0.79	0.432	-7.6107	3.255284
Wald test of exogeneity: chi2(3) = 14.90 Prob > chi2 = 0.0019						

4. *Dependent variable: unpaid family work=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Local TM index	-2.79805	0.66322	-4.22	0	-4.09794	-1.49816
GE index (instrumented)	0.922785	0.884618	1.04	0.297	-0.81104	2.656605
DV index (instrumented)	0.676074	1.056428	0.64	0.522	-1.39449	2.746634
CK index (instrumented)	0.414182	1.628941	0.25	0.799	-2.77848	3.606849
Age	0.051099	0.09538	0.54	0.592	-0.13584	0.238039
Age squared	-0.00048	0.001339	-0.36	0.718	-0.00311	0.002141
Women’s education (ref.: No education)						
Incomplete primary	0.066684	0.153625	0.43	0.664	-0.23442	0.367782
Complete primary	0.391955	0.201739	1.94	0.052	-0.00345	0.787356
Incomplete secondary	0.416051	0.383463	1.08	0.278	-0.33552	1.167625
Complete secondary	0.140538	0.391442	0.36	0.72	-0.62667	0.907751
Higher Education	-0.11268	0.509213	-0.22	0.825	-1.11072	0.885358
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.05549	0.163793	-0.34	0.735	-0.37652	0.265541
Middle	-0.24344	0.291152	-0.84	0.403	-0.81409	0.327204
Richer	-0.56228	0.372345	-1.51	0.131	-1.29206	0.167505
Richest	-0.4611	0.427017	-1.08	0.28	-1.29804	0.375835
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.00358	0.127766	-0.03	0.978	-0.254	0.246838
More than 2 children under age 6	0.291521	0.124681	2.34	0.019	0.047151	0.535892
Formerly married	-0.22798	0.351633	-0.65	0.517	-0.91717	0.461209
Household head	-1.12041	0.279794	-4	0	-1.66879	-0.57202
Constant	-3.76823	2.469685	-1.53	0.127	-8.60873	1.072262
Wald test of exogeneity: chi2(3) = 2.52 Prob > chi2 = 0.4722						

2008 ivprobit with local TM index and the other individual sub-indices instrumented by their local averages (excluding the index value of the individual herself)

2) Dependent variable – work (in all forms)=1, not working=0

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Local TM index	-0.67604	0.638236	-1.06	0.289	-1.92696	0.574885
GE index (instrumented)	-0.85726	0.920101	-0.93	0.351	-2.66063	0.946104
DV index (instrumented)	0.724007	1.014168	0.71	0.475	-1.26373	2.711739
CK index (instrumented)	-2.72387	1.211747	-2.25	0.025	-5.09884	-0.34889
Age	0.030215	0.063215	0.48	0.633	-0.09368	0.154113
Age squared	-0.00034	0.000875	-0.39	0.699	-0.00205	0.001377
Women's education (ref.: No education)						
Incomplete primary	-0.06003	0.110793	-0.54	0.588	-0.27718	0.157115
Complete primary	-0.0686	0.117837	-0.58	0.56	-0.29956	0.162355
Incomplete secondary	-0.02879	0.206729	-0.14	0.889	-0.43397	0.376393
Complete secondary	-0.17313	0.16569	-1.04	0.296	-0.49787	0.151619
Higher Education	0.313836	0.184242	1.7	0.088	-0.04727	0.674945
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.31284	0.078684	-3.98	0	-0.46706	-0.15862
Middle	-0.50148	0.103379	-4.85	0	-0.7041	-0.29886
Richer	-0.68419	0.125828	-5.44	0	-0.93081	-0.43757
Richest	-0.61559	0.162384	-3.79	0	-0.93386	-0.29732
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.44056	0.090974	-4.84	0	-0.61886	-0.26225
More than 2 children under age 6	-0.28486	0.124894	-2.28	0.023	-0.52965	-0.04007
Formerly married	0.68019	0.250799	2.71	0.007	0.188634	1.171747
Household head	0.130226	0.118824	1.1	0.273	-0.10267	0.363116
Constant	-0.58504	1.543789	-0.38	0.705	-3.61081	2.440733
Wald test of exogeneity: chi2(3) = 5.08 Prob > chi2 = 0.1659						

5. Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Local TM index	-1.32971	0.806096	-1.65	0.099	-2.90963	0.250204
GE index (instrumented)	0.470637	1.146346	0.41	0.681	-1.77616	2.717433
DV index (instrumented)	-0.06117	1.286368	-0.05	0.962	-2.58241	2.460063
CK index (instrumented)	2.951666	1.5559	1.9	0.058	-0.09784	6.001174
Age	0.314789	0.081624	3.86	0	0.154809	0.47477
Age squared	-0.00446	0.00113	-3.94	0	-0.00667	-0.00224
Women’s education (ref.: No education)						
Incomplete primary	0.185397	0.142064	1.31	0.192	-0.09304	0.463838
Complete primary	0.148588	0.153645	0.97	0.333	-0.15255	0.449727
Incomplete secondary	0.456081	0.259273	1.76	0.079	-0.05208	0.964246
Complete secondary	0.24533	0.213639	1.15	0.251	-0.1734	0.664055
Higher Education	1.090209	0.236295	4.61	0	0.627079	1.553339
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.16958	0.102331	-1.66	0.097	-0.37015	0.030982
Middle	-0.23268	0.134446	-1.73	0.084	-0.49619	0.030825
Richer	-0.20794	0.161567	-1.29	0.198	-0.5246	0.108729
Richest	0.159161	0.207204	0.77	0.442	-0.24695	0.565273
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.1514	0.115307	-1.31	0.189	-0.3774	0.074596
More than 2 children under age 6	-0.15564	0.161271	-0.97	0.335	-0.47173	0.160447
Formerly married	-0.30163	0.315711	-0.96	0.339	-0.92042	0.317147
Household head	0.068744	0.137528	0.5	0.617	-0.20081	0.338294
Constant	-6.84529	1.986333	-3.45	0.001	-10.7384	-2.95215
Wald test of exogeneity: chi2(3) = 4.69 Prob > chi2 = 0.1962						

6. *Dependent variable: self-employed=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Local TM index	-0.45113	1.061144	-0.43	0.671	-2.53094	1.628672
GE index (instrumented)	-1.13594	1.498012	-0.76	0.448	-4.07199	1.800109
DV index (instrumented)	0.303669	1.713777	0.18	0.859	-3.05527	3.662611
CK index (instrumented)	-4.86409	2.058216	-2.36	0.018	-8.89812	-0.83006
Age	-0.05854	0.107376	-0.55	0.586	-0.26899	0.151913
Age squared	0.000841	0.001485	0.57	0.571	-0.00207	0.003751
Women's education (ref.: No education)						
Incomplete primary	-0.09493	0.181852	-0.52	0.602	-0.45135	0.261497
Complete primary	-0.25934	0.196942	-1.32	0.188	-0.64534	0.126655
Incomplete secondary	-0.45855	0.336058	-1.36	0.172	-1.11721	0.200115
Complete secondary	-0.22793	0.269935	-0.84	0.398	-0.75699	0.301131
Higher Education	-0.45169	0.306899	-1.47	0.141	-1.0532	0.149819
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.21308	0.13043	-1.63	0.102	-0.46871	0.042563
Middle	-0.31993	0.16884	-1.89	0.058	-0.65085	0.010989
Richer	-0.43215	0.204932	-2.11	0.035	-0.83381	-0.03049
Richest	-0.684	0.265812	-2.57	0.01	-1.20499	-0.16302
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.38437	0.151467	-2.54	0.011	-0.68124	-0.0875
More than 2 children under age 6	-0.26364	0.240311	-1.1	0.273	-0.73464	0.207356
Formerly married	1.076428	0.415787	2.59	0.01	0.2615	1.891356
Household head	0.346009	0.164729	2.1	0.036	0.023148	0.668871
Constant	1.636093	2.613621	0.63	0.531	-3.48651	6.758696
Wald test of exogeneity: chi2(3) = 6.60 Prob > chi2 = 0.0858						

7. *Dependent variable: unpaid family work=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Local TM index	0.261621	0.80714	0.32	0.746	-1.32035	1.843586
GE index (instrumented)	-0.92359	1.162345	-0.79	0.427	-3.20175	1.354561
DV index (instrumented)	0.758576	1.271095	0.6	0.551	-1.73273	3.249877
CK index (instrumented)	-3.47056	1.467955	-2.36	0.018	-6.34769	-0.59342
Age	-0.15652	0.076951	-2.03	0.042	-0.30734	-0.00569
Age squared	0.002443	0.001066	2.29	0.022	0.000354	0.004532
Women's education (ref.: No education)						
Incomplete primary	-0.19274	0.140605	-1.37	0.17	-0.46832	0.082844
Complete primary	-0.03405	0.145825	-0.23	0.815	-0.31986	0.251764
Incomplete secondary	-0.08317	0.265759	-0.31	0.754	-0.60405	0.437704
Complete secondary	-0.3884	0.21334	-1.82	0.069	-0.80654	0.02974
Higher Education	-0.67725	0.240556	-2.82	0.005	-1.14873	-0.20577
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.19574	0.09485	-2.06	0.039	-0.38164	-0.00984
Middle	-0.35061	0.126602	-2.77	0.006	-0.59875	-0.10248
Richer	-0.63767	0.158399	-4.03	0	-0.94812	-0.32721
Richest	-1.0217	0.213882	-4.78	0	-1.4409	-0.60249
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.29464	0.113675	-2.59	0.01	-0.51744	-0.07184
More than 2 children under age 6	-0.13755	0.152558	-0.9	0.367	-0.43655	0.161461
Formerly married	0.473945	0.319018	1.49	0.137	-0.15132	1.099209
Household head	-0.3448	0.195396	-1.76	0.078	-0.72777	0.038172
Constant	0.797583	1.884874	0.42	0.672	-2.8967	4.491868
Wald test of exogeneity: chi2(3) = 6.13 Prob > chi2 = 0.1055						

As neither of the outcomes reported above were entirely satisfactory, our final attempt was to investigate whether individual indices that use past information can provide a more robust evidence of the causal effects. Building on this comment, another estimation with ivprobit is performed. In this model, the TM and CK index are assumed to be exogenous as they mainly rely on past information. This argument is also supported by Jütting (2003) and Morrison and Jütting (2004). The authors indicate that the measures on traditions that make use of the age of marriage, polygamy or, overall, laws and practices that have existed for centuries and women`s economic roles are exogenously determined. The ivprobit results where the TM and CK index were assumed as exogenous and the DV and GE index instrumented by their local averages are presented in the Tables provided at the end of this section. The Wald tests for all the models with different forms of employment showed that women`s employment and their attitudes towards traditional gender roles and domestic violence are exogenously determined. In neither of the models, was the null hypothesis of "no endogeneity" rejected.

Overall, in light of the analyses presented above, it is not possible to be entirely sure about the presence of endogeneity. Yet again, as argued powerfully by Moffit (2005) and Connelly et al. (2006), endogeneity is always present to an extent and it is not easy to have theoretically sound instruments. Moreover, it is still not ideal to perform an IV approach with the binary outcome variables generated from the multinomial outcomes.

However, the exploratory attempts presented here provided a body of evidence to assert that it is more likely that women`s employment and traditional and/or conservative social norms and culture are exogenously determined. It has been a very useful practice to explore local averages, which lead us to be more confident about our original thoughts on exogeneity. Given the concerns about the validity of the local average indices as good proxies for social norms and culture due to high rates of internal migration and heterogeneity within the provinces, we believe parental education provides a more theoretically sound instrument and remains as our preferred instrument.

1998 ivprobit with individual TM and CK index and GE and DV are instrumented by their local averages.

1. ***Dependent variable – work (in all forms)=1, not working=0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	0.073065	0.683717	0.11	0.915	-1.267	1.413126
DV index (instrumented)	1.107383	0.779104	1.42	0.155	-0.41963	2.634399
TM index	0.016542	0.142222	0.12	0.907	-0.26221	0.295291
CK index	-0.40911	0.107983	-3.79	0	-0.62075	-0.19747
Age	0.113079	0.020056	5.64	0	0.07377	0.152388
Age squared	-0.00147	0.000296	-4.97	0	-0.00205	-0.00089
Women's education (ref.: No education)						
Incomplete primary	0.137899	0.094238	1.46	0.143	-0.0468	0.322602
Complete primary	0.360752	0.081795	4.41	0	0.200437	0.521066
Incomplete secondary	0.439353	0.169524	2.59	0.01	0.107092	0.771613
Complete secondary	0.8441	0.177894	4.74	0	0.495433	1.192766
Higher Education	2.032954	0.209407	9.71	0	1.622524	2.443383
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.19293	0.071046	-2.72	0.007	-0.33218	-0.05368
Middle	-0.41293	0.108486	-3.81	0	-0.62556	-0.20031
Richer	-0.51558	0.141093	-3.65	0	-0.79212	-0.23905
Richest	-0.64893	0.168695	-3.85	0	-0.97957	-0.31829
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.23911	0.046195	-5.18	0	-0.32965	-0.14857
More than 2 children under age 6	-0.21939	0.105981	-2.07	0.038	-0.4271	-0.01167
Formerly married	0.46484	0.124151	3.74	0	0.221508	0.708172
Household head	-0.07185	0.133595	-0.54	0.591	-0.33369	0.189988
Constant	-3.36251	0.424593	-7.92	0	-4.1947	-2.53032
Wald test of exogeneity: chi2(2) = 2.02 Prob > chi2 = 0.3636						

Controls are included for region, living in city and the presence of others during the interview.

2. ***Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-0.95468	0.952032	-1	0.316	-2.82063	0.911266
DV index (instrumented)	2.064675	1.123497	1.84	0.066	-0.13734	4.266688
TM index	-0.33491	0.201714	-1.66	0.097	-0.73026	0.060448
CK index	-0.25035	0.151784	-1.65	0.099	-0.54784	0.047144
Age	0.145391	0.030054	4.84	0	0.086487	0.204296
Age squared	-0.00204	0.000438	-4.66	0	-0.0029	-0.00118
Women’s education (ref.: No education)						
Incomplete primary	-0.10839	0.139844	-0.78	0.438	-0.38248	0.165696
Complete primary	0.000638	0.114521	0.01	0.996	-0.22382	0.225094
Incomplete secondary	0.006659	0.236371	0.03	0.978	-0.45662	0.469937
Complete secondary	0.847967	0.239434	3.54	0	0.378685	1.317249
Higher Education	2.093531	0.274949	7.61	0	1.554642	2.632421
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.12997	0.101302	-1.28	0.199	-0.32852	0.068574
Middle	-0.25211	0.153625	-1.64	0.101	-0.55321	0.048993
Richer	-0.22016	0.197453	-1.12	0.265	-0.60716	0.166836
Richest	-0.2789	0.232835	-1.2	0.231	-0.73525	0.177451
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.24639	0.06287	-3.92	0	-0.36961	-0.12317
More than 2 children under age 6	-0.43447	0.194491	-2.23	0.025	-0.81567	-0.05328
Formerly married	0.724449	0.150922	4.8	0	0.428648	1.02025
Household head	-0.31547	0.172486	-1.83	0.067	-0.65354	0.022594
Constant	-3.39345	0.609299	-5.57	0	-4.58765	-2.19925
Wald test of exogeneity: chi2(2) = 3.17 Prob > chi2 = 0.2048						

3. *Dependent variable: self-employed=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	0.978296	0.909188	1.08	0.282	-0.80368	2.760272
DV index (instrumented)	0.667548	1.055276	0.63	0.527	-1.40076	2.735851
TM index	-0.22083	0.18976	-1.16	0.245	-0.59275	0.151098
CK index	-0.57348	0.148759	-3.86	0	-0.86504	-0.28191
Age	0.077	0.028105	2.74	0.006	0.021916	0.132085
Age squared	-0.00116	0.000414	-2.8	0.005	-0.00197	-0.00035
Women's education (ref.: No education)						
Incomplete primary	0.31552	0.122341	2.58	0.01	0.075736	0.555303
Complete primary	0.358749	0.110467	3.25	0.001	0.142238	0.575261
Incomplete secondary	0.693644	0.220657	3.14	0.002	0.261165	1.126124
Complete secondary	0.462266	0.239354	1.93	0.053	-0.00686	0.931392
Higher Education	0.30777	0.291951	1.05	0.292	-0.26444	0.879983
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.08048	0.098427	-0.82	0.414	-0.2734	0.112431
Middle	0.064223	0.144638	0.44	0.657	-0.21926	0.347708
Richer	0.140404	0.185873	0.76	0.45	-0.2239	0.504709
Richest	-0.06358	0.223682	-0.28	0.776	-0.50198	0.374833
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.20817	0.061911	-3.36	0.001	-0.32951	-0.08683
More than 2 children under age 6	-0.66152	0.193023	-3.43	0.001	-1.03984	-0.2832
Formerly married	0.151743	0.161349	0.94	0.347	-0.1645	0.467981
Household head	0.623608	0.157864	3.95	0	0.3142	0.933016
Constant	-2.88083	0.586501	-4.91	0	-4.03035	-1.73131
Wald test of exogeneity: chi2(2) = 3.75 Prob > chi2 = 0.1534						

4. *Dependent variable: unpaid family work=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-0.62427	0.85763	-0.73	0.467	-2.3052	1.05665
DV index (instrumented)	0.070751	0.917525	0.08	0.939	-1.72757	1.869067
TM index	0.438582	0.178602	2.46	0.014	0.088528	0.788636
CK index	0.055669	0.137283	0.41	0.685	-0.2134	0.324738
Age	0.037321	0.02501	1.49	0.136	-0.0117	0.08634
Age squared	-0.00024	0.00037	-0.66	0.511	-0.00097	0.000481
Women's education (ref.: No education)						
Incomplete primary	0.002111	0.114543	0.02	0.985	-0.22239	0.226612
Complete primary	0.216632	0.102106	2.12	0.034	0.016509	0.416756
Incomplete secondary	-0.07036	0.226555	-0.31	0.756	-0.5144	0.373682
Complete secondary	-0.35017	0.256262	-1.37	0.172	-0.85243	0.152098
Higher Education	-0.64226	0.363483	-1.77	0.077	-1.35467	0.070159
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.15504	0.081609	-1.9	0.057	-0.31499	0.004905
Middle	-0.52112	0.134826	-3.87	0	-0.78537	-0.25686
Richer	-0.95763	0.184377	-5.19	0	-1.319	-0.59625
Richest	-0.94623	0.225719	-4.19	0	-1.38863	-0.50383
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.04058	0.059866	-0.68	0.498	-0.15792	0.076751
More than 2 children under age 6	0.217155	0.118438	1.83	0.067	-0.01498	0.44929
Formerly married	-0.17456	0.188619	-0.93	0.355	-0.54425	0.195121
Household head	-1.09248	0.276351	-3.95	0	-1.63412	-0.55084
Constant	-3.28201	0.532952	-6.16	0	-4.32657	-2.23744
Wald test of exogeneity: chi2(2) = 1.51 Prob > chi2 = 0.4689						

2008 ivprobit with individual TM and CK index and GE and DV are instrumented by their local averages.

1. ***Dependent variable – work (in all forms)=1, not working=0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-0.2934	0.696176	-0.42	0.673	-1.65788	1.071077
DV index (instrumented)	-0.30749	0.676396	-0.45	0.649	-1.6332	1.018226
TM index	0.11323	0.125223	0.9	0.366	-0.1322	0.358663
CK index	-0.12859	0.105445	-1.22	0.223	-0.33526	0.078075
Age	0.155501	0.020487	7.59	0	0.115347	0.195655
Age squared	-0.00203	0.000302	-6.71	0	-0.00262	-0.00144
Women's education (ref.: No education)						
Incomplete primary	-0.01254	0.094731	-0.13	0.895	-0.19821	0.173132
Complete primary	0.049128	0.084165	0.58	0.559	-0.11583	0.214087
Incomplete secondary	0.140425	0.164918	0.85	0.395	-0.18281	0.463659
Complete secondary	-0.04909	0.135218	-0.36	0.717	-0.31411	0.215932
Higher Education	0.488482	0.139497	3.5	0	0.215073	0.761891
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.24847	0.064639	-3.84	0	-0.37516	-0.12178
Middle	-0.40225	0.079549	-5.06	0	-0.55816	-0.24634
Richer	-0.56873	0.097294	-5.85	0	-0.75942	-0.37804
Richest	-0.43949	0.116066	-3.79	0	-0.66697	-0.212
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.26585	0.042967	-6.19	0	-0.35006	-0.18164
More than 2 children under age 6	-0.19777	0.109672	-1.8	0.071	-0.41272	0.017183
Formerly married	0.195355	0.101867	1.92	0.055	-0.0043	0.39501
Household head	0.128054	0.111109	1.15	0.249	-0.08971	0.345823
Constant	-3.6416	0.462841	-7.87	0	-4.54875	-2.73445
Wald test of exogeneity: chi2(2) = 1.07 Prob > chi2 = 0.5868						

2. ***Dependent variable= waged work=1, the rest (not working/self-employed/unpaid family work) = 0***

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	0.246028	0.877604	0.28	0.779	-1.47405	1.966101
DV index (instrumented)	-0.90137	0.890484	-1.01	0.311	-2.64668	0.843949
TM index	-0.22028	0.164513	-1.34	0.181	-0.54272	0.10216
CK index	-0.16105	0.134323	-1.2	0.231	-0.42431	0.102222
Age	0.164843	0.026527	6.21	0	0.112852	0.216834
Age squared	-0.00239	0.00039	-6.12	0	-0.00315	-0.00162
Women's education (ref.: No education)						
Incomplete primary	0.043065	0.122389	0.35	0.725	-0.19681	0.282942
Complete primary	-0.11873	0.110352	-1.08	0.282	-0.33501	0.097561
Incomplete secondary	0.076687	0.204592	0.37	0.708	-0.32431	0.47768
Complete secondary	-0.0592	0.174289	-0.34	0.734	-0.4008	0.282405
Higher Education	0.697505	0.17681	3.94	0	0.350963	1.044046
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.27269	0.084739	-3.22	0.001	-0.43877	-0.1066
Middle	-0.40085	0.103777	-3.86	0	-0.60425	-0.19745
Richer	-0.41065	0.124336	-3.3	0.001	-0.65434	-0.16695
Richest	-0.13139	0.146082	-0.9	0.368	-0.4177	0.154928
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.35276	0.053304	-6.62	0	-0.45723	-0.24828
More than 2 children under age 6	-0.15086	0.144012	-1.05	0.295	-0.43312	0.131398
Formerly married	0.289506	0.117573	2.46	0.014	0.059067	0.519944
Household head	0.05387	0.128803	0.42	0.676	-0.19858	0.306318
Constant	-3.47833	0.596539	-5.83	0	-4.64753	-2.30914
Wald test of exogeneity: chi2(2) = 1.57 Prob > chi2 = 0.4566						

3. *Dependent variable: self-employed=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-0.30464	1.08452	-0.28	0.779	-2.43026	1.820984
DV index (instrumented)	-0.64709	1.091715	-0.59	0.553	-2.78681	1.492637
TM index	-0.03289	0.19114	-0.17	0.863	-0.40752	0.341734
CK index	0.037445	0.162727	0.23	0.818	-0.28149	0.356383
Age	0.173773	0.033764	5.15	0	0.107598	0.239948
Age squared	-0.00231	0.00049	-4.73	0	-0.00327	-0.00136
Women's education (ref.: No education)						
Incomplete primary	0.023471	0.149682	0.16	0.875	-0.2699	0.316843
Complete primary	-0.01493	0.132069	-0.11	0.91	-0.27378	0.243921
Incomplete secondary	-0.10454	0.252059	-0.41	0.678	-0.59857	0.389484
Complete secondary	0.028001	0.206682	0.14	0.892	-0.37709	0.43309
Higher Education	-0.10834	0.217691	-0.5	0.619	-0.53501	0.318327
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.09576	0.104934	-0.91	0.361	-0.30143	0.109903
Middle	-0.13163	0.123863	-1.06	0.288	-0.3744	0.111134
Richer	-0.20598	0.149783	-1.38	0.169	-0.49955	0.087586
Richest	-0.33829	0.178143	-1.9	0.058	-0.68744	0.010862
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.05943	0.065232	-0.91	0.362	-0.18728	0.068425
More than 2 children under age 6	-0.13148	0.214293	-0.61	0.54	-0.55148	0.288529
Formerly married	0.161233	0.140326	1.15	0.251	-0.1138	0.436267
Household head	0.351745	0.143791	2.45	0.014	0.069921	0.63357
Constant	-3.83429	0.75132	-5.1	0	-5.30685	-2.36173
Wald test of exogeneity: chi2(2) = 0.61 Prob > chi2 = 0.7371						

4. *Dependent variable: unpaid family work=1, 0 otherwise*

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GE index (instrumented)	-0.43558	0.881447	-0.49	0.621	-2.16318	1.292027
DV index (instrumented)	0.326062	0.861647	0.38	0.705	-1.36274	2.014859
TM index	0.421339	0.158462	2.66	0.008	0.110759	0.731919
CK index	-0.0756	0.136968	-0.55	0.581	-0.34405	0.192857
Age	0.009678	0.02649	0.37	0.715	-0.04224	0.061598
Age squared	0.000182	0.000389	0.47	0.639	-0.00058	0.000945
Women's education (ref.: No education)						
Incomplete primary	-0.08367	0.120023	-0.7	0.486	-0.31891	0.151576
Complete primary	0.189505	0.104845	1.81	0.071	-0.01599	0.394997
Incomplete secondary	0.241511	0.214278	1.13	0.26	-0.17847	0.661489
Complete secondary	-0.14701	0.177807	-0.83	0.408	-0.49551	0.201486
Higher Education	-0.34058	0.19091	-1.78	0.074	-0.71475	0.0336
Household wealth quintiles (ref.: poorest quintile)						
Poorer	-0.10134	0.076759	-1.32	0.187	-0.25179	0.049105
Middle	-0.20051	0.097505	-2.06	0.04	-0.39162	-0.00941
Richer	-0.45825	0.124598	-3.68	0	-0.70246	-0.21404
Richest	-0.75715	0.162865	-4.65	0	-1.07636	-0.43794
Presence of child under age 6 (ref.: No children under age 6)						
1-2 child under age 6	-0.07083	0.05945	-1.19	0.234	-0.18735	0.045695
More than 2 children under age 6	-0.08209	0.132262	-0.62	0.535	-0.34132	0.177142
Formerly married	-0.15404	0.158482	-0.97	0.331	-0.46466	0.156575
Household head	-0.35169	0.186709	-1.88	0.06	-0.71764	0.01425
Constant	-3.12163	0.594321	-5.25	0	-4.28648	-1.95678
Wald test of exogeneity: chi2(2) = 0.21 Prob > chi2 = 0.8995						

3A.3.

Kendal Tau-b Coefficients for the Variables Used within and across the Sub-indices and Correlations between the Sub-indices.

Table 3A.1 - Kendall Tau-b: "Traditional marriage" (TM) index

(1998)		Early motherhood	Early marriage	Civil or religious marriage	Arranged Marriage	Brides price	Kinship with husband
Early marriage	Kendall tau-b	0.622					
	p-value	0.00					
Civil or religious marriage	Kendall tau-b	0.073	0.103				
	p-value	0.00	0.00				
Arranged Marriage	Kendall tau-b	0.135	0.152	0.043			
	p-value	0.00	0.00	0.00			
Brides price	Kendall tau-b	0.173	0.206	0.166	0.169		
	p-value	0.00	0.00	0.00	0.00		
Kinship with husband	Kendall tau-b	0.086	0.109	0.136	0.118	0.117	
	p-value	0.00	0.00	0.00	0.00	0.00	
Household size	Kendall tau-b	0.189	0.1921	0.195	0.1255	0.253	0.161
	p-value	0.00	0.00	0.00	0.00	0.00	0.00
(2008)							
Early marriage	Kendall tau-b	0.629					
	p-value	0.00					
Civil or religious marriage	Kendall tau-b	0.042	0.075				
	p-value	0.00	0.00				
Arranged Marriage	Kendall tau-b	0.131	0.134	0.032			
	p-value	0.00	0.00	0.00			
Brides price	Kendall tau-b	0.149	0.187	0.148	0.129		
	p-value	0.00	0.00	0.00	0.00		
Kinship with husband	Kendall tau-b	0.121	0.168	0.056	0.114	0.135	
	p-value	0.00	0.00	0.00	0.00	0.00	
Household size	Kendall tau-b	0.156	0.199	0.156	0.105	0.315	0.165
	p-value	0.00	0.00	0.00	0.00	0.00	0.00

Source: TDHS-98; TDHS-08

Table 3A.2 - Kendall Tau-b: "Contraception knowledge and Usage" (CK) index:

(1998)		Knowledge of a contraception method	Ever used a contraception method
Ever used a contraception method	Kendall tau-b	0.192	
	p-value	0.00	
Current contraception method	Kendall tau-b	0.118	0.541
	p-value	0.00	0.00
(2008)			
Ever used a contraception method	Kendall tau-b	0.140	
	p-value	0.00	
Current contraception method	Kendall tau-b	0.080	0.493
	p-value	0.00	0.00

Source: TDHS-98; TDHS-08

Table 3A.3 - Kendall Tau-b: "Attitudes towards domestic violence" (DV) index

(1998)		Burns food	Neglects child care	Argues with husband	Spends money needlessly
Neglects child care	Kendall tau-b	0.402			
	p-value	0.00			
Argues with husband	Kendall tau-b	0.329	0.466		
	p-value	0.00	0.00		
Spends money needlessly	Kendall tau-b	0.363	0.462	0.473	
	p-value	0.00	0.00	0.00	
Refuses sexual intercourse	Kendall tau-b	0.349	0.369	0.434	0.463
	p-value	0.00	0.00	0.00	0.00
(2008)					
Neglects child care	Kendall tau-b	0.430			
	p-value	0.00			
Argues with husband	Kendall tau-b	0.429	0.471		
	p-value	0.00	0.00		
Spends money needlessly	Kendall tau-b	0.409	0.537	0.517	
	p-value	0.00	0.00	0.00	
Refuses sexual intercourse	Kendall tau-b	0.463	0.407	0.441	0.463
	p-value	0.00	0.00	0.00	0.00

Source: TDHS-98; TDHS-08

Table 3A.4-Kendall Tau-b: "Attitudes towards gender equality" (GE) index

(1998)		Statement 1	Statement 2	Statement 3
Statement 2	Kendall tau-b	0.506		
	p-value	0.00		
Statement 3	Kendall tau-b	0.419	0.402	
	p-value	0.00	0.00	
Statement 4	Kendall tau-b	0.385	0.453	0.307
	p-value	0.00	0.00	0.00
(2008)				
Statement 2	Kendall tau-b	0.328		
	p-value	0.00		
Statement 3	Kendall tau-b	0.267	0.179	
	p-value	0.00	0.00	
Statement 4	Kendall tau-b	0.276	0.293	0.168
	p-value	0.00	0.00	0.00

Source: TDHS-98: TDHS-08. ***Statement 1:*** *Important decisions should be made by men,* ***Statement 2:*** *Men are usually wiser than women,* ***Statement 3:*** *Woman should not argue with her husband even if she disagrees with him,* ***Statement 4:*** *It is always better for the male child to have education than the female child.*

Table 3A.5 - Correlations between the sub-indices

(1998)	Traditional Marriage	Contraception Knowledge and Usage	Attitudes towards domestic violence
Contraception Knowledge and Usage	0.140		
Attitudes towards domestic violence	0.288	0.174	
Attitudes towards gender equality	0.330	0.172	0.554
(2008)	Traditional Marriage	Contraception Knowledge and Usage	Attitudes towards domestic violence
Contraception Knowledge and Usage	0.057		
Attitudes towards domestic violence	0.222	0.122	
Attitudes towards gender equality	0.254	0.131	0.378

Table 3A.6a- Kendall Tau-b: All the variables used in the four sub-indices, 1998

			TM index							CK index			DV index					GE index			
			1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**
CK index	1	Kendall tau-b	0.019	0.027	0.072	0.049	0.104	0.036	0.102	1											
		p-value	0.16	0.04	0.00	0.00	0.000	0.01	0.00												
	2	Kendall tau-b	-0.060	0.032	0.214	0.020	0.093	0.068	0.098	0.192	1										
		p-value	0.00	0.02	0.00	0.14	0.00	0.00	0.000	0.00											
	3	Kendall tau-b	-0.009	0.062	0.160	0.049	0.111	0.048	0.077	0.119	0.541	1									
		p-value	0.47	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00										
DV Index	1	Kendall tau-b	0.048	0.066	0.108	0.125	0.153	0.060	0.133	0.093	0.112	0.088	1								
		p-value	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00									
	2	Kendall tau-b	0.089	0.091	0.104	0.100	0.161	0.073	0.137	0.088	0.112	0.095	0.402	1							
		p-value	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00								
	3	Kendall tau-b	0.096	0.112	0.113	0.083	0.189	0.096	0.174	0.051	0.123	0.103	0.329	0.466	1						
		p-value	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000							
	4	Kendall tau-b	0.089	0.103	0.098	0.112	0.175	0.062	0.177	0.072	0.123	0.096	0.364	0.462	0.473	1					
		p-value	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00						
	5	Kendall tau-b	0.099	0.115	0.106	0.124	0.152	0.056	0.142	0.049	0.090	0.071	0.349	0.369	0.434	0.463	1				
		p-value	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00					
GE index	1	Kendall tau-b	0.104	0.145	0.131	0.109	0.185	0.100	0.221	0.082	0.128	0.096	0.227	0.285	0.369	0.319	0.317	1			
		p-value	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.00				

	2	Kendall tau-b	0.091	0.144	0.125	0.071	0.206	0.090	0.199	0.067	0.133	0.088	0.272	0.284	0.369	0.330	0.339	0.506	1		
		p-value	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.00	0.00			
	3	Kendall tau-b	0.091	0.143	0.099	0.069	0.147	0.086	0.186	0.070	0.107	0.068	0.171	0.250	0.335	0.256	0.253	0.420	0.402	1	
		p-value	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000		
	4	Kendall tau-b	0.098	0.134	0.115	0.090	0.182	0.080	0.164	0.084	0.123	0.089	0.270	0.233	0.303	0.270	0.310	0.385	0.453	0.308	1
		p-value	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.00	

Source: TDHS-98

TM index: 1: Early motherhood; 2: Early marriage; 3: Civil or religious marriage; 4: Arranged marriage; 5: Brides price; 6: Kinship with husband; 7: Household size

CK index: 1: Knowledge of a contraception method; 2: Ever used a contraception method; 3: Current contraception method

DV index: 1: Burns food 2: Neglects child care 3: Argues with husband 4: Spends money needlessly 5: Refuses sexual intercourse

***GE index*:** 1: Important decisions should be made by men; 2: Men are usually wiser than women; 3: Woman should not argue with her husband even if she disagrees with him; 4: It is always better for the male child to have education than the female child.

Table 3A.6b - Kendall Tau-b: All the variables used in the four sub-indices, 2008

			TM index							CK index			DV index					GE index			
			1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**
CK index	1	Kendall tau-b	0.017	0.031	0.047	-0.007	0.057	0.017	0.050	1											
		p-value	0.16	0.01	0.00	0.545	0.00	0.17	0.00												
	2	Kendall tau-b	-0.076	-0.018	0.125	0.001	0.115	0.061	0.074	0.140	1										
		p-value	0.00	0.134	0.00	0.92	0.00	0.00	0.00	0.00											
	3	Kendall tau-b	-0.009	0.011	0.083	0.041	0.069	0.053	0.023	0.080	0.493	1									
		p-value	0.432	0.336	0.00	0.00	0.00	0.00	0.046	0.00	0.00										
DV Index	1	Kendall tau-b	0.067	0.064	0.071	0.048	0.189	0.060	0.184	0.072	0.084	0.076	1								
		p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	2	Kendall tau-b	0.055	0.080	0.093	0.064	0.175	0.082	0.178	0.049	0.099	0.070	0.430	1							
		p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
	3	Kendall tau-b	0.070	0.093	0.090	0.069	0.171	0.088	0.174	0.056	0.109	0.081	0.429	0.471	1						
		p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
	4	Kendall tau-b	0.055	0.083	0.062	0.071	0.176	0.079	0.160	0.052	0.088	0.062	0.410	0.538	0.517	1					
		p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
	5	Kendall tau-b	0.042	0.066	0.059	0.065	0.163	0.085	0.173	0.069	0.083	0.066	0.463	0.407	0.442	0.463	1				
		p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
GE index	1	Kendall tau-b	0.091	0.106	0.073	0.042	0.182	0.094	0.195	0.056	0.117	0.077	0.242	0.234	0.278	0.230	0.238	1			
		p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

	2	Kendall tau-b	0.071	0.090	0.048	0.038	0.167	0.071	0.161	0.078	0.109	0.065	0.238	0.202	0.226	0.215	0.225	0.328	1		
		p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
	3	Kendall tau-b	0.070	0.085	0.049	0.024	0.100	0.065	0.110	0.035	0.083	0.060	0.094	0.133	0.147	0.145	0.136	0.267	0.180	1	
		p-value	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	4	Kendall tau-b	0.061	0.071	0.053	0.047	0.105	0.069	0.105	0.058	0.036	0.026	0.144	0.165	0.174	0.170	0.196	0.276	0.293	0.168	1
		p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Source: TDHS-08.

TM index: 1: Early motherhood; 2: Early marriage; 3: Civil or religious marriage; 4: Arranged marriage; 5: Brides price; 6: Kinship with husband; 7: household size

CK index: 1: Knowledge of a contraception method; 2: Ever used a contraception method; 3: Current contraception method

DV index: 1: Burns food 2: Neglects child care 3: Argues with husband 4: Spends money needlessly 5: Refuses sexual intercourse

GE index**:** 1: Important decisions should be made by men; 2: Men are usually wiser than women; 3: Woman should not argue with her husband even if she disagrees with him; 4: It is always better for the male child to have education than the female child.

3A.4

Further Descriptive Statistics for the Variables Used in Building the Sub-Indices:

Table 3A.7 - Descriptive Statistics for the Variables Used in the "Traditional Marriage" (TM) index

	Whole Sample		Not working		Waged worker		Self-employed		Unpaid family worker	
	1998	2008	1998	2008	1998	2008	1998	2008	1998	2008
(In percentages)										
Age at first marriage < 19	50.99	39.38	51.66	40.55	32.52	27.58	54.62	33.74	60.47	50.68
Age had first child < 19	29.67	22.44	29.77	22.61	18.72	15.75	33.92	23.54	35.42	29.42
(Civil or religious marriage)										
Only civil marriage	3.85	3.28	3.51	2.68	9.03	5.82	3.32	6.05	1.64	2.04
Both civil and religious marriage	88.15	93.52	87.24	93.80	88.38	92.03	90.64	92.09	90.76	94.55
Only religious marriage	8.00	3.20	9.25	3.52	2.60	2.15	6.04	1.86	7.60	3.40
Arranged marriage	10.48	6.94	9.90	7.00	8.29	4.35	10.87	8.54	14.60	9.00
Husband or family paid bride price	24.24	13.86	25.10	15.04	13.22	6.51	18.77	9.20	31.94	18.85
Have kinship with husband	23.88	23.97	24.47	24.45	15.20	17.57	22.76	20.89	28.57	31.07
Household size										
5 people or less	64.40	74.15	41.51	63.30	65.44	72.73	81.22	84.85	73.72	84.28
5-11 people	29.78	23.12	46.77	30.15	28.87	24.72	16.66	13.63	24.91	15.23
11 or more	5.82	2.73	11.71	6.55	5.69	2.55	2.12	1.52	1.37	0.49
Number of observations	5,394	6776	3,596	4,706	559	873	433	402	806	795

Source: TDHS-98; TDHS-08. Sample weights are used.

Table 3A.8 - Descriptive Statistics for the Variables Used in the "Contraception Knowledge and Usage" (CK) Index

	Whole Sample		Not working		Waged worker		Self-employed		Unpaid family worker	
	1998	2008	1998	2008	1998	2008	1998	2008	1998	2008
(In percentages)										
(Knowledge of a contraceptive method)										
Knows modern method	98.49	99.54	98.39	99.55	99.79	99.70	97.61	99.74	98.40	99.14
Knows traditional method [a]	0.30	0.21	0.19	0.22	0.21	0.08	0.47	0.00	0.75	0.48
Does not know a contraception method	1.21	0.25	1.42	0.23	0.00	0.21	1.92	0.26	0.85	0.39
(Ever used a contraception method)										
Used modern method	66.79	77.43	65.81	77.70	74.27	80.23	76.98	83.20	59.86	69.05
Used traditional method	16.78	13.51	16.08	12.69	13.52	13.25	13.47	9.17	24.31	21.08
Never used a method	16.42	9.06	18.10	9.61	12.21	6.52	9.55	7.63	15.83	9.87
(Current contraception method)										
Modern method	36.47	44.47	36.34	43.88	41.56	50.71	43.30	44.58	29.36	39.95
Traditional method	25.14	26.13	23.94	25.50	23.05	24.42	22.13	23.60	33.86	33.46
Not using a contraception method	38.39	29.39	39.72	30.62	35.40	24.87	34.57	31.82	36.77	26.60
Number of observations	5,394	6776	3,596	4,706	559	873	433	402	806	795

Source: TDHS-98; TDHS-08. Sample weights are used. [a]*the percentage indicating the knowledge of a traditional method is based only on those who do not know of modern methods.*

Table 3A.9 - Descriptive Statistics for the Variables Used in the “Attitudes towards Domestic Violence” (DV) Index

	Whole Sample		Not working		Waged worker		Self-employed		Unpaid family worker	
(In percentages)	1998	2008	1998	2008	1998	2008	1998	2008	1998	2008
A husband is justified in beating his wife if she…										
Burns food										
Yes	7.59	4.53	6.37	4.12	5.46	2.99	8.30	4.87	14.36	8.77
No	91.66	95.26	93.06	95.71	93.76	96.90	91.20	94.68	83.90	90.76
Do not know	0.76	0.21	0.56	0.16	0.79	0.11	0.50	0.45	1.74	0.47
Neglects childcare										
Yes	24.35	13.87	22.28	13.43	16.37	10.62	27.30	12.94	38.38	21.12
No	74.20	85.65	76.39	86.16	82.74	88.97	71.79	86.81	58.90	77.77
Do not know	1.45	0.48	1.33	0.41	0.88	0.41	0.91	0.25	2.72	1.11
Argues with husband										
Yes	35.48	10.53	32.59	9.76	23.99	8.76	37.51	10.98	56.47	17.18
No	61.95	88.61	64.93	89.26	74.49	91.09	59.37	88.46	40.03	81.62
Do not know	2.57	0.86	2.47	0.99	1.52	0.15	3.13	0.55	3.50	1.19
Spends money needlessly										
Yes	22.99	14.59	20.29	14.51	14.54	8.82	25.55	13.67	40.43	22.98
No	73.70	84.61	76.73	84.66	83.41	90.96	71.66	85.85	53.47	75.47
Do not know	3.31	0.80	2.98	0.83	2.05	0.21	2.79	0.48	6.09	1.55
Refuses sexual intercourse										
Yes	16.56	5.04	14.60	4.84	13.80	3.61	19.64	4.45	25.92	8.40
No	79.03	93.98	81.74	94.15	83.98	96.02	74.44	95.35	65.35	89.61
Do not know	4.41	0.98	3.66	1.01	2.22	0.37	5.92	0.20	8.73	1.98
Number of Observations	5,394	6776	3,596	4,706	559	873	433	402	806	795

Table 3A.10 - Descriptive Statistics for the Variables Used in the "Attitudes towards Gender Equality" (GE) Index

	Whole Sample		Not working		Waged worker		Self-employed		Unpaid family worker	
	1998	2008	1998	2008	1998	2008	1998	2008	1998	2008
(In percentages)										
Important decisions should be made by men										
Yes	37.16	16.58	35.06	16.32	25.22	9.46	38.44	13.40	55.30	29.02
No	61.51	82.87	63.90	83.18	74.35	90.39	60.10	85.35	41.44	69.98
Do not know/depends	1.33	0.55	1.04	0.50	0.44	0.15	1.47	1.24	3.26	1.00
Men are usually wiser than women										
Yes	31.39	14.84	28.64	14.29	21.96	11.41	32.65	12.31	50.50	23.88
No	64.83	81.78	67.38	82.34	76.95	85.59	64.08	86.21	44.17	71.14
Do not know/depends	3.79	3.38	3.98	3.37	1.09	3.00	3.26	1.48	5.32	4.98
Women should not argue with men even if she disagrees with him										
Yes	44.88	40.83	42.66	41.72	29.22	30.57	47.74	41.38	65.62	48.47
No	52.47	58.16	54.50	57.34	70.25	68.23	48.57	57.37	31.50	50.47
Do not know/depends	2.65	1.01	2.84	0.94	0.53	1.21	3.69	1.26	2.88	1.07
It is always better for the male child to have education than the female child										
Yes	22.36	11.86	19.26	12.38	15.38	8.84	25.25	7.55	40.28	15.03
No	76.71	87.94	79.85	87.40	84.29	91.16	73.28	92.21	58.38	84.63
Do not know/depends	0.94	0.20	0.89	0.22	0.34	0.00	1.47	0.25	1.34	0.34
Number of Observations	5,394	6776	3,596	4,706	559	873	433	402	806	795

Source: TDHS-98; TDHS-08. Sample weights are used.

3A.5

ADDITIONAL MNL RESULTS

Table 3A.11- MEMs for the Control Variables Included in the MNL model (for the empirical specification with the composite index)

	Waged worker				Self-employed				Unpaid family worker			
	1998		2008		1998		2008		1998		2008	
Region (Ref.: West)												
South	-0.073***	(0.02)	-0.017	(0.02)	-0.049***	(0.01)	-0.039***	(0.01)	-0.029***	(0.01)	-0.022***	(0.01)
Central	-0.063***	(0.02)	-0.086***	(0.01)	0.013	(0.02)	-0.037***	(0.01)	0.010	(0.01)	0.000	(0.01)
North	-0.060***	(0.02)	-0.031*	(0.02)	0.027	(0.02)	0.013	(0.02)	0.136***	(0.02)	0.146***	(0.02)
East	-0.099***	(0.02)	-0.098***	(0.02)	-0.045***	(0.02)	-0.057***	(0.01)	-0.036***	(0.01)	-0.018**	(0.01)
Current residence (ref.: city)												
Town	-0.002	(0.01)	-0.002	(0.01)	0.012	(0.01)	-0.009	(0.01)	0.045***	(0.01)	0.027***	(0.01)
Countryside	0.010	(0.01)	0.036**	(0.01)	0.000	(0.01)	-0.021**	(0.01)	0.213***	(0.02)	0.162***	(0.01)
Women interviewed alone	0.004	(0.01)	0.004	(0.01)	-0.008	(0.01)	0.023***	(0.01)	0.014*	(0.01)	0.014***	(0.01)

*Source: TDHS-98; TDHS-08. Standard errors are in parenthesis. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 3A.12 - MEMs for the Empirical Specification with the Individual Sub-indices

	Waged worker				Self-employed				Unpaid family worker			
	1998		2008		1998		2008		1998		2008	
Age	0.003***	(0.00)	0.000	(0.00)	0.001	(0.00)	0.002***	(0.00)	0.002***	(0.00)	0.002***	(0.00)
Women's education (ref.: No education)												
Incomplete primary	-0.019	(0.03)	0.022	(0.03)	0.052**	(0.02)	0.008	(0.02)	0.007	(0.01)	-0.012	(0.01)
Complete primary	-0.004	(0.02)	-0.007	(0.02)	0.047***	(0.01)	0.008	(0.01)	0.037***	(0.01)	0.023***	(0.01)
Incomplete secondary	0.002	(0.03)	0.038	(0.04)	0.072***	(0.02)	0.000	(0.03)	0.017	(0.02)	0.037**	(0.02)
Complete secondary	0.152***	(0.02)	0.002	(0.03)	0.037	(0.02)	0.019	(0.02)	-0.033	(0.02)	-0.008	(0.01)
Higher Education	0.346***	(0.03)	0.167***	(0.02)	0.068*	(0.04)	0.011	(0.02)	-0.024	(0.05)	-0.029**	(0.01)
Household wealth quintiles (ref.: poorest quintile)												
Poorer	-0.046**	(0.02)	-0.076***	(0.02)	-0.035*	(0.02)	-0.001	(0.02)	-0.011	(0.01)	-0.019*	(0.01)
Middle	-0.087***	(0.02)	-0.103***	(0.02)	-0.038**	(0.02)	-0.003	(0.02)	-0.052***	(0.01)	-0.033***	(0.01)
Richer	-0.087***	(0.03)	-0.107***	(0.02)	-0.041**	(0.02)	-0.013	(0.02)	-0.088***	(0.01)	-0.060***	(0.01)
Richest	-0.100***	(0.03)	-0.045*	(0.03)	-0.077***	(0.02)	-0.023	(0.02)	-0.083***	(0.02)	-0.083***	(0.01)
Presence of child under age 6 (ref.: No children under age 6)												
1-2 child under age 6	-0.044***	(0.01)	-0.081***	(0.01)	-0.036***	(0.01)	-0.013	(0.01)	-0.007	(0.01)	-0.006	(0.01)
More than 2 children under age 6	-0.095**	(0.04)	-0.053*	(0.03)	-0.114***	(0.04)	-0.040	(0.03)	0.027**	(0.01)	-0.001	(0.01)
Formerly Married	0.131***	(0.03)	0.064**	(0.03)	0.032	(0.03)	0.025	(0.02)	-0.016	(0.02)	-0.019	(0.02)
Household head	-0.045	(0.03)	0.022	(0.03)	0.095***	(0.03)	0.050***	(0.02)	-0.118***	(0.03)	-0.031	(0.02)
Sub-indices												
TM index	-0.052	(0.03)	-0.077**	(0.04)	0.005	(0.03)	-0.009	(0.03)	0.038**	(0.02)	0.053***	(0.02)
CK index	-0.040*	(0.02)	-0.062**	(0.03)	-0.085***	(0.02)	-0.006	(0.02)	-0.005	(0.01)	-0.007	(0.01)
DV index	0.032	(0.02)	0.049**	(0.02)	0.018	(0.02)	-0.014	(0.02)	0.024**	(0.01)	0.014	(0.01)
GE index	0.009	(0.02)	-0.030	(0.02)	0.007	(0.02)	0.000	(0.02)	0.016	(0.01)	-0.006	(0.01)

Region (Ref.: West)												
South	-0.071***	(0.02)	-0.020	(0.02)	-0.046***	(0.01)	-0.039***	(0.01)	-0.030***	(0.01)	-0.022***	(0.01)
Central	-0.063***	(0.02)	-0.087***	(0.01)	0.008	(0.01)	-0.039***	(0.01)	0.007	(0.01)	-0.003	(0.01)
North	-0.059***	(0.02)	-0.033*	(0.02)	0.027	(0.02)	0.012	(0.02)	0.139***	(0.02)	0.145***	(0.02)
East	-0.091***	(0.02)	-0.097***	(0.02)	-0.038**	(0.02)	-0.057***	(0.01)	-0.038***	(0.01)	-0.022***	(0.01)
Current residence (ref.: city)												
Town	-0.004	(0.01)	-0.001	(0.01)	0.011	(0.01)	-0.009	(0.01)	0.045***	(0.01)	0.027***	(0.01)
Countryside	0.009	(0.01)	0.038***	(0.01)	0.000	(0.01)	-0.021**	(0.01)	0.211***	(0.02)	0.160***	(0.01)
Women interviewed alone	0.004	(0.01)	0.003	(0.01)	-0.007	(0.01)	0.023***	(0.01)	0.013*	(0.01)	0.015***	(0.01)

*Source: TDHS-98; TDHS-08. Standard Errors are in parenthesis. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively. Standard errors are in parenthesis.*

Table 3A.13 - MEMs calculated from the Exploratory MNL model for 2008 in five categories: Reference Category: Not working

	Formal waged worker		Informal waged worker		Self-employed		Unpaid Family Worker	
Age	-0.001***	(0.00)	0.001***	(0.00)	0.002***	(0.00)	0.002***	(0.00)
Women's education (ref.: No education)								
Incomplete primary	0.011	(0.02)	0.011	(0.01)	0.008	(0.02)	-0.011	(0.01)
Complete primary	0.014	(0.01)	-0.002	(0.01)	0.007	(0.01)	0.023***	(0.01)
Incomplete secondary	0.034*	(0.02)	0.014	(0.02)	-0.001	(0.03)	0.038**	(0.02)
Complete secondary	0.026*	(0.02)	-0.008	(0.01)	0.019	(0.02)	-0.009	(0.01)
Higher Education	0.075***	(0.02)	-0.017	(0.01)	0.021	(0.02)	-0.026*	(0.01)
Household wealth quintiles (ref.: poorest quintile)								
Poorer	0.009	(0.01)	-0.049***	(0.01)	-0.006	(0.02)	-0.026**	(0.01)
Middle	0.019**	(0.01)	-0.075***	(0.02)	-0.010	(0.02)	-0.042***	(0.01)
Richer	0.027***	(0.01)	-0.089***	(0.02)	-0.020	(0.02)	-0.070***	(0.01)
Richest	0.063***	(0.01)	-0.098***	(0.02)	-0.028	(0.02)	-0.092***	(0.01)
Presence of child under age 6 (ref.: No children under age 6)								
1-2 child under age 6	-0.017***	(0.00)	-0.042***	(0.01)	-0.016	(0.01)	-0.009	(0.01)
More than 2 children under age 6	-0.051	(0.03)	-0.011	(0.01)	-0.044	(0.04)	-0.001	(0.01)
Formerly Married	0.016*	(0.01)	0.035***	(0.01)	0.028	(0.02)	-0.017	(0.02)
Household head	0.010	(0.01)	-0.006	(0.02)	0.056***	(0.02)	-0.032	(0.02)
Sub-indices								
TM index	-0.078***	(0.02)	0.026	(0.02)	-0.013	(0.03)	0.058***	(0.02)
CK index	-0.029***	(0.01)	-0.009	(0.01)	-0.010	(0.02)	-0.008	(0.01)
DV index	-0.005	(0.02)	0.025**	(0.01)	-0.013	(0.02)	0.018*	(0.01)
GE index	-0.019	(0.01)	-0.011	(0.01)	-0.001	(0.02)	-0.006	(0.01)
Region (Ref.: West)								
South	-0.014***	(0.01)	-0.002	(0.01)	-0.043***	(0.01)	-0.023***	(0.01)
Central	-0.017***	(0.00)	-0.051***	(0.01)	-0.043***	(0.01)	-0.006	(0.01)
North	-0.005	(0.01)	-0.024*	(0.01)	0.012	(0.02)	0.153***	(0.02)
East	-0.006	(0.01)	-0.065***	(0.01)	-0.064***	(0.01)	-0.028***	(0.01)
Current residence (ref.: city)								

Town	-0.006	(0.00)	0.012*	(0.01)	-0.010	(0.01)	0.027***	(0.01)
Countryside	-0.008	(0.01)	0.033***	(0.01)	-0.021**	(0.01)	0.170***	(0.01)
Women interviewed alone	0.002	(0.00)	0.000	(0.01)	0.025***	(0.01)	0.015***	(0.01)

*Source: TDHS-08. Standard Errors are in parenthesis. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively. Standard errors are in parenthesis. There were 497 formal waged workers; 376 informal waged workers; 402 self-employed; 795 unpaid family workers in the sample and 4,706 of the sample were coded as not working.*

Chapter 4: EXPLORING THE EXTENT OF INEQUALITY ASSOCIATED WITH OCCUPATIONAL GENDER SEGREGETION IN TURKEY

4.1. Introduction

Although enabling women to take part in the workforce is an important step towards achieving a gender equal labour market, it is crucial to acknowledge that it does not necessarily imply an equal distribution of income, skills, social status or power between men and women. Several studies note the roles undertaken by men and women in the labour markets; women typically taking up the clerical and service work, while men dominate the production and managerial occupations, and the striking similarities in the sex-typing of occupations across countries (Hakim, 1979; Roos, 1985; Charles, 1990; Anker et al., 2003). Therefore, regardless of the level of economic development, there is a degree of occupational segregation whereby men and women differ in terms of their employment patterns across occupations, although the extent varies between countries.

It is important to acknowledge that, even when women and men are randomly distributed across the occupations, there might be a degree of occupational segregation (Cortese et al., 1976) and, therefore, what is more important than the segregation itself is the potential inequality associated with it. Given the concerns about the potential impact of occupational segregation on gender inequality, Blackburn et al. provide a valuable approach which decomposes occupational segregation into vertical and horizontal components, with a vertical component capturing the extent of inequality entailed in segregation; for example, in terms of difference in pay, occupational prestige and social status (Blackburn et al., 2001; Blackburn and Jarman, 2005; 2006). The horizontal component, on the other hand, explores the difference in the distribution of men and women across occupations without an implication of inequality in terms of a vertical criterion, although it may imply narrower occupational choices available for them.

This chapter investigates occupational gender segregation and the associated vertical and horizontal dimensions in Turkey. It, therefore, represents the first application of the approach taken by Blackburn et al. for a developing country. In order to explore the extent of inequality (the vertical component of segregation), average pay levels across occupations are used and it is investigated whether it is men or women who have a greater tendency to be employed in lower-paid occupations. In addition to pay, aiming to investigate the social inequalities inherent in occupational gender segregation, a social stratification scale similar to CAMSIS ("Cambridge Social Interaction and Stratification Scales", see http://www.camsis.stir.ac.uk and Prandy and Lambert, 2003; Griffiths and Lambert, 2011) is constructed. This is the first attempt to investigate the social rewards associated with holding an occupation in Turkey by providing a scale which can broadly be defined as the status or prestige scale or a social interaction distance scale based on data for 2010. Although there is a CAMSIS scale for Turkey (Lambert, 2003; http://www.camsis.stir.ac.uk/versions.html#Turkey), it was constructed using an older data source based on a now dated classification of occupations. Furthermore, there is no study which applies the CAMSIS for Turkey to estimate occupational segregation indices.

The horizontal dimension of occupational gender segregation may simply be a matter of choice or reflect differential preferences between men and women. However, it is worth acknowledging that, given social and educational conventions, there is a potential that men and women may not freely choose occupations in Turkey. Therefore, a significant difference in the employment patterns of men and women might be the consequence of the limited occupational choices faced. Moreover, preferences, such as the possibility of women choosing flexible or family-friendly occupations might be the consequence of gender stereotypes. As a result, although the difference in the tendency of men and women to be employed in different occupations may not entail inequality in the form of pay or social stratification, it may imply the existence of social and labour market institutions shaped within the constraints of traditional gender roles that hinder men and women from being employed in gender atypical occupations.

4.2 Conceptualising Occupational Gender Segregation

An accurate conceptualisation of occupational gender segregation is the most important starting point in the analysis of how countries` occupational structures are gendered. First and foremost, as argued powerfully by Blackburn et al. (2001), “segregation” should be distinguished from “concentration”. Accordingly, while concentration is concerned with the representation of women or men in a particular occupation or a set of occupations, segregation refers to the extent to which women and men are inclined to be separated into different occupations from each other over the whole range of occupations under consideration. The most prominent difference between the two concepts is that while segregation is gender symmetric - if women are segregated from men, men are segregated from women to the same degree - concentration, by definition, cannot be symmetrical between genders (Siltanen et al., 1995; Blackburn and Jarman, 2005). The concepts are interlinked in the sense that segregation can be evaluated as a consequence of concentrations of men and women across all occupations. There are instances amongst earlier works on the topic where segregation is conceptualised in a wider context including concentration (see, for example, Lewis, 1985; Anker, 1998); however, the important difference between the two concepts is now commonly recognised.

The main motivation behind analysing the segregation of men and women across occupations has been to shed light on inequality operating to the detriment of women among the occupational structures shaped by gender. In this context, horizontal and vertical segregation have essentially been distinguished from each other. Horizontal segregation has conventionally been defined as the extent to which women and men are employed in different occupations (Hakim, 1979; Rubery and Fagan, 1995; Cousins, 1999; European Commission, 2009). On the other hand, vertical segregation has usually been defined as the relative position of women working within the same segment of an occupation as men (Hakim, 1979; Reskin and Roos, 1990). Therefore, vertical segregation has been regarded as having a fundamental role in examining the inequality that women face in the occupational structure (see, for example, Hakim, 1998). However, conceptualising horizontal and vertical segregation in this way is problematic and unsatisfactory. This is because when vertical segregation is defined as the tendency of women being employed in lower grade jobs within the same occupational groupings; for example, women are primary school teachers, men are university teachers; or women are nurses, men are doctors, the possible vertical relationship between different occupational categories (e.g. the vertical relationship between university teachers and nurses) goes unchecked.[50] To put it differently, horizontal segregation, defined as the tendency of men and women working in different occupations, might include a vertical component (Blackburn and Jarman, 2005; Blackburn, 2009). Therefore, the distinction between vertical and horizontal segregation becomes clouded.

Exploring the extent of inequality associated with occupational gender segregation has been a challenging process. For example, in their influential work, Semuonov and Jones (1999) have argued that occupational segregation does not necessarily amount to occupational inequality and, therefore, segregation and inequality should be analysed separately. In order to do so, the authors distinguish between “nominal segregation” and

[50] For example, under ISCO-88 occupational classification, primary school teachers and university teachers are classified within the sub-major group “teaching professionals whilst nurses and doctors are classified within the “life science and health professionals”.

"ordinal inequality", both associated with the so-called "occupational differentiation" among men and women (Semuonov and Jones, 1999: 226). Accordingly, ordinal inequality takes into account the ordering of the occupations on a vertical scale, by status or prestige. However, their approach does not enable researchers to investigate how much of the "occupational differentiation" is due to inequality as it does not provide comparable measures for ordinal inequality and nominal segregation.

In a series of related papers, Blackburn et al. have contributed to an important development in terms of exploring the extent of inequality prevalent in occupational gender segregation (see, for example, Blackburn et al., 2001; Blackburn and Jarman, 2005, Blackburn, 2009). The authors have introduced the term "overall segregation" which can be decomposed into two components: a "vertical" dimension, which measures the extent of inequality in terms of the tendency of women and men to be employed in different occupations, and a "horizontal" dimension which refers to the difference in their employment patterns without an implication of inequality (Blackburn et al., 2001; Blackburn and Jarman, 2005; Jarman et al., 2012). Therefore, their approach is superior in the sense that it enables researchers to investigate how much of the overall difference in the distribution of men and women across occupations owes to the inequality in occupational outcomes between them. Accordingly, it is only the vertical component that captures the inequality associated with overall segregation and unlike the conventional approach, it investigates the vertical relationship; such as, pay, status and prestige, between all rather than specific sub-sections of occupations. The overall segregation, on the other hand, can be viewed as what has usually been referred to as horizontal segregation in the literature.

The analysis of segregation without investigating its dimensions as suggested by Blackburn et al. can be misleading. For example, Blackburn and Jarman (2005) note significantly higher levels of (overall) segregation in more egalitarian and gender equal countries such as Sweden and Finland.[51] The authors, therefore, state that it is important to consider segregation as a consequence of vertical and horizontal components and, accordingly, differentiate between inequality and difference in the distribution of men and women across occupations. The paradoxical positive relationship between segregation measures and women's empowerment might then be the consequence of relatively higher levels of horizontal and lower levels of the vertical dimension of segregation. That is to say, the high segregation levels in these countries can be due more to the difference in the occupational distributions of women and men, rather than women being employed in occupations that are less prestigious or less well-rewarded in terms of pay. Indeed, while analysing the vertical dimension of segregation in terms of pay and social stratification in Scandinavian countries together with the USA and Britain, Jarman et al. (2012) find an advantageous position of women in terms of social stratification relative to men, while men are found to have a slight advantage in terms of pay. Hence, although pay inequality to the detriment of women persists in these countries, women hold occupations that rank highly in the social stratification. This is explained by the transition from manual to non-manual work as a result of industrialisation, which contributed to increasing female labour force participation rates. Moreover, the authors argue that it was generally women who moved into the non-manual occupations and although women were mostly employed in lower level non-manual employment at the beginning of the transition, their share amongst professionals has increased notably over time. Therefore, their study concludes that

[51] Blackburn and Jarman (2005) point to positive correlations between (overall) occupational gender segregation figures (measured by the "Marginal Matching" coefficient) and the United Nations' (UN) measures as proxies for women's empowerment/gender equality (the Gender Related Development Index (GDI), the Gender Empowerment Measure (GEM) and the Human Development Index (HDI)); reflecting that a greater degree of women's empowerment are associated with a higher degree of occupational segregation.

although men might be employed in relatively well-paid occupations, it is also men who perform the unskilled manual work which ranks significantly lower in the social hierarchy.

Although these explanations might hold for industrialised economies, it is less likely to be the case for countries where the industrialisation process is not yet complete. This chapter aims to contribute to the literature by investigating occupational gender segregation and its vertical and horizontal dimensions in Turkey, where the labour market is characterised by very low female labour force participation rates and agriculture continues to be the major economic activity for women. Moreover, the literature on occupational gender segregation is quite limited and dated in Turkey and there is no study which analyses the dimensions of segregation. Amongst the very few studies related to occupational segregation in Turkey, the majority apply the term "horizontal" to what is conceptualised as "overall" segregation in this chapter. These studies adopt the common measures of segregation, either the Index of Dissimilarity (ID) (Duncan and Duncan, 1955) or the Karmel MacLachlan Index (IP) (Karmel and MacLachlan, 1988), which can be interpreted as the share of employed people who would need to move to different occupations in order to achieve no segregation in the workforce.[52] For example, based on 1994 data provided by the Turkish Statistics Institute, Selim and Ilkkaracan (2002) have found that almost 27.6 percent of the employed people in Turkey would have to change their jobs in order to achieve an equal distribution of men and women across occupations.[53] Rich and Palaz (2008) have investigated the trend in occupational segregation between 1975 and 2000 and noted an even more segregated workforce in Turkey over the time under consideration. However,

[52] Information on these indices can be found in Appendix 4A.2.
[53] This figure does not seem very high; however, it is difficult to compare this with other countries as different measures are used when calculating the segregation indices and the number of occupations used in calculations are different across the studies on occupational segregation. For example, using the ID index (same as Selim and Ilkkaracan (2002)), Anker et al. (2003) present occupational segregation figures such as 0.569 for Austria, 0.554 for France and 0.616 for Poland around the year 2000. However, Anker et al. use detailed occupational categories and exclude agricultural occupations whilst the data cover information for only three industries - manufacturing, mining and quarrying, and electricity, gas and water - in Selim and Ilkkaracan's work on Turkey.

these studies do not explore the extent of inequality entailed in the segregated workforce or whether the increased segregation, as found by Rich and Palaz (2008), stands for an increased disadvantageous position of women in the occupational structure of the country. Nor do they cover the first decade of the 21st century where the process of industrialisation has continued to change employment patterns in Turkey.

Vertical occupational segregation has been analysed between the sub-sections of occupations in Turkey; for example, Gunluk-Senesen and Ozar (2001) have examined segregation in the private banking sector based on data for the years 1996 and 1997. Their study differentiates between four hierarchical occupational positions held in the sector[54] in order to investigate how men and women are vertically segregated from each other. However, the ID-index has been used for this purpose and, as the authors also point out, being a segregation measure the ID-index is gender symmetric and, therefore, does not directly refer to men or women who would need to move to different occupations in order to achieve no segregation.[55] As a result, the "vertical segregation" index value of 25.6 percent found in Gunluk-Senesen and Ozar's study does not explore whether it is women or men who are in the disadvantaged situations across the hierarchically ranked positions in the sector. Therefore, in order to expand the analysis, the authors look at the concentration of men and women across the occupational positions analysed. They find an over-representation of highly educated women in the banking sector jobs which require lower qualifications and offer limited opportunities for promotion. Although this finding is a sign of the disadvantaged position of women in the sector, a measure of concentration –

[54] The occupational categories are: i) top management, consisting of general managers, their assistants, and department managers, ii) mid management, consisting of branch managers, their assistants, department heads and their supervisors, iii) skilled personnel, consisting of trained cashiers, tellers, computer operators and other such staff, iv) unskilled personnel, consisting of service workers, janitors, security guards and couriers.
[55] Information on the ID-index can be found in Appendix 4A.2.

the percentage of women in these jobs – can provide little more than an indirect measure of women’s over-education.

There is, therefore, insufficient evidence on whether there is an unequal differentiation in the employment patterns of women and men across occupations in Turkey and the attempts to explore women’s disadvantaged position in the occupational hierarchy are not satisfactory. As a result, it becomes crucial to differentiate between vertical and horizontal components of overall segregation and explore the inequality and difference (without inequality) in the tendency of women and men to be employed in different occupations. Several criteria can be introduced to analyse the vertical dimension of occupational segregation. Conventionally, occupations are valued according to their economic and labour market characteristics; such as, pay and skill level (Bottero, 2005). It is true that one of the most important rewards associated with holding an occupation is pay. Therefore, the vertical dimension of segregation is often captured by ranking occupational groups according to average levels of pay, a method also employed in this chapter. However, although income generated from employment is the main source of economic rewards for the individuals, it is crucial to evaluate the meaning of holding an occupation in a wider context and acknowledge the social rewards associated with employment. Occupations can play a significant role in structuring the social space and, thereby, can create or hinder pathways to social networks and opportunities (Stewart et al., 1980). When female employment is considered, these are crucial aspects in gaining a full understanding for policy making. Sociological research considers occupation as the major indicator of an individual`s position in the social hierarchy and, therefore, a means to investigate social advantage or disadvantage, such as prestige, status and location of incumbents of occupations in the social stratification structure (see, for example, Treiman, 1977; Stewart et al., 1980; Ganzeboom and Treiman, 1996; Prandy and Lambert, 2003; Chan and

Goldthorpe, 2004; 2007). Therefore, in order to capture the inequalities between women and men in terms of the locations of the occupations they hold in the social hierarchy, a further criterion should be introduced in order to rank occupations on the vertical dimension of segregation. This is achieved by constructing a social stratification scale similar to the CAMSIS ("Cambridge Social Interaction and Stratification Scales", see http://www.camsis.stir.ac.uk and Prandy and Lambert, 2003; Griffiths and Lambert, 2011) which is variously defined as "a measure of general social advantage, hierarchical patterns of social relationships, prestige, social class and so on" (Blackburn and Jarman, 2006: 301).[56]

4.3 Methodology and Data

Following the approach taken by Blackburn et al., occupational gender segregation is decomposed into two components; that is, "vertical segregation" and "horizontal segregation" (Blackburn et al., 2001; Blackburn and Jarman, 2005; Blackburn, 2009). These two components will make up the "overall segregation". Accordingly, the vertical dimension of occupational gender segregation measures the extent of inequality entailed in the tendency of women and men to be separated into different occupations, while the horizontal dimension refers to the difference in their employment patterns without an implication of inequality with respect to vertical criteria.

The analysis of occupational segregation has mostly been based on index measures. The most commonly used index has been the index of dissimilarity (ID) introduced by Duncan and Duncan (1955) which, as previously mentioned, has been interpreted as the share of employed people who would need to move to different occupations in order to achieve no segregation. The ID-index has played a pioneering role in the occupational segregation literature and several other indices; such as, the Moir and Selby-Smith segregation

[56] The details on the features and construction of the scale will be explained in Section 4.4.

indicator (MSS) (Moir and Selby Smith, 1979), the Karmel MacLachlan Index (IP) (Karmel and MacLachlan (1988) and the Marginal Matching Measure (MM) (Blackburn et al., 1993), have evolved from the ID-index.[57] These indices are appropriate when the purpose is to measure what we refer to as "overall" segregation in this chapter without looking at its dimensions, because there is no way of decomposing these indices into vertical and horizontal components. However, other measures are needed if the purpose is to explore the inequality and difference in how men and women are separated from each other across occupations. Hence, benefiting from the methodology adopted by Blackburn et al. which allows a detailed exploration of the disadvantaged group and quantify the extent of the disadvantage, this chapter uses the Gini coefficient as a measure for overall segregation while Somers' D is employed for vertical segregation.

4.3.1 Measuring the Dimensions of (overall) Occupational Gender Segregation

An attempt to analyse the extent of inequality prevalent in segregation requires adopting measures for vertical and horizontal components that are comparable and consistent with the overall segregation measure (Blackburn, 2009). Therefore, following Blackburn et al., the Gini coefficient is adopted in order to analyse overall segregation, while Somers' D is used for the vertical segregation analysis. This is because, the Gini coefficient is shown to be a limiting case for Somers' D (see Blackburn et al., 2001) in the sense that both use the same statistic for the same occupational groupings; however, the ordering of the occupations is based on different tools.

[57] Further details on the features of these indices as well as many others can be found in Appendix 4A.2.

There are various formulae for the derivation of the Gini coefficient of which the one employed by Siltanen et al. (1995) and Blackburn (2009) is presented here. Accordingly, the Gini coefficient can be computed as:

$$G = \sum_{i=2}^{n}\left[\sum_{1}^{i-1} W_t/W \sum_{1}^{i} M_t/M - \sum_{1}^{i} W_t/W \sum_{1}^{i-1} M_t/M\right] \qquad 1.1$$

where t stands for an occupation included in the cumulative total; i denotes a single occupation which can range from 1 to n where n is the total number of occupations included in the analysis.

The formula can be rewritten as;

$$G = [1/WM]\sum_{i-2}^{n}\left[\sum_{1}^{i-1} W_t\left(\sum_{1}^{i-1}(M_t + M_i)\right) - \left(\sum_{1}^{i-1}(W_t + W_i)\right)\sum_{1}^{i-1} M_t\right] \qquad 1.2$$

$$= [1/WM]\sum_{i-2}^{n}\left(M_t\sum_{1}^{i-1} W_t - W_i\sum_{1}^{i-1} M_t\right) \qquad 1.3$$

where

W = the number of women in the workforce.

M = the number of men in the workforce.

W_i, M_i = the number of women and men in occupation i respectively.

W_t, M_t = the number of women and men in occupation t respectively.

Values of the Gini coefficient vary between 0 which stands for total integration and 1 which stands for total segregation. The formula for the Gini coefficient can be interpreted as ordering the pairs of men and women by the gender composition (femaleness/maleness) of the occupations they hold. (Blackburn et al., 2001: 534). If C denotes concordant pairs;

that is, the woman is employed in an occupation with a greater share of women and the man in an occupation with a greater proportion of men, and D stands for the discordant pairs, meaning that the woman is employed in a male dominated occupation and the man is in a female dominated occupation, the Gini coefficient then becomes;

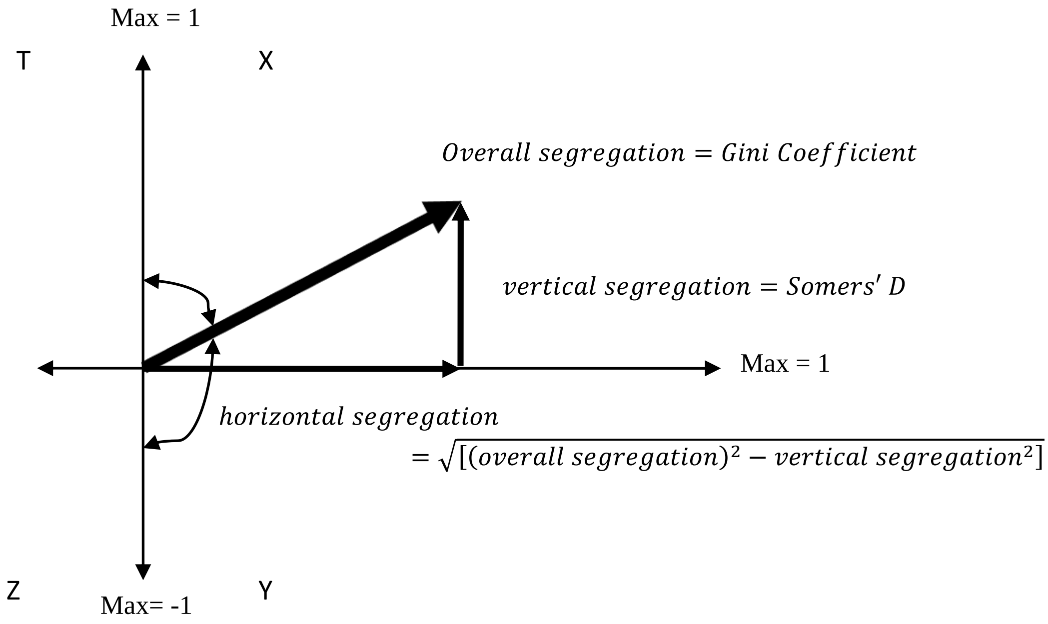
$$G = (C - D)/WM \qquad 1.4$$

which is actually Somers' D, a measure of association with an independent variable that can take two values (men and women in this chapter).[58] In other words, when occupations are ranked from the most female dominated to the lowest or vice versa, the value for Somers' D is maximised and it becomes the Gini coefficient (Blackburn et al., 1994 as cited in Blackburn and Jarman, 2006). When occupations are ranked by the criteria of occupational inequality - in our case by the mean hourly pay levels and stratification scale scores – Somers' D measures the vertical dimension of segregation. Therefore, the Gini coefficient for the overall segregation and Somers' D for its vertical dimension are strictly comparable measures in the sense that both are measured by Somers' D (since Somers' D becomes the Gini coefficient when occupations are ordered in accordance with their gender composition).

Finally, the horizontal component of segregation is conceptualised in the usual mathematical formulation indicating that it is orthogonal to the vertical component. Therefore, the horizontal component is found by using Pythagoras' theorem (see Figure 4.1). Blackburn et al. (2001) and Blackburn and Jarman (2006) summarise the mathematical and the conceptual relationship between vertical and horizontal dimension as the result of overall segregation as follows:

[58] See Appendix 4A.3 for further information on Somers' D.

Figure 4.1 - Graphical Representation of the Components of Segregation



Source: Blackburn and Jarman (2006) pp.298

Figure 4.1 illustrates an expected (and usually observed) case where the vertical component is positive indicating men`s advantage over women in terms of pay or social stratification. Given the data on gender are coded as “1= man 2 = woman”, a positive vertical segregation value measured by Somers’ D indicates woman’s disadvantageous position compared to man in a given occupational group. However, the vertical component can also be negative indicating an advantage for women.[59] Since horizontal segregation is conceptualised as the difference without inequality, it can only be positive (Blackburn et al., 2001). Accordingly, the overall segregation cannot be located within quadrants Z and T. Therefore, when there is an advantage for women in the vertical segregation measure, the overall segregation will locate at quadrant Y, and when there is a male advantage, it will locate at Quadrant X.

[59] For example, Blackburn and Jarman (2005) find a negative vertical segregation when CAMSIS is used as a measure for occupational inequality.

4.3.2 Data and Descriptive Statistics

The data to analyse occupational gender segregation comes from the 2010 Household Labour Force Survey (HLFS) undertaken by the Turkish Statistics Institute. The sample is restricted to individuals aged 15 to 65 who are currently in employment. The sample contains 153,920 currently working individuals of which 45,029 are women and 108,891 are men. The HLFS provides data on occupations coded at the 2-digit International Standard Classification of Occupations 1988 (ISCO-88). When "pay" is used as a measure for inequality for the vertical dimension of segregation, the data is restricted to regular/casual employees because the data on pay are available only for them.[60] The regular/casual employee sample comprising those who have non-zero income consists of 86,120 individuals (20,175 women; 65,945 men).[61] In the case of the stratification scale score as a measure for inequality, the analysis is performed amongst the whole sample and several other sub-samples of interest, such as regular/casual employees for comparison purposes and with and without agricultural occupations for exploratory purposes.

There are no data available for Turkey that provide classifications which are more detailed than 2-digit level occupational categories. It is well established in the literature that segregation measures tend to increase with the number of occupations used in the analysis and, therefore, measures that use a less detailed occupational data are likely to underestimate the extent of occupational segregation (see, for example, Anker, 1998; Anker et al., 2003; Blackburn et al., 2001 and Blackburn, 2009). However, Anker (1998) argues that disaggregating occupational groupings from 2-digit to 3-digit level does not result in a substantial difference in the segregation measures, whereas one-digit level

[60] "Regular/casual employees" are one of the employment status categories available in the HLFS 2010 (the others are *i)* employers, *ii)* self-employed, *iii)* unpaid family workers). Thereby, regular and casual employees are inseparable and there is no additional question in the data set which enables the researcher to capture casualty in work separately.
[61] 5,765 individuals have reported zero income and these have been excluded from the sample, when pay is used as a measure for inequality for the vertical component of overall segregation.

occupational data usually underestimate occupational gender segregation. Moreover, Blackburn (2009) considers 20 occupational categories as an “appropriate minimum” (2009: 14). Accordingly, he states that it is possible to work on a less detailed occupational data if there are no alternatives, though caution must be exercised when interpreting segregation measures. Therefore, given the lack of availability of detailed occupational data for Turkey, we are constrained to work on 2-digit ISCO-88 data that cover 27 occupational categories, which satisfies Blackburn’s “appropriate minimum”.[62]

Table 4.1 shows the employment distribution of women and men by occupational groups among the total sample and regular/casual employees. It is seen that a very high proportion is engaged in agriculture, accounting for almost 24 percent of the total sample, and women are particularly over-represented in agricultural occupations. More than 40 percent of women are employed in either skilled or unskilled agricultural occupations (31.37 percent under major group 6 “skilled agricultural and fishery workers” and 9.60 percent under unskilled “agricultural, fishery and related labourers” – sub-major group 92). The proportion of men in agriculture is around 17 percent of which the vast majority is in skilled agricultural occupations and only 2.26 percent are unskilled agricultural labourers.

[62] Another option, in order to proxy for a more detailed, job-level information, could have been to cross-classify occupation and industry. Several attempts have been tested in this research in order to achieve a finer classification by cross classifying industry and occupation. Interestingly, unlike the limited ISCO-88 occupational categories, 2010 HLFS provides a detailed “The European Classification of Economic Activities” (NACE) industrial categorisation (99 sub-groups based on NACE Rev. 2). However, many industry/occupations combinations did not exist or the number of observations were very small (for example, life science and health professionals in mining or related industries or in finance, or teaching professionals in agriculture or in, for example, transport etc.) which results in difficulties in the segregation analysis. Therefore, this approach has not been employed.

Table 4.1 - Employment Distribution of Men and Women by Occupational Groups (in percentages)

	Total Sample			Regular/Casual Employees		
	Total	Women	Men	Total	Women	Men
Major Group 1 Legislators, senior officials and managers						
11-Legislators and senior officials	0.38	0.09	0.49	0.63	0.19	0.77
12-Corporate managers	2.04	1.52	2.25	3.18	2.99	3.24
13-Managers of small enterprises	5.95	1.37	7.77	0.88	0.35	1.04
Major Group 2 Professionals						
21-Physical, mathematical and engineering science professionals	0.98	0.84	1.03	1.43	1.54	1.40
22-Life science and health professionals	0.91	1.27	0.76	1.27	2.10	1.02
23-Teaching professionals	3.33	6.16	2.20	5.59	12.58	3.46
24-Other professionals	2.04	1.80	2.13	2.82	3.04	2.76
Major Group 3 Technicians and associate professionals						
31-Physical and engineering science associate professionals	1.81	1.16	2.06	2.89	2.28	3.07
32-Life science and health associate professionals	1.05	2.59	0.43	1.74	5.31	0.66
33-Teaching associate professionals	0.14	0.37	0.04	0.22	0.72	0.07
34-Other associate professionals	3.09	2.82	3.19	4.24	5.08	3.98
Major Group 4 Clerks						
41-Office clerks	5.08	7.56	4.09	8.20	14.73	6.21
42-Customer services clerks	1.88	3.00	1.44	2.88	5.66	2.03
Major Group 5 Service workers and shop and market sales workers						
51-Personal and protective services workers	7.03	5.08	7.81	10.31	8.47	10.87
52-Models, salespersons and demonstrators	5.43	5.01	5.59	6.09	5.98	6.12
Major Group 6 Skilled agricultural and fishery workers						
61-Market-oriented Skilled agricultural and fishery workers	18.05	28.70	13.82	0.79	0.34	0.93
62-Subsistence agricultural and fishery workers	1.26	2.67	0.70	0.00	0.00	0.00
Major Group 7 Craft and related trade workers						
71-Extraction and building trades workers	4.21	0.07	5.86	4.49	0.11	5.83
72-Metal, machinery and related trades workers	4.38	0.25	6.03	5.87	0.46	7.51
73-Precision, handicraft, craft printing and related trades workers	1.32	2.61	0.81	0.99	0.93	1.00
74-Other craft and related trades workers	4.01	3.04	4.39	5.16	4.42	5.39
Major Group 8 Plant and machine operators and assemblers						
81-Stationary plant and related operators	0.70	0.05	0.96	1.12	0.09	1.44
82-Machine operators and assemblers	4.77	3.63	5.22	7.35	6.75	7.53
83-Drivers and mobile plant operators	5.10	0.03	7.12	6.25	0.04	8.14
Major Group 9 Elementary occupations						
91-Sales and services elementary occupations	6.73	6.35	6.88	8.24	8.36	8.21
92-Agricultural, fishery and related labourers	4.35	9.60	2.26	1.83	3.29	1.38
93-Labourers in mining, construction, manufacturing and transport	3.99	2.36	4.64	5.53	4.17	5.95
Number of Observations	153,920	45,029	108,891	86,120	20,175	65,945

Source: HLFS 2010. Sample weights are used.

Aside from the agricultural occupations, women are relatively more concentrated in service sector occupations (major group 4 “Clerks” and 6 “Service workers and shop and market sales workers”). On the other hand, men appear to have a more even distribution of employment across occupational groups. The highest proportion of men is observed in “Crafts and Related Trade Workers” which is closely followed by skilled agricultural activities. When the sample is restricted to regular/casual employees, the incidence of agricultural occupations disappears. Amongst regular/casual employees, women are mostly concentrated in “office clerks” and “teaching professionals” whereas occupational distribution remains comparably homogenous for men.

It is also important to note that women’s representation amongst occupations under major group 1 “legislators, senior officials and managers”, which requires a significant degree of supervisory responsibilities and decision making, are markedly low when compared to that of men. For example, looking at the figures for the total sample, only around 0.1 percent of women are in the “legislators and senior officials” category, compared to 0.49 percent of men. Female employment shares across occupational groups are presented in Table 4.2. It is observed that only around 7 percent of the sample working as “legislators and senior officials” is female and their representation amongst “corporate managers” and “managers in small enterprises” remains low compared to men. Women’s employment shares are very low across most occupational categories and they outnumber men in two areas which are at opposite ends of the skills spectrum. Women dominate in very low skill occupations such as “subsistence agricultural and fishery workers”, “agricultural labourers” and “precision, handicraft, craft printing and related trades workers”. Women’s shares also dominate men’s in “life science and health associate professionals” and “teaching associate professionals” which includes typically “female” professional occupations such as nurses and associate professionals in primary school education.

These findings can be regarded as an indicator for the disadvantaged position of women across the occupational structure in the labour market in Turkey. However, it is important to expand the analysis by investigating overall segregation and its vertical and horizontal components and, therefore, provide a valid estimation for the extent of inequality entailed in the differentiation in the employment patterns between genders. Before doing so, the next section is devoted to explaining the construction of the stratification scale that is used as an indicator of occupational inequality in addition to mean levels of pay in given occupations.

Table 4.2 - Female Employment Shares across Occupational Groups (in percentages)

		Women's employment shares within occupations
11	Legislators and senior officials	6.88
12	Corporate managers	21.10
13	Managers of small enterprises	6.56
21	Physical, mathematical and engineering science professionals	24.52
22	Life science and health professionals	39.99
23	Teaching professionals	52.62
24	Other professionals	25.16
31	Physical and engineering science associate professionals	18.29
32	Life science and health associate professionals	70.39
33	Teaching associate professionals	76.98
34	Other associate professionals	26.01
41	Office clerks	42.33
42	Customer services clerks	45.33
51	Personal and protective services workers	20.53
52	Models, salespersons and demonstrators	26.25
61	Market-oriented Skilled agricultural and fishery workers	45.22
62	Subsistence agricultural and fishery workers	60.39
71	Extraction and building trades workers	0.45
72	Metal, machinery and related trades workers	1.60
73	Precision, handicraft, craft printing and related trades workers	56.29
74	Other craft and related trades workers	21.59
81	Stationary plant and related operators	1.85
82	Machine operators and assemblers	21.64
83	Drivers and mobile plant operators	0.15
91	Sales and services elementary occupations	26.82
92	Agricultural, fishery and related labourers	62.85
93	Labourers in mining, construction, manufacturing and transport	16.79
Total		0.29

Source: 2010 HLFS. Sample weights are used.

4.4 A Social Stratification Scale for Turkey

The background to the conceptual framework and methodology for the construction of the stratification scale is the CAMSIS project ("Cambridge Social Interaction and Stratification Scales", see http://www.camsis.stir.ac.uk). CAMSIS uses the patterns of social interaction, for example in the form of friendship, marriage or cohabitation, between persons across occupational groups, in order to discover the structure of the stratification order in a society (Lambert, 2012). Accordingly, it is argued that "social interaction will occur most frequently between persons who are socially close to one another and relatively infrequently between those that are socially distant" (Prandy, 1999: 204). Therefore, the CAMSIS scales are generally defined as "social interaction distance scales" and regarded broadly as an indicator of general social or material advantage, social hierarchy, prestige, social class, for example. (Blackburn and Jarman, 2006).

For more than a decade, the CAMSIS project has been analysing the social interactions between occupations across countries and providing scale values indicating an occupation's relative positioning in the social stratification. There is a CAMSIS scale derived for Turkey (Lambert, 2003, http://www.camsis.stir.ac.uk/Data/Turkey90.html). However, rather than using this, it was decided to construct a new scale on the basis of the methods employed in deriving the CAMSIS scales. This is because the only CAMSIS scale available for Turkey was constructed using the 1990 Household Labour Force Survey which used a dated occupational classification. Given the significant changes associated with industrialisation, it is believed that it is essential to generate a new social interaction distance scale for Turkey by adopting a more recent data set.[63] More

[63] It was also intended to investigate the changes in the stratification structure in Turkey over 20 years by comparing the stratification order observed in the CAMSIS scale for Turkey based on 1990 data to the one obtained by the stratification scale constructed in this chapter using 2010 data. However, the existing CAMSIS scale for Turkey employs a detailed (3-digit or 4-digit) occupational categories coded in ISCO-68. In order to have comparability, occupational groups coded in ISCO-68 in CAMSIS were first converted to

importantly, this chapter aims to contribute to the very limited research on the occupational stratification in Turkey as, to the best of our knowledge, there is no socio-economic index or status scale for Turkey or a social interaction distance scale other than the CAMSIS scale based on 1990 data.

4.4.1 Estimation of the Social Stratification Scale

Following the CAMSIS approach, a social interaction distance analysis is adopted in the construction of the scale. As a statistical model, a Correspondence Analysis (CA) (Greenacre, 1984) is used in order to analyse the interactions between socially connected occupations. Broadly speaking, CA provides a visualisation of the "correspondence" or association between the row and column categories. Taking a two-way contingency table, the observed association between row and column categories is indicated by cell frequencies and CA is the study of how similar or different the certain characteristics of the two traits are.

CA assigns scores to the rows and columns of a cross-tabulation of socially connected occupations so as to maximise the correspondence between them. In other words, it estimates dimensions of difference between categorical positions of connected occupations with respect to the empirical occurrence of various combinations and the estimated parameters representing one or more dimensions of difference. Although more than one dimension of difference is usually reached, it is the first dimension (also called the principle dimension) which is generally found as an indicator of the social distance structure and, therefore, regarded as an indication of social advantage or disadvantage

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ISCO-88 (as will be discussed in Section 4.4.2, the data used for the stratification scale in this chapter is based on ISCO-88) following the tools provided by Harry Ganzeboom (available at http://home.fsw.vu.nl/hbg.ganzeboom/isco68/index.htm). However, as the author also points out, serious loss of information and misclassification occurred when ISCO-68 is recoded into ISCO-88, preventing us from obtaining a reliable comparison between the two scales.

(Griffiths and Lambert, 2011). Accordingly, it is usually the parameters of the first dimension which generate the social interaction distance scales.[64]

4.4.2 Data for the Correspondence Analysis

The estimation of social stratification scale scores are based on the 2010 Household Labour Force Survey (HLFS) undertaken by the Turkish Statistics Institute. However, the data are processed quite differently in the social interaction distance analysis. The original HLFS data includes 522,171 individual members of households. In an attempt to construct a data set which links individuals through a “social connection”, the data is first converted into a format consisting of pairs of men and women within the households who are cohabiting or married couples. In other words, the data set is sorted into male-female within household occupational combinations.[65] Data on the occupations of cohabiting/married partners have been a major source for many CAMSIS scale estimates (see http://www.camsis.stir.ac.uk/versions.html for information on the national versions of CAMSIS). This is mostly because the information on occupations on married/cohabiting couples is widely available in large scale representative data, such as, census and large scale household surveys, for many countries (Griffiths and Lambert, 2011). Moreover, this enables researchers to work on large number of cases (Chan, 2010a).

As discussed extensively by Prandy and Lambert (2003) and Griffiths and Lambert (2011), there are some potential drawbacks associated with using data on occupations of married/cohabiting couples. First of all, the sample of partners may not be representative of the population of all occupations; for example, the jobs that are likely to be held by the

[64] The further dimensions are more difficult to interpret. However, it can be asserted that they stand for the effect of further elements on the empirical patterns of social interactions between people (in our case, in the form of marriage) other than the general social stratification structure. These elements can be the gender profile or sectoral distribution of the occupations. However, the interpretation of the further dimensions is debatable (see Prandy and Jones, 2001; Prandy and Lambert, 2003 and Griffiths and Lambert, 2011 for a further discussion).The detailed explanation and the mathematical formula of the CA can be found in Appendix 4A.4.

[65] See Lambert (2009) for a guidance to the analysis of data on social connections and do-file exemplars are available at CAMSIS project websites (http://www.camsis.stir.ac.uk/make_camsis/).

young or the old might be under-represented since it is less likely that data on occupations of partners will be available for these age groups. Similarly, the jobs that are particularly favoured by married women are likely to be over-represented. It, therefore, follows that an analysis based solely on married women's occupations might not provide a satisfactory illustration of women's location in the social hierarchy. However, Prandy and Lambert (2003) justify the use of couple data in order to derive a social stratification scale in the sense that "...emphasis on marriage as an aspect of social reproduction means that we give equal weight to both partners.... Because of the reciprocal nature of the methods used, if there are structural inconsistencies in the location of wives, this will be reflected in the positions of husbands (which, in turn, will feed back on wives' locations)…" (2003: 402). Moreover, the evidence from several studies indicates that the occupational links between couples provide a stratification structure that is very similar to those generated by data on occupations linked through other social connections such as friendship (see, for example, Prandy and Lambert, 2003 and Chan, 2010b).[66] It is also plausible to regard marriage as the most important form of social connection in a more socially conservative society such as Turkey. Therefore, the analysis in this chapter explores social interaction distances or to put it differently, the association between occupations, according to the marriage/cohabitation patterns.

The HLFS data had information on 108,589 couples. However, the combinations where both partners are currently employed are selected (25,512 couples) in order to have data on both occupations within married/cohabiting couples. Data on occupations are based on ISCO-88 2-digit sub-major groupings that include 27 occupational categories. CAMSIS

[66] There are various studies which use friendship data that provide information on respondents' and their close friends' occupations in order to analyse social connections between occupations (for example, Laumann and Guttman, 1966; Stewart et al., 1980; Chan and Goldthorpe, 2004). It could have been a fruitful exercise to compare the stratification structure generated from friendship and marriage networks; however, there is no data set which can enable us to derive friendship connections between occupations for Turkey.

methodology strongly recommends the use of the most detailed occupational categories available, since a finer detailed classification of occupations can provide a better insight into the relative positioning of different units.[67] This is an important argument because, the scale values generated for the sub-major groups may not be able to illustrate the potential variation in gender profiles in particular occupational categories. For example, within group 22 – life science and health professionals – men are more likely to be doctors and women are more likely to be nurses; however, a scale score for the sub-major group will not be able to disentangle these differences. Nevertheless, there are a considerable number of studies that use a more aggregate level of occupational groupings, usually 2-digit categories (for example, Mitchell and Critchley, 1985; Chan and Goldthorpe, 2004; 2007). Moreover, there are examples of the CAMSIS scales for countries presented at a relatively aggregate level of occupational groupings, such as minor or even major groupings, because of the unavailability of detailed occupational data.[68] More pragmatically, the analysis for Turkey requires working on 2-digit level occupational data as there are no data that provide a more detailed occupational grouping.

4.4.3 Further Aspects of the Social Interaction Distance Analysis

A further challenge in the social interaction distance analysis relates to the treatment of pairings of occupations which are more likely to be observed. That is, there might be cases where partners hold the same occupation (diagonal cells in the table) or closely related occupations, not because of the underlying general structure of stratification or inequality but because of the other reasons that give rise to this particular pattern of interaction, such as joint or family owned enterprises or shared institutions (Prandy and Lambert, 2003). As

[67] An extensive discussion on the CAMSIS methodology can be found at http://www.camsis.stir.ac.uk/.

[68] For example, the CAMSIS scale for Belgium is based on ISCO-88 2-digit occupational categories due to the unavailability of a finer detailed occupational data. As a consequence of that and the small sample size of the data set used, the scale values are argued not to be fully satisfactory; but still worth presenting since there is no way of providing a better alternative (Lambert, 2003; available at http://www.camsis.stir.ac.uk/Data/Belgium.html) .

discussed extensively in the CAMSIS approach (see http://www.camsis.stir.ac.uk/overview.html), common examples of such cases include partners both engaging in farming; husbands are farmers and wives are agricultural workers or in retail; husbands are "shopkeepers" and wives "shop assistants" or in terms of more institutional links; husbands are "doctors" who are married to "nurses".

In the CAMSIS approach such combinations of occupations are identified and defined as "pseudo-diagonals" (including the true diagonals) and they are conventionally excluded from the analysis in the CA framework (Griffiths and Lambert, 2011). By doing so, the possible effect of the pseudo-diagonals on each occupation's location on the general scale score is eliminated.[69] In this chapter, combinations of "market-oriented skilled agricultural and fishery workers" and "subsistence agricultural and fishery workers" are excluded from the analysis.[70] Unfortunately, ISCO-88 2-digit categories do not enable us to identify further pseudo-diagonals such as combinations of occupations that are institutionally linked. The results from the CA after the exclusion of couples engaged in farming are represented in Table 4A.1 in the Appendix to Chapter 4 (Appendix 4A.1). The results consist of two spaces, one for each row and the columns; that is, one for men and one for women. Except for the case of pseudo-diagonals discussed above, it is expected that the stratification structure is the main determinant of marriage or cohabiting and, therefore, it is the stratification order that appears as the first dimension of each of these two spaces.[71] The coordinates on this first dimension of each row or column points, which stand for occupation categories of men or women, are then regarded as scores indicating their

[69] If pseudo-diagonals are not eliminated from the analysis of association between couples' occupations, their effect on the derived scores can be significant; for example, pseudo-diagonal occupations can be scored at the positive or negative extremes (see Prandy and Lambert, 2003).

[70] Therefore, 8,001 out of 25,512 married and cohabiting partners are excluded from the analysis.

[71] The further dimensions presented in the social distance analysis are more difficult to interpret. However, it can be asserted that they stand for the effect of further elements on the empirical patterns of social interactions between people (in our case, in the form of marriage) other than the general social stratification structure. These elements can be the gender profile or sectoral distribution of the occupations. However, the interpretation of the further dimensions is debatable (see, for example, Prandy and Jones, 2001; Prandy and Lambert, 2003 and Griffiths and Lambert, 2011 for further discussion).

location in the hierarchical social ordering (Prandy and Jones, 2001).[72] The singular value (referred to as the Pearson correlation) associated with the first dimension (shown at the bottom of Table 4A.1) represents the extent of the correspondence between the occupational scores of men and women. In other words, it is an indicator of the tendency of couples to be at similar levels in the social hierarchy. Accordingly, a high singular value, or the Pearson correlation coefficient, can also be interpreted as a sign of a strong stratification structure generated from the marriage/cohabitation patterns; that is, some couples being at one extreme of the stratification structure and the remainder at the other. Conversely, a low correlation coefficient indicates a less significant social ordering.[73] As can be seen from Table 4A.1, the singular value associated with the first dimension is 0.79 for Turkey which is a sign of significant stratification structure; however, as argued above, it is possible that this figure would have been lower if a more detailed occupational classification was available.

Another noteworthy feature of our analysis is that it is gender-sensitive in the sense that different scale scores are derived for women and men. The scale for women provides a ranking for women's occupations in the social hierarchy while the scale for men ranks men's occupations. Men's scale scores are identified by the occupations of women they are married to/cohabiting with and women's scale scores are derived from the occupations of men they are married to/cohabiting with. This is important because holding a particular occupation might have different social meaning for men and women; although we might expect an association between the scale scores for men and women. In the case for Turkey, the correlation between the scale scores for men and women for the overall occupational

[72] This is the initial step in the scale construction. In line with the CAMSIS approach, these scores are then transformed by mean standardisation that will be discussed shortly.
[73] Prandy and Jones (2001) find a very low singular value for Australia and the USA which are regarded as socially egalitarian countries (2001: 173).

categories is found to be 0.78 which can be interpreted as a quite similar social ordering of occupations for men and women.

4.4.4 The Stratification Scale Scores for Men and Women

In order to ensure a clearer stratification ranking for men and women, the scale values should be transformed into a more straightforward format. This is performed by mean standardisation that ensures that the scale values have the same population mean value and variance parameters. Accordingly, following the common CAMSIS practice, the scale scores for men and women within non-pseudo couples are standardised around a continuous normal distribution with a mean value of 50 and standard deviation of 15 (see http://www.camsis.stir.ac.uk/construction/transformations.htm for a detailed information on the scale transformation).

The ranking of occupations for women and men by the mean scale scores after the standardisation are presented in Table 4.3. Broadly speaking, the ranking of women's and men's occupations are very similar with some interesting exceptions.[74] Professionals constitute the top positions in the social stratification structure for both men and women and they are followed by corporate managers. As might be expected, manual occupations such as labourers in mining, construction, manufacturing and transport; agricultural, fishery and related labourers; subsistence agricultural and fishery workers; extraction and building trades workers and unskilled sales and services elementary occupations fall into the lowest positions in the stratification order. The middle of the occupational ordering

[74] As discussed extensively in the methodology for the stratification scale, different social stratification scales are derived for men and women. The scales for women provide a ranking for women's occupations in the social hierarchy while the scales for men rank men's occupations. Therefore, although relative locations of occupations of men and women might be similar, the scale scores for men and women for an occupation need not to be related. Therefore, the analysis of stratification structure is ideally applicable only within gender groups. That's why a comparison between the value of the scale scores for men and women is avoided and the focus is solely on the relative locations of the occupations for men and women.

consists of clerical jobs (office clerks and customer service clerks) followed by associate professionals and managers of small enterprises.

One important difference between the scales for men and women is in the relative positioning of various agricultural occupations. For men, they are at the very lowest end of the continuum, whereas their position amongst the ranking of women's occupations is slightly higher. The agricultural occupations' scale scores are extremely low for men. As previously discussed, the combinations of "market-oriented skilled agricultural and fishery workers" and "subsistence agricultural and fishery workers" are excluded from the analysis. Prandy and Jones (2001) give the example of farmers and farm workers to illustrate the possible effect of pseudo diagonals on the stratification scale scores. Their study states that the potential outcome of including the husband and wife combinations in farming would be an artificially high scale score derived for the farm workers for women, as many of them are likely to be wives of farmers. Therefore, the scale score for farm workers are more reliable when these combinations are excluded from the analysis. However, Prandy and Jones (2003) argue that the exclusion of such combinations reduces the correlation between partners' occupations' scores. They give the scale scores derived for Britain as an illustration; the scale scores show a notable gap between men and women, women having a significantly higher scale score for farm workers compared to that of men. The difference between the scale scores resulting in a slight difference in agricultural occupations' locations on the stratification scale for men and women observed in Turkey can therefore result from the exclusion of pseudo-diagonals from the analysis.[75]

[75] In order to investigate whether the dominance of agricultural occupations and the way they are treated in the CA analysis affect the locations of the non-agricultural occupations across the social stratification, it is worthwhile performing the CA only amongst non-agricultural occupations. The results from the CA performed within non-agricultural occupations are presented in the Appendix 4A.5. This strategy did not result in notable changes in the ranking of the non-agricultural occupations along the social stratification scale.

Table 4.3 - Ranking of Occupations by the Stratification Scale Scores for Women and Men

Women		Men	
Occupational Title	Score	Occupational Title	Score
1.Teaching professionals	71.14	1.Teaching professionals	72.56
2.Life science and health professionals	70.66	2.Life science and health professionals	71.44
3.Physical, mathematical and engineering science professionals	69.49	3.Physical, mathematical and engineering science professionals	70.09
4.Other professionals	66.66	4.Other professionals	67.39
5.Life science and health associate professionals	65.61	5.Corporate managers	67.2
6.Corporate managers	65.16	6.Life science and health associate professionals	66.79
7.Legislators and senior officials	61.72	7.Physical and engineering science associate professionals	60.84
8.Other associate professionals	60.25	8.Other associate professionals	60.39
9.Customer services clerks	59.89	9.Customer services clerks	58.4
10.Office clerks	59.11	10.Office clerks	57.41
11.Drivers and mobile plant operators	56.91	11.Managers of small enterprises	54.37
12.Physical and engineering science associate professionals	56.37	12.Precision, handicraft, craft printing and related trades workers	54.33
13.Managers of small enterprises	55.37	13.Personal and protective services workers	53.23
14.Stationary plant and related operators	54.68	14.Teaching associate professionals	52.73
15.Teaching associate professionals	54.16	15.Legislators and senior officials	52.69
16.Models, salespersons and demonstrators	53.64	16.Models, salespersons and demonstrators	51.76
17.Metal, machinery and related trades workers	51.23	17.Machine operators and assemblers	49.28
18.Personal and protective services workers	51.14	18.Metal, machinery and related trades workers	48.7
19.Precision, handicraft, craft printing and related trades workers	49.71	19.Other craft and related trades workers	48.47
20.Machine operators and assemblers	49.06	20.Stationary plant and related operators	48.41
21.Market-oriented Skilled agricultural and fishery workers	48.46	21.Drivers and mobile plant operators	48.03
22.Sales and services elementary occupations	47.88	22.Extraction and building trades workers	46.06
23.Subsistence agricultural and fishery workers	47.69	23.Sales and services elementary occupations	45.76
24.Other craft and related trades workers	47.27	24.Labourers in mining, construction, manufacturing and transport	43.73
25.Labourers in mining, construction, manufacturing and transport	46.51	25.Agricultural, fishery and related labourers	24.41
26.Extraction and building trades workers	42.53	26.Market-oriented Skilled agricultural and fishery workers	16.62
27.Agricultural, fishery and related labourers	19.77	27.Subsistence agricultural and fishery workers	14.44

Source: 2010 HLFS

4.4.5 Validation Check

Before using the generated scale scores for the occupational categories in the main data source, it is a common practice to check their validation by investigating their relationships with other gradational measures of stratification. In order to do so, the scale scores are correlated with the "international socio economic index" (ISEI) and the "international CAMSIS" (ICAM) (Ganzeboom et al., 1992; Ganzeboom and Treiman, 1996; De Luca et al., 2010). Ganzeboom at al. (1992) have conceptualised occupations as a means to transform education into earnings. Therefore, they have estimated the ISEI by scaling the occupational categories so as to maximise the indirect effect of education on earnings through occupation and minimise its direct effect. ICAM, which is shown to be strongly correlated with ISEI, has been developed by De Luca et al. (2010). ICAM is a relational scale that uses data for more than 110,000 married/cohabiting couples from the International Social Survey Programme (ISSP) 2002-2007 for 42 countries[76] with detailed ISCO-88 occupation groupings. The correlations between the scale scores for men and women derived for Turkey and ISEI and ICAM among all and non-agricultural occupations are represented in Table 4.4.[77]

Table 4.4 - Correlations between ISEI and ICAM

			(among non-agricultural occupations)	
	Female Score	Male Score	Female Score	Male Score
ISEI	0.81	0.83	0.86	0.88
ICAM	0.77	0.67	0.88	0.94

NOTE: The results are weighted by the sample size.

It is seen that the stratification scales derived for Turkey are highly correlated with the ISEI and ICAM. The correlations are greater when agricultural occupations are excluded with the highest correlation of 0.94 between male scale scores and the ICAM. After this

[76] Turkey is not included in the data.
[77] ICAM and ISEI scores on 2-digit occupational categories are used for the correlation analysis.

validation check, these scale scores were safely imported to the main data source and the derived scores were assigned to the occupational categories.[78]

4.5 Empirical Results on the Extent of (overall) Occupational Gender Segregation and its Dimensions in Turkey

As noted earlier, the Gini coefficient is used as a measure for overall occupational gender segregation and it is shown to be the “limiting case of Somers’ D” when occupations are cross-tabulated by gender (Blackburn and Jarman, 2006). Accordingly, Somers’ D is used to analyse the vertical dimension of overall segregation since it is strictly comparable with the overall segregation measure. Two criteria of occupational disadvantage or inequality are employed in order to rank occupations on the vertical axis. These are the levels of pay and the stratification scale scores for the occupations. In terms of pay, mean hourly pay levels of all workers in an occupation are calculated.[79] In terms of the social stratification scale scores, as discussed in Section 4.4.3, separate scales are derived for men and women. However, mean scale scores for men are used for the analysis of the vertical dimension. It is a common practice to analyse vertical dimensions with the male CAMSIS scores as more occupational data are typically available for male occupations (Blackburn et al., 2001). Therefore, one reason to choose men’s scores is to achieve comparability with these studies. Furthermore, it is believed that the advantages of holding an occupation would be

[78] Following the CAMSIS approach, the scale scores are reformatted and re-standardised for men and women for the whole population around a continuous normal distribution with a mean value of 50 and standard deviation of 15. This is the method of mean standardisation used in all CAMSIS versions.

[79] Mean hourly pay levels are obtained through dividing monthly payment by 4.3 in order to obtain weekly pay. The resulting weekly pay is then divided by the total weekly hours of work. 2010 HLFS collects information on the *i)* number of hours per week *usually* worked and, *ii)* number of hours *actually* worked in the job during the reference week. The hourly pay measure used to rank occupations in this chapter is based on the former. However, as a robustness check, the analysis is also performed using the actual hours of work when calculating the hourly pay. The vertical segregation figures were similar (0.152 when the actual hours were used and, as presented in Table 4.5, it is 0.169 when *usual* weekly hours of work are used to calculate the hourly pay and the occupations are ranked accordingly). Moreover, the vertical segregation figures are also calculated using the weekly/monthly pay, rather than the hourly pay. The results were again similar (0.156 with weekly/monthly pay).

better illustrated by the ordering of the more favourable, mostly full-time, uninterrupted career opportunities; that is the occupational structure of men (see Blackburn et al., 1997).

4.5.1 Occupational Gender Segregation amongst Regular/Casual Employees

At the first stage, the analysis of overall segregation as the result of vertical and horizontal components is performed amongst “regular or casual employees”. This is because the pay data is available only for regular/casual employees. Moreover, as shown in the basic descriptive statistics, a significant portion of the population engaged in farming and agricultural occupations have notably low CAMSIS scores. Therefore, there were concerns about the possibility of the dominating effect of the agricultural occupations on the segregation measures. There are several instances where the occupational gender segregation is analysed only for the non-agricultural labour force (see, for example, Anker 1998 and Melkas and Anker, 1998). According to Anker et al. (2003), occupational gender segregation does not typically apply to family labour and an analysis of the driving force behind women’s exclusion from “non-family” employment is essential.[80] Therefore, by focusing only on regular/casual employees such concerns are eliminated as the shares of agricultural occupations are very small amongst regular/casual employees (see Table 4.1 in Section 4.3.2). Later in the chapter, a detailed investigation of the effect of excluding several agricultural occupations will also be presented.

[80] Anker et al. (2003) investigate the level and pattern of occupational gender segregation in several countries for the non-agricultural labour force regardless of how big the agricultural sector is in these countries’ economies. The countries included in their study are Hong Kong, China, Korea, Republic of Thailand, Egypt, Iran, Islamic Republic of Jordan, Austria, France, Spain, United States, Poland, Czech Republic, Costa Rica, Ecuador and Uruguay.

Table 4.5 presents the results for regular/casual employees. The overall gender segregation is 0.473.[81] Looking at the level of segregation when the vertical dimension is measured by pay, it is seen that the vertical dimension is associated with a positive sign (0.169), indicating the expected advantaged position of men in terms of mean hourly pay. In other words, women have a greater tendency to be employed in lower-paid jobs. However, the horizontal dimension is considerably larger than the vertical dimension. Therefore, it can be asserted that the overall segregation amongst regular/casual employees owes more to the differences in the patterns of male and female employment across occupations rather than the inequality (measured by pay) prevalent in this pattern.

Table 4.5 - Overall Segregation and the Associated Vertical and Horizontal Dimensions (Regular/Casual Employees)

	Vertical segregation measured by mean hourly pay	Vertical segregation measured by the stratification scale
Overall	0.473	0.473
Horizontal	0.442	0.380
Vertical	0.169	0.282
Number of occupations	27	
Number of observations	86,120	

Source: 2010 HLFS

The vertical dimension measured by the social stratification scale is 0.282 which is substantially larger than the value obtained for pay. That is to say, women are at an even more disadvantaged situation in terms of social stratification; they have a greater tendency than men to be employed in occupations that rank lower in the overall social hierarchy.

[81] It is difficult to achieve a direct comparison of the segregation figures found in this chapter with those found for other countries or for Turkey by earlier studies. This is because of the differences in the tools used for calculating the segregation indices. Moreover, even if the Gini coefficient and Somers' D are used, the number of occupations used to calculate the indices are different or the indices are calculated for a different year. For example, the overall segregation figure of 0.473 can be regarded as moderate considering the overall segregation figures calculated by the Gini coefficient for several countries such as 0.767 for Finland; 0.725 for Spain, 0.636 for Romania, 0.609 for Austria based on data for the 2000s (see Jarman et al., 2012). However, the number of occupations used are much greater in Jarman et al.'s study, when compared to 27 occupational groups used in this chapter. We, therefore, refrain from comparing the extent of segregation found for Turkey with other countries. However, it is certainly possible to compare the "sign" of the vertical segregation figures with those found for other countries.

Once again, the horizontal dimension is larger than the vertical dimension. Therefore, the overall segregation is due more to the fact that men and women are employed in horizontally different occupations; however, it is accompanied by a considerably greater level of inequality when the vertical dimension is measured using the stratification scale.

It can, therefore, be concluded that women are always found to be in a disadvantaged position with respect to men amongst regular/casual employees. It is particularly striking that women have a substantially greater probability of being employed in lower ranked occupations across the social stratification structure. Therefore, in addition to the economic inequalities women face, they are also exposed to social inequalities in the occupational structure. A larger horizontal dimension of overall segregation is found regardless of whether the vertical dimension is measured by pay or social stratification scale, although the extent is smaller in the latter. However, it is important to note that, although the horizontal dimension does not bring about inequality, it may suggest a more limited set of occupational choices for both women and men.

4.5.2 Occupational Gender Segregation amongst the Whole Sample

In order to expand the analysis on the extent of occupational gender segregation in the labour market in Turkey, this section analyses the overall segregation and its components for the whole sample, including agricultural occupations and all kinds of employment status.[82] The vertical dimension is measured only by the stratification scale scores here, as the data on pay are not available for those who are not regular/casual employees. Table 4.6 shows the results for the overall segregation and its components for the whole sample.

[82] 2010 HLFS classifies employment status as i) regular/casual employee, ii) employer, iii) self-employed and iv) unpaid family worker.

Table 4.6 - Overall Segregation and the Associated Vertical and Horizontal Dimensions for the Whole sample

Overall Segregation	-0.518 [a]
Horizontal Segregation	0.503
Vertical Segregation	-0.124[b]
Number of occupations	27
Number of observations	153,920

Source: 2010 HLFS.[a] Overall segregation is shown with a negative sign because it locates at quadrant Y (Figure 4.1, p.163) when the vertical component is negative. [b] Vertical segregation is measured by male stratification scale scores.

As can be seen from Table 4.6, surprisingly, the vertical dimension of overall segregation is negative. Therefore, when the occupational segregation analysis is performed for the whole sample, women appear to have an advantage compared to men in terms of the positions of the occupations they hold in the social stratification structure. There are several instances in the literature where women are found to be employed in occupations that are higher up the social stratification structure (i.e. the vertical component of the overall segregation shows a negative sign) (see, Blackburn et al., 2001; Blackburn and Jarman, 2006; Jarman et al., 2012). For example, while analysing the occupational gender segregation patterns in the USA and Britain, Blackburn and Jarman (2005) find a positive vertical dimension when measured by pay, but a negative sign when measured by CAMSIS. In a more recent article, Jarman, et al. (2012) expanded the analysis by including more countries, the majority of which are developed countries.[83] They observe a similar pattern in the vertical segregation; a positive and a negative sign when the vertical dimension is measured by pay and CAMSIS respectively. According to the authors, the distribution of women and men across occupations could provide an explanation for this fact. Although men might be employed in the well-paid occupations, it is also true that the

[83] The authors analyse the occupational gender segregation across 30 countries. However, the sample is reduced to 10 countries while analysing the vertical dimension of segregation by pay and CAMSIS scores due to the unavailability of data. These countries are; Sweden, Russia, Germany, Slovenia, Hungary, UK, USA, Czech Republic, Switzerland and Austria. The vertical dimension measured by pay is found to be positive for all countries except Slovenia. The countries are found to have a negative vertical dimension when measured by CAMSIS with the exception of Austria in which the vertical component is shown to have a positive sign.

unskilled heavy work, which is located at a lower position in the social hierarchy, is undertaken by men. Furthermore, the authors indicate that the favourable position of women in the stratification structure is rather recent phenomenon and could be explained by the changing characteristics of the occupational structure in industrialised countries. Prior to industrialisation, there were a limited number of women in the workforce and they were more likely to be employed in manual occupations compared to men. However, the shift from manual to non-manual work as a result of industrialisation provided additional job opportunities for women and it has mostly been women who moved into non-manual occupations. Therefore, it is now men who have a greater tendency to undertake manual work. While at the beginning of this transition, women were mostly employed in lower level non-manual employment, such as clerical jobs, they now have a considerable share in the professional occupations.

Although these explanations provide a very strong argument for the developed countries, we will argue that it is less likely to be true for Turkey for several reasons. As shown in details in Chapter 2, the labour market in Turkey is characterised by a significantly low participation rates of women.[84] Moreover, it is explained in Chapter 2 that the U-shaped impact of economic development and urbanisation, together with the rural-urban migration over the last 50 years in the country, are amongst the common explanations for the under-representation of women in the labour market (see, for example, Tansel, 2001a; Gunduz-Hosgor and Smits, 2006; Dayioglu and Kirdar, 2010). Accordingly, the industrialisation process in Turkey has been criticised on the grounds that it reduced the importance of agriculture and failed to create job opportunities for women. In other words, it is argued that women who used to work in agricultural activities in rural areas devoted themselves to

[84] The labour force participation rates of women were around 25 percent in the 2000s. The figure has increased to 29.7 percent in 2013 (TurkStat, 2013; available at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007, the figures can also be found in Table 2.1 on page 12).

housework rather than participating in the urban labour market because of their limited labour market characteristics, such as their lower educational levels and limited experience.

The studies testing the impact of economic development on women's employment in Turkey note that the country can be regarded as being at the intermediate phase of industrialisation where women's participation rates in the labour market are the lowest (Tansel, 2001a; Gunduz-Hosgor and Smits, 2006). These studies anticipate a transition to an upward trend in the coming years which is supported by the national figures indicating that the decline has slowed down and there has been a slight improvement in the participation rates of women since 2007. However, this is likely to have a lagged effect and it may be some years before the positive effects of industrialisation on women's employment in Turkey are observed. That is to say, the labour market structure in Turkey is still quite different from many industrialised countries. Therefore, an investigation for the negative sign observed for the vertical dimension should be sought on different grounds.

One reason might be the agricultural occupations. Although declining in prevalence, agriculture continues to be one of the main economic activities, particularly for women (see descriptive data analysis in Section 4.3.2).[85] Referring back to the social interaction and distance analysis for Turkey, as summarised in Table 4.7, a significant portion of the population are engaged in farming and the CAMSIS scores for the agricultural categories are notably low. This raises concerns about the possibility of the dominating effect of the agricultural occupations on the segregation measures. Therefore, for exploratory purposes and in order to establish a clearer picture concerning the location of women`s occupations

[85] Almost 38 percent of the employed women were reported to engage in agriculture in 2013 (TurkStat, 2013, available at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007, and see Table 2A.4 in Appendix to Chapter 2 (page 35) for the sectoral distribution of female employment in Turkey from 1980 to 2012.

in the social hierarchy, the segregation measures are calculated by excluding each agricultural occupation separately and the separate effect of each exclusion on the extent of vertical segregation is investigated.

Table 4.7 - The Distribution of Agricultural Occupations among Women and Men and the Associated Scale Scores

Code	Occupational Title	Women		Men		Scale Score	Women's employment share
		Frequency	Percentage amongst Women	Frequency	Percentage Amongst Men		
92	Agricultural, fishery & related labourers	4,152	9.22	2,430	2.23	24.41	63
61	Market-oriented skilled agricultural & fishery workers	14,309	31.78	16,673	15.31	16.62	46
62	Subsistence agricultural & fishery workers	1,244	2.76	864	0.79	14.44	59

Source: 2010 HLFS

4.5.3 Occupational Gender Segregation after the Exclusion of Agricultural Occupations

In order to analyse how agricultural occupations affect the level of segregation and particularly, to investigate whether they are the driving source behind the negative vertical component, group 61 (market oriented skilled agricultural and fishery workers) are first excluded from the analysis, since it includes the greatest number of men and women. Looking at Table 4.8, it is seen that, although the size of the vertical segregation is very low, it is no longer negative when group 61 is eliminated from the sample. However, the vertical segregation index continues to be negative, indicating women's occupational advantage concerning the stratification structure, when group 92 (agricultural, fishery and related labourers) and 62 (subsistence agricultural and fishery workers) are excluded respectively. Therefore, it can be concluded that the negative vertical dimension is connected with the ranking of group 61 and the counterintuitive results disappear when this group is excluded from the analysis. This highlights the dominating effect of group 61 in the occupational segregation analysis. A vast majority of the sample is employed in this group. Moreover, although the greatest proportion of the women in the labour force is employed in this group, the number of men outweighs the number of women. Therefore, women artificially appear to have a better occupational standing in terms of the relative position of the occupations they hold across the stratification structure.

Table 4.8 - Overall Segregation and the Associated Vertical and Horizontal Dimensions After Excluding Agricultural Occupations Separately

	Group-61 is excluded	Group-92 is excluded	Group-62 is excluded
Overall	0.554	-0.504	-0.516
Horizontal	0.549	0.498	0.504
Vertical	0.075	-0.077	-0.108
Number of Occupations	26	26	26
Number of Observations	122,938	147,338	151,812

Source: 2010 HLFS. 61- Market-oriented Skilled agricultural and fishery workers; 92- Agricultural, fishery and related labourers; 62- Subsistence agricultural and fishery workers.

In order to expand the analysis, the effects of the further exclusions of combined agricultural occupations are investigated. The results from these exclusions are presented in Table 4.9. It is seen that, except from the extremely small but negative vertical dimension observed with the exclusion of groups 62 and 92, the vertical dimensions are all associated with a positive sign, indicating the expected disadvantaged position of women. The only negative sign can be interpreted as, given the relatively few members in these groups, the elimination of groups 62 and 92 from the analysis is not enough to offset the dominating effect of group 61 on the vertical segregation measure.

Looking at the first column in Table 4.9, which shows the occupational segregation measures with the exclusion of groups 61 and 62, a modest advantage to men is seen with a vertical dimension of 0.112. The level of overall segregation is observed to be the highest in this sample and it is mostly because of the difference in the occupations that women and men are employed (with a horizontal dimension of 0.537). Comparing these results with the ones observed when groups 61 and 92 are excluded (the third column in Table 4.9), it is seen that the vertical component of overall segregation is substantially larger in the latter. Correspondingly, the extent of horizontal segregation is lower, although it still constitutes a greater part in the overall segregation.

Table 4.9 - Overall Segregation and the Associated Vertical and Horizontal Dimensions After Excluding Combined Agricultural Occupations

	Groups 61and 62 are excluded	Groups 62 and 92 are excluded	Groups 61 and 92 are excluded	Groups 61, 62 and 92 are excluded
Overall	0.549	0.500	0.528	0.519
Horizontal	0.537	0.496	0.481	0.442
Vertical	0.112	-0.057	0.218	0.271
Number of Occupations	25	25	25	24
Number of Observations	120,830	145,230	116,356	114,248

Source: 2010 HLFS. 61- Market-oriented Skilled agricultural and fishery workers; 92- Agricultural, fishery and related labourers; 62- Subsistence agricultural and fishery workers.

Unsurprisingly, the vertical dimension becomes bigger when all the agricultural occupations are excluded from the analysis (see the last column in Table 4.9). In parallel, the horizontal dimension is even lower than that which is observed when groups 61 and 92 are excluded. This result is expected because the difference in the employment patterns between men and women is likely to be lower when a large number of women engaged in agriculture are excluded from the analysis. Moreover, although the horizontal dimension constitutes a greater proportion of the overall segregation, there is a notable effect on the vertical dimension this time; women are working in the occupations that rank lower in the social hierarchy.

Although this thesis does not claim that agricultural occupations should be dropped from the analyses, the exploratory attempts presented above show that agricultural occupations can blur the whole picture. In order to be clearer and, as commonly practiced (see Anker et al., 2003), it is worth performing occupational segregation analyses by excluding agricultural occupations.

Finally, in order to investigate the differentials in pay, in addition to social stratification when agricultural occupations are excluded, Table 4.10 presents the segregation measures amongst the non-agricultural “regular/casual employees”. The vertical dimension both in terms of pay and social stratification are the greatest, when compared to any other attempt discussed above. That is to say, it is the non-agricultural regular/casual employees in which women face the greatest disadvantage, either in terms of pay or the social stratification. Yet again, women are notably more disadvantaged in the latter. Moreover, horizontal and vertical dimensions are almost the same when the vertical dimension is measured by the stratification scale. This suggests that, amongst non-agricultural regular/casual employees, the overall segregation owes equally to the difference in the occupational patterns between men and women and to the inequality inherent in this pattern. The results from the non-agricultural regular/casual employee sample point to the fact that women are more likely to be employed in occupations that pay less and, more importantly, the extent of inequality in terms of the positions of the occupations women hold in the social hierarchy is the greatest amongst paid work.

Table 4.10 - Overall Segregation and the Associated Vertical and Horizontal Dimension amongst Non-agricultural, Regular/casual Employees

	Vertical dimension measured by pay	Vertical dimension measured by the stratification scale
Overall	0.472	0.472
Horizontal	0.428	0.350
Vertical	0.199	0.317
Number of Occupations	24	
Number of Observations	83,679	

Source: 2010 HLFS

4.6 Conclusion

This chapter attempts to analyse occupational gender segregation in Turkey, as a consequence of horizontal and vertical dimensions as suggested by Blackburn et al. It is, therefore, the first study which explores the extent of inequality entailed in the tendency of men and women to be employed in different occupations in the labour market in Turkey. Accordingly, it is argued that the actual degree of unequal differentiation in the employment patterns between men and women can be captured by the vertical dimension of segregation, while the horizontal dimension stands for the difference in this pattern without an implication of inequality with regards to a vertical criterion. In order to rank occupations on the vertical axis, in addition to the mean hourly pay levels, a gender sensitive social stratification scale is constructed following the CAMSIS approach by using a Correspondence Analysis. To the best of our knowledge, it is the first socio-economic index or status scale or a social interaction distance scale apart from the CAMSIS scale based on 1990 data for Turkey. The scale derived for Turkey is found to be highly correlated with the ICAM and ISEI which ensures the validity of the scale. The scale presents a similar stratification structure for men and women in Turkey; professionals and corporate managers locating at the higher end of the continuum and manual workers are at the lowest position in the stratification order, with the exception of agricultural occupations ranking slightly higher for women relative to men.

The vertical and horizontal dimensions associated with the overall segregation of men and women into different occupations are first analysed amongst the regular/casual employees mostly because pay data is available only for this category. Women are consistently found to be at a disadvantaged position with respect to men and the extent of inequality is even larger when the occupations are ranked by the social stratification scale scores. In other words, women are more likely to be employed in lower-paid occupations relative to men and their chance of being employed in the lower ranked occupations across the social hierarchy is even greater. However, when the analysis is expanded to the whole sample, including agricultural occupations and all kinds of employment status, counter-intuitive results are obtained for the vertical dimension measured by the stratification scale scores. Interestingly, women appear to have a greater tendency to be employed in occupations that are higher up the social stratification structure.

It is not peculiar to our study to find an advantaged position of women in the social stratification structure; several studies suggest similar results for the developed countries (see, for example, Blackburn et al., 2001; Blackburn and Jarman, 2006; Jarman et al., 2012). Women's favourable position relative to men is reasonably attributed to changing employment patterns in the industrialised countries where women are increasingly employed in non-manual occupations such as professionals, which rank more highly in the social hierarchy. However, this chapter argues that the explanation is likely to be different for Turkey as manual work, especially agriculture, is still an important part in women's employment in Turkey. Women are still under-represented to a large extent across the prestigious occupations ranking highly in the social stratification structure. Consequently, it is shown that it is actually the agricultural occupations, especially the market oriented skilled agricultural and fishery workers, which rank so low across the stratification scale as to have a dominating effect on the vertical segregation measure. Accordingly, the advantage to women is shown to disappear when each agricultural occupation is excluded from the analysis; women are observed to be at a marked disadvantaged position across the social hierarchy amongst the non-agricultural workforce, particularly within paid employment. For precisely this reason - the possibility of agricultural occupations to blur the investigation on the extent of occupational segregation - agriculture is often excluded from the analysis.

As with studies for industrialised countries, the horizontal component is found to be larger than the vertical component in each case, suggesting that the overall differentiation in the employment patterns between men and women owes more to the fact that they are employed in horizontally different occupations. However, in terms of the non-agricultural "paid" work, the vertical component measured by stratification scale - the inequality associated with the tendency of women being employed in occupations that rank considerably low in the social hierarchy - contributes to the overall segregation to almost a same extent as the horizontal component.

This chapter provides important insights into the extent of occupational gender segregation in the labour market in Turkey which might be of interest to policymakers aiming to eliminate gender inequalities. First of all, it shows that the extent of inequality associated with occupational gender segregation is substantial and it is operating to the detriment of women. In addition to the economic inequalities women face, they are also exposed to social inequalities in the occupational structure. Moreover, although the horizontal component does not represent an inequality in terms of vertical criteria, it may well result in limited occupational choices both for men and women. Even if the horizontal dimension of occupational gender segregation might be a matter of women's own preferences, it is crucial to explore the motivations behind women's tendency to choose occupations that pay less and ranks lowly in the social hierarchy. A high horizontal dimension figure might again be an indicative of traditional gender roles and their impacts on social and labour market institutions, preventing women and men from being employed in gender-atypical occupations. It is, therefore, crucial to recognise the root causes and challenge the dominant norms in Turkey that recognise men as breadwinners and women as homemakers, or second earners in the family. New educational and training programs are necessary to encourage women, as well as men, to choose atypical fields of studies. In line with this argument, it is also essential to monitor the transition between education and the labour market, particularly for women, as organisations can be reluctant to hire women or create barriers to women's advancement in traditionally male dominated occupations. Furthermore, policies aiming at reconciling work, family and private life, affordable and accessible childcare and care for elderly, along with parental leave provision, have a vital role in enabling men and women to share domestic work and allow women to have equal opportunities in the labour market.

Appendix to Chapter 4

4A.1

Table 4A.1 - Results from the Correspondence Analysis

	Scores for women and men			
	Dim 1 coordinates (stratification)		Dim 2 coordinates (gender)	
Occupational Groups	Women	Men	Women	Men
11-Legislators & Senior officials	0.70	0.16	-0.25	0.26
12-Corporate Managers	0.90	1.02	-0.64	-0.87
13-Managers of small enterprises	0.32	0.26	0.25	0.40
21-Physical, Mathematical & Engineering science	1.16	1.19	-1.06	-1.15
22-Life science and Health professionals	1.23	1.27	-1.30	-1.37
23-Teaching professionals	1.25	1.34	-1.36	-1.53
24-Other professionals	0.99	1.03	-0.85	-0.90
31-Physical and Engineering Associate Professionals	0.38	0.64	0.23	-0.11
32-Life science & Health Associate Professional	0.93	1.00	-0.70	-0.74
33-Teaching Associate Professionals	0.25	0.16	0.07	-0.04
34-Other Associate Professionals	0.61	0.62	-0.20	-0.19
41-Office clerks	0.54	0.44	0.01	0.07
42-Customer service clerks	0.59	0.50	-0.01	-0.02
51-Personal & Protective Services workers	0.07	0.19	0.65	0.48
52-Models, Salesperson & Demonstrators	0.22	0.10	0.59	0.59
61-Market oriented skilled agricultural & fishery workers	-0.09	-1.98	0.73	-1.20
62-Subsistence agricultural & fishery workers	-0.14	-2.11	0.79	-1.30
71-Extraction & building trades workers	-0.44	-0.23	0.46	0.71
72-Metal, machinery & related trades workers	0.07	-0.08	0.78	0.62
73-Precision, handicraft & related trades workers	-0.02	0.26	0.70	0.51
74-Other craft & related trades workers	-0.16	-0.09	0.67	0.84
81-Stationary plant & related operators	0.28	-0.09	0.38	0.67
82-Machine operators & assemblers	-0.06	-0.04	0.81	0.86
83-Drivers & mobile plant operators	0.41	-0.12	-0.16	0.69
91-Sales & Services Elementary Occupations	-0.13	-0.25	0.84	0.86
92-Agricultural, fishery & related labourers	-1.79	-1.52	-0.98	-0.59
93-Labourers in mining, construction, manufacturing & transport	-0.21	-0.37	0.70	0.66

Source: 2010 HLFS

Model Fit Statistics	Dim1 inertia	Dim2 inertia
Total inertia= 1.7037 (27 rows by 27 columns)	0.625	0.446
Singular value from first dimension = 0.79		

4A.2

Measures for Occupational Segregation

The analysis of occupational segregation has mostly been based on index measures. Until recently, the most common measure, especially in the US literature, has been the Index of Dissimilarity (ID) introduced by Duncan and Duncan (1955). The ID-index measures segregation in terms of the sum of the absolute difference between the distribution of women's and men's employment across occupations. The ID-index is formulated as follows:

$$ID = \frac{1}{2} \sum_i^n \left| {}^{M_i}/_{M} - {}^{W_i}/_{W} \right| \qquad\qquad i = 1, 2, \ldots n \qquad\qquad 1.1$$

Where n is the number of occupations, M_i represents the number of men in occupation i and M is the total number of men in the workforce, W_i stands for the number of women in occupation i and W denote the total number of women in the workforce. Therefore, it can be asserted from 1.1 that the ID-index equals to zero when there is no segregation; that is, when women's employment distribution are equal to those of men and it equals to 1 when there is a completely segregated workforce; men and women are employed in completely different occupations. Furthermore, if we assume that N is the total number of workers in the labour force ($N = M + W$), then the formula can be rewritten as:

$$ID = \frac{1}{N} \sum_i^n \frac{1}{2} \left| M_i \frac{N}{M} - W_i \frac{N}{W} \right| \qquad\qquad 1.2$$

It is therefore plausible to interpret the ID-index as the share of employed people who would need to move to different occupations in order to achieve no segregation in the workforce.

It is important to acknowledge the pioneering role of the ID-index in the occupational segregation literature and its inspirational effect on the development of many other segregation indices. Indeed, the ID-index has been criticised substantively on various grounds; most notably, with respect to its failure to meet the condition of "occupation invariance"[86] which requires the values of the index to be insensitive to the changes in the relative sizes of the occupations if the distribution of men and women in these occupations remain unchanged (see Watts, 1998: 490; Blackburn, 2009). Therefore, several other indices, such as the Moir and Selby-Smith segregation indicator (MSS) (Moir and Selby Smith, 1979) and the Karmel MacLachlan Index (IP) (Karmel and MacLachlan, 1988), have been evolved around the ID-index.

The MSS index is named as the WE[87] index after the use of the index in OECD's Women in Employment report (OECD, 1980). The use of the IP-index has been supported by Watts (1992). Similar to the interpretation of the ID-index, the IP-index and the WE index are evaluated as the proportion of the employed people who would need to move different occupations in order to achieve no segregation. However, although these indices have been widely used in the literature, they have their own limitations. For example, the WE index is not gender symmetric as it has different versions for men and women. Moreover, both the WE and the IP-index are affected by the changes in the gender composition of the labour force and, as with the ID-index, they do not meet the condition of occupation invariance. However, the IP-index is somewhat superior as it disentangles the impact of gender composition through a decomposition procedure. As shown by Karmel and MacLachlan (1988), the change in the IP-index over a specific period of time can be decomposed into a "composition effect" and a "mixed effect" which consists of the i) occupation, ii) gender and iii) gender/occupation (interaction) effects. The composition

[86] There are several conditions that need to be met for the segregation measures to be completely satisfactory. These are 1) gender symmetry, 2) constant upper limit, 3) constant lower limit, 4) size invariance, 5) occupational/organizational equivalence, 6) gender composition invariance 7) occupations invariance (see Watts, 1998; Blackburn, 2009 for a detailed discussion on these concepts).

[87] WE stands for women and employment.

effect addresses the contribution of the changes in the gender composition across individual occupational categories to the overall change in the IP-index over a specified time period and leaves out the effect of changes in the occupational structure and the associated change in the overall gender composition of the labour force (Watts, 1993, cited in Watts 1998). Therefore, the composition effect is both “compositions and occupations invariant” (Watts, 1998: 489). Consequently, more recent measures, the Marginal Matching measure (MM) introduced by Blackburn et al. (1993) and the Charles and Grusky ratio based on log-linear methods developed by Charles and Grusky (1995), provide more sound measures of segregation as they meet the conditions of sex composition invariance and occupations invariance; that is, they are not sensitive to the changes in the employment shares of men or women and occupational structure.

4A.3

SOMERS' D as a Measure of Association:

Somers' D introduced by Somers (1962) can be formulated in terms of Kendall's τ_a (Kendall and Gibbons, 1990). For the pairs of observations (x_l, y_l) and (x_k, y_k) Kendall's τ_a is defined as:

$$\tau_a = E[sign(x_l - y_k)sign(y_l - x_l)]$$

Where E denotes expectations or is the difference between the probability that two pairs are concordant or discordant. The pair of observations (x_l, y_l) and (x_k, y_k) for the variables (X, Y) are said to be concordant when $x_l > x_k$ and $y_l > y_k$ or $x_l < x_k$ and $y_l < y_k$. In other words, they are consistently ordered pairs. The pairs are defined as discordant when $x_l > x_k$ and $y_l < y_k$or $x_l < x_k$ and $y_l > y_k$; that is when the pairs are inconsistent. To put it simply, pairs are defined to be concordant if the larger X value is paired with the larger Y value, and is said to be discordant if the larger X value is paired with the smaller Y value.

Somers' D of X in terms of Y can then be written as;

$$D(Y|X) = \tau(X, Y)/\tau(X, X)$$

which stands for the difference between the two conditional probabilities of pairs being concordant or discordant.

APPENDIX 4A.4

Mathematical Derivation of Correspondence Analysis

The following mathematical description of Correspondence Analysis is mainly taken from Greenacre (1984) and Beh (2004).

Suppose that N is $K \times L$ two-way contingency table and $n_{kl}$is the (k, l) -th cell entry for $k = 1,2 \dots K$ and $l = 1,2, \dots L$. The correspondence matrix, P, is defined as dividing the elements of the contingency table, N, by the grand total of N. P can be regarded as the probability density on the cells of the $K \times L$ contingency table and the sum of the elements of P is 1. That is to say, assuming that n is the grand total of N, the (k, l)-th cell entry is $p_{kl} = {}^{n_{kl}}/_{n}$ and $\sum_{k=1}^{K} \sum_{l=1}^{L} p_{kl} = 1$. The k-th row marginal density is defined by $p_{k.} = \sum_{l=1}^{L} p_{kl}$ and the l-th column marginal density is $p_{.l} = \sum_{k=1}^{K} p_{kl}$. The row and column marginal densities are then named as row masses and the column masses respectively.

The main purpose of the Correspondence Analysis is to derive scores that summarise the association or interaction between the row and column categories. If we assume that there are no associations between the rows and columns, the model for complete independence will be;

$$p_{kl} = p_{k.} p_{.l} \tag{1}$$

Since it is not likely to observe complete independence, the model can be reconsidered as:

$$p_{kl} = \theta_{kl} p_{k.} p_{.l} \tag{2}$$

which allows for the deviation from the complete independence by θ_{kl} if $\theta_{kl} \neq 1$.

θ_{kl} can be computed as follows:

$$\theta_{kl} = \frac{p_{kl}}{p_{k.} p_{.l}} \tag{3}$$

which is attributed as the Pearson ratio's by Goodman (1996) and, the Pearson chi-squared statistic can be found as:

$$X^2 = n \sum_{k=1}^{K} \sum_{l=1}^{L} p_{k.} p_{.l} (\theta_{kl} - 1)^2 \quad (4)$$

which has a Pearson chi-squared distribution with $(K-1)(L-1)$ degrees of freedom ($\chi^2_{(K-1)(L-1)}$). If $\theta_{kl} \cong 1$, the Pearson chi-squared statistic will be small which implies a convergence to a complete independence model. However, the Pearson chi-squared statistic increases as n increases and this can blur the analysis of association between the row and column categories. In order to tackle this problem, CA takes χ^2/n as a measure of "total inertia" of the contingency table which represents the level of association or distance between row and column variables.

The next step in the CA is to decompose the total inertia by undertaking a singular value decomposition (SVD) on the Pearson ratio in order to derive the underlying dimensions of the association. The mathematical formula for the decomposition can be written as:

$$\theta_{kl} = \sum_{m=0}^{M^*} x_{km} \lambda_m y_{lm}$$

(5)

where $M^* = \max(K, L) - 1$ is the maximum number of dimensions that can be used to define the association graphically; $(x_{1m}, x_{2m} x_{3m} \dots x_{km})$ is the m-th row singular vector and $(y_{1m}, y_{2m} y_{3m} \dots y_{km})$ is the m-th column singular vector and therefore, they are associated with the K row and L column categories respectively. $(\lambda_0, \lambda_1, \lambda_2 \dots \lambda_{M^*})$ is a vector with non-negative numbers indicating the first M^* singular values and arranged in a descending order; $\lambda_0 = 1 \geq \lambda_1 \geq \lambda_2 \geq \cdots \geq \lambda_{M^*}$. It is the first dimension which explains the most of the variation existing in the contingency table. Please see Greeanacre (1984) and Beh (2004) for a full discussion of the Correspondence Analysis.

Appendix 4A.5

Scale Scores based on the Correspondence Analysis only on the Non-agricultural Occupations

Women		Men	
Occupational Title	Score	Occupational Title	Score
1.Teaching professionals	75.13	1.Teaching professionals	77.84
2.Life science and health professionals	74.16	2.Life science and health professionals	74.93
3.Physical, mathematical and engineering science professionals	70.57	3.Physical, mathematical and engineering science professionals	71.59
4.Other professionals	67.58	4.Other professionals	68.77
5.Life science and health associate professionals	64.46	5.Corporate managers	67.58
6.Corporate managers	63.99	6.Life science and health associate professionals	66.49
7.Legislators and senior officials	58.44	7. Legislators and senior officials	63.89
8.Other associate professionals	55.97	8.Other associate professionals	57.37
9.Customer services clerks	53.6	9. Physical and engineering science associate professionals	54.61
10.Office clerks	52.45	10. Customer services clerks	54.08
11.Drivers and mobile plant operators	50.28	11. Office clerks	51.3
12. Teaching associate professionals	49.14	12. Teaching associate professionals	50.75
13.Managers of small enterprises	47.72	13. Managers of small enterprises	46.84
14. Physical and engineering science associate professionals	47.25	14. Personal and protective services workers	43.77
15. Stationary plant and related operators	44.57	15. Precision, handicraft, craft printing and related trades workers	42.54
16.Models, salespersons and demonstrators	43.17	16.Models, salespersons and demonstrators	41.41
17. Personal and protective services workers	39.17	17. Drivers and mobile plant operators	37.97
18. Metal, machinery and related trades workers	37.18	18.Metal, machinery and related trades workers	37.88
19.Precision, handicraft, craft printing and related trades workers	37.02	19. Stationary plant and related operators	37.18
20. Other craft and related trades workers	35.29	20. Extraction and building trades workers	34.69
21. Machine operators and assemblers	34.88	21. Machine operators and assemblers	34.18
22. Labourers in mining, construction, manufacturing and transport	34.18	22. Other craft and related trades workers	34.08
23. Extraction and building trades workers	33.95	23. Labourers in mining, construction, manufacturing and transport	32.83
24. Sales and services elementary occupations	33.52	24. Sales and services elementary occupations	31.05

Source: 2010 HLFS

Chapter 5: THE GENDER WAGE GAP IN TURKEY: DOES NON-RANDOM SELECTION INTO EMPLOYMENT HAVE A ROLE?

5.1 Introduction

The gender wage gap has long been at the core of research on gender inequalities in the labour market. Besides the fact that equal pay for equal work is an essential prerequisite for gender equality and dignity for women, there has been an increased focus on the economic case for eliminating discrimination in pay, as this reflects a better utilisation of women's talents and skills which will help companies/countries to achieve competitiveness in the global economy. Despite the great importance attached to the topic and a series of legislation for the equal treatment of women in the labour market, women continue to earn less than men although the extent varies between countries.

Turkey represents an exceptional case in terms of the gender wage gap. According to the International Labour Office Global Gender Wage Gap database, wages of men and women were almost the same in Turkey in 2010 whilst the female to male wage ratio was reported to be around 70 percent to 80 percent for the same year in countries such as the United Kingdom, Switzerland, Finland, Belgium and Germany (access to data is available at http://www.ilo.org/travail/areasofwork/WCMS_142568/lang--en/index.htm).[88]

In this context, there are two questions that need to be addressed: what is the true gender wage gap and, if the gender wage gap is narrower in Turkey or even comparable, is this

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[88] International Labour Office (ILO) employs the Structure of Earnings Survey, 2010 undertaken by the Turkish Statistics Institute. This data can be criticized for not providing a comprehensive wage data because it does not have the information on the wages for the small size enterprises and informal sector. Yet, according to the OECD employment data base, a gender wage gap of 20.1 percent was noted for Turkey in 2010, a figure which is comparable with the gender wage gaps of around 20 percent which are reported for the OECD countries (see http://www.oecd.org/gender/data/genderwagegap.htm). (The gender wage gap is unadjusted and for full-time employees, it is calculated as the difference between male and female median wages divided by male median wages.)

because of selection into employment? As explored in Chapter 3, which provides a comprehensive analysis on women's employment and its determinants, the female employment rate is very low in Turkey. According to the Turkish Statistics Institute, the male employment rate was 65.2 percent while the female employment rate was only 27.1 percent in 2013 (TurkStat, 2013; available at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007). Indeed, if there is a positive selection into employment, in other words, if women who are employed are more likely to have the characteristics associated with higher wages, the observed gender pay gap is likely to be underestimated, compared to the one that might be observed if male and female employment rates were equal (Olivetti and Petrongolo, 2008; Albrecht et al., 2009). Similarly, if there are sizable differences in female employment across countries, cross-country comparisons of the gender pay gap become inconclusive without correcting for selection into employment.

The substantial gender employment gap in Turkey implies the possibility of non-random selection into employment. This raises concerns about the validity of the uncorrected gender wage gap figures for Turkey and, more importantly, the potential misinterpretation of gender wage inequalities in the country. However, to the best of our knowledge, no study provides an extensive discussion on the selection-corrected gender wage gap estimations in Turkey. This chapter, therefore, aims to fill this gap in the literature. To fulfil this aim, selection corrected quantile regressions are estimated separately for men and women by adopting the approach suggested by Buchinsky (1998). Thereby, in addition to investigating the different returns to various characteristics of men and women along the entire wage distribution, the extent of non-random selection into employment is explored. Following that, inspired by the approach suggested by Albrecht et al. (2009), the decomposition of sample selection corrected gender wage gaps are calculated at various quantiles. This extends the Machado and Mata decomposition method (Machado and Mata, 2005) by allowing for Buchinsky's selection correction approach for the quantile regression. Finally, the analysis is undertaken for the years 2002 and 2012 in order to provide an insight into the evolution of gender wage gap in Turkey over the ten year period.

The remainder of the chapter is organised as follows: the next section reviews the literature on the gender wage gap. Section 5.3 explains the methodology and data employed, the estimation results are discussed in Section 5.4 and, finally, a conclusion is presented in Section 5.5.

5.2 Literature Review

Quantile regression methods have enabled researchers to investigate the gender wage gap along the entire wage distribution. They improve upon the traditional Oaxaca (1973) and Blinder (1973) method which decomposes the gender wage gap at the mean into a part due to the differences in the characteristics between women and men, and a part due to the differences in returns to these characteristics, by calculating the same decompositions along the entire wage distribution (Machado and Mata, 2005; Melly, 2006). Accordingly, it has been shown that the gender wage gap is complex and differs considerably across the wage distribution. The studies have mainly drawn attention to the comparatively large gender pay gap among the low earners and high earners, referred to as the sticky floor and the glass ceiling effects respectively. For example, in one of their early works, Albrecht et al. (2003) analyse the wage structure in Sweden, using 1998 data, by adopting a quantile regression approach. They note that the gender wage gap persistently increases across the wage distribution and reaches its highest level at the top. Furthermore, their results indicate that half of the gender wage gap at the top of the wage distribution is due to women not being as well rewarded as men for the same labour characteristics.

By adopting a similar methodology, Arulampalam et al. (2007) investigate the gender wage gap in eleven countries[89] using pooled data for 1995–2001 from the European Community Household Panel (ECHP). Their study points to the disadvantaged position of women and the presence of the glass ceilings effect in most of the countries under consideration. More importantly, regardless of the country examined, women and men are found to receive differing returns even if they possess the same labour market characteristics; yet the extent varies across the countries. Using 1999 data, De la Rica et al. (2008) examine the gender wage gap in Spain among the sub-samples of respondents with different educational categories. Their study reveals glass ceiling effects for the highly-educated group whereas they find a "glass floor" effect (decreasing gender pay gap when moving up the wage distribution) for the less well educated group (De la Rica et al., 2008: 3).

An important concern in the literature has been the possibility of the observed gender wage gap being affected by the non-random selection into employment. For example, it may be the case that women who expect lower wages due to their lower qualifications or limited work experience are less likely to work, that women with children find it hard to be in the job market and that women who are married may face fewer financial pressures and, therefore, are less likely to work. Consequently, a selection bias may arise because wages can be observed only if the individual participates in the labour market. The so-called sample selection and its importance are explained comprehensively by Heckman (1979). Heckman shows that the coefficients obtained by the standard ordinary least squares method are likely to be biased estimates if the sample selection effect is not taken into account. Buchinsky (1998) extends Heckman's parametric approach in order to allow for non-normality under a quantile regression framework and, thereby, corrects for sample

[89] Austria, Belgium, Britain, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands and Spain.

selection across the whole wage distribution.[90] In line with this development, the Machado and Mata (2005) quantile decomposition method is further improved by Albrecht et al. (2009) in order to obtain selection corrected gender wage gap decompositions across the wage distribution.

The pioneering work of Albrecht et al. (2009) shows the substantial role of selection in the gender wage gap amongst full-time workers in the Netherlands. Their results identify a positive selection of women into employment; that is, the extent of the gender wage gap in the Netherlands would be much greater if all women worked full-time. Furthermore, most of the gender wage gap is explained by the different returns to characteristics. However, an increased impact of gender differences in labour market characteristics on the gender pay gap is observed when the selection effect is taken into account. Adopting an analogous methodology, Chzhen and Mumford (2011) show a positive and significant selection effect on gender wage gaps in Britain. More importantly, the gender pay gaps amongst full-time workers in Britain are shown to be markedly larger after correcting for positive selection into full-time employment, especially in the first six deciles of the wage distribution.

Olivetti and Petrongolo (2008) point to the negative correlation between the gender wage gap and gender employment gap across countries. The authors note the strikingly low gender wage gaps in southern Europe, such as in Italy and Spain, where relatively higher gender employment gaps are observed. Accordingly, when selection into employment is taken into account, the "favourable" position of southern Europe with regards to lower gender wage gaps compared to rest of Europe and the United States (where there are smaller gender employment gaps) is shown to disappear.

[90] Several other methods have been suggested in order to adjust for selection along the distribution. For example, Blundell et al. (2007) use bounds to allow for the possible sample selection across the quantiles.

Despite the huge gender employment gap in Turkey, the potential non-random selection into employment and its effect on the estimated gender wage gap have largely been ignored in the literature.[91] The majority of studies employ the familiar Oaxaca (1973) and Blinder (1973) approach (see, for example, Ozcan et al., 2003; Ilkkaracan and Selim, 2007; Cudeville and Gurbuzer, 2008). The most recent research by Kaya (2010) and Aktas and Uysal (2012) contributes to the limited literature on the gender wage gap in Turkey by adopting quantile regression and the relevant decomposition techniques.[92] Using the 2006 Structure of Earnings Survey, both studies note that men earn slightly more than women at the low end of the wage distribution, whilst the reverse holds at the higher end of the wage distribution with women having a wage advantage over men. However, women are shown to receive significantly lower returns than men, even when the distribution of the observed characteristics are the same across genders. These two studies are important in the development of gender wage gap literature in Turkey as they shed light on the gender wage differentials along the entire wage distribution. However, as with the early studies on the topic, they do not correct for selection into employment. Moreover, as the authors also note, the Structure of Earnings Survey can be criticised for not being representative wage data as it excludes small-size enterprises and informal sector workers that constitute more than 40 percent of total employment in Turkey (ILO, 2013).

This chapter, therefore, contributes to the previous research by being the first study that implements quantile regression techniques with selection correction when examining the gender wage gap in Turkey. Following Albrecht et al. (2009), the selection corrected

[91] Although the main focus is not gender pay differentials, Tansel (2001b; 2004b) adjusts for selection into different sectors of employment while analysing the wage differentials in these sectors. For example, Tansel (2004b) investigates the pay gaps in the public administration, state owned enterprises (SOEs) and the formal private wage sector in Turkey. While doing so, a multinomial logit model is used in order correct for selection into each sector for men and women separately. The author finds a statistically significant positive selection term for women working in SOEs which is interpreted as the higher productivity of women in SOEs than the average.

[92] Kaya (2010) uses the decomposition method suggested by Melly (2006) and Aktas and Uysal (2012) employ the Machado and Mata decomposition method (Machado and Mata, 2005).

gender wage gap is decomposed into a part that investigates the role of different characteristics of men and women and a part that reveals the role of different returns to these characteristics on the estimated gender wage gap. Accordingly, central to this chapter is an investigation into the extent of non-random selection into employment and the effect of correction for selection on the extent of these two components.

5.3 Methodology and Data

5.3.1 Quantile Regression Model with Selection Adjustment

The first step of the empirical strategy employed in this chapter involves the estimation of wage functions of men and women using a quantile regression approach. An ordinary least squares model (OLS) is built on the mean of the conditional distribution of the dependent variable of the regression. This approach is appropriate when one implicitly assumes that potential differences in the effect of explanatory variables along the conditional distribution can be neglected. However, the recent empirical literature on the topic shows that the determinants of wages, thereby the estimated gender wage gaps, differ along the wage distribution. Therefore, in order to estimate the wage functions for men and women, a quantile regression (QR) model first introduced by Koenker and Bassett (1978) is employed in this chapter. As QR takes account of different returns to characteristics of men and women at different quantiles, it can control for the existing wage differentials associated with differing characteristics at each quantile to a greater extent (Arulampalam et al., 2007).

Following Koenker and Basset (1978) and Buchinsky (1998), the QR framework in a wage equation context can be described as follows:

$$W_i = X_i'\beta_\theta + \varepsilon_{\theta i} \qquad \text{with}$$

$$Quant_\theta(W_i|X_i) = X_i'\beta_\theta \tag{1}$$

where W_i is the log wage of individual i ($i = 1,2, \ldots, n$); X_i is a $K \times 1$ stochastic vector of covariates measuring various characteristics and X_i' is the realisation of this vector. The θ^{th} $(0 \leq \theta \leq 1)$ conditional quantile of the log wage distribution is defined as $Quant_\theta(W_i|X_i)$ where the distribution of the error term is left unspecified, assuming that $\varepsilon_{\theta i}$ satisfies $Quant_\theta(\varepsilon_{\theta i}|X_i) = 0$. Following Koenker and Basset (1978), the estimated vector of the QR coefficient, $\hat{\beta}_\theta$, is the solution of the following minimization problem:

$$\hat{\beta}_\theta = \min n^{-1} \left[\sum_i^n \rho_\theta (W_i - X_i \beta) \right]$$

with the check function ρ_θ weighting residuals asymmetrically;

$$\rho_\theta = \begin{cases} \theta \varepsilon_i & if\ \varepsilon_i \geq 0 \\ (\theta - 1)\varepsilon_i & if\ \varepsilon_i < 0 \end{cases}$$

That is to say, unlike the OLS estimators which minimises the sum of squared residuals, the θ^{th} quantile regression estimator, $\hat{\beta}_\theta$, is estimated by minimising asymmetrically weighted residuals, with positive errors weighted by θ and negative errors by $(\theta - 1)$. This minimisation problem can be solved by using linear programming methods (Koenker and Hallock, 2001) and the standard errors of the coefficients can be estimated by bootstrapping methods as shown by Buchinsky (1998). The interpretation of the QR estimator is similar to the least squares estimators; that is, $\hat{\beta}_\theta$ shows, *ceteris paribus*, the marginal change at the θ^{th} conditional quantile of the wage distribution due to a marginal change in the corresponding covariate.

It is essential to correct for selection in order to have reliable estimates of the gender wage gap. However, contrary to the general approach that corrects for selection bias only among women, this chapter also takes into account the possible non-random selection of men into employment. In fact, even a very small rate of non-participation of men may imply a possibility of a selection bias (Badel and Pena, 2010). This possibility is typically neglected in the gender wage gap literature as women's employment rates are notably lower than men. Moreover, the barriers that prevent women from being in the labour market are more severe and Turkey is no exception to this. The reason why the male sample is also corrected for selection is the significantly lower male employment rates in Turkey, especially amongst older men[93], compared to many countries in the world. For example, the male employment rate in Turkey was reported as 65 percent in 2012 while the average male employment rate was 74.5 percent amongst EU-28 countries.[94] This notably lower rate raises concerns about whether sample selection bias also applies for men in the labour market in Turkey. We, therefore, corrected for the selection for both the female and the male sample in order to control for this possibility.

To control for selection into employment, a method proposed by Buchinsky (1998) is adopted which can be interpreted as an alternative to the standard Heckman two-step procedure when selection at different quantiles is required to be estimated. Buchinsky's approach consists of estimating a selection parameter at the first step and the quantile regression of the observed wages on several control characteristics and an estimate of the selection parameter at the second step. The whole procedure can be expressed as below (see Buchinsky, 1998: p. 3-9 for a full mathematical explanation).

The wage offer equation for individual i which is assumed to depend linearly on a number of labour market characteristics can be written as:

$$W_i^* = X_{bi}'\beta_0 + u_i \tag{2}$$

[93] See footnote 11 in Chapter 2 for a discussion on the early retirement scheme and its effect on male employment rates.

[94] According to the Turkish Statistical Institute, male employment rates were 63.9 percent in 2002 and 65.0 percent in 2012 (available at http://www.tuik.gov.tr/PreTablo.do?alt_id=1007). The EU-28 average male employment rates were 75.4 percent and 75.0 percent in 2002 and 2012 respectively (available at http://epp.eurostat.ec.europa.eu/). On the other hand, female employment rates in Turkey were reported as 25.3 percent in 2002 and 26.3 percent in 2012 (available at http://www.tuik.gov.tr/PreTablo.do?alt_id=1007).

However, the offered wage can be observed only if it exceeds the reservation wage shown as;

$$W_i^R = X'_{ai}\alpha_0 + \delta_i \tag{3}$$

where X_{ai} and X_{bi} are the vectors of characteristics. It is assumed that X_b is a sub-vector of X_a(omitting the i-th subscript); X_a should contain at least one (continuous) variable which is not included in X_b for identification. The wage offer equation (Equation 2) can be rewritten as follows under a quantile regression framework:

$$W^* = X'_b\beta_\theta + u_\theta \quad \text{with}$$

$$Quant_\theta(W|X_b) = X'_b\beta_\theta, \quad 0 \leq \theta \leq 1 \tag{4}$$

where $u_\theta \equiv X'_b(\beta_0 - \beta_\theta) + u$ and $Quant_\theta(u_\theta|X_b) = 0$. Consequently, the observed wage can be described as:

$$W = D.W^* = D(X'_b\beta_\theta + u_\theta), \quad D = I(W^* > W^R) \tag{5}$$

where $I(.)$ is the indicator function showing whether the wage is observed or not. In other words, wages are observed only for those individuals whose wage offers are greater than their reservation wages. Therefore, the conditional quantile of the observed wage corrected for selection can be written as:

$$Quant_\theta(W|X_b) = Quant_\theta(W^*|X_b, D = 1) = X'\beta_\theta + Quant_\theta(u_\theta|X_b, D = 1)$$

$$= X'\beta_\theta + h_\theta(X_a, \gamma_0) \tag{6}$$

$(h_\theta(X_a, \gamma_0) = Quant_\theta(u_\theta|X_b, D = 1))$. Buchinsky indicates that if only $h_\theta(X_a, \gamma_0)$ was a function of a known index, say $g = g(X_a, \gamma)$=$X'_a\gamma$, the observed wage could have been shown as:

$$W = X'_b\beta_\theta + h_\theta(X'_a\gamma) + \varepsilon_\theta \tag{7}$$

where $Quant(\varepsilon_\theta|X_b, D = 1) = 0$ and $h_\theta(X_a'\gamma)$ is the selection term for the θth quantile. However, while in the classical Heckman method, the term takes the form of an "inverse Mill's ratio", the form of the selection correction term is unknown in Buchinsky's method. As $h_\theta(g)$ is an unknown function, it is approximated by a power series expansion by adopting a two-step procedure. Accordingly, γ_0 is estimated at the first step by using a semiparametric least squares (SLS) procedure. Following that, the quantile regression of observed wages on X_b and on an estimate of $h_\theta(g)$ is performed at the second step. As shown in Ichimura (1993) and similarly in Buchinsky (1998), SLS gives a consistent and asymptotic normal estimate of γ_0.[95] At the second step, the selection term $h_\theta(g)$ is approximated by a series expansion (a power series approximation); that is,

$$\hat{h}_\theta(g) = \hat{h}_\theta(X_a'\gamma_0) = \delta_0(\theta) + \delta_1(\theta)\lambda(\varphi + \omega X_a'\gamma) + \delta_2(\theta)\lambda(\varphi + \omega X_a'\gamma)^2 + \cdots$$

Where φ and ω are location and scale parameters and $\lambda(.)$ is the usual inverse Mill's ratio. As can be seen, λ's vary with the quantiles.[96] Following that, the quantile regression of observed wages (W) on X_b and the estimated selection correction term, $\hat{h}_\theta(g)$, is performed in order to get a consistent estimator of β_θ;

$$W_i = X_{bi}'\hat{\beta}_\theta + \hat{h}_\theta(g) + \hat{\varepsilon}_{\theta i} \tag{8}$$

$\hat{\beta}_\theta$ represents the true value of the coefficient corrected for selection at the θth quantile. It is important to note that, the constant term in β_θ (the intercept in the wage estimation) is not identified, one needs to separate it from $\delta_0(\theta)$ (the first term in the power series approximation for the selection term $(h_\theta(g))$. Following Buchinsky (1998), we employ an

[95] In the classical Heckman method, the selection term is estimated by a probit model which assumes normally distributed error terms. However, in order to allow for non-normality under a QR framework, a different method is required to estimate the selection term. This is why SLS is employed because, as described in Buchinsky (1998), the SLS estimate is consistent regardless of the error term's distribution.

[96] The location and scale parameters are not identified in the single index estimation. In order to separate them from the single index, φ and ω are estimated by a probit regression of the binary variable indicating whether an individual is in waged work on the semi-parametric single index estimate.

identification at unity approach (Andrews and Schafgan, 1998) to estimate the intercept in the wage equation. That is, we select a sub-sample of observations in which the probability of work is close to 1 and then estimate the intercept using this sub-sample, without correcting for selection.

5.3.2 Decomposition of the Gender Wage Gap with Sample Selection Adjustment

The increasing use of QR to estimate log wages have required new methods for the decomposition of the gender wage gap. Accordingly, the traditional Blinder (1973) and Oaxaca (1973) decomposition at the mean has been expanded by Machado and Mata (2005) in order to enable an analogous decomposition along the entire wage distribution under a QR framework. The usual Machado-Mata (M-M) procedure can be represented as follows. Considering two groups, i.e., men and women in the context of gender wage gap, the estimation of their conditional wage distributions separately at quantile θ will be as follows:

$$Quant_{\theta}(W_m|X_m) = X'_m\beta^m_{\theta} \qquad \theta \in [0,1] \tag{9}$$

$$Quant_{\theta}(W_f|X_f) = X'_f\beta^f_{\theta} \qquad \theta \in [0,1]$$

(10)

X_m and X_f are the stochastic vectors of regressors measuring a range of characteristics of men and women with the distribution functions of $G_{X_m}$and G_{X_f} respectively. The realisation of these stochastic vectors are shown by X'_m and X'_f. W_m and W_f are the log wages for men and women with unconditional distribution functions F_{W_m} and F_{W_f}. The motivation behind the M-M procedure is the estimation of counterfactual distributions: *i*) the distribution of female log wages that would have been observed if women had men's characteristics but were paid as women or ii) the distribution that would have prevailed if women had their own labour market characteristics but were paid as men (Albrecht et al. 2003: 168). The estimation of the counterfactual distributions in i) and ii) can be shown as:

$$Quant_{\theta}(W_{mf}|X_m) = X'_m\beta^f_{\theta} \qquad \theta \in [0,1] \tag{11}$$

$$Quant_{\theta}(W_{fm}|X_f) = X'_f\beta^m_{\theta}, \qquad \theta \in [0,1] \tag{12}$$

Following Machado and Mata (2005); Albrecht et al. (2003, 2009) and Arulampalam et al. (2007), the original M-M procedure can be summarised as follows:

1. Sample θ from a standard uniform distribution, ($\theta \in [0,1]$).
2. For each quantile, $\theta \in [0,1]$, estimate the coefficients $\hat{\beta}^m_{\theta}$ and $\hat{\beta}^f_{\theta}$ in equations (9) and (10) using the male and female data sets respectively.
3. Sample X'_m and X'_f from the empirical distributions of $\hat{G}_{X_m}$ and $\hat{G}_{X_f}$.
4. Calculate $\widehat{W}_{mf} = X'_m\hat{\beta}^f_{\theta}$ to obtain the counterfactual distribution in i or $\widehat{W}_{fm} = X'_f\hat{\beta}^m_{\theta}$ to obtain the counterfactual distribution in ii.
5. Repeat the steps described above n times.[97]

For example, if one estimates the counterfactual distribution of women's wages that would have observed if women had their own labour market characteristics but were rewarded as

[97] There are several variations of the M-M procedure providing almost identical results. For example, rather than sampling θ from a uniform distribution and repeating the whole procedure n times, Melly (2005; 2006) estimates $\hat{\beta}^m_{\theta}$ or $\hat{\beta}^f_{\theta}$ for a grid of θs, such that $\theta = 0.001, \ldots 0.999$ and repeats steps 3 and 4 several times. Melly (2006) shows that this method provides numerically identical results with the M-M method when the number of simulations (k) goes to infinity. Another variation of the original M-M method includes making more than one draw at random from the empirical distributions of Xs in step 3 (see, for example, Albrecht et al., 2003 and De la Rica et al., 2008). In this chapter, Melly's decomposition method is adopted; thereby, rather than taking, say k random draws from the uniform distribution and estimating k quantile regression coefficients, the decompositions are performed for a grid of $\theta = 0.01, 0.02, \ldots, 0.99$. The standard errors for the counterfactual distributions described in step 3 are obtained by repeating the procedure 100 times.

men for these characteristics (defined in ii)), the difference between the female and male log wage distributions can be decomposed as follows;

$$X_f'\hat{\beta}_\theta^f - X_m'\hat{\beta}_\theta^m = \hat{\beta}_\theta^m\left(X_f' - X_m'\right) + X_f'(\hat{\beta}_\theta^f - \hat{\beta}_\theta^m)$$

(6)

The first component on the right hand side of the equation denotes the characteristics effect since it gauges the contribution of a range of covariates to the gender pay gap at the θ^{th}quantile. It is the difference between the estimated counterfactual distribution (female wage distribution when they have their own characteristics but are rewarded as men for these characteristics) and the male wage distribution. The second component is the coefficients effect as it stands for the contribution of differences in returns (coefficients) to the gender gap at the θ^{th}quantile. Accordingly, it is the difference between the female wage distribution and the counterfactual wage distribution. In order to allow for selection in a quantile decomposition framework, the M-M decomposition method is further improved by Albrecht et al. (2009) by incorporating Buchinsky's selection correction method into the analysis. Basically, Albrecht et al. (2009) extends the M-M method by estimating a true value of $\hat{\beta}_\theta^f$ in step 2 by selection correction methods suggested by Buchinsky.[98]

The empirical strategy employed in this chapter can be summarised as follows: first, in order to take into account the non-random selection into employment, the probabilities of being in waged work are estimated for both men and women by using Ichimura (1993)'s single index estimation which does not impose restrictions on normality. Following that,

[98] See page 385 in Albrecht et al. (2009) for further details on the methodology. The methodology adopted by the authors allows estimating a counterfactual distribution of log wages of women that would have been observed if all women were in full-time work. The selection effect is then illustrated as the difference between this distribution and the wage distribution of women who actually work full time. However, the "rqdeco" command (a Stata command written by Melly (2006)) is used in this chapter which does not have this option. The extent of the selection effect is, therefore, explained by the coefficients of the selection terms in the quantile regressions.

for both men and women, the observed wages are regressed on various covariates as well as the selection terms approximated by power series expansion suggested by Buchinsky (1998). The final stage of the analysis implements the M-M decomposition corrected for selection as suggested by Albrecht et al. (2009). However, in order to evaluate the selection effect, the QR and M-M decomposition estimations without selection correction are also presented.

5.3.3 Data and Empirical Specifications

The data are taken from the Household Labour Force Survey (HLFS) undertaken by the Turkish Statistics Institute (TurkStat) for the years 2002 and 2012. These years are chosen in order to investigate the changes in the gender wage differentials over a recent 10 year period. HLFS provides a rich set of information on a range of socio-economic characteristics of the respondents such as their age, educational attainment and marital status. The surveys also have information on the respondent's work-place characteristics; for example, occupation, industry, sector of employment, firm size, social security coverage and so on. The data, therefore, provide a more representative wage information compared with the data sets used in the most recent studies on the gender wage gap in Turkey.

In order to focus on those who are least likely to be retired or still in full-time education or undertaking military service, the samples are restricted to individuals aged 25-55 for both years. The natural logarithm of real hourly wages is used as a measure of wages. In order to derive hourly wages, monthly wages are first divided by 4.3. The resulting weekly wage is then divided by the weekly hours of work reported by the respondent. Finally, in order to have a comparable measure between the years, the real hourly wages are obtained by deflating the hourly wages by the consumer price index provided by the TurkStat. In addition to non-working women, non-working men are also included in the sample as the male sample will also be adjusted for selection. A final note is that the analyses are performed with a randomly selected 40 percent of the sample in the 2002 data and 25 percent of the sample in 2012 data due to computational limitations when performing the single index estimation.[99] The restricted 2002 data include 44,710 individuals 14,007 of whom are waged workers (2,836 women and 11,171 men). The restricted 2012 sample has information on 48,625 individuals of whom 22,835 are waged workers (4,754 women and 18,639 men). The dependent variable in the selection equation equals to 1 if the person is a waged worker and 0 otherwise.[100]

Three alternative empirical specifications are considered when analysing the gender wage differentials. As an initial step, the human capital model (Becker, 1962; 1964; Mincer, 1958) is adopted as a theoretical basis to specify the wage equations. Educational qualifications are measured in five categories, these are: less than primary school, primary school, secondary school, high school, vocational/technical high school and university or higher. One important drawback of the HLFS data is that they do not provide information on the actual years of work experience.[101] Instead, we controlled for job tenure. Human

[99] The decision on the 40 percent of the sample for the 2002 data and 25 percent of the sample for the 2012 data is reached by gradually increasing the sample size. These are the highest percentages for which we were able to perform the single index estimation (the proportion is lower for the 2012 data due to its bigger size, when compared to the 2002 data. Tables on descriptive statistics (Tables 5.1a, 5.1b and 5.2) provide a comparison between the full and the restricted samples. HLFS data are very big; thereby, as can be seen from the tables, the restrictions in the sample size did not result in a loss of information. The descriptive statistics for the full and the restricted samples are almost identical.

[100] It is important to note that unpaid family workers are not excluded as are the self-employed/employers, although there are no earnings data available for them (wage information is provided only for regular/casual employees in the HLFS data). This is because it would mean large exclusions from the sample. Accordingly, there are 6,290 (5,962) self-employed/employers and 595 (530) unpaid family workers amongst the male sample and 940 (1,244) self-employed/employers and 2,148 (2,751) unpaid family workers amongst the female sample in 2002 and 2012 respectively. Therefore, the dependent variable in the selection equation takes the value of 1 if women or men are regular/casual employees and 0 if they are unpaid family workers, self-employed/employer or not working. An alternative empirical strategy could have been the implementation of a multinomial logit in order to correct for selection in the first step. However, since the main aim of the chapter is to investigate the wage differentials along the entire distribution, this practice is not adopted as the multinomial logit model is not compatible with the quantile regression framework.

[101] We have not used age as a proxy for experience in the human capital model. This is because at least one continuous variable in the selection equation should be excluded from the wage regression for identification. Unfortunately, the HLFS data do not provide a suitable continuous variable (for example, non-labour income) other than age for identification. Another option could have been to use potential experience rather

capital theory states that the productivity levels of individuals can increase by improving their skills on the job. Therefore, job tenure as an indicator of seniority on the current job is assumed to be an important determinant of wages.

Studies on the gender wage gap increasingly focus on the importance of institutional factors such as work-place characteristics in addition to human capital variables in explaining the wage structures of the countries (see, for example, Groshen, 1991; Christofides and Pashardes, 2000; Blau and Kahn, 2006 and Arulampalam et al., 2007). The previous chapter (Chapter 4) has also provided evidence that women are segregated into low-paid occupations. Therefore, in the second and the third models, the wage functions based on the basic human capital variables are extended by the inclusion of work-place variables; such as, firm size, sector of employment, occupation and industry. It is important to note that these variables are arguably endogenous and may result in underestimation of the extent of discrimination against women in the labour market. This is because, some of these controls such as occupation or industry may themselves be influenced by employers' or trade unions' discriminatory practices. Therefore, including these variables could be regarded as setting a lower limit to the extent of discrimination, whereas excluding them could be regarded as ignoring the role of unobserved human capital and, thereby, putting an upper limit to the extent of discrimination (Arulampalam et al., 2007: 174).[102] Overall, the estimation results from the models with work-place variables should be interpreted cautiously. The next section provides a detailed explanation and descriptive statistics for the variables included in the analysis.

than the actual experience. However, potential experience is also a very poor proxy for women's actual experience levels as career interruptions are common for female workers due to their household and child bearing activities. Thus, this approach is not followed either.

[102] It is, therefore, a common practice to first estimate the wage regressions in a reduced form (with only human capital variables) and then estimate another model which includes the potentially endogenous work-place characteristics.

5.3.4 Descriptive Statistics

Summary statistics for the explanatory variables used in the wage regression and/or single index estimation are provided for the sub-samples of interest for women and men in Tables 5.1a and 5.1b. The first striking observation is that female waged workers appear to earn slightly more than their male counterparts on average in both 2002 and 2012. For both men and women, the average values of the log of real hourly wages are higher in 2012.

It is not peculiar to our study to observe a female advantage in terms of mean wages. For example, Kaya (2010) notes, on average, a 2.5 percent wage advantage of women over men, using the Structure of Earnings Survey undertaken by TurkStat for 2006. According to the author, this is the result of a composition effect; that is, employed women are mostly concentrated in the higher education group. Using the same data as Kaya (2010), Aktas and Uysal (2012) also indicate women's wage advantage over men and note the role of women being better educated than men in the sample as a potential explanation. Not surprisingly, waged workers are better educated than the rest of the sample for both men and women, according to the data sets used in this chapter. However, there are noteworthy gender differences in terms of the highest level of education achieved amongst the waged workers themselves. Female waged workers mostly have a university degree or higher, while the greatest share of men have only a primary school diploma in both 2002 and 2012. The share of those with a university degree or higher increases over time in waged employment, reaching almost 50 percent for women in 2012 while this figure is 23.6 percent for men. In line with the two studies mentioned above, it can be asserted that women in waged employment are significantly better educated than men. On the other hand, men tend to have a slightly longer job tenure; however, the gap between men and women is less pronounced in 2012.

For identification, additional information on age and its squared form, being married, the number of children in the household and its squared and cubic forms, the presence of young children in the household and living in urban areas of the country are used in the selection equation. It is seen that waged workers are younger than those who are not. The vast majority of the sample is married. However, as expected, the share of married women amongst waged workers is notably lower than the share observed among those who are not in waged employment. No clear difference is observed in the proportion of married men among the sub-samples. The average value of the number of children in the household is significantly lower for waged workers than for the rest of the sample of women, whereas there is no noteworthy difference for men between the two groups. There is also a decrease in the average number of children in the households from 2002 to 2012. The mean value for the presence of young children (below 5 years old) in the household is much lower for female waged workers compared to the rest of the sample. On the contrary, the mean value for the presence of children is slightly higher for male waged workers. These results provide evidence that it is mostly women who are responsible for the childcare at home and, therefore, are less likely to be in waged employment when there is a young child in the household.

Table 5.1a - Descriptive Statistics for Women

	2002				2012			
	Waged Worker (40%)	Rest (40%)	Waged Worker (full)	Rest (full)	Waged Worker (25%)	Rest (25%)	Waged Worker (full)	Rest (full)
Percentage	12.00	88.00	11.87	88.13	18.43	81.57	18.47	81.53
Log of real hourly wage	5.476	-	5.470	-	5.758	-	5.767	-
	(0.020)	-	(0.013)	-	(0.011)	-	(0.006)	-
Tenure	7.610	-	7.716	-	6.013	-	5.975	-
	(0.137)	-	(0.089	-	(0.101)	-	(0.050)	-
Highest level of education								
Less than Primary School	0.046	0.215	0.045	0.214	0.041	0.214	0.041	0.209
Primary school	0.279	0.617	0.281	0.620	0.232	0.524	0.241	0.528
Secondary school	0.073	0.059	0.066	0.058	0.068	0.086	0.069	0.084
High school	0.142	0.064	0.147	0.062	0.124	0.075	0.117	0.076
Vocational/technical high school	0.087	0.026	0.091	0.027	0.086	0.053	0.088	0.053
University or higher	0.373	0.019	0.370	0.020	0.449	0.049	0.444	0.050
Age*	34.816	37.883	34.867	37.807	35.718	38.420	35.684	38.375
	(0.136)	(0.065)	(0.088)	(0.041)	(0.116)	(0.064)	(0.058)	(0.032)
Married*	0.672	0.899	0.677	0.898	0.657	0.879	0.668	0.878
Urban*	0.828	0.602	0.833	0.602	0.887	0.681	0.885	0.682
Number of children in the household*	0.866	1.515	0.842	1.511	0.742	1.364	0.757	1.351
	(0.021)	(0.012)	(0.013)	(0.007)	(0.013)	(0.011)	(0.007)	(0.005)
Children under 5 years of age*	0.201	0.319	0.195	0.317	0.186	0.313	0.200	0.313
Observations	2,836	20,802	7,017	52,101	4,754	21,036	18,959	83,712

*Source: HLFS 2002, 2012. * the variables used only in the selection equation. Sample weights are used*.

Table 5.1b - Descriptive Statistics for Men

	2002				2012			
	Waged Worker (40%)	Rest (40%)	Waged Worker (full)	Rest (full)	Waged Worker (25%)	Rest (25%)	Waged Worker (full)	Rest (full)
Percentage	53.01	46.99	53.24	46.76	60.81	39.19	61.31	38.69
Log of real hourly wage	5.467	-	5.464	-	5.718	-	5.717	-
	(0.008)	-	(0.005	-	0.006	-	0.003	-
Tenure	8.757	-	8.740	-	6.727	-	6.691	-
	(0.075)	-	(0.047	-	0.063	-	0.031	-
Highest level of education								
Less than Primary School	0.021	0.050	0.021	0.050	0.029	0.056	0.028	0.056
Primary school	0.430	0.638	0.433	0.639	0.331	0.502	0.332	0.504
Secondary school	0.132	0.113	0.134	0.115	0.142	0.156	0.142	0.157
High school	0.137	0.093	0.136	0.088	0.128	0.109	0.124	0.106
Vocational or technical high school	0.119	0.046	0.116	0.050	0.134	0.081	0.133	0.082
University or higher	0.162	0.059	0.160	0.059	0.236	0.096	0.240	0.096
Age*	36.367	38.052	36.290	37.992	36.570	39.110	36.601	39.132
	(0.077)	(0.096)	(0.049	(0.061)	(0.071)	(0.100)	(0.035)	(0.050)
Married*	0.889	0.865	0.889	0.863	0.819	0.813	0.816	0.814
Urban*	0.753	0.495	0.751	0.500	0.812	0.572	0.817	0.576
Number of children in the household*	1.384	1.546	1.386	1.567	1.218	1.323	1.201	1.329
	0.014	0.017	0.008	0.011	0.011	0.017	0.006	0.009
Children under 5 years of age*	0.376	0.356	0.379	0.357	0.351	0.307	0.346	0.306
Observations	11,171	9,901	28,036	24,621	13,885	8,950	56,300	35,527

*Source: HLFS 2002, 2012. * the variables used only in the selection equation. Sample weights are used*

Table 5.2 presents the descriptive statistics for the work-related characteristics of those who are in waged employment. It is seen that the majority are covered by social security, 83 percent of women and 86 percent of men in 2012. Waged workers are concentrated in firms with more than 50 employees; however, the share somewhat decreases by 2012. Part-time work is also controlled for in the wage estimation. Several studies note the increasing number of women in part-time work, which is usually associated with less-well paid and low status jobs, in advanced economies (see, for example, Connolly and Gregory, 2008; Manning and Petrongolo, 2008). On the contrary, part-time work is not a fundamental source of employment for women in Turkey. Furthermore, the data indicate that the extent of part-time employment decreases over the years under consideration, especially for women (part-time employment shares decrease from 14.9 percent to 6 percent for women and from 4.2 percent to 1.4 percent for men between 2002 and 2012).[103]

As with the results provided in Chapter 4 on occupational gender segregation in Turkey, the data employed in this chapter indicate the differentials in the occupations where men and women are employed. Waged female workers are mostly concentrated in professional occupations followed by clerks. On average, only around 10 percent of men are professionals while this figure is 24 percent and 21 percent for women in 2002 and 2012 respectively. These results are in line with the findings in Chapter 4 that, aside from agricultural occupations, women are concentrated in associate professional and service sector jobs in Turkey (see Tables 4.1 and 4.2 on pages 166 and 168). Men are dispersed more evenly across occupations; however, they are relatively more highly concentrated in occupations such as craft and related trades workers and “plants and machine operators and assemblers” that are likely to be less well-rewarded in terms of pay and, as shown in

[103] Until the Labour Law (no. 4857) enacted in 2003, part-time employment was not even formalised and legalised in Turkey.

Chapter 4 (see Table 4.3 on page 179), the social hierarchy. In terms of the industrial categories, "public, social and personnel services" and "manufacturing" are the main sectors of employment for men and women in both years. However, the average share in public, social and personnel services is notably larger for the female sample (0.473 for women and 0.303 for men in 2002, 0.446 for women and 0.244 for men in 2012).[104] Moreover, a decrease is observed in the share of manufacturing, especially for women, from 2002 and 2012.

[104] In addition to these variables, 2012 data includes information on managerial responsibilities, sector of employment and the region where the respondent lives - all of which might be useful controls in wage estimation. The descriptive statistics for these variables can be found in Table 5A.1 in the Appendix to Chapter 5. It is seen that a very small share of men and women have managerial responsibilities and they mostly work in the private sector; the shares are larger for men. As expected, waged workers are mostly concentrated in Istanbul, East Marmara and Aegean given the high level of development and favourable socio-economic conditions in these regions.

Table 5.2 - Descriptive statistics on the Workplace Characteristics for Waged Worker Women and Men

	Women				Men			
	2002		2012		2002		2012	
	40%	Full Sample	25%	Full Sample	40%	Full Sample	25%	Full Sample
Size of the workplace								
<10	0.263	0.266	0.275	0.267	0.329	0.331	0.296	0.299
10-24	0.113	0.111	0.125	0.126	0.108	0.110	0.119	0.122
25-49	0.171	0.178	0.208	0.216	0.147	0.145	0.201	0.197
50 or more	0.453	0.445	0.392	0.390	0.416	0.414	0.383	0.382
Part-time	0.149	0.146	0.060	0.065	0.042	0.042	0.014	0.015
Social security	0.760	0.759	0.833	0.834	0.774	0.774	0.865	0.863
Occupational Category								
Legislators, senior officials and managers	0.036	0.039	0.047	0.043	0.047	0.045	0.050	0.055
Professionals	0.245	0.233	0.216	0.226	0.106	0.107	0.104	0.103
Technicians and associate professionals	0.128	0.131	0.132	0.132	0.079	0.079	0.087	0.087
Clerks	0.164	0.175	0.194	0.183	0.084	0.087	0.085	0.084
Service workers and shop and market sales workers	0.090	0.094	0.154	0.153	0.156	0.153	0.165	0.159
Skilled agricultural and fishery workers	0.004	0.005	0.004	0.005	0.006	0.006	0.008	0.008
Craft and related trades workers	0.125	0.116	0.035	0.038	0.211	0.215	0.181	0.180
Plant and machine operators and assemblers	0.046	0.041	0.055	0.053	0.164	0.159	0.171	0.175
Elementary occupations	0.161	0.165	0.163	0.166	0.146	0.150	0.150	0.149
Economic activity								
Agricultural activities and mining and quarrying	0.055	0.061	0.029	0.029	0.042	0.041	0.032	0.033
Manufacturing	0.258	0.246	0.186	0.197	0.261	0.265	0.255	0.263
Electricity, gas and water supply	0.001	0.002	0.004	0.003	0.014	0.014	0.015	0.014
Construction	0.009	0.010	0.013	0.014	0.094	0.093	0.098	0.097
Wholesale and retail trade and hotels and restaurants	0.101	0.102	0.157	0.152	0.166	0.163	0.180	0.181
Transport, storage and communications	0.029	0.031	0.038	0.031	0.077	0.076	0.075	0.074
Financial institutions, real estate and auxiliary activities	0.073	0.077	0.127	0.135	0.042	0.043	0.100	0.100

Public, social and personnel services	0.473	0.471	0.446	0.438	0.303	0.306	0.244	0.240
Observations	2,836	7,017	4,754	18,959	11,171	28,036	13,885	56,300

Source: HLFS 2002; 2012. Sample weights are used.

5.4 Estimation Results

5.4.1 Results from the Selection Equation

As discussed in the methodology section, non-random selection into employment is taken into account for both the female and the male sample. In order to correct for the possible sample selection bias, a semi-parametric single index estimation suggested by Ichimura (1993) is employed since it does not rely on normally distributed error terms.[105] Table 5.3 presents the estimation results from the single index estimation and also from the standard probit model for comparison purposes.[106] The dependent variable used in the probability models takes the value of 1 if the women/men are waged workers and 0 otherwise. It is seen that the probability of being in waged employment for both men and women increases with age but at a decreasing rate.[107] Not surprisingly, being married has a negative effect on women's probability of being a waged worker in both years. In contrast, marriage increases men's probability of being in waged employment.[108] As expected, living in urban areas of the country increases the chances of being a waged worker.

Looking at the effect of education, it is seen that the probability of being in waged employment is higher for men and women with higher educational achievements

[105]As suggested by Buchinsky (1998), a Hausman test is performed under the null hypothesis of normally distributed residuals. If the test fails to reject the null hypothesis, the probit estimates can be used to create the inverse Mill's ratio. As shown in Table 5.3, the Hausman test statistics rejects the null hypothesis of normally distributed errors; therefore, the selection correction term used in quantile regressions are derived from the single index estimation.

[106] The constant and the coefficient of one of the continuous variables (respondent's age in this chapter) are not identified in the single index estimation. Therefore, following the standard practice in the studies that use the single index estimation, the coefficients of the constant term and age in the single index estimation are normalised by assigning their corresponding values in the probit estimates in order to make the results of the two models comparable (see, for example, De la Rica et al., 2008; Albrecht et al., 2009; Chzhen and Mumford, 2011).

[107] Unfortunately, the age variable is categorical in the 2002 data. Although not ideal, in order to have a continuous variable for identification, the midpoints of each age group are taken and are used as a proxy for age for 2002.

[108] It is important to note that women's participation in the workforce and being married and/or having children can be endogenously determined. However, this possibility is commonly ignored in gender wage gap literature when these variables are used as explanatory variables in selection equations. Moreover, there is no data available in the HLFS surveys to enable us to investigate this possibility for exploratory purposes.

compared to “less than secondary school”. The number of children in the household has a different impact on men and women’s wage employment. While the probability of a man being a waged worker in 2002 rises with the number of children (according to the single index estimation results), it does not have a significant effect on a woman’s probability of being a waged worker in either year. In order to fully capture the effect of the number of children, quadratic and cubic forms of the number of children are also included in the analysis. As seen in Table 5.3, there is a cubic effect on the number of children for the male sample. Whilst the probability initially rises with family size, there is a point at which the likelihood of being a waged worker falls with increased family size. This may be because households with many children might be indicative of traditional families that are large in size and engage in agricultural activities or husbandry in the rural areas of the country. Therefore, the probability of being a waged worker is likely to be low for men in comparison with the other forms of employment such as being self-employed in the family farm.

Finally, as a further check on the effect of children on waged employment for men and women, the presence of young children is also included in the analysis. Having a young child at home significantly reduces women’s chances of being waged workers in both years, while it does not have a significant effect for men, suggesting that childcare is the responsibility of women in the families in Turkey. It can, therefore, be concluded that it does not matter for women how many children there are in the household, it is rather the presence of young children in the household that prevents them from being in the waged work.

Table 5.3 - Selection Equation

	2002				2012			
	Women		Men		Women		Men	
	Probit	Single Index	Probit	Single Index	Probit	Single Index	Probit	Single Index
Constant	-3.841***	-3.841***	-1.597***	-1.597***	-4.296***	-4.296***	-1.464***	-1.464***
	(0.336)	-	(0.244)	-	(0.266)	-	(0.222)	-
Age	0.159***	0.159***	0.055***	0.055***	0.186***	0.186***	0.068***	0.068***
	(0.018)	-	(0.013)	-	(0.014)	-	(0.012)	-
Age squared	-0.002***	-0.002***	-0.001***	-0.002***	-0.003***	-0.003***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	-0.391***	-0.390***	0.479***	0.935***	-0.367***	-0.467***	0.392***	0.333***
	(0.035)	(0.047)	(0.034)	(0.074)	(0.028)	(0.045)	(0.030)	(0.047)
Urban	0.231***	0.095***	0.479***	1.889***	0.319***	0.392***	0.585***	4.333***
	(0.036)	(0.025)	(0.022)	(0.136)	(0.029)	(0.045)	(0.020)	(4.117)
Secondary school	0.403***	0.391***	0.225***	0.450***	0.273***	0.267***	0.133***	0.122***
	(0.045)	(0.054)	(0.028)	(0.043)	(0.039)	(0.040)	(0.026)	(0.028)
High School/ Vocational technical high school	0.752***	0.737***	0.460***	2.033***	0.630***	0.576***	0.342***	0.310***
	(0.033)	(0.074)	(0.024)	(0.156)	(0.028)	(0.048)	(0.023)	(0.042)
University or equivalent	1.979***	2.151***	0.725***	3.288***	1.665***	1.743***	0.717***	0.818***
	(0.039)	(0.149)	(0.030)	(0.249)	(0.030)	(0.145)	(0.027)	(0.101)
Number of children	-0.049	-0.040	0.021	0.042**	0.006	0.005	0.012	0.009
	(0.035)	(0.031)	(0.022)	(0.017)	(0.034)	(0.044)	(0.025)	(0.024)
Number of children^2	-0.028**	-0.028**	-0.023***	-0.046***	-0.064***	-0.069***	-0.024***	-0.022**
	(0.012)	(0.011)	(0.006)	(0.003)	(0.014)	(0.023)	(0.008)	(0.009)
Number of children^3	0.002**	0.002**	0.001***	0.003***	0.006***	0.004	0.002***	0.002**
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.003)	(0.001)	(0.001)
Presence of children younger than 5 years of age	-0.188***	-0.260***	-0.013	-0.032	-0.287***	-0.312***	0.006	0.005
	(0.036)	(0.039)	(0.024)	(0.022)	(0.031)	(0.044)	(0.024)	(0.021)
Hausman test statistics	26.00		198.12		29.11		44.49	
Hausman test p-value	0.00		0.00		0.00		0.00	
Observations	23,638		21,072		25,790		22,835	

*Source: HLFS 2002; 2012. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

5.4.2 Quantile Regression Results

This section presents the quantile regression results based on the empirical specification in which differences in human capital as well as work-place characteristics are controlled for.[109] In order to correct for the selection bias at different quantiles, inverse Mill's ratio polynomials of the third order and second degree $(1 + \lambda + \lambda^2)$ are included as explanatory variables in the wage regressions. As discussed in the Methodology section, the constant term in the wage equation $(\beta_0(\theta))$ and the zero degree polynomial term in the power series approximation $(\delta_0(\theta))$ are not separately identified in the quantile regression. Therefore, the constant term in the wage equation is estimated by adopting an identification at unity approach (Andrews and Schafgans, 1998).[110] Tables 5.4a – 5.5b presented at the end of this section show the results from the quantile regressions by gender with and without selection correction in 2002 and 2012.

It is seen that the coefficients of all the selectivity polynomials across the quantiles are statistically significant for women in both 2002 and 2012. This is indicative of the presence of the sample selection bias for the female sample. The positive and negative coefficients for the lambda and lambda-squared implies that the overall selection effect is positive but the effect rises at a decreasing rate for each quantile. Therefore, the unobservable factors (such as, intelligence and ambition) that increase the potential wage a woman receives are also associated with a higher probability of woman being in the waged work. To put it differently, for both 2002 and 2012, women who are in waged employment

[109] The results from Model 1 with the basic human capital variables and Model 2 with a further inclusion of workplace characteristics but without industrial categories are presented in Appendix Tables 5A.2a to 5A.5b. Moreover, Table 5A.6 presents the quantile regression results (with selection correction) from the separate model for 2012 which makes use of the additional variables available only in the 2012 data such as private sector employment and the region.
[110] In other words, in order to present the true value of the constant terms, additional quantile regressions are estimated based on a sub-sample of individuals whose probabilities of being a wage worker are close to 1. We have chosen a subsample of individuals who are younger than 35 years old and live in households where there are no young children.

are actually those who have greater productivity levels, thereby, a higher wage potential than the average. On the other hand, the coefficients of the selection terms are statistically insignificant for men (except the first quantile in 2002), implying that the covariance between the error terms in the wage and the selection equations are weak. Therefore, selection bias is not a problem for the male sample.

In line with these results, while there are no significant differences between the estimates from the corrected and uncorrected models for men, there are clear differences when correcting for selection for the female sample. Most notably, the coefficients of the constant terms in the quantile regressions for the female sample decrease substantially when one corrects for selection. Moreover, the returns to university or higher education are considerably higher in the corrected models when compared with the uncorrected quantile regressions for both years (except the 90th quantile in 2002). These results show that it is essential to adjust for selection. The main discussion from this point onwards will, therefore, focus on the quantile regressions estimates corrected for the potential selection bias.

Tables 5.4a and 5.5a show the quantile regression estimates corrected for selection for men and women for 2002 and 2012.[111] It is seen that job tenure has a statistically significant positive effect on wages for both genders across all the quantiles. However, the returns to an additional year of job tenure are greater for men than they are for women in 2002 while the reverse is true for 2012.

There are noteworthy differences in the returns to different educational categories between genders. Looking at the returns to education in 2002, it is seen that having more than primary level education has a strong positive effect on men's wages. The returns to

[111] Furthermore, the quantile regression results reveal that the effect of various covariates differ significantly along the entire wage distribution, suggesting that a mean regression analysis could mask several factors contributing to the wage differentials between genders.

education rise with the increase in the qualification achieved within each quantile for the male sample and the highest returns are observed for university or higher education. Moreover, returns to each educational category increase when one moves to the higher end of the conditional wage distribution. Unlike men, relative to the base category of “less than primary school”, having a primary or secondary school diploma does not contribute to the higher wages for women in 2002. The positive effect of educational achievements on women’s wages are only observed at high school education and higher which may be an indication that waged employment is closed to women without a high school diploma. As for men, the highest returns for women are seen for university or higher education. However, in contrast to men, there is a huge decline in returns to university or higher education at the highest end of the wage distribution for women. This result can be interpreted to the potential role of factors other than favourable educational qualifications (such as inherent ability or family ties or other forms of social capital) on wages amongst women with high earning potentials, as represented by their location in the wage distribution (see Mwabu and Shultz, 1996; Girma and Kedir, 2003 for a further discussion on the possible reasons for relatively low returns to education for individuals with high earning potentials). This pattern is not observed in 2012.

The returns to educational achievements below university is markedly lower in 2012, especially for men. The returns to having a university degree or higher continues to be strongly associated with higher wages; however, to a lesser extent when compared with 2002. This is probably because of the increased educational attainment and a significant rise in the number of university graduates. According to the TurkStat web database, between 1990 and 2013 the share of individuals with university education in the labour force increased from around 5 percent to 24 percent for women and 6 percent to 17 percent for men (the figures are calculated using the database available at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007). Therefore, it can be argued that increased supply of highly qualified labour has reduced the associated wage premiums.[112]

Work-place size is positively related to wage in both years; however, the returns are lower in 2012 for both men and women. The returns to working in relatively large work-places differ considerably across the quantiles for women, with notably lower returns for those located at the higher end of the wage distribution in both years. As discussed above, part-time employment is very rare amongst waged workers in Turkey. Looking at the coefficient for the part-time dummy, we observe an hourly wage advantage of part-time workers in each year. Moreover, the wage premium for part-time work is generally higher for men and the returns increase across the quantiles for each gender. Not surprisingly, being covered by social security (a proxy for being in formal employment) has a positive effect on wages in both years, especially for women in the lower quantiles.

Compared with elementary occupations, having a skilled occupation or being in an occupation that requires managerial duties are strongly associated with higher wages for both men and women in each year. For example, the highest returns are observed for "legislators, senior officials and managers" and "professionals". Moreover, the coefficients for these occupational categories increase at the upper quantiles; that is, the returns are greater for men and women with high earning potentials.[113] Overall, the returns to occupations are generally greater for men; indeed, for women, the coefficients for the occupational categories other than professionals, managers or clerks are generally insignificant. In addition to the occupational gender segregation indices calculated in

[112] The ruling party's (AKP) "university in each city" project (since 2003) also contributes to this. The project can be criticized on several grounds; for example, causing an increase in the number of university graduates having skills where there is already high supply which may not be met by demand in the labour market. Moreover, there are considerable differences in the quality of the new and old universities, for example, the lack of qualified staff in the new universities, as a result of rapid rise in the number of universities (Hatakenaka, 2006) which can result in further wage inequalities amongst university graduates in the labour markets.

[113] The returns to "legislators, senior officials and managers" and "professionals" for men and women at the 75th and the 90th quantiles are more or less the same in 2002 while the returns to these occupations are greater for the women compared to men in 2012 for the same quantiles.

Chapter 4 which have shown that women are more likely to be employed in lower-paid occupations, the results obtained in this chapter provide a further evidence on the disadvantaged position of women in the occupational hierarchy in terms of wages. Women not only are more likely to be employed in low-paying occupations but also are less well-paid within these occupations.

It is observed that working in industries other than manufacturing (base category) is generally associated with higher wages for men, while for women the coefficients are usually insignificant except for “transport, storage and communications”, “financial institutions and real estate and auxiliary activities” and “public, social and personnel services” industries. As with men, working in “transport, storage and communications”, “financial institutions and real estate and auxiliary activities” and “public, social and personnel services” are positively related to wages for women in each year. With the exception of “public, social and personnel services” in 2012, the returns to these industrial categories are greater for women than they are for men at the lower quantiles in each year. However, while the returns for the first two categories are higher in 2002, the returns to “public, social and personnel services” are greater in 2012 for both men and women.

Table 5.4a - Quantile Regression Results (with sample selection correction) for Women and Men, 2002

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.032***	0.027***	0.023***	0.026***	0.026***	0.038***	0.038***	0.036***	0.042***	0.042***
	(0.006)	(0.004)	(0.004)	(0.005)	(0.007)	(0.004)	(0.002)	(0.003)	(0.003)	(0.004)
Tenure squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001**	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.096	0.033	0.107	0.106	0.189*	0.231***	0.213***	0.199***	0.229***	0.260***
	(0.153)	(0.080)	(0.074)	(0.076)	(0.103)	(0.074)	(0.060)	(0.044)	(0.041)	(0.055)
Secondary school	0.093	0.169	0.116	0.233**	0.225	0.346***	0.353***	0.360***	0.397***	0.411***
	(0.164)	(0.104)	(0.087)	(0.092)	(0.139)	(0.077)	(0.064)	(0.047)	(0.046)	(0.059)
High school	0.310*	0.391***	0.405***	0.450***	0.548***	0.441***	0.480***	0.504***	0.641***	0.650***
	(0.170)	(0.114)	(0.096)	(0.111)	(0.159)	(0.083)	(0.066)	(0.051)	(0.048)	(0.075)
Vocational or technical high school	0.352**	0.416***	0.423***	0.434***	0.360**	0.484***	0.527***	0.554***	0.670***	0.686***
	(0.173)	(0.109)	(0.092)	(0.099)	(0.161)	(0.086)	(0.066)	(0.052)	(0.050)	(0.074)
University or higher	0.792***	0.884***	0.845***	0.854***	0.688***	0.761***	0.774***	0.739***	0.899***	0.932***
	(0.196)	(0.148)	(0.125)	(0.133)	(0.183)	(0.088)	(0.072)	(0.059)	(0.058)	(0.105)
Size of the workplace (ref: less than 10 employees)										
10-24	0.252***	0.267***	0.166***	0.067	0.008	0.272***	0.245***	0.231***	0.193***	0.193***
	(0.083)	(0.053)	(0.041)	(0.049)	(0.075)	(0.033)	(0.027)	(0.018)	(0.026)	(0.038)
25-49	0.375***	0.344***	0.235***	0.100**	0.056	0.318***	0.306***	0.286***	0.278***	0.293***
	(0.067)	(0.048)	(0.040)	(0.047)	(0.064)	(0.027)	(0.019)	(0.020)	(0.023)	(0.036)
50 or more	0.474***	0.435***	0.344***	0.271***	0.347***	0.458***	0.462***	0.481***	0.499***	0.501***
	(0.065)	(0.044)	(0.037)	(0.044)	(0.071)	(0.024)	(0.019)	(0.017)	(0.021)	(0.031)
Part-time	0.196***	0.273***	0.366***	0.413***	0.463***	0.273***	0.310***	0.325***	0.356***	0.416***
	(0.053)	(0.041)	(0.030)	(0.032)	(0.070)	(0.035)	(0.026)	(0.028)	(0.039)	(0.089)
Social security	0.626***	0.458***	0.300***	0.216***	0.116	0.334***	0.272***	0.270***	0.263***	0.278***
	(0.091)	(0.062)	(0.042)	(0.060)	(0.083)	(0.035)	(0.018)	(0.018)	(0.022)	(0.033)
Occupational Category (ref: elementary occupations)										
Legislators, senior officials and managers	0.451***	0.547***	0.735***	0.724***	0.699***	0.362***	0.557***	0.608***	0.630***	0.686***
	(0.096)	(0.083)	(0.100)	(0.087)	(0.228)	(0.091)	(0.046)	(0.038)	(0.041)	(0.071)
Professionals	0.526***	0.472***	0.509***	0.382***	0.508***	0.563***	0.569***	0.532***	0.442***	0.420***
	(0.086)	(0.065)	(0.077)	(0.079)	(0.125)	(0.046)	(0.036)	(0.035)	(0.028)	(0.055)
Technicians and	0.323***	0.265***	0.385***	0.295***	0.313***	0.343***	0.354***	0.310***	0.250***	0.340***

associate professionals	(0.091)	(0.064)	(0.077)	(0.074)	(0.117)	(0.035)	(0.030)	(0.027)	(0.027)	(0.047)
Clerks	0.197**	0.188***	0.243***	0.106	0.122	0.280***	0.294***	0.207***	0.105***	0.139***
	(0.080)	(0.064)	(0.068)	(0.070)	(0.112)	(0.036)	(0.029)	(0.025)	(0.028)	(0.049)
Service workers and shop and	0.238***	0.151***	0.103*	0.050	0.146	0.165***	0.176***	0.137***	0.118***	0.120***
market sales workers	(0.072)	(0.058)	(0.058)	(0.066)	(0.111)	(0.033)	(0.029)	(0.027)	(0.027)	(0.036)
Skilled agricultural and	-1.465***	-0.702	-0.700**	-1.201**	-0.427	0.152*	0.033	0.063	-0.004	0.371**
fishery workers	(0.521)	(0.517)	(0.352)	(0.537)	(0.356)	(0.090)	(0.063)	(0.109)	(0.129)	(0.186)
Craft and related trades workers	-0.319**	-0.209***	-0.070	-0.140*	-0.145	0.178***	0.213***	0.191***	0.160***	0.157***
	(0.152)	(0.078)	(0.071)	(0.081)	(0.113)	(0.032)	(0.027)	(0.023)	(0.026)	(0.034)
Plant and machine operators and	0.104	0.020	0.021	-0.035	-0.191	0.157***	0.177***	0.133***	0.094***	0.133***
assemblers	(0.124)	(0.083)	(0.080)	(0.082)	(0.118)	(0.036)	(0.024)	(0.025)	(0.027)	(0.037)
Economic activity (ref: manufacturing)										
Agricultural activities and mining	-0.407**	-0.327***	-0.229*	-0.183*	-0.240*	-0.136	0.049	0.150***	0.092**	0.088
and quarrying	(0.189)	(0.101)	(0.135)	(0.108)	(0.143)	(0.108)	(0.051)	(0.042)	(0.037)	(0.064)
Electricity, gas and water supply	0.461**	0.347*	0.393**	0.203*	-0.004	0.419***	0.560***	0.449***	0.407***	0.330***
	(0.192)	(0.209)	(0.176)	(0.107)	(0.173)	(0.090)	(0.050)	(0.050)	(0.066)	(0.081)
Construction	0.160	-0.065	0.123	0.251	0.077	-0.026	0.098***	0.131***	0.139***	0.076**
	(0.150)	(0.111)	(0.174)	(0.184)	(0.257)	(0.040)	(0.024)	(0.025)	(0.029)	(0.034)
Wholesale and retail trade and	-0.027	-0.046	0.010	-0.038	-0.103	-0.010	0.011	0.008	-0.027	-0.050
hotels and restaurants	(0.071)	(0.067)	(0.053)	(0.049)	(0.103)	(0.028)	(0.022)	(0.024)	(0.026)	(0.039)
Transport, storage and	0.251**	0.274**	0.432***	0.416***	0.356**	0.153***	0.299***	0.306***	0.245***	0.178***
communications	(0.104)	(0.130)	(0.068)	(0.108)	(0.147)	(0.041)	(0.023)	(0.023)	(0.022)	(0.039)
Financial institutions, real estate	0.353***	0.333***	0.345***	0.406***	0.466***	0.161***	0.195***	0.221***	0.266***	0.310***
and auxiliary activities	(0.079)	(0.072)	(0.056)	(0.068)	(0.114)	(0.046)	(0.029)	(0.035)	(0.057)	(0.083)
Public, social and personnel	0.280***	0.218***	0.162***	0.088**	-0.023	0.186***	0.194***	0.140***	0.060***	-0.029
services	(0.064)	(0.053)	(0.046)	(0.042)	(0.093)	(0.022)	(0.018)	(0.019)	(0.021)	(0.034)
Urban	-0.046	0.005	0.042	0.021	0.060	0.076	0.108***	0.113***	0.169***	0.193***
	(0.059)	(0.044)	(0.040)	(0.042)	(0.065)	(0.047)	(0.026)	(0.027)	(0.027)	(0.044)
λ	0.612***	0.466***	0.308**	0.342***	0.248	0.827**	0.493**	0.179	0.560**	0.039
	(0.210)	(0.135)	(0.129)	(0.113)	(0.225)	(0.333)	(0.207)	(0.188)	(0.225)	(0.385)
λ squared	-0.206***	-0.120**	-0.080*	-0.114***	-0.095	-0.577***	-0.239*	0.036	-0.033	0.329
	(0.078)	(0.048)	(0.046)	(0.042)	(0.084)	(0.202)	(0.130)	(0.109)	(0.134)	(0.215)
Constant	2.820***	3.262***	3.816***	4.372***	4.814***	3.095***	3.400***	3.821***	3.850***	4.301***
	(0.238)	(0.177)	(0.164)	(0.141)	(0.237)	(0.185)	(0.117)	(0.114)	(0.128)	(0.215)
Observations			2,836					11,171		

*Source: HLFS 2002. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5.4b - Quantile Regression Results (without sample selection correction) for Women and Men, 2002

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.029***	0.026***	0.022***	0.028***	0.026***	0.039***	0.037***	0.036***	0.041***	0.042***
	(0.007)	(0.004)	(0.004)	(0.005)	(0.009)	(0.004)	(0.002)	(0.003)	(0.003)	(0.004)
Tenure squared	-0.000**	-0.001***	-0.001***	-0.001***	-0.001**	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.058	0.065	0.113	0.120	0.198**	0.328***	0.217***	0.177***	0.196***	0.234***
	(0.191)	(0.085)	(0.072)	(0.082)	(0.078)	(0.077)	(0.053)	(0.040)	(0.041)	(0.052)
Secondary school	0.096	0.204**	0.116	0.249**	0.248**	0.454***	0.352***	0.324***	0.319***	0.334***
	(0.203)	(0.085)	(0.079)	(0.101)	(0.112)	(0.079)	(0.056)	(0.043)	(0.042)	(0.053)
High school	0.287	0.358***	0.365***	0.442***	0.577***	0.538***	0.446***	0.411***	0.453***	0.464***
	(0.185)	(0.100)	(0.092)	(0.124)	(0.124)	(0.076)	(0.057)	(0.046)	(0.047)	(0.060)
Vocational or technical high school	0.321	0.405***	0.382***	0.438***	0.406***	0.576***	0.477***	0.457***	0.467***	0.498***
	(0.196)	(0.094)	(0.098)	(0.112)	(0.130)	(0.079)	(0.057)	(0.047)	(0.044)	(0.057)
University or higher	0.584***	0.645***	0.642***	0.731***	0.673***	0.819***	0.688***	0.611***	0.633***	0.686***
	(0.199)	(0.095)	(0.094)	(0.119)	(0.137)	(0.082)	(0.057)	(0.047)	(0.048)	(0.060)
Size of the workplace (ref: less than 10 employees)										
10-24	0.224***	0.316***	0.180***	0.083*	0.019	0.259***	0.247***	0.232***	0.200***	0.215***
	(0.084)	(0.049)	(0.041)	(0.045)	(0.064)	(0.028)	(0.022)	(0.018)	(0.023)	(0.040)
25-49	0.387***	0.358***	0.240***	0.115***	0.079	0.313***	0.308***	0.292***	0.282***	0.329***
	(0.073)	(0.048)	(0.032)	(0.039)	(0.060)	(0.028)	(0.021)	(0.021)	(0.024)	(0.036)
50 or more	0.475***	0.446***	0.353***	0.280***	0.348***	0.449***	0.461***	0.487***	0.510***	0.528***
	(0.065)	(0.042)	(0.032)	(0.042)	(0.059)	(0.024)	(0.019)	(0.016)	(0.022)	(0.031)
Part-time	0.220***	0.275***	0.365***	0.426***	0.459***	0.284***	0.319***	0.322***	0.367***	0.435***
	(0.063)	(0.044)	(0.031)	(0.033)	(0.071)	(0.035)	(0.024)	(0.027)	(0.037)	(0.087)
Social security	0.641***	0.446***	0.282***	0.225***	0.111	0.357***	0.269***	0.262***	0.257***	0.258***
	(0.098)	(0.051)	(0.038)	(0.053)	(0.073)	(0.036)	(0.021)	(0.018)	(0.024)	(0.034)
Occupational Category (ref: elementary occupations)										
Legislators, senior officials and managers	0.487***	0.477***	0.749***	0.733***	0.721***	0.349***	0.561***	0.619***	0.637***	0.712***
	(0.097)	(0.086)	(0.097)	(0.094)	(0.210)	(0.099)	(0.042)	(0.035)	(0.048)	(0.068)
Professionals	0.535***	0.464***	0.538***	0.412***	0.512***	0.566***	0.566***	0.543***	0.433***	0.418***
	(0.080)	(0.064)	(0.079)	(0.083)	(0.115)	(0.049)	(0.032)	(0.032)	(0.037)	(0.049)
Technicians and associate	0.322***	0.259***	0.396***	0.312***	0.326***	0.345***	0.348***	0.319***	0.238***	0.335***

professionals	(0.079)	(0.060)	(0.070)	(0.079)	(0.101)	(0.039)	(0.025)	(0.023)	(0.034)	(0.061)
Clerks	0.183**	0.182***	0.251***	0.122	0.126	0.275***	0.289***	0.212***	0.105***	0.131***
	(0.074)	(0.058)	(0.064)	(0.076)	(0.102)	(0.037)	(0.028)	(0.024)	(0.035)	(0.050)
Service workers and shop and	0.257***	0.132**	0.119**	0.063	0.151	0.162***	0.165***	0.137***	0.114***	0.118***
market sales workers	(0.076)	(0.066)	(0.058)	(0.060)	(0.096)	(0.034)	(0.023)	(0.023)	(0.033)	(0.036)
Skilled agricultural and fishery	-1.507***	-0.668	-0.693**	-1.259**	-0.380	0.127	0.049	0.110	-0.001	0.379*
workers	(0.484)	(0.488)	(0.350)	(0.534)	(0.359)	(0.080)	(0.063)	(0.103)	(0.102)	(0.197)
Craft and related trades workers	-0.339**	-0.191**	-0.069	-0.135*	-0.128	0.183***	0.211***	0.194***	0.151***	0.149***
	(0.159)	(0.074)	(0.063)	(0.075)	(0.104)	(0.035)	(0.023)	(0.024)	(0.031)	(0.036)
Plant and machine operators and	0.102	0.021	0.008	-0.015	-0.188	0.159***	0.172***	0.137***	0.091***	0.132***
assemblers	(0.127)	(0.075)	(0.077)	(0.094)	(0.125)	(0.033)	(0.023)	(0.019)	(0.029)	(0.033)
Economic activity (ref: manufacturing)										
Agricultural activities and	-0.432**	-0.295***	-0.255**	-0.207**	-0.275**	-0.149	0.039	0.160***	0.111***	0.121**
mining and quarrying	(0.184)	(0.092)	(0.105)	(0.098)	(0.131)	(0.107)	(0.053)	(0.040)	(0.033)	(0.051)
Electricity, gas and water supply	0.457**	0.431*	0.457***	0.203	-0.035	0.422***	0.578***	0.459***	0.418***	0.336***
	(0.193)	(0.237)	(0.177)	(0.123)	(0.175)	(0.102)	(0.056)	(0.055)	(0.054)	(0.074)
Construction	0.087	-0.069	0.098	0.262	0.029	-0.031	0.093***	0.139***	0.152***	0.110***
	(0.156)	(0.119)	(0.161)	(0.160)	(0.239)	(0.041)	(0.029)	(0.022)	(0.029)	(0.031)
Wholesale and retail trade and	-0.036	-0.024	0.004	-0.038	-0.091	-0.006	0.014	0.011	-0.015	-0.034
hotels and restaurants	(0.073)	(0.077)	(0.056)	(0.054)	(0.101)	(0.024)	(0.021)	(0.023)	(0.023)	(0.032)
Transport, storage and	0.279***	0.312**	0.469***	0.414***	0.380***	0.157***	0.303***	0.320***	0.264***	0.188***
communications	(0.091)	(0.131)	(0.062)	(0.094)	(0.147)	(0.040)	(0.029)	(0.025)	(0.027)	(0.040)
Financial institutions, real estate	0.346***	0.364***	0.343***	0.410***	0.486***	0.144***	0.197***	0.231***	0.276***	0.330***
and auxiliary activities	(0.072)	(0.082)	(0.063)	(0.087)	(0.125)	(0.049)	(0.036)	(0.035)	(0.049)	(0.087)
Public, social and personnel	0.284***	0.259***	0.169***	0.084*	-0.017	0.183***	0.197***	0.146***	0.065***	-0.015
services	(0.056)	(0.063)	(0.054)	(0.047)	(0.090)	(0.030)	(0.021)	(0.018)	(0.021)	(0.031)
Urban	-0.041	0.012	0.026	0.015	0.056	0.103***	0.083***	0.038**	0.033*	0.019
	(0.058)	(0.039)	(0.032)	(0.034)	(0.056)	(0.030)	(0.020)	(0.017)	(0.018)	(0.026)
Constant	3.254***	3.649***	4.126***	4.570***	4.914***	3.231***	3.664***	4.073***	4.439***	4.723***
	(0.207)	(0.106)	(0.094)	(0.096)	(0.133)	(0.078)	(0.054)	(0.043)	(0.051)	(0.064)
Observations			2,836					11,171		

*Source: HLFS 2002. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5.5a - Quantile Regression Results (with sample selection correction) for Women and Men, 2012

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.043***	0.034***	0.026***	0.031***	0.038***	0.015***	0.016***	0.019***	0.023***	0.024***
	(0.005)	(0.003)	(0.004)	(0.004)	(0.005)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)
Tenure squared	-0.001***	-0.001***	-0.000***	-0.001***	-0.001***	0.000	0.000	-0.000*	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.010	0.087**	0.061	0.028	-0.004	0.063	-0.001	0.021	0.023	0.057
	(0.071)	(0.040)	(0.037)	(0.049)	(0.044)	(0.041)	(0.025)	(0.023)	(0.021)	(0.047)
Secondary school	-0.004	0.137***	0.127***	0.113**	0.092	0.079*	0.050*	0.060**	0.064***	0.125***
	(0.075)	(0.046)	(0.044)	(0.056)	(0.057)	(0.043)	(0.027)	(0.026)	(0.022)	(0.047)
High school	0.104	0.235***	0.255***	0.260***	0.301***	0.071	0.069**	0.131***	0.161***	0.233***
	(0.077)	(0.048)	(0.045)	(0.067)	(0.068)	(0.049)	(0.028)	(0.027)	(0.023)	(0.050)
Vocational or technical high	0.089	0.196***	0.214***	0.248***	0.305***	0.131***	0.095***	0.145***	0.182***	0.241***
school	(0.080)	(0.050)	(0.045)	(0.061)	(0.061)	(0.045)	(0.027)	(0.028)	(0.024)	(0.050)
University or higher	0.591***	0.631***	0.682***	0.668***	0.687***	0.271***	0.303***	0.388***	0.477***	0.604***
	(0.090)	(0.057)	(0.062)	(0.082)	(0.089)	(0.057)	(0.040)	(0.035)	(0.033)	(0.063)
Size of the workplace (ref: less than 10 employees)										
10-24	0.212***	0.150***	0.101***	0.079***	0.052*	0.097***	0.088***	0.077***	0.096***	0.109***
	(0.041)	(0.028)	(0.030)	(0.028)	(0.031)	(0.022)	(0.015)	(0.016)	(0.017)	(0.022)
25-49	0.208***	0.164***	0.109***	0.056**	0.040	0.190***	0.166***	0.147***	0.154***	0.149***
	(0.039)	(0.027)	(0.023)	(0.025)	(0.030)	(0.016)	(0.013)	(0.012)	(0.014)	(0.019)
50 or more	0.264***	0.219***	0.157***	0.089***	0.088***	0.272***	0.227***	0.203***	0.217***	0.222***
	(0.037)	(0.027)	(0.021)	(0.023)	(0.030)	(0.016)	(0.012)	(0.012)	(0.013)	(0.019)
Part-time	0.245***	0.297***	0.321***	0.388***	0.473***	0.360***	0.320***	0.347***	0.497***	0.560***
	(0.082)	(0.038)	(0.035)	(0.043)	(0.058)	(0.072)	(0.034)	(0.039)	(0.054)	(0.078)
Social security	0.442***	0.362***	0.282***	0.174***	0.116***	0.273***	0.198***	0.142***	0.125***	0.106***
	(0.057)	(0.033)	(0.025)	(0.025)	(0.037)	(0.035)	(0.016)	(0.016)	(0.016)	(0.023)
Occupational Category (ref: elementary occupations)										
Legislators, senior officials and	0.473***	0.550***	0.648***	0.873***	0.904***	0.282***	0.442***	0.545***	0.700***	0.836***
managers	(0.060)	(0.057)	(0.045)	(0.072)	(0.060)	(0.048)	(0.040)	(0.035)	(0.037)	(0.056)
Professionals	0.326***	0.462***	0.476***	0.522***	0.584***	0.435***	0.449***	0.463***	0.477***	0.504***
	(0.048)	(0.041)	(0.036)	(0.044)	(0.047)	(0.036)	(0.025)	(0.022)	(0.022)	(0.033)
Technicians and associate	0.168***	0.185***	0.245***	0.343***	0.402***	0.155***	0.209***	0.273***	0.358***	0.387***

professionals	(0.047)	(0.038)	(0.031)	(0.045)	(0.045)	(0.031)	(0.021)	(0.021)	(0.020)	(0.031)
Clerks	0.095**	0.053*	0.124***	0.182***	0.216***	0.142***	0.161***	0.222***	0.250***	0.247***
	(0.040)	(0.031)	(0.026)	(0.036)	(0.033)	(0.023)	(0.021)	(0.020)	(0.020)	(0.026)
Service workers and shop and	0.044	0.004	-0.062**	-0.041	0.019	0.034	0.064***	0.098***	0.176***	0.146***
market sales workers	(0.041)	(0.032)	(0.025)	(0.029)	(0.033)	(0.023)	(0.016)	(0.017)	(0.018)	(0.022)
Skilled agricultural and fishery	0.010	0.002	-0.013	-0.026	0.053	-0.217**	-0.009	-0.013	-0.007	0.008
workers	(0.493)	(0.150)	(0.098)	(0.099)	(0.139)	(0.100)	(0.088)	(0.050)	(0.045)	(0.084)
Craft and related trades	-0.867***	-0.328***	-0.060	-0.047	-0.016	0.122***	0.100***	0.128***	0.188***	0.153***
workers	(0.187)	(0.101)	(0.051)	(0.037)	(0.056)	(0.023)	(0.014)	(0.015)	(0.014)	(0.022)
Plant and machine operators	0.146**	0.054*	0.022	0.014	-0.020	0.089***	0.090***	0.089***	0.134***	0.144***
and assemblers	(0.070)	(0.029)	(0.025)	(0.029)	(0.039)	(0.021)	(0.014)	(0.014)	(0.017)	(0.024)
Economic activity (ref: manufacturing)										
Agricultural activities and	-0.105	-0.075	-0.089	0.018	0.044	0.029	0.026	0.129***	0.214***	0.246***
mining and quarrying	(0.185)	(0.064)	(0.057)	(0.046)	(0.071)	(0.041)	(0.034)	(0.040)	(0.033)	(0.055)
Electricity, gas and water	0.082	0.284**	0.319***	0.211	0.469	0.197***	0.267***	0.271***	0.292***	0.209***
supply	(0.208)	(0.141)	(0.103)	(0.165)	(0.333)	(0.033)	(0.043)	(0.040)	(0.031)	(0.063)
Construction	-0.008	0.083	0.114*	0.070	0.040	0.105***	0.143***	0.202***	0.261***	0.302***
	(0.139)	(0.088)	(0.067)	(0.061)	(0.081)	(0.027)	(0.015)	(0.018)	(0.018)	(0.022)
Wholesale and retail trade and	0.040	-0.038	0.008	-0.009	0.008	-0.038	-0.056***	-0.050***	-0.034**	-0.029
hotels and restaurants	(0.038)	(0.035)	(0.024)	(0.027)	(0.039)	(0.023)	(0.016)	(0.013)	(0.017)	(0.024)
Transport, storage and	0.189***	0.134***	0.132**	0.195***	0.179**	0.033	0.071***	0.149***	0.214***	0.212***
communications	(0.071)	(0.048)	(0.052)	(0.044)	(0.076)	(0.027)	(0.020)	(0.020)	(0.022)	(0.030)
Financial institutions, real	0.190***	0.131***	0.136***	0.125***	0.153***	0.078***	0.075***	0.064***	0.074***	0.056**
estate and auxiliary activities	(0.045)	(0.030)	(0.025)	(0.032)	(0.033)	(0.023)	(0.015)	(0.014)	(0.017)	(0.026)
Public, social and personnel	0.275***	0.231***	0.238***	0.213***	0.179***	0.356***	0.409***	0.404***	0.367***	0.305***
services	(0.036)	(0.026)	(0.024)	(0.024)	(0.038)	(0.027)	(0.020)	(0.018)	(0.018)	(0.023)
Urban	0.028	0.026	0.029	0.045	0.060*	-0.813***	-0.255*	-0.095	0.218	0.551***
	(0.048)	(0.025)	(0.029)	(0.028)	(0.036)	(0.182)	(0.137)	(0.119)	(0.138)	(0.183)
λ	0.724***	0.517***	0.376***	0.320***	0.275**	-1.092	-0.783	0.221	0.528	0.973
	(0.150)	(0.086)	(0.098)	(0.086)	(0.108)	(0.832)	(0.548)	(0.442)	(0.531)	(0.691)
λ squared	-0.230***	-0.168***	-0.102***	-0.089***	-0.073**	-0.476	0.081	-0.364	-0.133	0.065
	(0.059)	(0.033)	(0.034)	(0.025)	(0.036)	(0.456)	(0.334)	(0.258)	(0.324)	(0.389)
Constant	3.477***	3.934***	4.317***	4.679***	4.894***	5.855***	5.311***	4.964***	4.598***	4.178***
	(0.158)	(0.093)	(0.094)	(0.117)	(0.122)	(0.474)	(0.318)	(0.273)	(0.310)	(0.422)
Observations			4,754					13,885		

*Source: HLFS 2012. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5.5b - Quantile Regression Results (without sample selection correction) for Women and Men, 2012

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.043***	0.033***	0.028***	0.031***	0.037***	0.017***	0.018***	0.020***	0.022***	0.022***
	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Tenure squared	-0.001***	-0.001***	-0.000***	-0.001***	-0.001***	0.000	-0.000	-0.000*	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.047	0.107***	0.057*	0.049	0.001	0.063	0.002	0.018	0.019	0.063
	(0.061)	(0.034)	(0.029)	(0.040)	(0.040)	(0.043)	(0.029)	(0.031)	(0.027)	(0.046)
Secondary school	0.022	0.157***	0.105***	0.135***	0.099**	0.103**	0.062**	0.057*	0.055*	0.112**
	(0.060)	(0.042)	(0.035)	(0.044)	(0.048)	(0.048)	(0.030)	(0.032)	(0.029)	(0.046)
High school	0.116*	0.229***	0.215***	0.259***	0.279***	0.128***	0.098***	0.136***	0.143***	0.195***
	(0.070)	(0.042)	(0.034)	(0.053)	(0.050)	(0.046)	(0.029)	(0.031)	(0.028)	(0.046)
Vocational or technical high school	0.094	0.189***	0.191***	0.242***	0.286***	0.193***	0.122***	0.148***	0.166***	0.201***
	(0.074)	(0.043)	(0.032)	(0.048)	(0.054)	(0.047)	(0.029)	(0.033)	(0.026)	(0.048)
University or higher	0.380***	0.477***	0.509***	0.552***	0.575***	0.405***	0.367***	0.398***	0.444***	0.514***
	(0.066)	(0.046)	(0.042)	(0.060)	(0.053)	(0.048)	(0.029)	(0.033)	(0.026)	(0.047)
Size of the workplace (ref: less than 10 employees)										
10-24	0.206***	0.163***	0.109***	0.066**	0.052*	0.099***	0.090***	0.077***	0.093***	0.112***
	(0.039)	(0.029)	(0.029)	(0.028)	(0.030)	(0.023)	(0.014)	(0.015)	(0.017)	(0.022)
25-49	0.206***	0.169***	0.103***	0.053**	0.032	0.186***	0.170***	0.148***	0.151***	0.151***
	(0.036)	(0.023)	(0.024)	(0.024)	(0.028)	(0.017)	(0.014)	(0.014)	(0.014)	(0.019)
50 or more	0.286***	0.225***	0.159***	0.082***	0.084***	0.272***	0.223***	0.202***	0.213***	0.227***
	(0.036)	(0.024)	(0.024)	(0.025)	(0.030)	(0.016)	(0.013)	(0.013)	(0.015)	(0.020)
Part-time	0.216***	0.288***	0.328***	0.380***	0.438***	0.323***	0.321***	0.342***	0.493***	0.567***
	(0.071)	(0.031)	(0.034)	(0.040)	(0.060)	(0.078)	(0.037)	(0.043)	(0.053)	(0.078)
Social security	0.451***	0.362***	0.272***	0.175***	0.118***	0.280***	0.205***	0.145***	0.127***	0.112***
	(0.057)	(0.031)	(0.023)	(0.027)	(0.032)	(0.032)	(0.015)	(0.015)	(0.017)	(0.024)
Occupational Category (ref: elementary occupations)										
Legislators, senior officials and managers	0.479***	0.558***	0.638***	0.830***	0.879***	0.252***	0.440***	0.548***	0.706***	0.834***
	(0.063)	(0.068)	(0.044)	(0.060)	(0.067)	(0.061)	(0.039)	(0.029)	(0.031)	(0.051)
Professionals	0.309***	0.482***	0.482***	0.521***	0.558***	0.437***	0.449***	0.469***	0.473***	0.511***
	(0.049)	(0.041)	(0.034)	(0.050)	(0.046)	(0.037)	(0.027)	(0.022)	(0.021)	(0.033)
Technicians and associate	0.161***	0.182***	0.243***	0.347***	0.381***	0.159***	0.206***	0.277***	0.357***	0.396***

professionals	(0.048)	(0.037)	(0.034)	(0.044)	(0.048)	(0.034)	(0.020)	(0.021)	(0.021)	(0.036)
Clerks	0.064	0.059*	0.105***	0.159***	0.186***	0.140***	0.157***	0.224***	0.251***	0.250***
	(0.042)	(0.034)	(0.032)	(0.042)	(0.036)	(0.024)	(0.023)	(0.018)	(0.019)	(0.024)
Service workers and shop and	0.041	-0.018	-0.064***	-0.053**	0.005	0.038	0.060***	0.098***	0.176***	0.144***
market sales workers	(0.036)	(0.027)	(0.021)	(0.025)	(0.034)	(0.026)	(0.017)	(0.016)	(0.019)	(0.022)
Skilled agricultural and fishery	-0.040	0.035	0.007	-0.021	0.010	-0.253***	-0.034	-0.012	-0.011	0.002
workers	(0.434)	(0.138)	(0.108)	(0.107)	(0.110)	(0.091)	(0.087)	(0.056)	(0.068)	(0.082)
Craft and related trades workers	-0.811***	-0.334***	-0.068	-0.041	-0.011	0.126***	0.100***	0.131***	0.187***	0.154***
	(0.175)	(0.099)	(0.058)	(0.036)	(0.053)	(0.022)	(0.017)	(0.017)	(0.017)	(0.022)
Plant and machine operators and	0.138**	0.037	0.020	0.011	-0.022	0.090***	0.087***	0.091***	0.135***	0.148***
assemblers	(0.070)	(0.033)	(0.022)	(0.028)	(0.043)	(0.023)	(0.015)	(0.014)	(0.018)	(0.019)
Economic activity (ref: manufacturing)										
Agricultural activities and	-0.148	-0.114*	-0.078	0.023	0.033	0.009	0.028	0.125***	0.218***	0.252***
mining and quarrying	(0.160)	(0.064)	(0.060)	(0.053)	(0.072)	(0.038)	(0.034)	(0.040)	(0.035)	(0.048)
Electricity, gas and water supply	0.062	0.224	0.283***	0.200	0.441	0.201***	0.250***	0.272***	0.289***	0.225***
	(0.181)	(0.152)	(0.106)	(0.133)	(0.330)	(0.036)	(0.042)	(0.038)	(0.034)	(0.060)
Construction	0.044	0.070	0.122*	0.092	0.054	0.093***	0.137***	0.203***	0.263***	0.305***
	(0.123)	(0.085)	(0.070)	(0.066)	(0.052)	(0.030)	(0.015)	(0.017)	(0.020)	(0.025)
Wholesale and retail trade and	0.023	-0.048	0.011	-0.003	0.015	-0.039**	-0.060***	-0.050***	-0.032*	-0.033
hotels and restaurants	(0.045)	(0.031)	(0.023)	(0.030)	(0.036)	(0.020)	(0.016)	(0.015)	(0.018)	(0.024)
Transport, storage and	0.142**	0.109***	0.110**	0.205***	0.214**	0.013	0.068***	0.149***	0.218***	0.220***
communications	(0.071)	(0.041)	(0.047)	(0.055)	(0.084)	(0.031)	(0.022)	(0.020)	(0.024)	(0.034)
Financial institutions, real estate	0.153***	0.112***	0.142***	0.143***	0.157***	0.075***	0.067***	0.065***	0.074***	0.067**
and auxiliary activities	(0.046)	(0.033)	(0.023)	(0.032)	(0.034)	(0.020)	(0.017)	(0.014)	(0.022)	(0.030)
Public, social and personnel	0.287***	0.227***	0.243***	0.221***	0.202***	0.350***	0.399***	0.405***	0.371***	0.311***
services	(0.038)	(0.027)	(0.024)	(0.027)	(0.038)	(0.023)	(0.015)	(0.014)	(0.014)	(0.021)
Urban	-0.008	0.013	0.025	0.034	0.058*	0.084***	0.072***	0.069***	0.059***	0.019
	(0.049)	(0.023)	(0.032)	(0.025)	(0.034)	(0.017)	(0.013)	(0.012)	(0.013)	(0.015)
Constant	4.019***	4.321***	4.659***	4.949***	5.141***	4.230***	4.580***	4.810***	5.002***	5.241***
	(0.081)	(0.048)	(0.042)	(0.051)	(0.056)	(0.046)	(0.034)	(0.032)	(0.031)	(0.052)
Observations			4,754					13,885		

*Source: HLFS 2012. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

5.4.3 Decomposition of the Gender Wage Gap

For the decomposition analyses, a counterfactual wage distribution is estimated that shows the female wage distribution, with their own characteristics, but rewarded as men for these characteristics. Using this information, the gender wage gap (the difference between female and male wages) is decomposed into a component due to differences in the characteristics between men and women (characteristics effect) and a component due to differing returns to these characteristics (coefficients effect). These two components are also referred to as counterfactual gaps in the literature (see, for example, Albrecht et al., 2003; De la Rica et al., 2008). It follows that, when selection is taken into account, the "coefficients effect" measures the gap between women's selection adjusted wage distribution and the counterfactual distribution, showing what they would earn if they had their own characteristics but have men's selection adjusted returns. By the same logic, the "characteristics effect" shows the difference between this selection adjusted counterfactual distribution and men's selection adjusted wage distribution.[114] For example, a positive coefficient effect indicates that women receive greater returns than men for the same labour market characteristics, whilst a positive characteristics effect implies that women have better labour market characteristics than men.

Figures 5.1 to 5.3 at the end of this section show the decomposition results with and without selection correction for 2002 and 2012. In order to provide the most detailed analysis, the results presented here are the decompositions based on all the three different empirical specifications discussed earlier.[115] Looking at the total wage differential between women and men, it is seen that women earn less than men until almost the 40th quantile in

[114] The coefficients and the characteristics effects are based on unadjusted wage distributions when selection is not taken into account.
[115] For comparison purposes, the Oaxaca and Blinder decomposition along with the decomposition results for the several quantiles (with and without selection) for 2002 and 2012 are represented in the Appendix Table 5A.7a and Table 5A.7b.

2002. However, after this point women start earning more than men and the gap reaches almost 0.20 log wage points at around the 70th quantile. The wages of men and women converge at the highest end of the wage distribution. A similar picture is observed for 2012 in terms of the total wage differentials. Women earn less than men at the lower end of the distribution; however the gap observed below the 10th quantile is somewhat smaller when compared to 2002. A wage advantage for women is observed just after the 40th quantile. Women continue to earn more than men in increasing amounts (reaching 0.20 log wage points difference) until almost the 80th quantile and, yet again, convergence is observed in the wages of men and women at the highest end of the distribution.

Figure 5.1 presents the decomposition results from Model 1 based on the basic human capital variables for 2002 and 2012. In 2002, the characteristics effect is always positive when selection is not taken into account. Moreover, the positive effect increases when one moves higher up the wage distribution. Therefore, the reason for women's wage advantage is that they have better labour market characteristics (in this case, their better educational qualifications and tenure) than men; especially amongst those with high-earnings potential. On the contrary, the coefficients effect is always negative and more pronounced at the lowest and highest end of the wage distribution. That is to say, women consistently get lower returns than men for the same labour market characteristics along the entire wage distribution. Therefore, although women appear to earn more than men above the 40th quantile, this does not mean that women have an advantaged position over men as they are not as well rewarded as men for their productive characteristics.

When selection bias is taken into account, the overall picture changes considerably, particularly at the lowest end of the wage distribution. There is now a turning point at the 25th quantile where the coefficients and the characteristics effects change signs. Below the 25th quantile, a negative characteristics effect and a positive coefficients effect are observed. Therefore, the results corrected for selection suggest that women at the low end of the wage distribution earn less than men due to their lower educational qualifications and/or lower job tenure. More importantly, there is actually positive discrimination in favour of women here; women receive greater returns than men when controlling for the differences in education and job tenure. However, beyond the turning point, the coefficients effect is again negative whilst the characteristics effect is positive (similar to the results obtained without the selection correction). That is, women are better educated and have longer job tenure than men; nevertheless, they are less well rewarded for their characteristics when compared to their male counterparts. Moreover, the extent of the negative coefficient effect is actually larger than that observed in the uncorrected decomposition results. Therefore, apart from the women with low earnings potentials, the extent to which women are treated unequally in the labour market is greater when the results are corrected for selection into employment in 2002.

Looking at the decomposition of the gender wage gap in 2012, as with 2002, the results with and without selection are very different from each other at the lowest end of the wage distribution. There is again a turning point in terms of the characteristics and the coefficients effects when the results are corrected for selection. The turning point in 2012 is at the 30th quantile which is only slightly higher than we observed in 2002. Below the turning point, women earn less than men because of their lower educational levels and shorter job tenure. However, their wages would actually be greater than for men when the differences in their human capital characteristics were controlled for (a positive coefficients effect). Slightly after the turning point, women start earning more than men and the directions of the characteristics and the coefficients effects reverse. In other words, as in 2002, women have better education/tenure but are less well-rewarded for these characteristics compared to men. However, the extent of the negative coefficient effect is somewhat smaller in 2012. Therefore, according to Model 1, in addition to a very similar gender wage gap structure in 2002 and 2012, the decomposition of the gap does not change much across the years either.

Figure 5.2 shows the decomposition results based on Model 2 which includes work-related controls such as firm size, social security coverage, part-time employment and occupation in addition to the basic human capital variables. Similar to Model 1, the selection adjusted results indicate a turning point, implying the changing effects of the characteristics and the coefficients on the decomposition of the wage gap. However, the turning point moves slightly to the left in 2002 and slightly to the right in 2012 in Model 2, compared to those observed in Model 1 in these years. Thereby, when several work-place characteristics are controlled for, the advantaged position of women at the low end of the wage distribution in terms of returns to their labour market characteristics holds for a smaller proportion of women in 2002. On the contrary, it holds for a larger proportion of women in 2012. The negative coefficients effects after the turning points seem to be slightly greater in Model 2 for both years compared to Model 1.

In order to extend the analysis, the final model further controls for the industrial structure of the labour market in Turkey (see Figure 5.3). Considering the results corrected for selection, it is seen that the turning point moves even more to the left in 2002 whilst it moves more to the right in 2012, compared to Model 2. Therefore, there is now a considerable difference between the two years in terms of the locations of the turning points.

In 2002, the positive coefficient effect is observed only for a very small share of women who are located below the 10th quantile. Therefore, along with their lower educational attainment and tenure compared to men, women at the very low end of the wage distribution work in less favourable workplaces that are associated with low earnings. However, when controlling for the differences in such characteristics, women receive higher returns than men. Aside from women at the very lowest end of the distribution, women earn less than men, although they have better characteristics, until the 37th quantile due to the negative coefficients effect. Even though women have a wage advantage over men after the 37th quantile, they are still less well-rewarded than men with the same labour market characteristics. Furthermore, there is an even larger negative coefficient effect when industry is included in the analysis. Both the coefficients and the characteristics effect increase (in absolute terms) at the very highest end of the wage distribution. In terms of the characteristics effect, this suggests that, in addition to women being better educated than men, they are employed in better workplaces such as in occupations or industries associated with high wage potentials. However, the greater negative coefficient effect at the highest end of the distribution indicates the increase in the extent to which women are not as well paid as their male counterparts.

As a result of the notable rightward shift in 2012 compared to the previous models discussed, the turning point is now almost at the 43rd quantile where women actually start earning more than men. Therefore, the decomposition results from Model 3 suggest that, women earn less than men until the 43rd quantile and, unlike the results obtained from Model 3 in 2002 for quantiles after the 10th, women continue to have less favourable labour market characteristics almost until the point they start to earn more than men. When the differences in such characteristics are controlled for, women actually benefit from positive discrimination at the low end of the wage distribution in the sense that they receive better returns for their labour market characteristics than their male counterparts. More importantly, the extent of positive discrimination for the women with low earnings potential is significantly greater in Model 3 compared to any other model discussed. As with the other models for the same years, positive and negative characteristics and coefficients effects are observed after the turning point. At the very upper end of the wage distribution, the size of both effects increases and to a greater extent compared to 2002. Thus, women's wage advantage at the highest end of the wage distribution disappears in both years, even though women are significantly better educated and are being employed in high-wage potential workplaces, compared to men at the same end of the wage distribution.[116]

Overall, the results from the three models discussed above indicate that when work-place characteristics, especially industrial composition, are controlled for, the decomposition of the gender wage gap changes substantially at the low end of the wage distribution from 2002 to 2012. It is difficult to be fully confident in providing an explanation to this due to potential endogeneity associated with including work-place characteristics and the role of unobserved productivity (Arulampalam et al., 2007). However, it may still be important to investigate the changes in the industrial composition in Turkey from 2002 to 2012. Although this is not the focus of this thesis, one explanation for this result may be the changes in the distribution of female employment in tradable and non-tradable sectors.

Contrary to the mainstream approach which associates trade openness with a reduction in the discrimination against women[117], many have argued that women's unfavourable situation can be more pronounced in labour-intensive tradable sectors because low-cost female labour (accelerated by their restricted bargaining power in the household and in the labour market) is a source of competitive advantage for producers in these sectors

[116] A further decomposition analysis is performed for 2012 in order to investigate the effect of additional variables (managerial responsibilities, public/private sector of employment and region). The results are shown to be very similar to the decomposition results based on Model 3 (see Figure 5A.1 in the Appendix).
[117] Building upon Gary Becker's (1971) economics of discrimination theory, it has been argued that trade openness, by increasing competition, reduces discrimination against women as discrimination is costly and creates competitive disadvantage for the domestic firms over foreign firms (Bhagwati, 2004; Black and Brainerd, 2004).

(Seguino, 2000; Berik, 2000; Elson et al., 2007). It has been noted that increased competitiveness in the industries as a result of trade openness is accompanied by a greater discrimination against women in terms of lower returns to their labour market characteristics (see for example, Berik et al. (2004) for Taiwan and Korea and Menon and Rodgers (2009) for the Indian manufacturing industry). When investigating gender wage differentials in tradable and non-tradable sectors in Turkey, Aydiner-Avsar (2010) points to a considerably greater negative coefficients effect in the gender wage gap in tradable sectors.[118] That is, returns to women's labour market characteristics are substantially lower in tradable sectors when compared to non-tradable sectors in Turkey. Yet, the author finds a wage advantage for women in non-tradable sectors, although the returns to women's productive characteristics are still lower than that of men's.

Referring back to the descriptive statistics presented earlier in the chapter (see Table 5.2), it is observed that the share of manufacturing, agricultural activities and mining and quarrying amongst waged work (all classified as tradable sectors) decreases from 2002 to 2012, and the decline is more pronounced for women than it is for men. On the other hand, there is an increase in the proportion of women in non-tradable sectors; especially in "financial institutions, real estate and auxiliary activities" and the QR results show that the returns in the lower quantiles are higher for women than they are for men.[119]

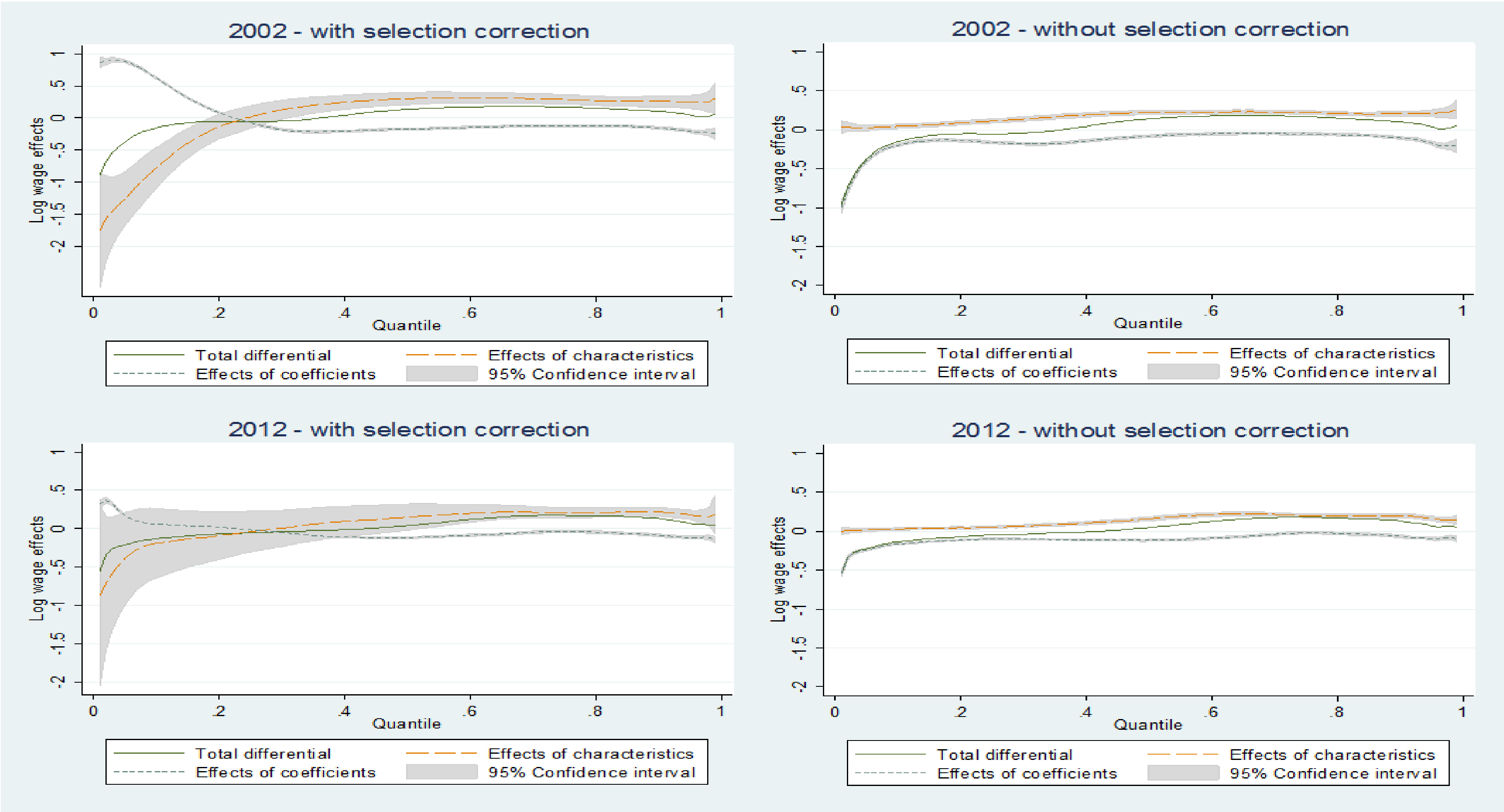
It can, therefore, be asserted that women's decreased concentration in labour-intensive tradable sectors that are associated with increased discrimination and their increased representation in industries that are associated with greater wage premiums for them,

[118] Following the conventional grouping, Aydiner–Avsar classifies agriculture, mining and manufacturing are as the tradable sectors and the rest is classified as non-tradable sectors.
[119] For a further investigation, Table 5A.8a and 5A.8b in the Appendix provide industrial distribution across the selected quantiles of the wage distribution in 2002 and 2012 respectively. Indeed, the descriptive results show that this trend (especially the decrease in the share of manufacturing, agricultural activities and mining and quarrying) is particularly pronounced at the low end of the wage distribution where the decomposition results change considerably from 2002 and 2012.

compared to their male counterparts, might be the reason behind the changes observed at the lower end of the wage distribution over the decade when industries are included in the model.[120]

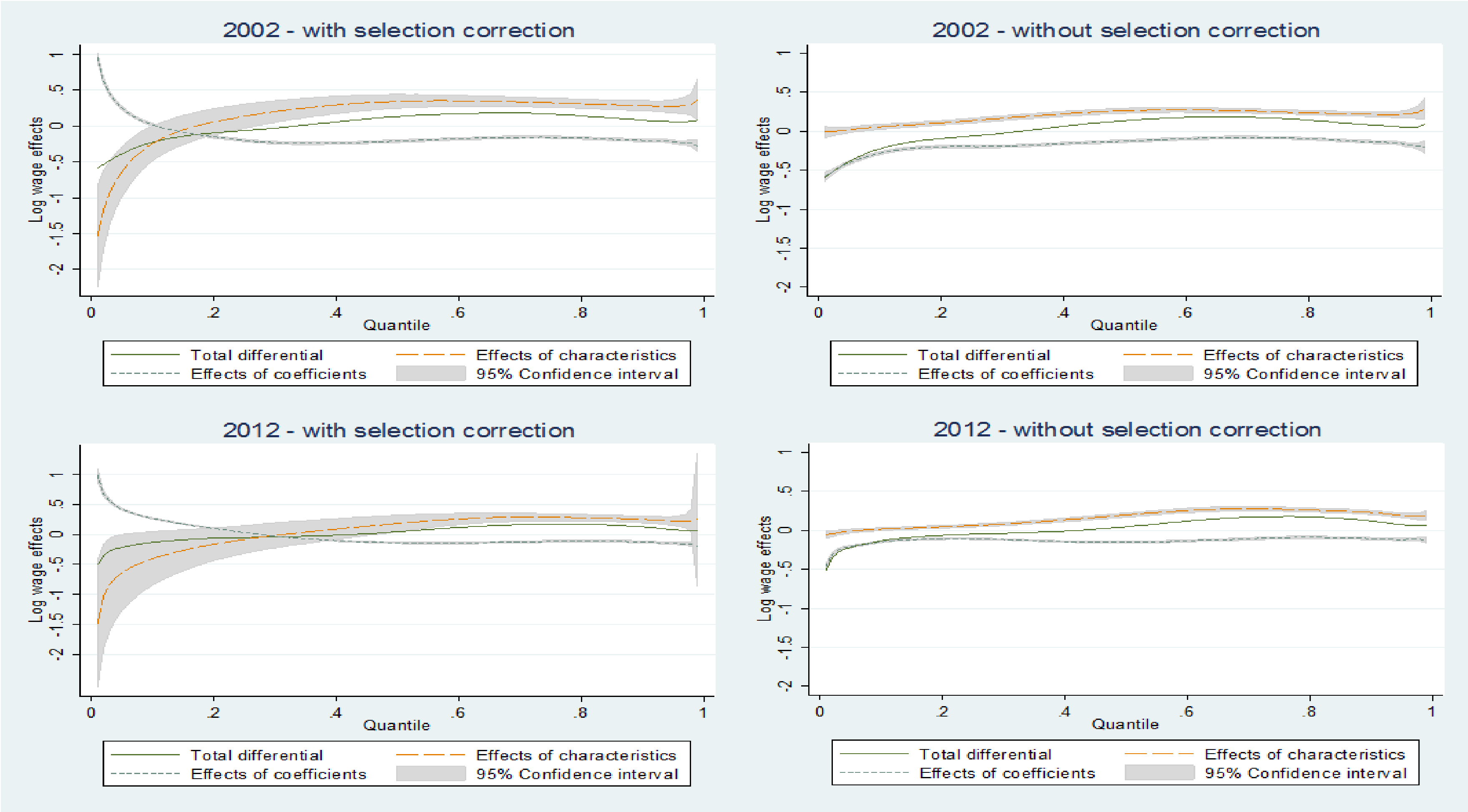
[120] The decrease in the share of agricultural employment has been discussed throughout the thesis. A very low share of agriculture in waged work and the decline over the decade are expected. In terms of manufacturing, it could have been useful to have the information on a detailed breakdown of manufacturing industry amongst women waged workers. However, the data do not provide this information. For example, textile and garment industry has been a major source of employment for women in Turkey and it has extensively been discussed that women are seen as a source of cheap labour and been discriminated in the sector (see Dedeoglu, 2010; Ilkkaracan 2012). However, with the liberalisation of trade in textile and garment by the Agreement on Textiles and Clothing in 2005, many firms could not compete with China and had to close down shortly after the agreement (Turkish Clothing Manufacturers Association (TGSD), 2007). This might have contributed to the decrease in the share of manufacturing amongst women's waged employment from 2002 to 2012.

Figure 5.1 - Decomposition Results based on Model 1 for 2002 and 2012 (with and without selection correction)



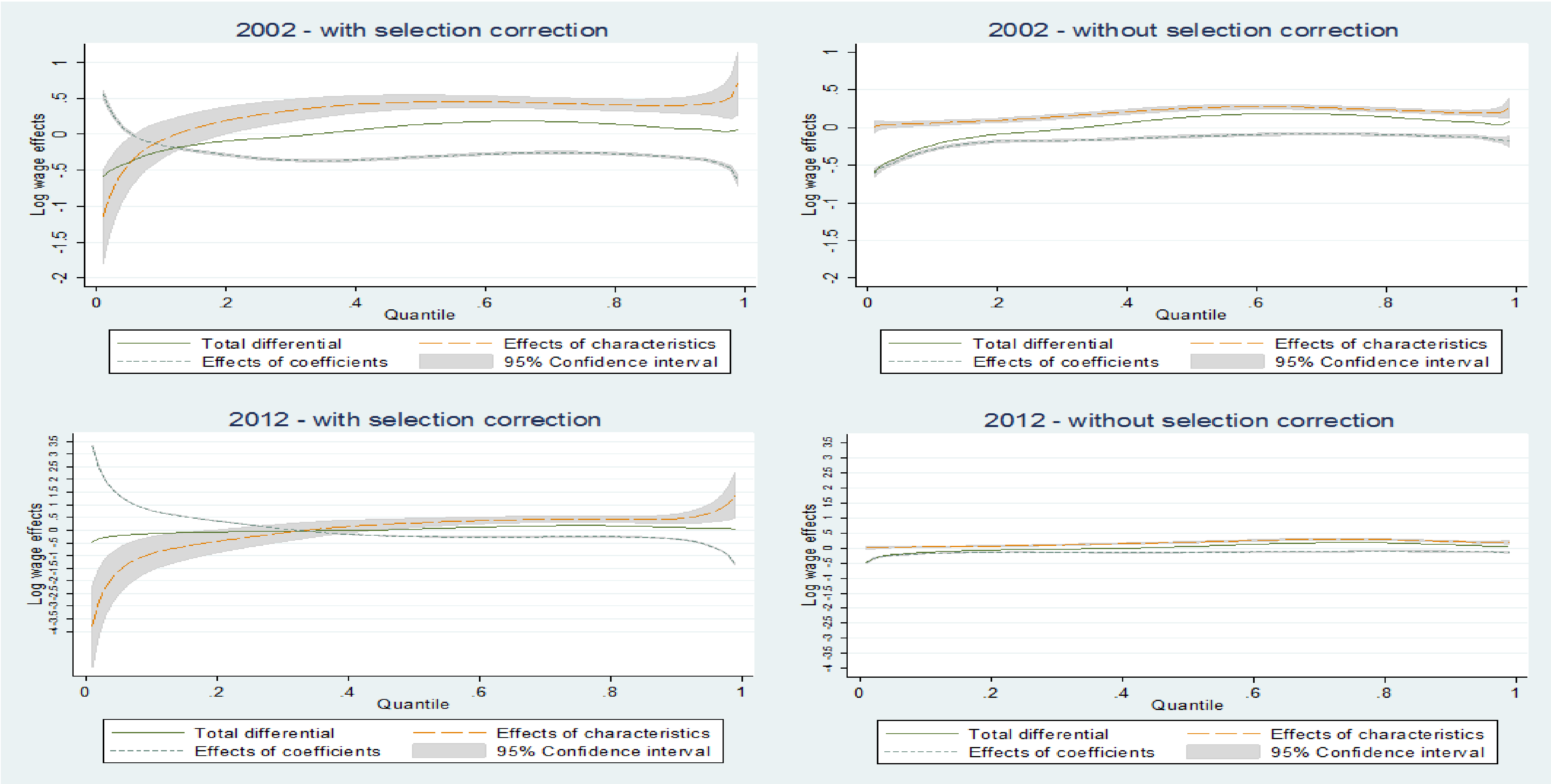
Source: HLFS 2002; 2012

Figure 5.2 - Decomposition Results based on Model 2 for 2002 and 2012 (with and without selection correction)



Source: HLFS 2002; 2012

Figure 5.3 - Decomposition Results based on Model 3 for 2002 and 2012 (with and without selection correction)



Source: HLFS 2002; 2012

5.5 Conclusion

This chapter provides an extensive analysis of the gender wage gap and its evolution in Turkey between 2002 and 2012. Its main contribution is to investigate the role of non-random selection into employment on the gender wage gap in Turkey, a topic which has been neglected in the limited number of empirical analyses. To this aim, sample selection corrected quantile regressions are estimated separately for men and women by using the method introduced by Buchinsky (1998). Following that, the quantile regression decompositions (with and without selection correction) are performed on the estimated gender wage gap (Machado and Mata, 2005; Albrecht et al., 2009). While no selection bias is observed for the male sample, a statistically significant positive selection into employment is observed for women both in 2002 and 2012. This chapter, therefore, argues that the relatively low gender wage gap figures reported for Turkey are misleading and should be interpreted cautiously. This is because women with low wage characteristics do not appear across the wage distribution.

For both 2002 and 2012, a widening gender wage gap is shown at the bottom of the wage distribution suggesting the presence of the sticky floor effect. No evidence is found for the glass ceilings effect; rather, men are observed to earn less than women after around the 40th quantile in both years, though the wages converge to each other at the very top of the wage distribution. The decomposition of the estimated gender wage gap provides important insights. The results adjusted for sample selection indicate that, except for a small proportion located at the low end of the wage distribution, women are increasingly better educated than men and employed in workplaces associated with higher wages, such as in bigger firms or in occupations such as professionals and legislators or in industries that offer higher wages. However, when controlling for these characteristics, women's returns are notably lower than those for men at the same end of the wage distribution.

Hence, although they appear to earn more than men at the higher quantiles, the labour market is still operating to the detriment of women. Moreover, the negative coefficients effect increases substantially at the highest end of the wage distribution, especially in 2012, suggesting a worsening of the situation of women with high earnings potentials in 2012 compared to 2002.

On the other hand, improvements are observed in terms of the situation of women with low earnings potential in 2012, especially when the analysis is enriched by additional work-place characteristics. A greater proportion of women with lower earnings potential are observed to receive greater returns than their male counterparts. Moreover, the extent of positive discrimination in favour of women with low earning potentials increases notably in 2012. It can, therefore, be concluded that the work-place characteristics, especially the industrial structure of the labour market in Turkey, are working in favour of the wages of women with low earnings potential by 2012.[121]

These results have important policy implications. The relatively low gender wage gap figures are open to misinterpretation and mask gender inequalities in the labour market in Turkey. First of all, a very small number of women have access to waged employment, and, in addition to the inequalities women face in entering the labour market, those who are already in employment are subject to further discrimination. That is, a substantial share of women are less-rewarded than men with the same characteristics and working in the same segment of the labour market or wage distribution. Therefore, elimination of discriminatory labour market institutions and cultural traditions, as well as the implementation of family policies such as child care, parental leave and equal opportunities remain crucial.

[121] It is also important to note that there has not been a change in the minimum wage legislation in Turkey from 2002 to 2012 which might have contributed to this result.

Appendix to Chapter 5

Table 5A.1 - Descriptive Statistics for the Additional Variables Available at 2012 HLFS for Women and Men

	Women				Men			
	Wage Worker (25%)	Rest (25%)	Wage Worker (full)	Rest (full)	Wage Worker (25%)	Rest (25%)	Wage Worker (full)	Rest (full)
Supervisory role	0.074	-	0.071	-	0.086	-	0.088	-
Private sector	0.674	-	0.671	-	0.761	-	0.767	-
Regions								
Istanbul	0.281	0.176	0.272	0.174	0.230	0.156	0.235	0.155
West Marmara	0.052	0.042	0.053	0.044	0.045	0.047	0.047	0.049
Aegean	0.157	0.130	0.154	0.130	0.126	0.145	0.128	0.148
East Marmara	0.120	0.095	0.118	0.099	0.120	0.089	0.119	0.079
West Anatolia	0.130	0.095	0.126	0.095	0.113	0.080	0.112	0.081
Mediterranean	0.115	0.130	0.117	0.131	0.116	0.125	0.113	0.135
Central Anatolia	0.029	0.055	0.030	0.054	0.042	0.059	0.043	0.057
West Black Sea	0.040	0.063	0.049	0.063	0.050	0.068	0.049	0.070
East Black Sea	0.017	0.035	0.020	0.035	0.024	0.045	0.025	0.042
Northeast Anatolia	0.011	0.028	0.012	0.027	0.020	0.035	0.019	0.034
Central east Anatolia	0.019	0.050	0.020	0.048	0.040	0.053	0.037	0.053
Southeast Anatolia	0.026	0.101	0.030	0.101	0.074	0.099	0.072	0.097
Observations	4,754	21,036	18,959	83,712	13,885	8,950	56,300	35,527

Source: HLFS 2012. Sample weights are used.

Table 5A.2a - Quantile Regression Results (with sample selection correction) based on Model 1, 2002

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.040***	0.044***	0.036***	0.037***	0.042***	0.051***	0.056***	0.062***	0.070***	0.073***
	(0.010)	(0.008)	(0.005)	(0.006)	(0.007)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)
Tenure squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.286	0.453***	0.217*	0.101	0.228*	0.417***	0.416***	0.391***	0.436***	0.510***
	(0.231)	(0.168)	(0.116)	(0.063)	(0.120)	(0.066)	(0.074)	(0.038)	(0.052)	(0.059)
Secondary school	0.757***	0.682***	0.332***	0.349***	0.437***	0.657***	0.663***	0.711***	0.734***	0.788***
	(0.261)	(0.180)	(0.119)	(0.082)	(0.150)	(0.074)	(0.076)	(0.044)	(0.057)	(0.065)
High school	1.063***	1.087***	0.951***	0.851***	0.949***	0.953***	1.032***	1.007***	1.066***	1.124***
	(0.253)	(0.198)	(0.115)	(0.090)	(0.171)	(0.093)	(0.084)	(0.049)	(0.073)	(0.082)
Vocational or technical high school	1.015***	1.151***	0.962***	0.822***	0.897***	1.026***	1.122***	1.078***	1.162***	1.205***
	(0.292)	(0.195)	(0.116)	(0.085)	(0.150)	(0.084)	(0.082)	(0.053)	(0.083)	(0.087)
University or higher	2.251***	2.074***	1.797***	1.587***	1.503***	1.707***	1.737***	1.618***	1.631***	1.720***
	(0.275)	(0.205)	(0.137)	(0.106)	(0.203)	(0.102)	(0.092)	(0.064)	(0.084)	(0.106)
Urban	0.127	0.117**	0.122***	0.122***	0.100**	0.161***	0.133***	0.145***	0.228***	0.302***
	(0.136)	(0.058)	(0.046)	(0.043)	(0.046)	(0.045)	(0.033)	(0.029)	(0.039)	(0.047)
λ	1.439***	0.763***	0.587***	0.454***	0.134	1.451***	1.340***	0.423*	0.137	-0.023
	(0.298)	(0.214)	(0.157)	(0.134)	(0.251)	(0.332)	(0.302)	(0.217)	(0.307)	(0.397)
λ squared	-0.562***	-0.264***	-0.176***	-0.145***	-0.049	-0.897***	-0.740***	-0.062	0.232	0.442**
	(0.120)	(0.078)	(0.056)	(0.052)	(0.091)	(0.185)	(0.172)	(0.119)	(0.169)	(0.203)
Constant	2.553***	3.220***	3.893***	4.437***	4.931***	3.024***	3.337***	3.961***	4.215***	4.433***
	(0.333)	(0.253)	(0.181)	(0.138)	(0.250)	(0.193)	(0.167)	(0.130)	(0.185)	(0.228)
Observations			2,836					11,171		

*Source: HLFS 2002. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5A.2b - Quantile Regression Results (without sample selection correction) based on Model 1, 2002

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.051***	0.050***	0.034***	0.034***	0.042***	0.052***	0.056***	0.062***	0.069***	0.075***
	(0.011)	(0.007)	(0.005)	(0.006)	(0.008)	(0.006)	(0.004)	(0.003)	(0.004)	(0.004)
Tenure squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.468**	0.533***	0.223**	0.085	0.250**	0.465***	0.437***	0.391***	0.396***	0.455***
	(0.231)	(0.120)	(0.112)	(0.061)	(0.110)	(0.061)	(0.090)	(0.037)	(0.056)	(0.070)
Secondary school	1.138***	0.803***	0.363***	0.364***	0.470***	0.707***	0.672***	0.684***	0.662***	0.683***
	(0.248)	(0.121)	(0.121)	(0.091)	(0.140)	(0.067)	(0.094)	(0.037)	(0.056)	(0.069)
High school	1.457***	1.187***	0.929***	0.840***	0.981***	0.936***	0.970***	0.906***	0.890***	0.871***
	(0.220)	(0.125)	(0.115)	(0.070)	(0.120)	(0.064)	(0.096)	(0.036)	(0.058)	(0.075)
Vocational or technical high school	1.411***	1.281***	0.962***	0.815***	0.924***	1.012***	1.057***	0.971***	0.973***	0.946***
	(0.263)	(0.131)	(0.107)	(0.070)	(0.107)	(0.074)	(0.093)	(0.038)	(0.054)	(0.074)
University or higher	2.243***	1.953***	1.544***	1.426***	1.492***	1.625***	1.580***	1.453***	1.408***	1.430***
	(0.218)	(0.114)	(0.109)	(0.064)	(0.108)	(0.071)	(0.093)	(0.036)	(0.054)	(0.072)
Urban	0.182	0.151***	0.067	0.111***	0.098**	0.182***	0.113***	0.056***	0.070***	0.075***
	(0.128)	(0.058)	(0.044)	(0.042)	(0.046)	(0.031)	(0.022)	(0.018)	(0.022)	(0.027)
Constant	2.936***	3.564***	4.406***	4.792***	4.992***	3.514***	3.909***	4.343***	4.663***	4.969***
	(0.244)	(0.118)	(0.120)	(0.070)	(0.108)	(0.074)	(0.096)	(0.044)	(0.060)	(0.077)
Observations			2,836					11,171		

*Source: HLFS 2002. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5A.3a - Quantile Regression Results (with sample selection correction) based on Model 1, 2012

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.060***	0.062***	0.049***	0.045***	0.051***	0.022***	0.027***	0.029***	0.038***	0.037***
	(0.005)	(0.003)	(0.003)	(0.005)	(0.005)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)
Tenure squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	0.000*	-0.000	-0.000	-0.000***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.197	0.057	0.130***	0.096***	0.066	0.156***	0.067**	0.044	0.065**	0.021
	(0.198)	(0.083)	(0.031)	(0.034)	(0.046)	(0.053)	(0.031)	(0.033)	(0.028)	(0.059)
Secondary school	0.345*	0.189*	0.279***	0.254***	0.224***	0.216***	0.150***	0.122***	0.174***	0.138**
	(0.204)	(0.100)	(0.038)	(0.046)	(0.058)	(0.053)	(0.033)	(0.035)	(0.030)	(0.060)
High school	0.578***	0.368***	0.465***	0.586***	0.629***	0.255***	0.239***	0.276***	0.383***	0.407***
	(0.209)	(0.092)	(0.044)	(0.058)	(0.068)	(0.051)	(0.032)	(0.037)	(0.032)	(0.060)
Vocational or technical	0.566***	0.375***	0.464***	0.642***	0.717***	0.305***	0.249***	0.297***	0.397***	0.418***
high school	(0.211)	(0.092)	(0.035)	(0.061)	(0.067)	(0.052)	(0.033)	(0.036)	(0.031)	(0.061)
University or higher	1.329***	1.268***	1.400***	1.453***	1.412***	0.700***	0.846***	0.952***	1.054***	1.118***
	(0.217)	(0.104)	(0.049)	(0.069)	(0.085)	(0.053)	(0.043)	(0.045)	(0.043)	(0.077)
Urban	0.111**	0.084*	0.071**	0.053	0.008	-0.897***	-0.383**	-0.093	0.421***	0.922***
	(0.048)	(0.046)	(0.036)	(0.038)	(0.042)	(0.181)	(0.175)	(0.130)	(0.148)	(0.215)
λ	1.027***	1.119***	0.733***	0.511***	0.303**	-0.194	-0.827	-0.159	0.810	1.840**
	(0.169)	(0.111)	(0.081)	(0.098)	(0.122)	(0.777)	(0.691)	(0.579)	(0.698)	(0.930)
λ squared	-0.348***	-0.385***	-0.227***	-0.134***	-0.076**	-1.212***	-0.107	-0.077	-0.010	0.004
	(0.069)	(0.041)	(0.029)	(0.029)	(0.038)	(0.470)	(0.466)	(0.352)	(0.330)	(0.510)
Constant	3.441***	3.831***	4.282***	4.634***	5.065***	5.978***	5.776***	5.376***	4.545***	3.835***
	(0.246)	(0.134)	(0.078)	(0.108)	(0.132)	(0.429)	(0.366)	(0.319)	(0.419)	(0.548)
Observations			4,754					13,885		

*Source: HLFS 2002. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5A.3b - Quantile Regression Results (without sample selection correction) based on Model 1, 2012

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.065***	0.066***	0.048***	0.044***	0.051***	0.024***	0.028***	0.029***	0.037***	0.035***
	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)
Tenure squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	0.000	-0.000	-0.000	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.305**	0.144**	0.149***	0.105***	0.084*	0.144***	0.065**	0.048	0.058*	0.011
	(0.131)	(0.066)	(0.029)	(0.039)	(0.045)	(0.047)	(0.029)	(0.033)	(0.035)	(0.071)
Secondary school	0.474***	0.288***	0.297***	0.237***	0.223***	0.233***	0.168***	0.128***	0.157***	0.100
	(0.144)	(0.082)	(0.033)	(0.044)	(0.045)	(0.050)	(0.032)	(0.035)	(0.036)	(0.071)
High school	0.684***	0.442***	0.431***	0.520***	0.580***	0.304***	0.271***	0.288***	0.346***	0.327***
	(0.129)	(0.062)	(0.037)	(0.043)	(0.050)	(0.051)	(0.032)	(0.037)	(0.039)	(0.073)
Vocational or technical high school	0.638***	0.433***	0.462***	0.585***	0.683***	0.362***	0.288***	0.307***	0.360***	0.339***
	(0.133)	(0.063)	(0.034)	(0.050)	(0.051)	(0.052)	(0.031)	(0.035)	(0.038)	(0.073)
University or higher	1.129***	1.022***	1.155***	1.213***	1.268***	0.822***	0.924***	0.975***	0.978***	0.946***
	(0.127)	(0.065)	(0.036)	(0.039)	(0.046)	(0.057)	(0.033)	(0.037)	(0.035)	(0.068)
Urban	0.099**	0.080	0.062**	0.000	-0.006	0.116***	0.105***	0.044***	0.023*	0.008
	(0.050)	(0.050)	(0.028)	(0.024)	(0.032)	(0.012)	(0.011)	(0.012)	(0.013)	(0.022)
λ	4.026***	4.506***	4.844***	5.146***	5.349***	4.511***	4.809***	5.128***	5.384***	5.752***
	(0.131)	(0.070)	(0.037)	(0.048)	(0.047)	(0.049)	(0.030)	(0.035)	(0.033)	(0.066)
Observations			4,754					13,885		

*Source: HLFS 2002. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5A.4a - Quantile Regression Results (with sample selection correction) based on Model 2, 2002

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.029***	0.032***	0.027***	0.026***	0.025***	0.042***	0.043***	0.042***	0.047***	0.045***
	(0.006)	(0.005)	(0.005)	(0.005)	(0.008)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Tenure squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001**	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.061	0.220**	0.121	0.050	0.196**	0.218***	0.230***	0.204***	0.232***	0.259***
	(0.179)	(0.099)	(0.075)	(0.070)	(0.088)	(0.048)	(0.049)	(0.041)	(0.041)	(0.055)
Secondary school	0.162	0.323***	0.144	0.163*	0.297**	0.340***	0.401***	0.401***	0.420***	0.436***
	(0.183)	(0.108)	(0.097)	(0.098)	(0.142)	(0.057)	(0.056)	(0.045)	(0.045)	(0.061)
High school	0.310	0.593***	0.426***	0.480***	0.569***	0.478***	0.589***	0.596***	0.670***	0.690***
	(0.200)	(0.118)	(0.095)	(0.111)	(0.159)	(0.061)	(0.071)	(0.054)	(0.056)	(0.074)
Vocational or	0.382*	0.641***	0.432***	0.406***	0.438***	0.529***	0.611***	0.652***	0.676***	0.729***
technical high school	(0.214)	(0.114)	(0.099)	(0.117)	(0.165)	(0.062)	(0.073)	(0.055)	(0.058)	(0.077)
University or higher	1.083***	1.162***	0.926***	0.925***	0.769***	0.839***	0.908***	0.856***	0.915***	0.982***
	(0.215)	(0.130)	(0.120)	(0.137)	(0.239)	(0.085)	(0.087)	(0.063)	(0.070)	(0.099)
Size of the workplace (ref: less than 10 employees)										
10-24	0.247**	0.267***	0.145***	0.056	-0.005	0.252***	0.251***	0.230***	0.205***	0.185***
	(0.101)	(0.055)	(0.042)	(0.056)	(0.084)	(0.033)	(0.025)	(0.023)	(0.024)	(0.032)
25-49	0.409***	0.350***	0.214***	0.092**	-0.007	0.313***	0.309***	0.277***	0.295***	0.319***
	(0.080)	(0.050)	(0.030)	(0.045)	(0.063)	(0.030)	(0.019)	(0.020)	(0.020)	(0.028)
50 or more	0.491***	0.449***	0.330***	0.263***	0.253***	0.475***	0.484***	0.487***	0.532***	0.508***
	(0.076)	(0.044)	(0.033)	(0.047)	(0.066)	(0.021)	(0.017)	(0.015)	(0.017)	(0.026)
Part-time	0.260***	0.299***	0.368***	0.426***	0.461***	0.284***	0.310***	0.322***	0.371***	0.399***
	(0.064)	(0.034)	(0.026)	(0.032)	(0.068)	(0.037)	(0.029)	(0.023)	(0.042)	(0.090)
Social security	0.762***	0.503***	0.310***	0.268***	0.174**	0.368***	0.261***	0.257***	0.224***	0.253***
	(0.113)	(0.053)	(0.034)	(0.045)	(0.085)	(0.024)	(0.018)	(0.016)	(0.020)	(0.024)
Occupational Category (ref: elementary occupations)										
Legislators, senior officials and	0.448***	0.628***	0.768***	0.667***	0.900***	0.405***	0.551***	0.586***	0.628***	0.699***
managers	(0.147)	(0.092)	(0.085)	(0.091)	(0.165)	(0.069)	(0.048)	(0.035)	(0.033)	(0.046)
Professionals	0.498***	0.551***	0.540***	0.371***	0.443***	0.611***	0.601***	0.545***	0.427***	0.392***

	(0.088)	(0.066)	(0.056)	(0.086)	(0.132)	(0.043)	(0.029)	(0.028)	(0.034)	(0.044)
Technicians and	0.299***	0.348***	0.421***	0.290***	0.293**	0.333***	0.348***	0.291***	0.242***	0.348***
associate professionals	(0.089)	(0.069)	(0.063)	(0.079)	(0.117)	(0.033)	(0.032)	(0.023)	(0.035)	(0.047)
Clerks	0.222***	0.257***	0.305***	0.220***	0.308***	0.293***	0.301***	0.214***	0.159***	0.220***
	(0.073)	(0.064)	(0.055)	(0.080)	(0.112)	(0.036)	(0.032)	(0.023)	(0.031)	(0.041)
Service workers and shop and	0.214***	0.213***	0.149***	0.077	0.072	0.138***	0.160***	0.104***	0.096***	0.099***
market sales workers	(0.074)	(0.047)	(0.044)	(0.052)	(0.105)	(0.033)	(0.029)	(0.024)	(0.026)	(0.033)
Skilled agricultural and	-1.819***	-0.749	-0.953***	-1.230***	-0.564	0.176**	0.058	0.070	0.005	0.308**
fishery workers	(0.623)	(0.664)	(0.287)	(0.461)	(0.397)	(0.077)	(0.064)	(0.101)	(0.117)	(0.156)
Craft and related trades workers	-0.353***	-0.243***	-0.138***	-0.156**	-0.111	0.114***	0.167***	0.144***	0.153***	0.192***
	(0.118)	(0.070)	(0.045)	(0.069)	(0.096)	(0.028)	(0.023)	(0.022)	(0.025)	(0.030)
Plant and machine operators and	-0.044	-0.039	-0.059	-0.038	-0.154	0.141***	0.168***	0.133***	0.129***	0.164***
assemblers	(0.091)	(0.059)	(0.061)	(0.078)	(0.120)	(0.031)	(0.028)	(0.023)	(0.027)	(0.033)
Urban	0.029	0.058	0.063**	0.081**	0.129**	0.112***	0.137***	0.147***	0.158***	0.200***
	(0.064)	(0.043)	(0.029)	(0.039)	(0.051)	(0.043)	(0.029)	(0.027)	(0.033)	(0.050)
λ	0.889***	0.529***	0.409***	0.367***	0.102	0.847***	0.721***	0.432*	0.435*	0.157
	(0.253)	(0.147)	(0.121)	(0.124)	(0.265)	(0.313)	(0.265)	(0.231)	(0.245)	(0.315)
λ squared	-0.274***	-0.132***	-0.122***	-0.111**	-0.046	-0.508***	-0.302*	-0.029	0.044	0.301*
	(0.093)	(0.049)	(0.044)	(0.045)	(0.086)	(0.170)	(0.160)	(0.132)	(0.134)	(0.158)
Constant	2.467***	2.959***	3.807***	4.301***	4.806***	3.015***	3.272***	3.698***	3.944***	4.221***
	(0.243)	(0.174)	(0.139)	(0.151)	(0.277)	(0.182)	(0.159)	(0.124)	(0.147)	(0.207)
Observations			2,836					11,171		

*Source: HLFS 2002. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5A.4b - Quantile Regression Results (without sample selection correction) based on Model 2, 2002

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.034***	0.032***	0.026***	0.027***	0.024***	0.044***	0.041***	0.043***	0.046***	0.045***
	(0.008)	(0.005)	(0.004)	(0.005)	(0.007)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)
Tenure squared	-0.001**	-0.001***	-0.001***	-0.001***	-0.001**	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.061	0.236**	0.174**	0.118*	0.204*	0.238***	0.202***	0.181***	0.219***	0.244***
	(0.179)	(0.105)	(0.078)	(0.071)	(0.112)	(0.055)	(0.045)	(0.043)	(0.042)	(0.064)
Secondary school	0.171	0.302***	0.207**	0.239**	0.330**	0.357***	0.366***	0.345***	0.372***	0.371***
	(0.191)	(0.106)	(0.091)	(0.094)	(0.132)	(0.061)	(0.050)	(0.043)	(0.045)	(0.068)
High school	0.321*	0.527***	0.469***	0.534***	0.616***	0.461***	0.466***	0.444***	0.492***	0.485***
	(0.183)	(0.115)	(0.090)	(0.100)	(0.131)	(0.054)	(0.047)	(0.045)	(0.043)	(0.068)
Vocational or technical high school	0.406*	0.581***	0.485***	0.460***	0.486***	0.499***	0.491***	0.498***	0.497***	0.519***
	(0.209)	(0.113)	(0.092)	(0.091)	(0.128)	(0.062)	(0.051)	(0.047)	(0.045)	(0.069)
University or higher	0.727***	0.867***	0.802***	0.829***	0.799***	0.784***	0.730***	0.648***	0.682***	0.709***
	(0.179)	(0.107)	(0.091)	(0.093)	(0.133)	(0.060)	(0.048)	(0.047)	(0.046)	(0.072)
Size of the workplace (ref: less than 10 employees)										
10-24	0.285***	0.277***	0.150***	0.067	-0.008	0.259***	0.254***	0.228***	0.205***	0.192***
	(0.089)	(0.057)	(0.043)	(0.046)	(0.085)	(0.037)	(0.025)	(0.021)	(0.024)	(0.038)
25-49	0.455***	0.355***	0.221***	0.099**	0.005	0.317***	0.313***	0.274***	0.294***	0.339***
	(0.065)	(0.052)	(0.038)	(0.041)	(0.068)	(0.027)	(0.022)	(0.019)	(0.022)	(0.035)
50 or more	0.550***	0.446***	0.335***	0.258***	0.253***	0.478***	0.488***	0.482***	0.530***	0.525***
	(0.062)	(0.050)	(0.036)	(0.041)	(0.063)	(0.022)	(0.016)	(0.015)	(0.019)	(0.025)
Part-time	0.290***	0.310***	0.368***	0.432***	0.442***	0.309***	0.316***	0.324***	0.368***	0.431***
	(0.059)	(0.037)	(0.029)	(0.033)	(0.074)	(0.035)	(0.029)	(0.025)	(0.036)	(0.085)
Social security	0.753***	0.513***	0.307***	0.280***	0.166**	0.376***	0.262***	0.249***	0.216***	0.241***
	(0.107)	(0.063)	(0.033)	(0.049)	(0.078)	(0.028)	(0.020)	(0.019)	(0.018)	(0.028)
Occupational Category (ref: elementary occupations)										
Legislators, senior officials and managers	0.496***	0.566***	0.758***	0.673***	0.885***	0.385***	0.563***	0.592***	0.632***	0.713***
	(0.116)	(0.096)	(0.103)	(0.117)	(0.174)	(0.061)	(0.041)	(0.036)	(0.032)	(0.064)
Professionals	0.514***	0.550***	0.539***	0.374***	0.444***	0.591***	0.600***	0.541***	0.421***	0.383***

	(0.089)	(0.064)	(0.059)	(0.073)	(0.114)	(0.046)	(0.032)	(0.027)	(0.030)	(0.047)
Technicians and associate	0.268***	0.355***	0.414***	0.296***	0.285***	0.336***	0.342***	0.302***	0.247***	0.345***
professionals	(0.084)	(0.064)	(0.053)	(0.070)	(0.102)	(0.033)	(0.031)	(0.024)	(0.041)	(0.052)
Clerks	0.173**	0.249***	0.310***	0.219***	0.305***	0.296***	0.292***	0.217***	0.165***	0.205***
	(0.081)	(0.061)	(0.053)	(0.078)	(0.108)	(0.037)	(0.032)	(0.022)	(0.030)	(0.039)
Service workers and shop and	0.226***	0.211***	0.142**	0.071	0.057	0.124***	0.156***	0.101***	0.094***	0.085**
market sales workers	(0.072)	(0.055)	(0.061)	(0.063)	(0.098)	(0.030)	(0.026)	(0.025)	(0.025)	(0.036)
Skilled agricultural and	-1.877***	-0.817	-0.964**	-1.238***	-0.549*	0.116	0.050	0.079	0.002	0.318
fishery workers	(0.628)	(0.623)	(0.376)	(0.459)	(0.318)	(0.085)	(0.068)	(0.120)	(0.102)	(0.202)
Craft and related trades workers	-0.343***	-0.245***	-0.134***	-0.156**	-0.119	0.126***	0.152***	0.128***	0.141***	0.177***
	(0.117)	(0.074)	(0.042)	(0.064)	(0.094)	(0.026)	(0.022)	(0.020)	(0.021)	(0.030)
Plant and machine operators and	-0.025	-0.044	-0.071	-0.029	-0.152	0.143***	0.162***	0.136***	0.142***	0.158***
assemblers	(0.086)	(0.060)	(0.063)	(0.085)	(0.102)	(0.028)	(0.024)	(0.022)	(0.025)	(0.029)
urban	0.008	0.047	0.060*	0.071*	0.130***	0.111***	0.065***	0.031*	0.018	0.005
	(0.071)	(0.047)	(0.032)	(0.042)	(0.050)	(0.026)	(0.020)	(0.019)	(0.019)	(0.027)
Constant	3.101***	3.464***	4.082***	4.518***	4.825***	3.322***	3.749***	4.167***	4.481***	4.752***
	(0.181)	(0.127)	(0.084)	(0.080)	(0.110)	(0.059)	(0.050)	(0.045)	(0.050)	(0.070)
Observations			2,836					11,171		

*Source: HLFS 2002. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5A.5a - Quantile Regression Results (with sample selection correction) based on Model 2, 2012

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.046***	0.039***	0.032***	0.033***	0.042***	0.014***	0.017***	0.021***	0.027***	0.027***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)
Tenure squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	0.000***	0.000*	0.000	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.037	0.078**	0.049	0.037	0.020	0.065	-0.009	-0.015	-0.025	0.020
	(0.065)	(0.033)	(0.034)	(0.037)	(0.050)	(0.044)	(0.031)	(0.029)	(0.028)	(0.045)
Secondary school	0.057	0.126**	0.134***	0.127***	0.132**	0.095**	0.038	0.040	0.039	0.104**
	(0.077)	(0.053)	(0.044)	(0.047)	(0.061)	(0.048)	(0.032)	(0.032)	(0.031)	(0.049)
High school	0.199**	0.265***	0.264***	0.302***	0.339***	0.128**	0.092**	0.152***	0.169***	0.269***
	(0.081)	(0.047)	(0.045)	(0.054)	(0.059)	(0.051)	(0.037)	(0.037)	(0.034)	(0.055)
Vocational or technical	0.127	0.233***	0.248***	0.307***	0.364***	0.167***	0.099***	0.143***	0.178***	0.239***
high school	(0.078)	(0.048)	(0.045)	(0.056)	(0.067)	(0.049)	(0.034)	(0.035)	(0.039)	(0.054)
University or higher	0.685***	0.745***	0.790***	0.789***	0.747***	0.367***	0.430***	0.560***	0.584***	0.709***
	(0.090)	(0.060)	(0.060)	(0.071)	(0.087)	(0.064)	(0.046)	(0.044)	(0.043)	(0.065)
Size of the workplace (ref: less than 10 employees)										
10-24	0.172***	0.122***	0.093***	0.040	0.062**	0.101***	0.096***	0.104***	0.080***	0.119***
	(0.042)	(0.030)	(0.030)	(0.028)	(0.029)	(0.021)	(0.016)	(0.016)	(0.016)	(0.021)
25-49	0.195***	0.145***	0.092***	0.048*	0.050*	0.229***	0.206***	0.190***	0.178***	0.162***
	(0.042)	(0.029)	(0.025)	(0.026)	(0.028)	(0.018)	(0.015)	(0.014)	(0.015)	(0.021)
50 or more	0.267***	0.209***	0.142***	0.079***	0.094***	0.297***	0.264***	0.246***	0.247***	0.247***
	(0.039)	(0.025)	(0.024)	(0.025)	(0.028)	(0.016)	(0.011)	(0.012)	(0.013)	(0.019)
Part-time	0.232***	0.296***	0.326***	0.419***	0.443***	0.345***	0.364***	0.358***	0.488***	0.640***
	(0.076)	(0.042)	(0.042)	(0.042)	(0.072)	(0.097)	(0.034)	(0.035)	(0.040)	(0.100)
Social security	0.384***	0.321***	0.216***	0.154***	0.109***	0.237***	0.167***	0.112***	0.078***	0.092***
	(0.047)	(0.023)	(0.029)	(0.027)	(0.034)	(0.023)	(0.016)	(0.016)	(0.016)	(0.026)
Occupational Category (ref: elementary occupations)										
Legislators, senior officials	0.451***	0.590***	0.676***	0.786***	0.867***	0.251***	0.454***	0.494***	0.586***	0.674***
and managers	(0.089)	(0.072)	(0.054)	(0.074)	(0.073)	(0.046)	(0.038)	(0.033)	(0.032)	(0.050)
Professionals	0.405***	0.567***	0.564***	0.586***	0.577***	0.623***	0.604***	0.531***	0.526***	0.483***

	(0.048)	(0.041)	(0.041)	(0.047)	(0.051)	(0.035)	(0.030)	(0.023)	(0.027)	(0.029)
Technicians and associate	0.180***	0.257***	0.288***	0.393***	0.373***	0.158***	0.217***	0.250***	0.306***	0.337***
professionals	(0.050)	(0.034)	(0.044)	(0.047)	(0.064)	(0.023)	(0.023)	(0.022)	(0.025)	(0.037)
Clerks	0.088**	0.106***	0.141***	0.224***	0.184***	0.117***	0.159***	0.233***	0.265***	0.211***
	(0.041)	(0.031)	(0.032)	(0.042)	(0.043)	(0.023)	(0.022)	(0.023)	(0.022)	(0.024)
Service workers and shop	0.056	0.031	-0.024	-0.027	-0.008	0.016	0.037**	0.058***	0.113***	0.086***
and market sales workers	(0.045)	(0.029)	(0.025)	(0.028)	(0.030)	(0.023)	(0.016)	(0.017)	(0.019)	(0.022)
Skilled agricultural and	-0.165	-0.130	0.061	-0.050	-0.060	-0.247*	-0.034	-0.004	-0.019	0.039
fishery workers	(0.480)	(0.123)	(0.161)	(0.087)	(0.095)	(0.134)	(0.079)	(0.046)	(0.038)	(0.088)
Craft and related trades	-0.991***	-0.428***	-0.118**	-0.126***	-0.074	0.082***	0.071***	0.100***	0.132***	0.105***
workers	(0.175)	(0.098)	(0.056)	(0.031)	(0.065)	(0.018)	(0.014)	(0.016)	(0.017)	(0.024)
Plant and machine	0.025	0.001	-0.019	-0.060**	-0.134***	0.045**	0.038***	0.067***	0.089***	0.078***
operators and assemblers	(0.054)	(0.028)	(0.020)	(0.024)	(0.032)	(0.021)	(0.014)	(0.014)	(0.017)	(0.021)
Urban	0.037	0.062***	0.062**	0.060*	0.019	-0.537***	-0.134	0.084	0.314**	0.740***
	(0.046)	(0.024)	(0.031)	(0.030)	(0.039)	(0.157)	(0.140)	(0.138)	(0.142)	(0.188)
λ	0.765***	0.607***	0.471***	0.359***	0.197*	-0.426	0.183	0.447	0.832	2.126***
	(0.125)	(0.100)	(0.100)	(0.074)	(0.114)	(0.774)	(0.579)	(0.522)	(0.528)	(0.668)
λ squared	-0.248***	-0.171***	-0.122***	-0.084***	-0.047	-0.514	-0.357	-0.186	-0.103	-0.369
	(0.050)	(0.037)	(0.037)	(0.025)	(0.037)	(0.501)	(0.343)	(0.301)	(0.285)	(0.333)
Constant	3.556***	3.860***	4.310***	4.668***	5.060***	5.297***	4.866***	4.702***	4.507***	3.693***
	(0.116)	(0.085)	(0.094)	(0.090)	(0.113)	(0.385)	(0.335)	(0.320)	(0.340)	(0.462)
Observations			4,754					13,885		

*Source: HLFS 2012. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5A.5b - Quantile Regression Results (without sample selection correction) based on Model 2, 2012

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.045***	0.040***	0.033***	0.033***	0.042***	0.015***	0.017***	0.021***	0.026***	0.024***
	(0.005)	(0.003)	(0.004)	(0.004)	(0.005)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Tenure squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	0.000***	0.000*	0.000	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.088	0.094***	0.051	0.037	0.000	0.074*	-0.007	-0.013	-0.022	0.022
	(0.069)	(0.032)	(0.032)	(0.036)	(0.042)	(0.044)	(0.033)	(0.024)	(0.028)	(0.052)
Secondary school	0.104	0.113**	0.109***	0.105**	0.102**	0.116**	0.045	0.041*	0.028	0.076
	(0.074)	(0.050)	(0.035)	(0.047)	(0.049)	(0.048)	(0.036)	(0.025)	(0.030)	(0.051)
High school	0.208***	0.211***	0.203***	0.239***	0.313***	0.172***	0.106***	0.148***	0.147***	0.208***
	(0.074)	(0.045)	(0.035)	(0.046)	(0.057)	(0.045)	(0.036)	(0.026)	(0.033)	(0.050)
Vocational or technical high	0.141*	0.179***	0.205***	0.258***	0.311***	0.209***	0.112***	0.136***	0.151***	0.177***
school	(0.075)	(0.047)	(0.036)	(0.049)	(0.063)	(0.045)	(0.033)	(0.028)	(0.032)	(0.050)
University or higher	0.453***	0.484***	0.565***	0.582***	0.630***	0.468***	0.451***	0.538***	0.525***	0.561***
	(0.078)	(0.045)	(0.044)	(0.059)	(0.057)	(0.050)	(0.040)	(0.030)	(0.033)	(0.049)
Size of the workplace (ref: less than 10 employees)										
10-24	0.167***	0.146***	0.090***	0.052**	0.072**	0.101***	0.096***	0.104***	0.080***	0.123***
	(0.041)	(0.029)	(0.028)	(0.027)	(0.028)	(0.023)	(0.017)	(0.015)	(0.016)	(0.025)
25-49	0.195***	0.160***	0.087***	0.053**	0.048	0.225***	0.206***	0.191***	0.179***	0.167***
	(0.036)	(0.032)	(0.026)	(0.026)	(0.029)	(0.020)	(0.013)	(0.012)	(0.014)	(0.022)
50 or more	0.271***	0.216***	0.141***	0.080***	0.086***	0.301***	0.261***	0.245***	0.250***	0.255***
	(0.034)	(0.027)	(0.025)	(0.026)	(0.030)	(0.017)	(0.011)	(0.012)	(0.013)	(0.020)
Part-time	0.252***	0.309***	0.327***	0.418***	0.465***	0.321***	0.355***	0.365***	0.490***	0.612***
	(0.085)	(0.035)	(0.043)	(0.040)	(0.070)	(0.090)	(0.031)	(0.040)	(0.044)	(0.098)
Social security	0.390***	0.322***	0.223***	0.157***	0.108***	0.248***	0.170***	0.109***	0.066***	0.081***
	(0.053)	(0.029)	(0.030)	(0.023)	(0.036)	(0.023)	(0.016)	(0.015)	(0.017)	(0.026)
Occupational Category (ref: elementary occupations)										
Legislators, senior officials	0.459***	0.598***	0.680***	0.771***	0.861***	0.256***	0.447***	0.498***	0.591***	0.692***
and managers	(0.071)	(0.070)	(0.040)	(0.070)	(0.071)	(0.051)	(0.038)	(0.030)	(0.032)	(0.047)
Professionals	0.441***	0.576***	0.553***	0.601***	0.578***	0.600***	0.604***	0.536***	0.532***	0.488***

	(0.051)	(0.035)	(0.036)	(0.053)	(0.054)	(0.036)	(0.027)	(0.023)	(0.028)	(0.028)
Technicians and associate	0.211***	0.238***	0.254***	0.408***	0.375***	0.154***	0.215***	0.251***	0.310***	0.348***
professionals	(0.052)	(0.034)	(0.037)	(0.048)	(0.059)	(0.030)	(0.021)	(0.022)	(0.028)	(0.038)
Clerks	0.095**	0.083***	0.129***	0.217***	0.189***	0.111***	0.157***	0.235***	0.269***	0.212***
	(0.037)	(0.029)	(0.030)	(0.042)	(0.046)	(0.024)	(0.020)	(0.025)	(0.025)	(0.027)
Service workers and shop	0.044	0.034	-0.037	-0.027	0.006	0.010	0.034**	0.060***	0.110***	0.080***
and market sales workers	(0.036)	(0.031)	(0.026)	(0.029)	(0.031)	(0.022)	(0.016)	(0.017)	(0.019)	(0.028)
Skilled agricultural and	-0.256	-0.109	0.049	-0.031	-0.055	-0.291**	-0.046	-0.010	-0.011	0.036
fishery workers	(0.477)	(0.122)	(0.168)	(0.101)	(0.097)	(0.125)	(0.072)	(0.042)	(0.041)	(0.074)
Craft and related trades	-0.975***	-0.421***	-0.147**	-0.123***	-0.086	0.085***	0.073***	0.104***	0.131***	0.099***
workers	(0.167)	(0.099)	(0.064)	(0.032)	(0.054)	(0.021)	(0.013)	(0.016)	(0.017)	(0.025)
Plant and machine operators	0.018	-0.014	-0.033	-0.060**	-0.131***	0.044**	0.037***	0.069***	0.095***	0.078***
and assemblers	(0.047)	(0.023)	(0.021)	(0.025)	(0.033)	(0.020)	(0.012)	(0.014)	(0.019)	(0.027)
Urban	0.022	0.034	0.032	0.033	0.008	0.060***	0.045***	0.004	-0.018	-0.034*
	(0.048)	(0.025)	(0.029)	(0.025)	(0.032)	(0.018)	(0.012)	(0.012)	(0.012)	(0.018)
Constant	4.086***	4.384***	4.773***	5.045***	5.275***	4.304***	4.675***	4.966***	5.266***	5.513***
	(0.062)	(0.040)	(0.047)	(0.047)	(0.047)	(0.041)	(0.037)	(0.030)	(0.030)	(0.053)
Observations			4,754					13,885		

*Source: HLFS 2002. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5A.6a - Quantile Regression Results (with sample selection correction) based on Model 4, 2012

	Women					Men				
VARIABLES	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Tenure	0.038***	0.030***	0.024***	0.029***	0.031***	0.012***	0.012***	0.014***	0.020***	0.019***
	(0.004)	(0.003)	(0.003)	(0.004)	(0.005)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Tenure squared	-0.001***	-0.001***	-0.000***	-0.001***	-0.001***	0.000	-0.000	-0.000*	-0.000***	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Highest level of education (ref: less than primary school)										
Primary school	0.021	0.028	0.092**	0.050	0.024	0.032	0.031	0.010	0.004	0.028
	(0.051)	(0.041)	(0.042)	(0.041)	(0.047)	(0.040)	(0.031)	(0.027)	(0.027)	(0.035)
Secondary school	0.040	0.072	0.152***	0.136***	0.085*	0.058	0.066**	0.041	0.057**	0.096***
	(0.066)	(0.049)	(0.041)	(0.046)	(0.046)	(0.042)	(0.032)	(0.028)	(0.029)	(0.037)
High school	0.142*	0.183***	0.249***	0.262***	0.304***	0.053	0.093***	0.107***	0.136***	0.195***
	(0.077)	(0.055)	(0.048)	(0.049)	(0.071)	(0.043)	(0.034)	(0.028)	(0.031)	(0.040)
Vocational or technical high school	0.073	0.127**	0.257***	0.255***	0.313***	0.097**	0.115***	0.130***	0.159***	0.209***
	(0.069)	(0.058)	(0.045)	(0.054)	(0.065)	(0.043)	(0.033)	(0.029)	(0.030)	(0.040)
University or higher	0.494***	0.541***	0.619***	0.635***	0.629***	0.210***	0.251***	0.299***	0.403***	0.546***
	(0.097)	(0.073)	(0.063)	(0.075)	(0.088)	(0.051)	(0.042)	(0.033)	(0.038)	(0.051)
Size of the workplace (ref: less than 10 employees)										
10-24	0.187***	0.130***	0.083***	0.058**	0.043	0.069***	0.063***	0.065***	0.076***	0.091***
	(0.038)	(0.024)	(0.028)	(0.029)	(0.030)	(0.019)	(0.014)	(0.014)	(0.017)	(0.020)
25-49	0.159***	0.144***	0.087***	0.051**	0.033	0.166***	0.121***	0.111***	0.125***	0.094***
	(0.037)	(0.025)	(0.026)	(0.024)	(0.033)	(0.016)	(0.012)	(0.010)	(0.014)	(0.016)
50 or more	0.225***	0.193***	0.134***	0.083***	0.078***	0.207***	0.178***	0.165***	0.184***	0.178***
	(0.034)	(0.025)	(0.025)	(0.025)	(0.026)	(0.015)	(0.011)	(0.010)	(0.014)	(0.017)
Part-time	0.286***	0.311***	0.326***	0.372***	0.457***	0.337***	0.380***	0.392***	0.528***	0.556***
	(0.103)	(0.038)	(0.032)	(0.042)	(0.060)	(0.080)	(0.025)	(0.038)	(0.057)	(0.080)
Social security	0.511***	0.385***	0.256***	0.135***	0.133***	0.274***	0.174***	0.118***	0.094***	0.090***
	(0.055)	(0.041)	(0.027)	(0.032)	(0.029)	(0.024)	(0.017)	(0.017)	(0.014)	(0.022)
Occupational Category (ref: elementary occupations)										
Legislators, senior officials and managers	0.371***	0.395***	0.506***	0.683***	0.682***	0.140***	0.313***	0.408***	0.569***	0.754***
	(0.082)	(0.052)	(0.057)	(0.082)	(0.075)	(0.053)	(0.032)	(0.027)	(0.044)	(0.054)
Professionals	0.244***	0.339***	0.398***	0.454***	0.543***	0.347***	0.380***	0.405***	0.425***	0.496***

	(0.056)	(0.035)	(0.030)	(0.042)	(0.046)	(0.026)	(0.024)	(0.022)	(0.019)	(0.029)
Technicians and associate professionals	0.098*	0.109***	0.178***	0.294***	0.310***	0.143***	0.172***	0.231***	0.286***	0.372***
	(0.057)	(0.037)	(0.030)	(0.045)	(0.051)	(0.028)	(0.022)	(0.020)	(0.021)	(0.026)
Clerks	0.047	0.051**	0.071***	0.122***	0.127***	0.143***	0.126***	0.162***	0.194***	0.220***
	(0.042)	(0.025)	(0.023)	(0.033)	(0.038)	(0.022)	(0.019)	(0.017)	(0.018)	(0.022)
Service workers and shop and market sales workers	-0.030	-0.012	-0.027	-0.028	-0.028	0.058***	0.054***	0.080***	0.131***	0.140***
	(0.043)	(0.034)	(0.025)	(0.027)	(0.026)	(0.019)	(0.016)	(0.015)	(0.018)	(0.020)
Skilled agricultural and fishery workers	0.032	0.017	-0.048	0.016	0.089	-0.270**	0.045	0.013	-0.009	0.057
	(0.436)	(0.140)	(0.102)	(0.137)	(0.148)	(0.130)	(0.074)	(0.041)	(0.035)	(0.087)
Craft and related trades workers	-0.814***	-0.323***	-0.053	-0.077***	-0.044	0.142***	0.101***	0.110***	0.168***	0.169***
	(0.183)	(0.110)	(0.045)	(0.029)	(0.039)	(0.017)	(0.013)	(0.012)	(0.014)	(0.018)
Plant and machine operators and assemblers	0.091	0.056*	0.003	-0.027	-0.057*	0.092***	0.072***	0.077***	0.106***	0.151***
	(0.059)	(0.029)	(0.025)	(0.024)	(0.034)	(0.018)	(0.014)	(0.011)	(0.012)	(0.020)
Economic activity (ref: manufacturing)										
Agricultural activities and mining and quarrying	-0.097	-0.041	-0.074	-0.015	0.076	0.052	-0.012	0.067**	0.155***	0.144***
	(0.174)	(0.052)	(0.060)	(0.052)	(0.085)	(0.032)	(0.028)	(0.029)	(0.018)	(0.032)
Electricity, gas and water supply	0.105	0.012	0.182	0.164	0.636	0.095***	0.087***	0.106***	0.135***	0.142***
	(0.075)	(0.139)	(0.156)	(0.256)	(0.439)	(0.036)	(0.033)	(0.024)	(0.038)	(0.052)
Construction	0.079	0.165*	0.118	0.070	0.176*	0.062**	0.120***	0.176***	0.261***	0.295***
	(0.130)	(0.087)	(0.076)	(0.062)	(0.101)	(0.024)	(0.016)	(0.018)	(0.023)	(0.026)
Wholesale and retail trade and hotels and restaurants	0.003	-0.020	-0.022	-0.016	0.019	-0.067***	-0.060***	-0.045***	-0.022	-0.039*
	(0.038)	(0.035)	(0.027)	(0.027)	(0.028)	(0.017)	(0.013)	(0.013)	(0.016)	(0.022)
Transport, storage and communications	0.097*	0.110**	0.077**	0.121*	0.192**	0.003	0.034*	0.094***	0.162***	0.180***
	(0.058)	(0.045)	(0.035)	(0.066)	(0.076)	(0.022)	(0.019)	(0.017)	(0.024)	(0.030)
Financial institutions, real estate and auxiliary activities	0.166***	0.173***	0.138***	0.145***	0.137***	0.063***	0.055***	0.055***	0.080***	0.031
	(0.041)	(0.031)	(0.022)	(0.029)	(0.034)	(0.018)	(0.016)	(0.013)	(0.019)	(0.024)
Public, social and personnel services	0.095**	0.105***	0.085***	0.092***	0.132***	0.002	-0.027	0.023	0.097***	0.129***
	(0.045)	(0.035)	(0.027)	(0.032)	(0.042)	(0.022)	(0.021)	(0.018)	(0.020)	(0.024)
Supervisory role	0.038	0.122***	0.166***	0.151***	0.208***	0.149***	0.135***	0.138***	0.158***	0.151***
	(0.053)	(0.041)	(0.036)	(0.049)	(0.057)	(0.024)	(0.021)	(0.019)	(0.024)	(0.031)
Private sector	-0.380***	-0.346***	-0.322***	-0.263***	-0.161***	-0.577***	-0.608***	-0.557***	-0.420***	-0.300***
	(0.038)	(0.032)	(0.026)	(0.032)	(0.043)	(0.025)	(0.019)	(0.018)	(0.021)	(0.022)
West Marmara	-0.114***	-0.124***	-0.171***	-0.217***	-0.293***	-0.126***	-0.157***	-0.210***	-0.278***	-0.309***
	(0.036)	(0.029)	(0.025)	(0.028)	(0.034)	(0.019)	(0.018)	(0.016)	(0.019)	(0.028)

Aegean	-0.156***	-0.157***	-0.162***	-0.162***	-0.199***	-0.203***	-0.185***	-0.201***	-0.234***	-0.242***
	(0.032)	(0.026)	(0.022)	(0.026)	(0.033)	(0.021)	(0.016)	(0.015)	(0.020)	(0.025)
East Marmara	-0.160***	-0.125***	-0.175***	-0.185***	-0.243***	-0.111***	-0.126***	-0.152***	-0.179***	-0.219***
	(0.042)	(0.022)	(0.022)	(0.026)	(0.035)	(0.020)	(0.016)	(0.017)	(0.021)	(0.028)
West Anatolia	-0.116***	-0.099***	-0.092***	-0.122***	-0.158***	-0.174***	-0.167***	-0.177***	-0.204***	-0.222***
	(0.043)	(0.029)	(0.021)	(0.029)	(0.037)	(0.018)	(0.016)	(0.015)	(0.018)	(0.025)
Mediterranean	-0.156***	-0.205***	-0.231***	-0.259***	-0.263***	-0.212***	-0.187***	-0.209***	-0.229***	-0.236***
	(0.038)	(0.033)	(0.024)	(0.029)	(0.036)	(0.021)	(0.014)	(0.015)	(0.021)	(0.029)
Central Anatolia	-0.204***	-0.159***	-0.140***	-0.166***	-0.222***	-0.239***	-0.239***	-0.255***	-0.278***	-0.305***
	(0.053)	(0.042)	(0.037)	(0.034)	(0.043)	(0.026)	(0.020)	(0.018)	(0.026)	(0.031)
West Black Sea	-0.217***	-0.172***	-0.242***	-0.277***	-0.281***	-0.223***	-0.199***	-0.243***	-0.259***	-0.248***
	(0.063)	(0.033)	(0.028)	(0.038)	(0.051)	(0.026)	(0.021)	(0.018)	(0.025)	(0.036)
East Black Sea	-0.225***	-0.234***	-0.264***	-0.250***	-0.233***	-0.185***	-0.200***	-0.231***	-0.241***	-0.263***
	(0.038)	(0.035)	(0.033)	(0.042)	(0.062)	(0.023)	(0.021)	(0.022)	(0.024)	(0.037)
Northeast Anatolia	-0.079	-0.199***	-0.172***	-0.156**	-0.214***	-0.216***	-0.197***	-0.213***	-0.253***	-0.294***
	(0.052)	(0.053)	(0.041)	(0.061)	(0.060)	(0.036)	(0.025)	(0.023)	(0.026)	(0.030)
Centraleast Anatolia	-0.176***	-0.200***	-0.185***	-0.206***	-0.158***	-0.220***	-0.247***	-0.251***	-0.248***	-0.293***
	(0.062)	(0.062)	(0.053)	(0.064)	(0.061)	(0.034)	(0.024)	(0.031)	(0.024)	(0.033)
Southeast Anatolia	-0.330***	-0.207***	-0.271***	-0.252***	-0.322***	-0.254***	-0.256***	-0.266***	-0.306***	-0.314***
	(0.095)	(0.053)	(0.060)	(0.046)	(0.041)	(0.026)	(0.020)	(0.019)	(0.020)	(0.031)
Urban	0.055	0.030	0.035	0.015	0.020	-0.727***	-0.382***	-0.104	0.128	0.483***
	(0.044)	(0.024)	(0.028)	(0.026)	(0.035)	(0.152)	(0.121)	(0.102)	(0.118)	(0.156)
λ	0.567***	0.531***	0.361***	0.342***	0.244**	-1.018	-0.889*	-0.120	-0.309	0.577
	(0.105)	(0.089)	(0.076)	(0.092)	(0.118)	(0.678)	(0.476)	(0.399)	(0.431)	(0.665)
λ squared	-0.192***	-0.180***	-0.113***	-0.104***	-0.072**	-0.441	-0.032	-0.143	0.328	0.260
	(0.039)	(0.029)	(0.027)	(0.029)	(0.035)	(0.406)	(0.321)	(0.240)	(0.231)	(0.352)
Constant	4.159***	4.475***	4.870***	5.169***	5.322***	6.554***	6.357***	5.911***	5.687***	4.966***
	(0.130)	(0.116)	(0.092)	(0.107)	(0.142)	(0.380)	(0.263)	(0.240)	(0.286)	(0.403)
Observations			4,754					13,885		

*Source: HLFS 2012. Standard errors in parentheses. *, **, *** indicate statistical significance at 10%, 5% and 1% respectively.*

Table 5A.7a - Comparison of Quantile Regresssion Decompositions with Oaxaca and Blinder Decomposition, 2002

	Quantiles		Female wage distribution	Male Wage Distribution	Total difference	Characteristics	Coefficients
Model 1	20	(Corrected)	4.790	4.840	-0.050	-0.132	0.081
		(Uncorrected)	4.790	4.843	-0.053	0.085	-0.138
	50	(Corrected)	5.617	5.481	0.136	0.304	-0.168
		(Uncorrected)	5.621	5.483	0.138	0.221	-0.083
	80	(Corrected)	6.300	6.147	0.153	0.272	-0.119
		(Uncorrected)	6.294	6.144	0.150	0.211	-0.060
	Oaxaca	(Corrected)	5.655	5.639	0.016	0.150	-0.210
		(Uncorrected)	5.515	5.497	0.019	0.167	-0.242
Model 2	20	(Corrected)	4.758	4.851	-0.093	0.057	-0.151
		(Uncorrected)	4.757	4.852	-0.095	0.106	-0.201
	50	(Corrected)	5.618	5.485	0.134	0.343	-0.210
		(Uncorrected)	5.620	5.485	0.135	0.262	-0.127
	80	(Corrected)	6.294	6.149	0.145	0.311	-0.165
		(Uncorrected)	6.292	6.148	0.144	0.238	-0.094
	Oaxaca	(Corrected)	5.543	5.558	-0.015	0.185	-0.310
		(Uncorrected)	5.515	5.497	0.019	0.191	-0.283
Model 3	20	(Corrected)	4.762	4.853	-0.091	0.194	-0.285
		(Uncorrected)	4.762	4.853	-0.092	0.094	-0.185
	50	(Corrected)	5.624	5.485	0.139	0.453	-0.314
		(Uncorrected)	5.626	5.486	0.141	0.259	-0.118
	80	(Corrected)	6.291	6.149	0.142	0.411	-0.268
		(Uncorrected)	6.289	6.148	0.141	0.235	-0.094
	Oaxaca	(Corrected)	5.524	5.575	-0.052	0.176	-0.320
		(Uncorrected)	5.515	5.497	0.019	0.184	-0.251

Table 5A.7b - Comparison of Quantile Regression Decompositions with Oaxaca and Blinder Decomposition, 2012

	Quantiles		Female wage distribution	Male Wage Distribution	Total difference	Characteristics	Coefficients
Model 1	20	(Corrected)	5.127	5.193	-0.066	-0.090	0.024
		(Uncorrected)	5.123	5.192	-0.069	0.044	-0.113
	50	(Corrected)	5.687	5.645	0.042	0.155	-0.114
		(Uncorrected)	5.691	5.646	0.045	0.160	-0.115
	80	(Corrected)	6.453	6.280	0.173	0.214	-0.041
		(Uncorrected)	6.452	6.281	0.171	0.201	-0.030
	Oaxaca	(Corrected)	5.720	5.801	-0.081	0.121	-0.223
		(Uncorrected)	5.748	5.727	0.020	0.129	-0.117
Model 2	20	(Corrected)	5.129	5.192	-0.063	-0.163	0.101
		(Uncorrected)	5.128	5.193	-0.065	0.045	-0.109
	50	(Corrected)	5.696	5.650	0.046	0.183	-0.137
		(Uncorrected)	5.697	5.650	0.047	0.196	-0.149
	80	(Corrected)	6.448	6.278	0.170	0.279	-0.109
		(Uncorrected)	6.450	6.278	0.172	0.260	-0.089
	Oaxaca	(Corrected)	5.684	5.740	-0.056	0.154	-0.275
		(Uncorrected)	5.748	5.727	0.020	0.156	-0.187
Model 3	20	(Corrected)	5.129	5.198	-0.069	-0.439	0.370
		(Uncorrected)	5.129	5.198	-0.069	0.070	-0.139
	50	(Corrected)	5.696	5.649	0.047	0.289	-0.242
		(Uncorrected)	5.698	5.650	0.049	0.193	-0.145
	80	(Corrected)	6.449	6.275	0.174	0.425	-0.251
		(Uncorrected)	6.448	6.276	0.173	0.278	-0.105
	Oaxaca	(Corrected)	5.720	5.807	-0.087	0.160	-0.294

		(Uncorrected)	5.748	5.727	0.020	0.167	-0.183
Model 4	20	(Corrected)	5.133	5.199	-0.066	-0.505	0.438
		(Uncorrected)	5.133	5.199	-0.066	0.043	-0.109
	50	(Corrected)	5.693	5.634	0.059	0.310	-0.251
		(Uncorrected)	5.694	5.634	0.060	0.173	-0.112
	80	(Corrected)	6.444	6.285	0.160	0.419	-0.259
		(Uncorrected)	6.444	6.284	0.160	0.271	-0.111
	Oaxaca	(Corrected)	5.755	5.813	-0.058	0.141	-0.259
		(Uncorrected)	5.748	5.727	0.020	0.150	-0.182

Source: HLFS 2012

Table 5A.8a - Industrial Composition across the Wage Distribution 2002 - Women, Men

	WOMEN					MEN				
	0-20th	21-40th	41-60th	61-80th	81-100th	0-20th	21-40th	41-60th	61-80th	81-100th
Agricultural activities and mining and quarrying	15.65	2.78	0.75	0.64	0.55	6.94	2.35	1.72	1.94	3.76
Manufacturing	38.71	44.44	27.43	9.11	7.21	23.55	36.43	31.87	16.93	16.45
Electricity, gas and water supply			0.25	0.16	0.42	0.09	0.3	0.68	2.41	3.67
Construction	0.81	1.07	1.75	0.8	1.11	16.7	11.96	10.13	5.25	6.92
Wholesale and retail trade and hotels and restaurants	15.97	17.31	17.71	3.83	3.19	30.67	25.61	16.27	6.86	5.34
Transport, storage and communications	1.61	1.71	2.24	3.67	5.69	7.67	7.17	7.1	8.75	9.4
Financial institutions, real estate and auxiliary activities	3.87	5.98	6.48	9.11	9.85	2.36	4.04	3.25	4.78	6.79
Public, social and personnel services	23.39	26.71	43.39	72.68	71.98	12.02	12.13	28.98	53.07	47.67
Observations	620	468	401	626	721	2,204	2,300	2,212	2,114	2,341

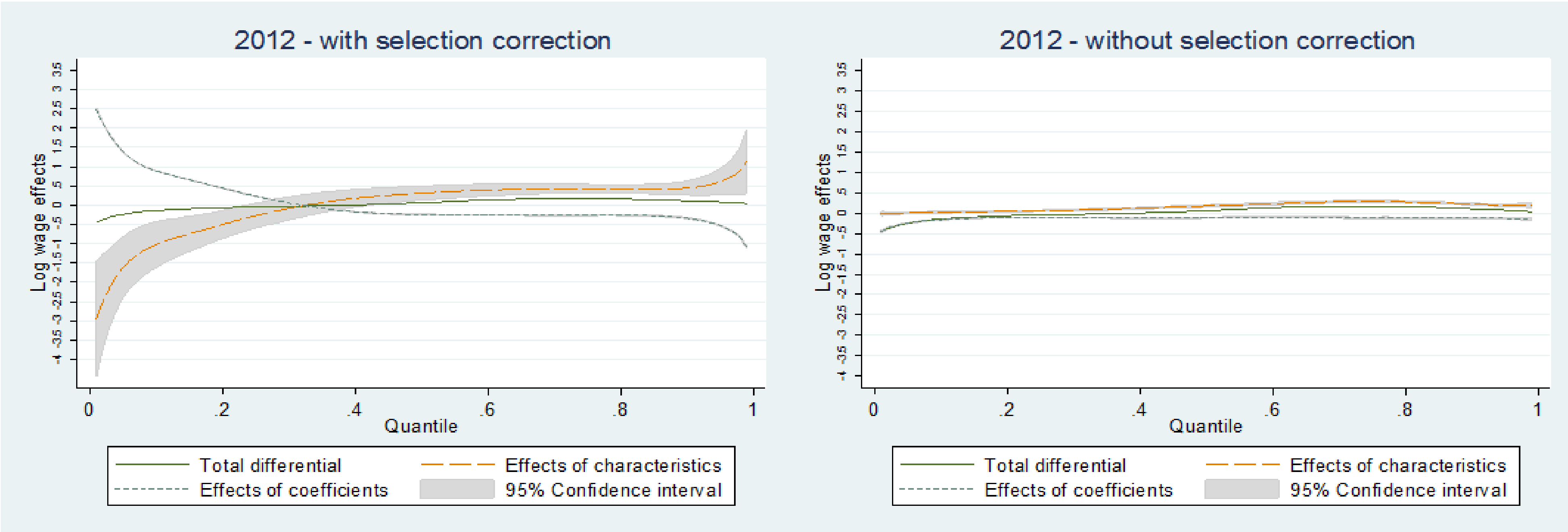
Source: 2002 HLFS

Table 5A.8b - Industrial Composition across the Wage Distribution 2012 - Women, Men

	WOMEN					MEN				
	0-20th	21-40th	41-60th	61-80th	81-100th	0-20th	21-40th	41-60th	61-80th	81-100th
Agricultural activities and mining and quarrying	9.64	1.97	1.11	0.78	0.43	6.5	3.16	2.81	2.36	1.08
Manufacturing	25.86	34.84	18.01	9.45	2.84	24.71	36.61	31.1	19.31	7.16
Electricity, gas and water supply	0.27		0.55	0.56	0.34	0.45	0.89	1.78	2.39	2.12
Construction	0.45	1.86	2.35	1.22	0.86	13.18	11.4	13.17	7.82	1.54
Wholesale and retail trade and hotels and restaurants	25.14	23.81	17.17	6.01	3.7	31.98	20.85	18.93	10.17	3.93
Transport, storage and communications	1.26	3.37	4.85	4.78	2.84	8.35	6.57	7.69	7.14	5.39
Financial institutions, real estate and auxiliary activities	7.12	14.98	22.44	13.13	7.31	7.93	14.45	14.13	7.03	4.97
Public, social and personnel services	30.27	19.16	33.52	64.07	81.67	6.89	6.07	10.39	43.77	73.82
Number of observations	1,110	861	722	899	1,162	2,861	2,816	2,810	2,801	2,597

Source: 2012 HLFS

Figure 5A.1- Decomposition Results based on Model 4 2012 (with and without selection correction)



Source: HLFS 2012

Chapter 6: CONCLUSION

6.1 Concluding Remarks

This thesis sheds light on some of the most crucial and interrelated gender unequal practices that lead to underrepresentation of women in the labour market and their being incorporated into unrewarding forms of employment. In addition to the main obstacles women face in entering the labour market, it investigates the extent of occupational gender segregation and gender wage differentials, all of which contribute to Turkey's poor performance in achieving gender equality in employment outcomes.

The first substantive chapter of the thesis (Chapter 3) analyses the determinants of women's employment in Turkey. Building on the previous literature, it investigates whether traditional or conservative social norms and cultural values in Turkey provide an additional explanation to the arguably low and stagnant employment rates of women, which contrasts with the improvements in female education and declining fertility rates in the country and also, with the increasing trend observed in countries with similar levels of economic development to Turkey. Benefiting from the rich set of information available in the TDHS-98 and TDHS-08, a composite index that consists of four sub-indices – traditional marriage index, contraception knowledge and usage index, attitudes towards domestic violence index, attitudes towards gender equality index – is formed. The sub-indices are developed by using a polychoric PCA which extracts the common information inherent in several indicator variables for the extent of social norms and culture. The composite index value presents a decline in the prevalence of discriminatory traditional and cultural norms and practices over the years under consideration. The mean index value decreases from 0.169 in 1998 to 0.096 in 2008. However, traditional values persist. A considerable portion of women continue to internalise traditional gender roles, have accepting attitudes towards domestic violence and improvements in the extent of traditional marriages have been particularly weak over the years under consideration (the mean traditional marriage index value is 0.339 in 1998 and 0.284 in 2008).

The employment status of women is analysed using a MNL model. Accordingly, four employment states are distinguished from each other. These are, waged employment, self-employment, unpaid family work and not working (reference category). Doing so allows consideration of differentials in the effect of the various determinants on women's employment states and challenging the standard conclusions on the factors affecting women's employment. In parallel, the MNL results show that while being married and having children limit women's waged employment to a large extent, their effects are insignificant or even have a positive impact on women's unpaid work.

In line with the previous research, amongst the various explanatory variables, higher education has a marked importance and is associated with a notably higher probability of women being in waged employment compared to all other employment states. On the other hand, economic need is shown to act as an important driving force for women's employment in Turkey; living in wealthier households are associated with decreased probabilities of employment in all forms. This implies that a portion of women might have preferred not working if they were not constrained by economic hardship.

In addition to providing a more detailed investigation of the determinants of women's employment by using more years of data and better measures, the key contribution of Chapter 3 is to uncover the strong link between traditional or conservative social norms and culture prevalent in Turkey and women's employment status, even when controlling for the standard determinants such as education, marital status or the presence of young children at home. It is shown that, while traditional or conservative values reduce women's chances of waged employment, they are also associated with a greater probability of women being an unpaid family worker or working in the informal segment of waged employment. Most importantly, although lower than the effect of higher education, the marginal effects of the indices developed as proxies for social norms and culture are shown to be comparable with those observed for the presence of children or household wealth which are amongst the most pronounced elements of women's employment.

After revealing the potential reasons behind women's consistently low employment rates in Turkey in Chapter 3, Chapter 4 points to the situation of employed women by providing an analysis of the occupational gender segregation in Turkey. Particularly, it investigates the extent to which women are segregated into less-rewarding occupations compared to men. Occupational gender segregation is analysed as a consequence of vertical and horizontal dimensions following Blackburn et al. (2001). Based on this approach, it is the vertical dimension which investigates the extent of inequality associated with occupational gender segregation, whereas the horizontal dimension captures the differentiation in the occupational distribution of men and women without an implication of inequality in terms of the vertical criteria. The analysis undertaken in Chapter 4 represents the first application of this method for a developing country where the industrialisation process is not yet complete.

Following the standard practice, as it is the most pronounced form of inequality, average pay levels across the occupations are used to measure the vertical dimension of occupational segregation. However, what is novel in the analysis undertaken in Chapter 4 is the consideration of social rewards of holding an occupation. Following the CAMSIS approach, a social stratification scale is constructed by using a Correspondence Analysis based on the 2010 HLFS. In addition to the average pay levels, the stratification scale is used as a measure to rank occupations on the vertical axis. The analysis, therefore, contributes to the occupational gender segregation literature on the labour market in Turkey by providing the first robust estimation of the extent to which women are segregated into occupations that are less prestigious and rank lowly in the social hierarchy.

The social stratification scale derived for Turkey is found to be highly correlated with the ICAM and ISEI which ensures its validity. Similar to the stratification order observed elsewhere, professionals and corporate managers are shown to be at the top end of the social stratification order whilst manual work is shown to locate at the lowest end of the continuum. This holds for both men and women; however, agricultural occupations rank slightly lower for men.

Occupational gender segregation analysis is first performed amongst regular/casual employees as the pay data is available only for them. The results obtained from the vertical dimension indicate that women are more likely to be employed in occupations that are less well-paid and rank lower across the social stratification structure compared to men. The disadvantaged position of women is found to be more pronounced when the vertical dimension is measured by the social stratification scale scores. Women's unfavourable position both in terms of pay and social stratification is even greater when the analysis is performed amongst *non-agricultural* paid work.

On the contrary, when the analysis is expanded to the whole sample for exploratory purposes (including all forms of employment and agricultural occupations) and, thereby, the vertical dimension is measured only by the stratification scale score, a paradoxical result is observed; women appear to have an advantaged position over men. As discussed in Chapter 4, several studies for industrialised countries have noted the favourable situation of women in terms of the positions of the occupations they hold in the social stratification scale. This is attributed to women's increased representation in non-manual work as a result of industrialisation, especially amongst professionals, that rank highly in the social hierarchy. This thesis argues that a different explanation should be sought for Turkey because, as also discussed in Chapter 2, the industrialisation process has not yet been successful in creating job opportunities for women. Women are still concentrated in manual work, especially agricultural activities, and their share amongst professionals or other prestigious occupations remains small. Indeed, women's advantage is shown to be artificial and due to agricultural occupations' dominating effects on the segregation measures. For precisely this reason, agricultural occupations are conventionally excluded from the occupational gender segregation analysis.

As with the studies performed for other countries, the size of the horizontal dimension is found to be greater than that of the vertical dimension. That is, the overall differentiation in the employment patterns between men and women is due more to the fact that they are employed in horizontally different occupations. However, this may well reflect the narrow occupational choices available to them. Moreover, in terms of the non-agricultural paid work, the vertical component measured by the stratification scale - the inequality associated with the tendency of women to be employed in occupations that rank considerably low in the social hierarchy - contributes to the overall segregation to almost the same extent as the horizontal component.

The final empirical work, presented in Chapter 5, provides an extensive discussion on the gender wage gap and its evolution in Turkey based on 2002 and 2012 HLFS. The chapter aims at questioning the validity of the optimistic gender wage gap figures recently reported for Turkey, given the substantial gender employment gap. If the very few women in waged employment are those who have characteristics that are associated with higher wages, the observed gender wage gap is likely to be underestimated when compared with the one that could be observed if the employment rates of men and women were equal (see Olivetti and

Petrongolo, 2008; Albrecht et al., 2009). The main contribution of Chapter 5 is to investigate the possibility of non-random selection into employment in a quantile regression framework, which has been ignored by the gender wage gap studies for Turkey. Accordingly, following Buchinsky (1998), sample selection corrected quantile regressions are estimated. The estimated gender wage gaps at different quantiles are then decomposed into a part due to differences in the characteristics of men and women (characteristics effect) and a part due to difference in returns to these characteristics (coefficients effect) (Machado and Mata, 2005; Albrecht et al, 2009).

The results indicate a statistically significant positive selection into employment for women in the sample both in 2002 and 2012. Therefore, it is possible to argue that the gender wage gap figures for Turkey are underestimated, as women with low wage characteristics do not appear across the wage distribution. It is important to interpret these figures cautiously as they can be misleading and hide gender unequal practices embedded in the labour market.

As with the recent studies for the gender wage gap in Turkey, women's wage advantage at the mean is also observed in this chapter. According to our findings, women start earning more than men after around the 40th quantile in each year; though the wages converge at the top of the wage distribution. However, the decomposition results show that this is due to the positive characteristics effect; women have better labour market characteristics than men. For example, they are more educated or are employed in workplaces that are associated with higher wages. When controlling for such characteristics, women are consistently found to receive lower returns than their male counterparts at the same end of the wage distribution (negative coefficients effect). Therefore, although women appear to have a wage advantage over men, the labour market still operates to their detriment. Women are less well-rewarded even though they have the same labour market characteristics as men. The negative coefficients effect becomes even greater at the top end of the wage distribution and the size is shown to be larger in 2012. That is to say, women with high wage potentials are in an unfavourable position compared to their male counterparts and their situation worsens over the years under consideration.

On the contrary, improvements are observed for women with low-earnings potentials from 2002 and 2012. Although women earn less than men below the 40^{th} quantile, they are rewarded better than men for the same labour market characteristics. Moreover, the extent of this positive discrimination is larger in 2012, especially when the analysis controls for the industrial composition. This certainly requires a detailed further investigation. However, one reason can be women's decreased representation in tradable sectors in 2012, where the jobs are often concentrated in the lowest paid and most insecure segments and women are consistently found to receive lower returns for their productive characteristics (Berik et al., 2004; Menon and Rodgers, 2009; Aydiner-Avsar, 2010).

Amongst the potential limitations of the analyses presented in this thesis, most are related to the data constraints. First of all, the data sets used in the empirical analyses presented in the three substantive chapters are all cross-sectional data sets. No panel data set is currently available in Turkey which, particularly, limits the analyses presented in Chapter 3 and Chapter 5. However, it is believed that the chosen years not only provide snap-shots for the years under consideration but also provide an insight into the changing characteristics of female employment and the wage structure in Turkey over time. In future studies, implementation of pseudo-panels and/or cohort analysis will be considered in order to provide a more dynamic analysis of women's employment and the gender wage differentials.

As also mentioned in Chapter 3, although TDHS surveys provide a rich set of information, there are still many dimensions of social norms and cultural values that remain unexplored. For example, given the prevalence of agriculture and small-scale family farms in Turkey, it could have been useful to highlight women's limited control over land, information which was not available in TDHS-98 and TDHS-98. Moreover, the contraception knowledge and usage index could have been measured better if there were more data on women's reproductive autonomy. Most importantly, the indices presented in Chapter 3 capture only women's attitudes and perceptions. It could have been an important contribution to the literature if data on men's attitudes towards traditional gender roles were available. In addition to these conceptual concerns, as a robustness check, structural equation modelling (SEM)[122] might be considered in future research on the role of social norms and culture on women's employment. This can assist in further investigation on the causality between female employment and traditional values.

Further potential limitations of the thesis, as emphasised in Chapter 4, relate to the limited occupational categories used in developing the stratification scale and the occupational segregation indices. It is possible that the stratification structure may not be well-presented and the segregation figures are under-estimated. It is, therefore, crucial to update the stratification scale and the associated occupational gender segregation indices presented in this thesis in the future when, hopefully, data on a more detailed occupational groupings become available. In future work, it is worthwhile investigating the extent to which men and women are segregated into different fields of studies in Turkey, which is likely to contribute to the occupational gender segregation in the labour market. Finally, with regards to the changing wage decomposition results from 2002 to 2012 shown in Chapter

[122] SEM identifies latent variables (social norms and culture in this research) using one or more observed variables (indicators) and it defines a structural regression model which links the latent variables (Kline, 2011).

5, especially when the industry dummies are included in the analysis, it can be a valuable exercise to provide a detailed analysis on the changes in industrial composition and its effect on gender wage differentials in future research on gender wage differentials in Turkey.

6.2 Policy Implications

As noted throughout the thesis, there have been significant attempts in achieving gender equality in access to employment and equal pay, especially after Turkey's ratification of CEDAW in 1985 together with the ongoing accession negotiations with the EU. Although it is certainly crucial to have a legal basis for gender equality, the results presented in this thesis provide an insight into the fact that equality before law, on its own, is insufficient to enable women to enjoy their right to have equal employment outcomes. It is important to acknowledge the unequal power relations amongst men and women, discriminatory social norms and gender stereotypes that are deeply embedded in peoples' lives in Turkey.

Forced marriages and early motherhood, limits to women's reproductive autonomy, internalised and/or normalised gender roles manifesting themselves through women's accepting attitudes towards domestic violence and their consent on men's superiority are amongst the various outcomes of discriminatory practices that this thesis was able to identify. Accordingly, one consequence of such practices is to limit women's access to employment or push them into the low status, less-paid, and mostly informal segment of the market. Thereby, it is essential to challenge social norms and gender stereotypes that limit women's bargaining power at home and in the labour market and enable women to realise their talents and capacities. It is equally crucial for the policies to target men, in addition to women, in order to alter the traditional gender roles that ascribe men as the provider and the head of household and challenge the mind-sets that regard men as being superior to or protector of women.

As with the rest of the world, women do a disproportionate share of housework and are mostly responsible for the caring activities in Turkey. Although unpaid care and domestic work has a fundamental role in reproducing the labour force, as shown in the thesis this remains an important limit for women's access to favourable paid employment where their contributions are rightfully valued. In order to incorporate more women in decent workplaces, it is important to transform the attitudes on responsibilities and encourage more men to take up domestic and unpaid care activities. In this regard, work and family reconciliation policies that mainly rely on women's inactivity should be challenged. Policies should aim to enable men and women to share domestic work and caring responsibilities equally, for example, introducing a comprehensive paternity leave provision can be a significant step in transforming traditional gender roles. Finally, with regards to reconciling work and family, providing accessible and affordable childcare and care for the elderly are still important in enabling women to enter and remain in the labour market.

Gender stereotypes within the households and the labour market continue to define suitable jobs for men and women and how they should be rewarded for their contributions. Decomposition of the gender wage gap presented in this thesis show that, even when men and women have the same labour market characteristics, women are less well-rewarded than men. Moreover, women are segregated into "female occupations" that are undervalued, compared to the occupations that men hold, and are associated with low pay and status. These results persist despite the closing of the gap between the educational qualifications of men and women in Turkey. Education can, however, still be an important policy tool if revised in a way to promote gender equality from the early ages. Moreover, by adopting new educational and training programs, women and men can be encouraged to choose gender atypical fields of studies, without being exposed to prejudice. This may help to reduce occupational gender segregation by making broader occupational choices available for both men and women. In parallel, it is also essential to monitor the transition between education and the labour market, particularly for women, as organisations can be unwilling to hire women or create barriers to their progress in traditionally male dominated occupations.

Overall, this thesis provides evidence that gender equality in employment outcomes in Turkey can only be achieved through a multidimensional, coordinated approach that enables legal reforms, labour market institutions and social institutions functioning together in promoting gender equality. It is also essential to acknowledge the vital role of women rights advocates, activists and supporters of the women's movement in Turkey, who have been consistently challenging gender stereotypes and discriminatory practices and pushing for women's rights to decent work. They remain to have crucial importance in making gender equality real in Turkey.

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