Finans Politik & Ekonomik Yorumlar (661) Eylül 2022: 127-154
Araştırma Makalesi

MOTHERHOOD WAGE PENALTY IN TURKEY*

Sinem SEFIL-TANSEVER[1]

Gönderim tarihi: 30.05.2022 *Kabul tarihi: 26.08.2022*

Abstract

The motherhood wage penalty refers to the wage differentials between mothers and women without children that cannot be attributed to differences in personal and job characteristics. The magnitude of the adverse impact of motherhood on women's wages depends on the institutional labor market framework of work-family balance and the cultural perception of maternal employment. The motherhood wage penalty is a potentially significant challenge for working mothers in the Turkish labor market, characterized by a low female labor force participation rate and a high gender wage gap. This study examines the motherhood wage penalty in Turkey on different wage levels by employing Buchinsky's (1998) quantile regression method with sample selection correction for the years 2018, 2019, and 2020 by taking into account education, experience, work intensity, and the relative wage level of the residing region. The study results showed that regular and casual wage earner mothers are subjected to different levels of motherhood wage penalties depending on their place in the wage distribution.

Jel codes: J24, J31, J81

Keywords: Motherhood wage penalty, wage inequality, quantile regression, sample selection

TÜRKİYE'DE ANNELİK ÜCRET CEZASI

Öz

Annelik ücreti cezası, anne olan ve olmayan kadınlar arasındaki kişisel ve iş özelliklerindeki farklılıklarla açıklanamayan ücret farklılıklarını ifade eder. Anneliğin kadınların ücretleri üzerindeki olumsuz etkisinin boyutu, iş-aile dengesi bağlamında kurumsal işgücü piyasası yapısına ve anne istihdamına yönelik kültürel algıya bağlıdır. Annelik ücreti cezası, kadınların işgücüne katılım oranının düşük ve cinsiyetler arası ücret farkının yüksek olduğu Türkiye işgücü piyasasında çalışan anneler için potansiyel olarak önemli bir zorluktur. Bu çalışma, Buchinsky'nin (1998) kantil regresyon yöntemini kullanarak 2018, 2019 ve 2020 yılları için Türkiye'de annelik ücreti cezasını eğitim, deneyim, iş yoğunluğu ve ikamet edilen bölgenin göreli ücret durumu dikkate alınarak örneklem seçimi düzeltmesi ile farklı ücret düzeylerinde incelemektedir. Araştırma sonuçları, ücretli ve yevmiyeli çalışan annelerin ücret dağılımındaki yerlerine göre farklı düzeylerde annelik ücreti cezalarına maruz kaldıklarını göstermiştir.

Jel Sınıflaması: J24, J31, J81

Anahtar Kelimeler: Annelik Ücret Cezası, Ücret Eşitsizliği, Kantil Regresyon, Örneklem Seçimi Düzeltmesi

[1] Istanbul Ticaret University, Economics (in English) Department, ssefil@ticaret.edu.tr , Orchid No: 0000-0001-7124-8618

* This paper was presented at the 21st National Economics Congress of the Turkish Economic Association, held on October 5-7, 2021. I would like to thank to Professor Alpay Filiztekin for his helpful comments and suggestions.

1. Introduction

The motherhood wage penalty refers to the wage disparities between mothers and women without dependent children, i.e., non-mothers. In some cases, it is also used to measure the wage differentials between mothers and fathers. It is a worldwide fact that women provide disproportionately more childcare than men. Despite significant improvement in gender equality and progress in work-family policies, motherhood is still strongly associated with adverse labor market outcomes such as low labor force participation, low working hours, and low wages around the world (Felfe et al., 2016; Blau and Kahn, 2017; Goldin 2014; Grimshaw and Rubery, 2015; Kleven and Landais, 2017; Goldin and Mitchell, 2017; Kleven et al. 2019; Chu et al.; 2021). However, being a father has a negligible adverse effect or no effect on men's labor supply and wages; it is even associated with a fatherhood wage premium in some cases (Killewald, 2013; Waldfogel, 1998; Addati et al., 2018; Glauber, 2018; Grimshaw and Rubery; 2015; Weeden et al., 2016; Cukrowska-Torzewska and Lovász, 2017; Kleven et al., 2019, Dias et al., 2020). Studies conducted for different countries show significant differences in motherhood wage penalty due to the difference in the estimation method and the differences in the institutional and cultural structure between countries. Another issue frequently discussed in the literature is selection bias, which occurs when working women with children are not a random sample of the female population who have children or when mothers' job choices are not random. The selection bias of female employees in the labor market can lead to inconsistent estimates of motherhood wage penalty if it is not corrected. Selection bias in household surveys can be corrected using alternative approaches. A frequently used model in motherhood wage penalty literature is Heckman's (1979) selection bias correction procedure which allows the researcher to deal with the high degree of non-randomness inherent in female labor force participation (Harkness and Waldfogel, 2003; Glauber, 2007; Krepp, 2007; Mandel and Semyonov, 2005; Budig et al., 2012; Nizalova and Sliusarenko, 2013; Zhao, 2018; Cukrowska-Torzewska and Matysiak, 2020; Villanueva and Lin, 2020). This study also employs Heckman's (1979) method to account for the sample selection bias.

Working women in Turkey have a disadvantageous position in the labor market with higher unemployment and lower labor force participation rates relative to men in Turkey and by international standards. As of 2020, Turkey performed worst among OECD countries with 35% of women's labor force participation rate and 15.1% of women's unemployment rate. The OECD rates for the same indicators were 63.8% and 7.5%, respectively. For the same year, women's labor force participation rate was 68.1%, and the unemployment rate was 8.3 % in the Euro Area. Meanwhile, men's labor force participation rate was

74.6%, and men's unemployment rate was 12.6% as of 2020 in Turkey. The disadvantaged status of women in the Turkish labor market is also evident in their relative wages. As of 2018, the median gender wage gap in Turkey was calculated as 16.1% in ILO (2018) report, while the mean OECD gender wage gap was 12.8% for the same year. Gender wage parity in Turkey was ranked 131st among 144 countries in the Global Gender Gap Report of 2017. A number of the studies examined working mothers' labor market experiences in Turkey from economic standpoint and predominantly sociological perspectives (Kulakaç et al., 2006; Ecevit, 2010; Dayıoğlu and Kırdar, 2010, 2019; Topgül, 2016; Küçükşen and Kaya, 2016; Soyseçkin, 2016; Sürgevil-Dalkılıç, 2015; Ünlütürk-Ulutaş, 2015; İlkkaracan, 2010, 2012; Metin and Kariman, 2013, Tekgüç et al., 2017; Negiz and Tokmakçı, 2011; Gökdemirel et al., 2008; Eken, 2005; Aycan, 2004, Kağnıcıoğlu, 2017; Akyol, 2018; Akyol and Aslan, 2020) mainly suggesting that motherhood brings additional challenges for working women in Turkey. Qualitative studies by Sürgevil-Dalkılıç (2015) and Akyol and Aslan (2020) reported that working mothers are exposed to bias, discrimination, psychological pressure in their workplace, also suffering from poor physical conditions, and lack of institutional support. However, these last two must be provided to working mothers at some level by the employers as they are guaranteed by law. According to the "Working Conditions of Pregnant or Breastfeeding Women, Lactation Rooms and Childcare Units, Article 13" issued in the official journal No. 28737, firms that employ between 100- 150 women, regardless of their marital status or age, must provide lactation rooms within the workplace and childcare units near 250 meters from the workplace. Nevertheless, legal gaps, lack of legal enforcement, and the high number of women working without job security in informal employment make these work-life balance policies ineffective in the Turkish labor market. Also, the insufficient number of nurseries for 0-3 age groups prevents mothers from participating in the workforce (again) in Turkey, as indicated in the World Bank report of 2015. Nevertheless, it can be inferred that the lack of formal childcare opportunities for infants seems to be not compensated by the cultural tendency for extensive involvement of grandparents in childrearing. Another institutional challenge for working mothers in Turkey is the relatively short length of paid maternity leave which was 16 weeks as of 2020, while the OECD average was 50.7 weeks for the same year. As a result, Turkey is among the seven countries that provide the shortest paid maternity leave among 39 countries in the OECD region. Along with these institutional and cultural challenges, low cultural support for maternal employment makes it difficult for women to balance motherhood and work; and join (or rejoin) the workforce in Turkey.

Despite being a potentially significant challenge for working mothers in the Turkish labor market, the motherhood wage penalty in Turkey has only been studied in a few cross-

country studies without a detailed investigation. However, to the best of our knowledge, there has been no attempt to examine the effect of motherhood on wage levels at different parts of the wage distribution in Turkey. This study aims to fulfill this gap by investigating the motherhood wage penalty in Turkey on different wage levels by employing Buchinsky's (1998) quantile regression method with sample selection correction for 2018, 2019, and 2020 by taking into account education, experience, and the work intensity of women, and the relative wage level of the region.

The rest of the study is structured as follows. Section 2 discusses the conceptual framework of the motherhood wage penalty, and section 3 offers an overview of the existing literature on the motherhood wage penalty estimations and their cross-country differences. Sections 4 and 5 explain the methodology, the data, and the variables, respectively. Section 6 presents the results, while section 7 discusses and concludes the findings.

2. A Conceptual Framework: Explanations and Importance of Motherhood Wage Penalty

The literature has offered several explanations for the wage gap between mothers and non-mothers. One can locate them in one of the following frameworks: economics, structural/sociological, and institutionalist approaches (Grimshaw and Rubery, 2015; Dumauli, 2019). According to the economic framework, the motherhood wage penalty occurs from declining human capital due to motherhood and working in family-friendly jobs. Motherhood is characterized by a break from the workforce, reluctance to seek vocational training, avoiding higher-paying jobs requiring more responsibility, and less commitment to work in the labor market. Eventually, all of these factors result in reduced human capital and knowledge. Also, after having children, women are more inclined to accept part-time jobs and, in many cases, have no choice but to take jobs with less responsibility which can be defined as "family-friendly" jobs that offer lower wages. The structural/sociological framework argues three main determinants of the motherhood wage penalty. The first factor is the discrimination in the labor market deriving from employers' hiring and promoting decisions based on the traditional stereotypical expectations of the time and energy the family places on the woman. The second factor is the market failure of the labor market and firms in offering childcare and other related measures for balancing work-family responsibilities. The third factor is the underestimation of women's work and unfair remuneration of women's skills, experience, and female-dominated occupations. Lastly, the institutionalist framework discusses the country-based variations in the motherhood wage penalty con-

cerning various applications and institutions affecting the mothers' labor. First, countries provide a wide variety of opportunities to women to access fair wages through particular policies to facilitate care and work, such as childcare provision, maternity leave, breast-feeding support, etc. Tax and benefit systems of the countries also make a difference to women's status within the family and as citizens in terms of their economic independence. The degree of general wage inequality in the country is another factor that influences the size of the motherhood wage penalty in the labor market. Cultural and family context is crucial for countries with less-institutionalized formal policy structures. Lastly, implementation gaps are striking, especially in developing countries where women work with risky contracts in the informal sector or formal employment, depriving them of their legal rights in leave and job protection.

The importance of the motherhood wage penalty stems from its effects and relation to some crucial issues of gender inequality. Any disadvantage of being a mother that fathers do not experience would adversely affect women and contribute to gender inequality in the labor market. The lower wage for employed mothers is just the most obvious price of motherhood, creating some other challenges and inequalities for working mothers. Budig and England (2001) summarized these challenges as follows: Lifetime earnings decline for women who have a period with no payments because of parental leave, resulting in lower retirement incomes. Lower wages for mothers may affect their bargaining power within the household and disturb the family dynamics to the detriment of women. For the case of single mothers, the motherhood wage penalty widens the gap between the poverty rates of households led by a single mother and households with an adult man. The motherhood wage penalty is also relevant to the broad social benefits of childrearing for a society. Since decent childrearing raises the chances that a child will grow up to be a good-natured and productive individual, it contributes to economic productivity and lowers the crime rates in a society. While mothers pay the penalty, the rest of the community who benefits from the resulting more productive economy bears no cost of rearing a child and becomes "free riders" on the mothers' efforts.

3. Literature Review

The motherhood wage penalty is a topic that has been discussed for a long time in the labor economics literature, which started as a by-product of comparing married and unmarried working women and continued within the scope of gender wage comparison. The literature on the subject has mainly developed with studies on median wage level estimations for developed countries. The motherhood wage penalty is typically estimated with linear logarithmic wage functions with a sample of working women, with explanatory variables for demographic and productivity characteristics, and variables for maternal status (dummy variables for being a mother or number of children, or a variable for the number of the children owned).

Hill (1979) was one of the first researchers to investigate the impact of motherhood on wages with such a model. Using PSID data for the US labor market, the study found a motherhood wage penalty of 7% for white women without productivity variables, showing that the motherhood wage penalty is significantly reduced when productivity variables are included in the model. Waldfogel (1997, 1998a, 1998b) estimated the motherhood wage penalty at 8% per child for the US labor market, while his fixed-effect model estimation results were 4.6% for the first child and 12.6% for two or more children. Assuming a priori that decreased work effort is responsible for the reduced wage of mothers, Anderson et al. (2002) did not obtain such a finding. They found a 3% and 6% wage penalty for one child and two or more children, respectively. A very influential study from Budig and England (2001) determined a 7% wage penalty for each child between 1982 and 1993 in the US. Using the fixed-effects method with microdata between 1982-1993, they found a 7% wage penalty for each child showing that mother-friendly attributes of jobs held by mothers explain only a little of the penalty. Molina and Montuenga (2009) examined the wage differences between mothers and non-mothers in Spain between 1994 and 2001 and found wage penalties varying between 6% and 15%, which increases with the number of children. They also reported no self-selection in the behaviors of mothers in the labor market. For the case of Germany, Felfe (2006) found a 20% difference in the wages and changes in job characteristics of women before and after the first child. Similar to US studies, Livermore et al. (2011) found a wage penalty of 5% for one child and 9% for two and more children in Australia, and Dumauli (2019) reported a 5.4% wage penalty per child in Japan.

Cross-country examinations of the motherhood wage penalty for developed countries offer a perspective on the importance of the institutional differences in terms of the women's work conditions in these societies. Cukrowska-Torzewska and Lovasz (2016) investigated the contribution of having a child to gender pay inequality with data from EU coun-

tries. Their findings showed that the extent of inequality is closely related to the institutional context. In Southern European Union countries, low motherhood wage penalties related to low gender wage inequality and sometimes even premiums have been detected. Although these countries are characterized by short maternity leaves, insufficient childcare contributions, and informal institutions that do not support the mother's participation in the workforce, mothers do not face significant wage penalties in the labor market. High childcare contribution of the state, medium-length maternity leave, supportive social norms, and flexible working opportunities in Western European Union countries keep the mothers' working status relatively higher and result in minor or small motherhood wage penalty. In central and eastern European countries, leaving the workforce for a long time due to motherhood-related absences from work, low childcare opportunities for children under the age of 3, and women's preference for family involvement result in low participation and wage of mothers in the labor market regardless of cultural norms and policies.

Another cross-country investigation of wage differentials between mothers and non-mothers is the study of Harkness and Waldfogel (2003) which examined the effects of being married and children's age on women's work in 7 developed countries. They found that the impact of the child on mothers' wages is more significant in England because in the UK, women work more in part-time and low-paid jobs, and even full-time workers are paid less than in other countries. In Nordic countries, the effect of motherhood on wages is low due to the related family policies, not to women's self-selection behavior, that is, to working in family-friendly jobs. A similar conclusion is reached by Sigle-Rushton and Waldfogel (2007), that found that the wage penalties are lowest in Nordic countries where laws for work-life balance facilitate single mothers' labor market participation and childcare wages are reliable. They showed that the highest wage penalties are observed in the USA, Canada, and England, with more liberal social systems. The motherhood wage penalty is moderate in Germany and the Netherlands, with more conservative welfare systems.

Developing country studies on motherhood wage penalty are mainly held for Latin American countries, highlighting the differences in institutional labor market framework and the cultural perception towards women participating in the workforce between developing and developed countries. Also, the role of the selectivity bias in developing countries draws special attention since women tend to accept the trade-off between working conditions and wages by choosing child-friendly jobs or industries in developing countries, as suggested by Amuedo-Dorantes and Kimmel (2005) and Nielsen et al. (2004). Villanueva and Lin (2006), Olarte and Pena (2010), and Piras and Ripani (2005) found significant motherhood wage penalties in Latin American countries, which are significantly higher relative to developed countries' cases. A comprehensive study by Agüero et al. (2017) ex-

amining the relationship between household size and women's wages using data from 21 Latin American and African countries found that the wage gap between mothers and non-mothers is higher in middle-income countries than in low-income countries. Two possible explanations have been offered for this finding: having a teenager creates a premium in low-wage countries, and wage discrimination based on work and occupation is not significant in low-income countries. The study of Nizalova et al. (2016), which examines the effect of being a mother on women's wages in Ukraine, is significant for the Turkish case because of the institutional and cultural similarities between these two countries in terms of having work-life balance laws with no legal enforcement for their practical implementation, state-funded childcare with limited capacity, lack of cultural support for maternal employment, and extensive involvement of grandparents in childcare. Analyzing the motherhood wage penalty between 1997 and 2007, Nizalova et al. (2016) found a 19% motherhood wage penalty in the Ukrainian labor market.

Despite the vast body of literature examining the motherhood wage penalty with median wage, quantile examination of the topic seems to gain momentum only recently, mainly for the US economy. Budig and Hodges (2010) found a higher motherhood wage penalty at the low wage levels by employing conditional quantile regression, while Killewald and Bearak (2014) found the wage differences between mothers and non-mothers to be higher at the middle-wage level than at the lower low and high wage levels by employing unconditional quantile regression.

England et al. (2016) also employed unconditional quantile regression and showed that high-paid and high-skilled women face higher motherhood wage penalties, possibly due to experience loss. Since high-skilled women have more return-to-experience, even not working in a short time increases the cost of having a child. With the same method, Glauber (2018) showed that low-middle and high-wage earner women pay similar motherhood wage penalties. Cooke (2014) found that women in Australia and Britain have more minor motherhood penalties across the bottom half of the distribution than in the US. A few developing country studies with quantile regression analysis reported increasing motherhood wage penalty across the wage distribution. Examining the post-Soviet Russian labor market, Pritchett (2016) showed that the wage differentials between women with and without children increase with wage level. Magadla et al. (2019) found higher wage penalties for being a mother at high wage levels in South African countries.

The motherhood wage penalty in Turkey has been examined only in a few cross-country studies. In an extensive report by ILO (2018), Turkey was the most disadvantaged country due to the 29.6% motherhood wage gap among upper-middle and lower-middle-income

countries. In their cross-country analysis of 37 countries, Chu et al. (2021) found a motherhood wage premium for 1994 and 2000 in Turkey. To the best of our knowledge, there has been no attempt to investigate the motherhood wage penalty along the wage distribution in the Turkish labor market. Thus, this study aims to fill this gap by exploring Turkey's motherhood wage penalty at different wage levels.

4. Methodology

This study employs Buchinsky's (1998) quantile regression method with sample selection correction to examine the effect of being a mother on wage level at different parts of the wage distribution. Following Heckman's (1979) two-step parametric method for sample selection correction and defining w as the logarithm of real hourly wage, the labor force participation equation can be written as

$$w_1 = x_1'\alpha_0 + v \quad (1)$$

where w_1 is a binary dependent variable that stands for labor force participation. x_1 is the vector, and v is the error term representing observable and unobservable characteristics that affect the decision to participate in the labor market, respectively, assuming that $E(v|x_1) = 0$. The wage equation, which represents the relationship between observed wage and personal attributes, can be written as

$$w_2 = x_2'\beta_0 + u \quad (2)$$

where β_0 is the vector that includes estimated coefficients and $E(u|x_2) \neq 0$ considering unobserved variables that have a role in the wage determination and are related to labor force participation decisions and other personal attributes.

Buchinsky (1998) adapted the wage equation of Heckman's (1979) two-step method to the quantile context as:

$$w_{12} = x_2'\beta_\theta + u_\theta \quad (3)$$

where θ stands for the selected quantiles. He defined $Q_\theta(w|x_2)$ as the representation of the quantile estimation of the relationship between wage conditionals to the attributes identified in x_2 for each quantile as:

$$Q_\theta(w|x_2) = x_2'\beta_\theta + u_\theta \quad (4)$$

where $u_\theta \equiv x_2'(\beta_0 - \beta_\theta) + u$. In this context, selectivity bias may affect the labor force participation decision and make the relationship between wages and motherhood incon-

sistent and biased. Given the fact that wage is only observed for those who are paid a wage above their reservation wage, equation 4 can be rewritten as:

$$Q_\theta(w|x_2) = x_2\beta_0 + Q_\theta(u_\theta|x_2, w_2 > w_1) \quad (5)$$

where $Q_\theta(u_\theta|x_2, w_2 > w_1) \neq 0$, which implies disturbances u and v are related to each other if selectivity bias exists. Buchinsky (1998) proposed a semi-parametric method for estimating a function known as index g to link u and v with a common error. In this context, the quantile wage equation with the selectivity bias correction can be defined as:

$$w = x_2'\beta_\theta + h_\theta(g) + \varepsilon_\theta \quad (6)$$

where the index g, $h_\theta(g)$ depends on the characteristics from equation 1.

The selectivity bias correction procedure is concentrated on the estimation of $h_\theta(g)$. The first estimation strategy was proposed by Heckman (1979), a parametric specification for obtaining an inverse Mill's ratio, which requires a bivariate normal distribution between the disturbances. Heckman's (1979) procedure is a parametric sample selection correction method with strong parametric assumptions such as the normal distribution of errors. Since quantile regression aims to see the effects of the variables at different parts of the wage distribution, using such strong assumptions covering the whole wage distribution is not preferred in the quantile context. Therefore, estimation of the g index is undertaken by employing semi-parametric or nonparametric methods in the quantile regression literature. Buchinsky (1998) suggested a two-step estimation method similar to Heckman (1979) for correcting the selectivity bias by using Ichimura's (1993) semi-parametric Least Squares (SLS) technique (Camaal, 2017). In this study, instead of Ichimura's (1993) method, the semi-nonparametric method proposed by Gallant and Nychka (1987) is employed for estimating the error terms.

5. Data and Variable Construction

The data employed in this study is from the 2018 to 2020 Income and Living Conditions Survey (SILC) compiled by the Turkish Statistical Institute (TurkStat). SILC is carried out annually under Eurostat's coordination to provide data on income, earnings, poverty, living conditions, and social exclusion. Since the SILC is not mainly designed to collect detailed demographic characteristics, it lacks direct information on the number of children born to each woman in a household. Nevertheless, it is possible to match the children and mother in a household; if the mother is the principal of the household or the spouse of the principal by combining data from three data sets of SILC, household data, individual data, and individual register data. To achieve this, the data is restricted to women who are either the head of households or the spouses of the head of households and working as regular employees or casual employees. This procedure has some drawbacks deriving from data, including only

children surviving at the time of the survey and excluding grown-up children who already left the household. Greulich and Dasré (2017) showed that the number of children reported in the SILC significantly decreases once women reach 40 years old. To eliminate this bias and observe women in their fertile ages, the data is reduced to women aged 16–46 at the time of the survey by following Felfe (2006).

The study uses two different wage equation constructs to measure motherhood's effect on wage levels. The first framework includes a dummy variable regarding being a mother. The second one contains three dummy variables regarding the number of children owned by the mother, namely, having one child, having two children, and having three or more children. The dependent variable of the wage equation is the logarithm of net hourly wages[2]. Since the wage is reported annually in SILC, an adjustment procedure for deriving a log of net hourly wages is applied following Tansel et al. (2019). In the first step, annual wage income is adjusted for inflation using the consumer price index-based 2003. The annual net wage is then divided by the number of months spent in the main job. This is divided by 4.3 to get the real weekly wage. Finally, the real hourly wage is obtained by dividing the weekly real wage by the total number of hours usually worked in the main job in a week. Apart from the variables regarding motherhood, other independent variables in the wage equation are years of schooling, a linear and quadratic term for experience, job intensity, a dummy variable showing residing in a region with wages above the mean, and inverse mills ratio. Years of schooling are the number of completed years of education, while experience is measured by years spent in paid work. Job Intensity is measured by the total number of hours usually worked in a week; residing in a region with wages above the mean is a dummy variable created on the NUTS2 level with 1 if the individual residing in a region with wage above the mean, and 0 otherwise. Finally, lambda is the inverse mills ratio

[2] In SILC, the reference period of income variable is the preceding calendar year while the reference period of other socio-economic, labor, and demographic characteristics are the year of the interview. For example, the wage in the 2019 survey covers the calendar year 2018. Therefore, it is possible that it does not correspond to the job characteristics described in the 2019 survey. Matching the income variables in the year t survey with all the other variables for the same individual in the year t-1 survey is not plausible in the case of the EU-SILC due to its design of four-year rotating panel, because it results in the loss of one-quarter of observations. More importantly for this study, the cross-sectional EU-SILC data cannot even be used for this exercise because linking the longitudinal and cross-sectional EU-SILC files is not presently possible [see Iacovou et al. (2012)]. Although this discrepancy between income and non-income variables is not considered problematic in many developed countries within the scope of the EU-SILC, it can result in a significant mismatch in developing countries with unstable labor markets. For the case of Turkish SILC, number of months spent in unemployment in the previous calendar year was reported as zero by 94%, 93,7%, and 94,5 % of the employees in 2018, 2019, and 2020 respectively. This may imply a stable labor market with the assumption of that job conditions do not change dramatically within a year.

derived from the labor force participation equation to correct the selectivity bias. Occupational or sectoral variables are not included in the analysis as they might be endogenous in the wage equation and be related to the decision to become a mother. The dependent variable in the labor force participation equation is a latent variable defining labor market participation (1 = working in the reference period, and 0 = otherwise). Size of housing which is measured as the number of rooms in the house, and three dummy variables representing being married, the presence of a grandparent in the same household, and the presence of nonlabor income in the household are included in the selection model as independent variables which are assumed to affect the mother's labor force participation decision, not their wages.

6. Estimation Results

The characteristic features of female employees in the mean are presented in Table 1. Each year, the mean age of mothers and non-mothers is 37 and 31.5, respectively. Non-mothers have approximately received an average of 2.5 years more education than mothers, while mothers have an average of 3 years more experience than non-mothers. While the average weekly working hours of non-mothers were slightly higher than mothers in 2018, the opposite was observed in 2019 and 2020.

Table 1. Descriptive Statistics (Mean)

	2018			2019			2020		
	Total	Mother	Non-mother	Total	Mother	Non-mother	Total	Mother	Non-mother
Age	35.8	37.0	31.6	4.4	37.0	31.5	35.7	37.0	31.4
Schooling	10.6	10.0	12.5	10.8	10.2	12.7	11.2	10.6	13.0
Experience	10.5	11.1	8.7	10.4	11.1	8.2	10.5	11.1	8.2
Weekly Working Hours	44.7	44.5	45.3	44.5	44.6	44.2	44.2	44.3	43.6

Source: Prepared by the author by using SILC data.

A detailed summary of the real hourly wage statistics of female employees can be seen in Table 2. The mean real hourly wage of non-mothers was 12.4% higher in 2018, 18.2% in 2019, and 17.1% in 2020 than mothers. The mean wage of mothers decreased by 1% in 2019 and increased by 6% in 2020, while the mean wage of non-mothers increased by 6.1% and 4.1% in 2019 and 2020, respectively. Different patterns are observed for employees with and without children when the net hourly wage is examined along the wage distribution. In the 10th quantile, it is seen that there was a 3.5% and 1.5% decrease in the hourly

net wages of women with and without children, respectively, in 2019. By 2020, the wages of non-mothers increased by 16.5%, while that of mothers increased by 7.7%. In the 75th quantile, the net hourly wage of mothers decreased by 2 %, while that of non-mothers increased by 7.8 percent in 2019. In the following year, the net hourly wages of mothers increased by 5.3%, while that of non-mothers increased by 4.26% in the same quantile. A similar pattern is observed in the 90th quantile as well. In 2019, there was a 2.4% decrease and a 1 % increase in the net hourly wages of mothers and non-mothers, respectively. In the following year, mothers' wages were 4%, while the wages of non-mothers increased by 11.8%.

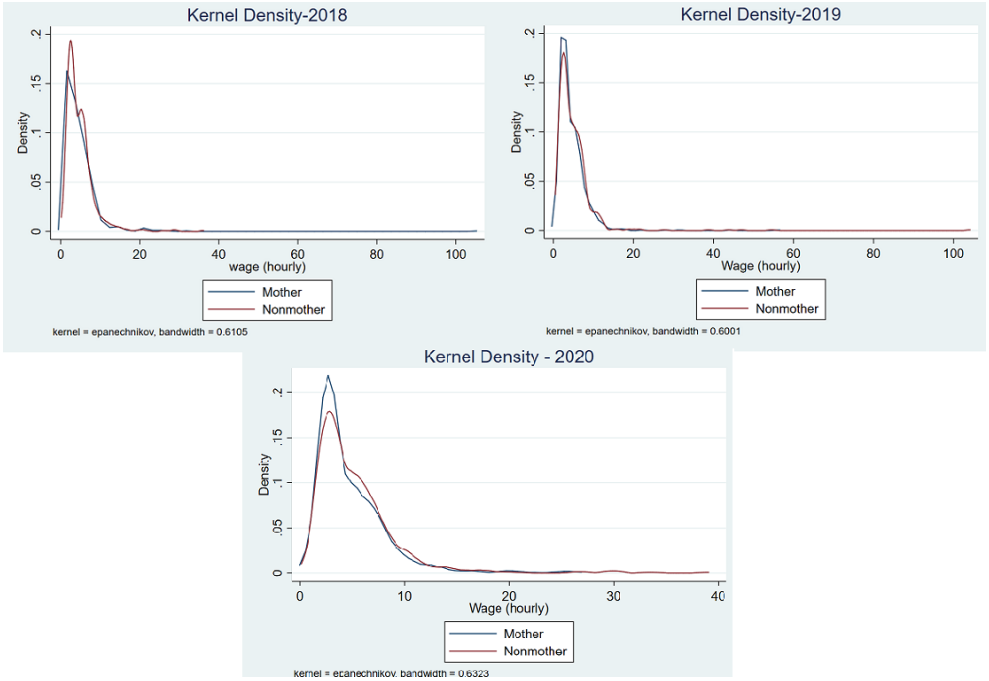
Table 2. Descriptive Statistics (Net Hourly Wage)

	2018			2019			2020		
	Total	Mother	Non-mother	Total	Mother	Non-mother	Total	Mother	Non-mother
Mean	4.31	4.18	4.77	4.35	4.14	5.06	4.58	4.37	5.27
Std. Dev.	4.00	4.09	3.64	4.24	3.55	5.97	3.74	3.60	4.09
q10	1.420	1.281	1.838	1.390	1.236	1.810	1.559	1.331	2.108
q25	2.135	2.049	2.402	2.160	2.085	2.326	2.423	2.321	2.679
q50	3.155	2.922	4.003	3.162	2.975	4.006	3.412	3.157	4.333
q75	5.637	5.550	5.909	5.692	5.524	6.371	6.042	5.819	6.643
q90	8.005	7.979	8.239	7.904	7.785	8.324	8.254	8.099	9.306
N	2703	2089	614	2812	2174	638	2723	2087	636

Source: Prepared by the author by using SILC data.

Wage distributions of women employees with the Kernel density functions for the years 2019, 2020, and 2021 can be seen in Figure 1. The wage distribution is skewed to the right in all three years for women with and without children suggesting that the mean is greater than the median. While the wage distribution of mothers in 2018 and 2020 was longer-tailed than that of non-mothers, the opposite was the case in 2019. In 2020, the difference between the median and the mean values appeared to have narrowed for both mothers and non-mothers, indicating that the right skewness has slightly improved.

Figure 1. Kernel Density Functions (Net Hourly Wage)



Source: Prepared by the author by using SILC data.

Quantile regression analysis results with the motherhood wage penalty variable regarding having a child for 2018 can be seen in Table 3. It appears that lambda, i.e., inverse mills ratio is statistically significant for each quantile; that is, selection bias correction is significant for 2018. Schooling is not statistically significant except for the 10th and 25th quantiles, which show a positive impact on education. The positive effect of experience on wages shows an inverted U behavior, so the highest impact is in the middle of the wage distribution. The adverse effect of work intensity is lowest at the lowest wage level and highest at the 50th and 75th quantiles. This effect appears to decrease at the highest wage level but is still stronger than at the lowest wage level. It is seen that the positive impact of residing in the region above the average wage level is the highest in the 90th quantile and the lowest in the 50th quantile. The motherhood wage penalty for having a child is statistically significant in each quantile. The negative impact of being a mother on the wage level is greatest at the lowest wage level, and the second greatest negative effect is seen at the highest wage level.

As seen in Table 4, quantile regression analysis with the "having child" variable for 2019 has similar patterns to the examination for 2018 regarding the effect and the significance of the independent variables. Years of schooling seem statistically insignificant except for the 75th and 90th quantile. The positive impact of experience on wages increases until the 50th quantile and reaches its lowest level in the highest wage level. The negative effect of work intensity increases up to 75 quantiles; although the effect is slightly lower at the top wage level, it is still higher than the 10th quantile. The positive impact of residing in a region with wages above the mean has a U-shaped behavior, with the lowest impact in the middle of the distribution and the highest at the ends. The negative impact of motherhood on the wage level also has a U shape pattern with higher levels at the top and the bottom of the wage distribution.

Table 3. Quantile Regression Results-Having Child (2018)

	q10	q25	q50	q75	q90
		2018			
schooling	0.020***	0.013***	0.006	0.001	-0.005
	(0.007)	(0.003)	(0.004)	(0.003)	(0.005)
experience	0.070***	0.071***	0.089***	0.078***	0.073***
	(0.014)	(0.007)	(0.008)	(0.006)	(0.011)
experience^2	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
work intensity	-0.017***	-0.025***	-0.035***	-0.035***	-0.027***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
The region above mean wage	0.142***	0.093***	0.077***	0.081***	0.188***
	(0.051)	(0.024)	(0.028)	(0.022)	(0.038)
child	-0.314***	-0.218***	-0.239***	-0.237***	-0.269***
	(0.060)	(0.028)	(0.033)	(0.026)	(0.044)
lambda	0.263***	0.239***	0.259***	0.232***	0.262***
	(0.068)	(0.032)	(0.038)	(0.030)	(0.050)
c	0.825***	1.484***	2.178***	2.520***	2.503***
	(0.162)	(0.076)	(0.089)	(0.070)	(0.119)
N	2,702	2,702	2,702	2,702	2,702
(Pseudo)R^2	0.173	0.195	0.2479	0.234	0.165

Source: Prepared by the author by using SILC data. Note: Standard errors are shown in the brackets.
*p < 0.05, ** p < 0.01, *** p < 0.001

Table 4. Quantile Regression Results-Having Child (2019)

	q10	q25	q50	q75	q90
		2019			
schooling	0.015**	0.015***	0.006*	0.005	0.003
	(0.006)	(0.005)	(0.004)	(0.004)	(0.007)
experience	0.051***	0.043***	0.054***	0.036***	0.033***
	(0.010)	(0.007)	(0.006)	(0.006)	(0.011)
experience^2	-0.002***	-0.001***	-0.002***	-0.001***	-0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
work intensity	-0.022***	-0.029***	-0.039***	-0.039***	-0.033***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.00the 2)
region above mean wage	0.149***	0.073**	0.047*	0.072***	0.180***
	(0.042)	(0.032)	(0.026)	(0.026)	(0.049)
child	-0.233***	-0.130**	-0.146***	-0.180***	-0.222***
	(0.047)	(0.036)	(0.029)	(0.028)	(0.054)
lambda	-0.078**	-0.034	-0.085***	-0.051**	-0.068
	(0.038)	(0.029)	(0.023)	(0.023)	(0.043)
c	1.452***	1.990**	2.814***	3.160***	3.220***
	(0.112)	(0.085)	(0.068)	(0.067)	(0.128)
N	2811	2811	2811	2811	2811
(Pseudo)R^2	0.222	0.215	0.279	0.260	0.189

Source: Prepared by the author by using SILC data. Note: Standard errors are shown in the brackets. *p < 0.05, ** p < 0.01, *** p < 0.001

For the year 2020, the positive effect of the years of schooling is significant along the wage distribution and is greatest at the lowest wage level, as shown in Table 5. The positive impact of the experience on the wage level displays inverted U behavior with a greater impact at the highest wage level than at the lowest wage level. The negative effect of work intensity increases until the middle of the distribution and then tends to decrease again. The negative impact of having a child on the wage level declines at the 25th quantile and rises again, peaking at the highest wage level. Tables 4 and 5 also reveal that sample selection bias is statistically significant for 2019, except for the 90th quantile in 2019.

Table 5. Quantile Regression Results-Having Child (2020)

	q10	q25	q50	q75	q90
		2020			
schooling	0.021***	0.013***	0.013***	0.010***	0.012**
	(0.007)	(0.004)	(0.003)	(0.003)	(0.005)
experience	0.038***	0.037***	0.046***	0.037***	0.044***
	(0.012)	(0.006)	(0.006)	(0.005)	(0.009)
experience^2	-0.002***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
work intensity	-0.015***	-0.027***	-0.038***	-0.034***	-0.029***
	(0.003)	(0.001)	(0.001)	(0.001)	(0.002)
region above mean wage	-0.021	-0.034	-0.003	0.012	0.040
	(0.055)	(0.029)	(0.026)	(0.025)	(0.041)
child	-0.206***	-0.143***	-0.189***	-0.206***	-0.356***
	(0.055)	(0.029)	(0.027)	(0.026)	(0.041)
lambda	-0.306***	-0.157***	-0.089***	-0.127***	-0.152***
	(0.068)	(0.036)	(0.033)	(0.032)	(0.051)
c	1.577***	2.188***	2.906***	3.123***	3.237***
	(0.110)	(0.059)	(0.053)	(0.051)	(0.083)
N	2,722	2,722	2,722	2722	2722
(Pseudo)R^2	0.2624	0.2476	0.3	0.2857	0.2179

Source: Prepared by the author by using SILC data. Note: Standard errors are shown in the brackets. $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The comparison of the motherhood wage penalty measured by the variable of having a child for the years 2018, 2019, and 2020 reveals no significant change in the order of magnitude of the effects in the 25th, 50th, and 75th quantiles. However, significant variations are observed in the lowest and highest wage levels. In 2018 and 2019, the negative impact of having a child on the wage level was most substantial at the lowest wage level, while it became strongest at the highest wage level in 2020.

The effect of the number of children owned on the women's wage for the years 2018, 2019, and 2020 are presented in Tables 6, 7, and 8. Sample selection correction seems statistically significant for all cases except for the 10th and 25th quantiles in 2019. The effect of education on wage level was positive but insignificant in the 90th quantile in 2018. In the same year, the positive impact of the experience was highest in the middle of the distribution, greater at the top quantile than at the lowest quantile. The negative effect of work

intensity was most substantial in the 50th and 75th quantiles and greater at the highest wage level than at the lowest wage level. The positive impact of residing in a region above the mean wage level was also more significant at the highest wage level than at the lowest wage level. Examination of the motherhood wage penalties for 2018 reveals that the negative effect of motherhood on wage level increases significantly at each quantile level as the number of children increases. The most substantial negative impact of having one child was at the highest wage level, while the negative effect of having 2 and 3 or more children was strongest at the lowest wage level.

Table 6. Quantile Regression Results-Number of the Children (2018)

	q10	q25	q50	q75	q90
		2018			
schooling	0.016**	0.016***	0.014***	0.008**	0.001
	(0.007)	(0.003)	(0.004)	(0.003)	(0.005)
experience	0.026**	0.034***	0.054***	0.051***	0.047***
	(0.012)	(0.006)	(0.007)	(0.006)	(0.009)
experience^2	-0.001**	-0.001***	-0.002***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
work intensity	-0.016***	-0.024***	-0.032***	-0.034***	-0.029***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
region above mean wage	0.109**	0.069***	0.079***	0.073***	0.157***
	(0.050)	(0.023)	(0.027)	(0.025)	(0.037)
one child	-0.063	-0.068**	-0.099***	-0.080**	-0.105**
	(0.066)	(0.031)	(0.036)	(0.034)	(0.050)
two children	-0.311***	-0.170***	-0.157***	-0.206***	-0.217***
	(0.067)	(0.031)	(0.036)	(0.034)	(0.051)
three or more children	-0.445***	-0.429***	-0.366***	-0.275***	-0.321***
	(0.085)	(0.040)	(0.046)	(0.044)	(0.064)
lambda	0.152***	0.204***	0.268***	0.271***	0.336***
	(0.046)	(0.021)	(0.025)	(0.024)	(0.035)
c	1.148***	1.645***	2.192***	2.586***	2.638***
	(0.125)	(0.058)	(0.068)	(0.064)	(0.094)
N	2702	2702	2702	2702	2702
(Pseudo)R^2	0.199	0.221	0.270	0.251	0.192

Source: Prepared by the author by using SILC data. Note: Standard errors are shown in the brackets. $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In 2019, the effect of education was insignificant at the lowest and highest quantiles. The positive impact of the experience was most substantial at the bottom end of the wage distribution and lowest at the top. The negative effect of work intensity seems stronger at the highest wage than at the lowest wage level. The positive impact of residing in the above-average wage area is U-shaped, with the strongest effect being at the highest wage level. As in the previous year's case, motherhood's negative impact on wages increased remarkably at each quantile level in 2019. The negative effect of having one and two children is most significant at the high end of the wage distribution, while having three or more children has the greatest negative impact at the bottom.

Table 7. Quantile Regression Results-Number of the Children (2019)

	q10	q25	q50	q75	q90
		2019			
schooling	0.008	0.014***	0.007*	0.006*	0.003
	(0.006)	(0.005)	(0.004)	(0.003)	(0.006)
experience	0.049***	0.039***	0.049***	0.041***	0.036***
	(0.010)	(0.007)	(0.006)	(0.006)	(0.010)
experience^2	-0.002***	-0.001***	-0.001***	-0.001***	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
work intensity	-0.021***	-0.027***	-0.038**	-0.038***	-0.032***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)
region above mean wage	0.106**	0.074**	0.052**	0.082***	0.142***
	(0.042)	(0.032)	(0.025)	(0.024)	(0.044)
one child	-0.066	-0.037	-0.076**	-0.122***	-0.174***
	(0.054)	(0.041)	(0.033)	(0.031)	(0.056)
two children	-0.253***	-0.131***	-0.172***	-0.221***	-0.285***
	(0.052)	(0.040)	(0.032)	(0.031)	(0.055)
three or more children	-0.594***	-0.453***	-0.346***	-0.318***	-0.373***
	(0.067)	(0.052)	(0.041)	(0.039)	(0.070)
lambda	-0.058	-0.029	-0.077***	-0.051***	-0.079*
	(0.039)	(0.030)	(0.023)	(0.023)	(0.041)
c	1.420	1.922	2.769***	3.124***	3.185***
	(0.110)	(0.085)	(0.067)	(0.064)	(0.116)
N	2811	2811	2811	2811	2811
(Pseudo)R^2	0.261	0.236	0.286	0.265	0.194

Source: Prepared by the author by using SILC data. Note: Standard errors are shown in the brackets. $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In 2020, the positive effects of education and experience and the negative effect of work intensity on wage level were highest in the middle of the wage distribution. Residing in a region with wages above the mean is statistically insignificant except at the highest wage level. The negative effect of having one child on wage level is insignificant at the 10th and 25th quantiles, increasing significantly from the middle to the top of the wage distribution. Similarly, the motherhood wage penalty regarding having two children is considerably stronger at the highest wage level. However, the negative effect of having three or more children on women's wages is greatest at the lowest wage level.

A comparison of motherhood wage penalties with the number of children over the years reveals that the wage penalties for having one, two, and three or more children increased from 2018 to 2020 at the highest end of the wage distribution. At the bottom of the wage distribution, such a clear-cut behavior cannot be observed for all categories. It is seen that from 2018 to 2020, the difference in motherhood wage penalty for having one child between 50th and 90th quantiles has increased. It is also observed that, in the 75th and 90th quantiles, the adverse effect of having one child on wages increased during the analysis period. The negative impact of having two children on wages decreased over the years at the lowest wage level and increased at the highest wage level. In the 50th and 75th quantiles, the motherhood wage penalty for having two children increased from 2018 to 2019; then, it fell below the 2018 level in 2020. The most substantial negative effect of having two children on wages is seen in the 10th quantile in 2018 and the 90th quantile in 2019 and 2020. During the analysis period, the strongest negative effect of having two children on wages is observed in the 90th quantile of 2020, and the strongest negative impact of having three or more children on wages is observed at the lowest wage level.

Table 8. Quantile Regression Results-Number of the Children (2020)

	q10	q25	q50	q75	q90
		2020			
schooling	0.015	0.016***	0.012***	0.008***	0.011**
	(0.006)	(0.004)	(0.003)	(0.003)	(0.005)
experience	0.032***	0.032***	0.041***	0.040***	0.034***
	(0.009)	(0.006)	(0.006)	(0.005)	(0.008)
experience^2	-0.001***	-0.001***	-0.001***	-0.001***	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
work intensity	-0.018***	-0.027***	-0.037***	-0.036***	-0.031***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
region above mean wage	0.007	0.003	-0.004	0.036	0.100***
	(0.039)	(0.028)	(0.024)	(0.022)	(0.034)
one child	-0.028	-0.048	-0.122***	-0.150***	-0.235***
	(0.041)	(0.029)	(0.025)	(0.024)	(0.036)
two children	-0.177***	-0.103***	-0.136***	-0.195***	-0.320***
	(0.041)	(0.029)	(0.025)	80.024)	(0.036)
three or more children	-0.585***	-0.428***	-0.392***	-0.337***	-0.423***
	(0.061)	(0.043)	(0.037)	(0.035)	(0.054)
lambda	-0.199***	-0.081***	-0.091***	-0.074***	-0.079***
	(0.041)	(0.029)	(0.025)	(0.024)	(0.036)
c	1.645***	2.164***	2.876***	3.087	3.194***
	(0.086)	(0.061)	(0.052)	0.050***	(0.076)
N	2722	2722	2722	2722	2722
(Pseudo)R^2	0.2951	0.266	0.312	0.2939	0.2285

Source: Prepared by the author by using SILC data. Note: Standard errors are shown in the brackets. $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

7. Conclusion

This study examines the motherhood wage penalty for being a mother and the number of children in the Turkish labor market along the wage distribution by employing quantile regression methodology with sample selection bias correction. By controlling the women's education, experience, work intensity, and the relative wage level of the region, it is found that regular and casual wage earner mothers are subjected to different levels of motherhood wage penalties depending on their place in the wage distribution. When the motherhood wage penalty is examined within the context of being a mother, it is seen that the negative

impact of being a mother on the hourly wage level was strongest at the bottom of the wage distribution in 2018 and 2019, while it became strongest at the top wage level in 2020. The examination of the motherhood wage penalty regarding the number of children in terms of having one child, two children, and three and more children reveals that the increase in the number of children at each wage level caused a significant increase in the motherhood wage penalty. While the adverse effect of having one child on real hourly wages is statistically insignificant at low wage levels, the motherhood wage penalty is higher at the highest wage levels than at the middle-wage levels. On the other hand, the negative impact of having one child on the wage levels at the middle and high wage levels seemed to increase from 2018 to 2020. The negative impact of having two children on real hourly wages is strongest at the lowest wage level in 2018 and strongest at the highest wage level in 2019 and 2020. The magnitude of the motherhood wage penalty for having three or more children was significantly higher than the other categories for all years and increased from 2018 to 2020 for all wage levels. The negative impact of having three or more children on real hourly wages is strongest at the low wage levels during the analysis period. Also, the sample selection bias correction is found to be significant except in a few cases, showing that the selection of mothers into employment in the Turkish labor market must be controlled for biases. The findings of this study point toward a need for further investigation of the motherhood wage penalty in the Turkish labor market via a detailed examination of the job and skill compositions of women employees to provide a better understanding of the impact of the labor and personal characteristics differences on the motherhood wage penalty.

References

Addati, Laura, Umberto Cattaneo, Valeria Esquivel, and Isabel Valarino. (2018). "Care Work and Care Jobs for the Future of Decent Work." International Labour Office, Geneva, Switzerland: International Labour Organization.

Agüero, Jorge M., Mindy Marks, and Neha Raykar. (2017). Economic Development and the Motherhood Wage Penalty. Unpublished. Available at: https://www.aeaweb.org/conference/2018/preliminary/paper/N4yheSRn

Akyol, Aylin. (2018). Anneliğin kadın çalışanlar üzerine etkileri: yorumsamacı bir alan araştırması. Basılmamış Doktora Tezi. Hacettepe Üniversitesi, Sosyal Bilimler Enstitüsü, Ankara.

Akyol, Aylin, and Mahmut Arslan. (2020). "The motherhood experiences of women employees: An interpretive field study in Turkey." Ege Academic Review, 20(4), 265-281.

Amuedo-Dorantes, Catalina, and Jean Kimmel. (2005). "The motherhood wage gap for women in the United States: The importance of college and fertility delay." Review of Economics of the Household, 3(1), 17-48.

Anderson, D. J., Binder, M., & Krause, K. (2002). "The Motherhood Wage Penalty: Which Mothers Pay It and Why?" The American Economic Review, 92(2), 354–358. http://www.jstor.org/stable/3083431

Aycan, Zeynep. (2004). "Key success factors for women in management in Turkey." Applied Psychology: An International Review, 53 (3), 453-477.

Blau, Francine D., and Lawrence M. Kahn. (2017). "The Gender Wage Gap: Extent, Trends, and Explanations." Journal of Economic Literature no. 55 (3):789-865.

Budig, Michelle J., and Paula England. (2001). "The wage penalty for motherhood." American sociological review, 204-225.

Budig, Michelle J., Joya Misra, and Irene Boeckmann. (2012). "The motherhood penalty in cross-national perspective: The importance of work-family policies and cultural attitudes." Social Politics, 19(2), 163-193.

Budig, Michelle, and Melissa Hodges. (2010). "Differences in disadvantage: How the wage penalty for motherhood varies across women's earnings distribution." American Sociological Review, 75(5), 705-728.

Buchinsky, Moshe. (1998). "Recent advances in quantile regression models: a practical guideline for empirical research." Journal of human resources, 88-126.

Caamal Olvera, Cinthya G. (2017). "Decreasing returns to schooling in México." Estudios económicos, 27-63. Recuperado de https://ideas.repec.org/a/emx/esteco/v32y2017i1p27-63.html

Chu, Yu-Wei Luke, Harold E. Cuffe, and Nguyen Doan. (2021). Motherhood Employment Penalty and Gender Wage Gap Across Countries: 1990–2010. Available at SSRN 3584920.

Cooke, Lynn Prince. (2014). “Gendered parenthood penalties and premiums across the earnings distribution in Australia, the United Kingdom, and the United States.” European Sociological Review, 30(3), 360-372.

Cukrowska-Torzewska, Ewa, and Anna Lovasz. (2016). “Are children driving the gender wage gap? Comparative evidence from Poland and Hungary.” Economics of Transition, 24(2), 259-297.

Cukrowska-Torzewska, Ewa, and Anna Lovasz. (2017). The Impact of Parenthood on the Gender Wage Gap–a Comparative Analysis of European Countries and Family Policies. Budapest Working Papers on the Labour Market.

Cukrowska-Torzewska, Ewa, and Anna Matysiak. (2020). “The motherhood wage penalty: A meta-analysis.” Social Science Research, 88, 102416.

Felfe, Christina, Michael Lechner, and Petra Thiemann. (2016). “After-school care and parents' labor supply.” Labour Economics, 42, 64-75.

Goldin, Claudia. (2014). "A Grand Gender Convergence: Its Last Chapter." American Economic Review no. 104 (4):1091-1119.

Goldin, Claudia, and Joshua Mitchell. (2017). "The New Life Cycle of Women's Employment: Disappearing Humps, Sagging Middles, Expanding Tops." Journal of Economic Perspectives no. 31 (1):161-82.

Dayıoğlu, Meltem, and Murat G. Kırdar. (2010). Türkiye’de kadınların işgücüne katılımında belirleyici etkenler ve eğilimler. DPT Yayınları, Ankara.

Dayıoğlu, Meltem, and Murat G. Kırdar. (2019). "Determinants of and Trends in Labor Force Participation of Women in Turkey Abstract:," Working Papers 2019/02, Bogazici University, Department of Economics.

Dias, Felipe A., Joseph Chance, and Arianna Buchanan. (2020). “The motherhood penalty and The fatherhood premium in employment during covid-19: evidence from The united states.” Research in social stratification and mobility, 69, 100542. https://doi.org/10.1016/j.rssm.2020.100542

Dumauli, Magdalena Triasih. (2019). “Motherhood wage penalty in Japan: What causes mothers to earn less in regular jobs?.” Business and Economic Horizons, 15(3), 375-392.

Ecevit, Yıldız. (2010). “Childcare and Pre-school Education in Turkey from the Perspective of Work-Family Reconciliation” in Ilkkaracan, İpek. (ed.) Towards Gender Equality in the Labour Market: Work and Family Reconciliation Policies (in Turkish), Istanbul Technical University and Women for Women’s Human Rights, Istanbul.

Eken, Hurigül. (2005). Toplumsal cinsiyet olgusu temelinde mesleğe ilişkin rol ile aile içi rol etkileşimi: Türk Silahlı Kuvvetlerindeki Kadın Subaylar. Doktora tezi, Hacettepe Üniversitesi, Ankara.

England, Paula, Jonathan Bearak, Michelle J. Budig, and Melissa J. Hodges. (2016). "Do highly paid, highly skilled women experience the largest motherhood penalty?." American sociological review, 81(6), 1161-1189.

Felfe, Christina. (2006). The Child Penalty–A Compensating Wage Differential? ENEPRI Research Reports No. 22, 22 August 2006.

Grimshaw, Damian, and Jill Rubery. (2015). The Motherhood Pay Gap: A Review of the Issues, Theory and International Evidence. In International Labour Office, Inclusive Labour Markets, Labour Relations, and Working Conditions Branch. - Geneva: ILO, 2015 International Labour Office, Inclusive Labour Markets, Labour Relations, and Working Conditions Branch. - Geneva: Switzerland: International Labour Organization.

Gallant, A. Ronald, and Douglas W. Nychka. (1987). "Semi-nonparametric maximum likelihood estimation." Econometrica: Journal of the econometric society, 363-390.

Glauber, Rebecca. (2007). "Marriage and the motherhood wage penalty among African Americans, Hispanics, and Whites." Journal of Marriage and Family, 69(4), 951-961.

Glauber, R. (2018). Trends in the motherhood wage penalty and fatherhood wage premium for low, middle, and high earners. Demography, 55(5), 1663-1680.

Gökdemirel, Sevgi, Gülçin Bozkurt, Gülbin Gökçay, and Ayşe Bulut. (2008). "Çalışan annelerin emzirme sürecinde yaşadıkları: Niteliksel bir çalışma." Çocuk Dergisi, 8(4), 221-234.

Greulich, Angela, and Aurélien Dasré. (2017). "The quality of periodic fertility measures in EU-SILC." Demographic Research, 36, 525-556.

Harkness, Susan, and Jane Waldfogel. (2003). The family gap in pay: Evidence from seven industrialized countries. In Worker well-being and public policy. Emerald Group Publishing Limited.

Heckman, James J. (1979). Sample selection bias as a specification error. "Econometrica: Journal of the econometric society." 153-161.

Hill, Martha S. (1979). "The Wage Effects of Marital Status and Children." Journal of Human Resources 14:579-94.

Iacovou, Maria, Olena Kaminska, and Horacio Levy. (2012). Using EU-SILC data for cross-national analysis: strengths, problems and recommendations. No. 2012-03. ISER working paper series.

Ichimura, Hidehiko. (1993). "Semiparametric least squares (SLS) and weighted SLS estimation of single-index models." Journal of Econometrics, 58(1-2), 71-120.

İlkkaracan, İpek. (2010). Emek piyasasında toplumsal cinsiyet eşitliğine doğru iş ve aile yaşamını uzlaştırma politikaları. Mega Basım, İstanbul kitabı içinde ilkkaracan, ipek Uzlaştırma Politikalarının Yokluğunda Türkiye Emek Piyasasında Toplumsal Cinsiyet Eşitsizlikleri, 21-59.

İlkkaracan, İpek. (2012). "Why so few women in the labor market in Turkey?." Feminist Economics, 18(1), 1-37.

İlkkaracan, İpek. (2013). Political economy of caring labor, gender, and deepening conservatism in a developing economy context: the case of Turkey. Istanbul Technical University, Women's Studies Center Working Paper Series, available online at http://www. kaum. itu. edu. tr/dosyalar/3013WorkingPaper. WorkFamilyBalance. Turkey. pdf.

ILO (2018). Global Wage Report 2018/19: What Lies Behind Gender Pay Gaps. International Labour Organization 2018. https://www.ilo.org/global/publications/books/ WCMS_ 650553/lang--en/index.htm

Kagnicioglu, Deniz. (2017). The role of women in working life in Turkey. "WIT Transactions on Ecology and the Environment." 226, 349-358.

Killewald, Alexandra. (2013). "A reconsideration of the fatherhood premium: Marriage, coresidence, biology, and fathers' wages." American sociological review, 78(1), 96-116.

Killewald, Alexandra, and Jonathan Bearak. (2014). "Is the motherhood penalty larger for low-wage women? A comment on quantile regression." American Sociological Review, 79(2), 350-357.

Kleven, Henrik, and Camille Landais. (2017). "Gender Inequality and Economic Development: Fertility, Education and Norms." Economica no. 84 (334):180-209. DOI: https://doi.org/10.1111/ecca.12230.

Kleven, Henrik, Camille Landais, and Jakob Egholt Søgaard. (2019). "Children and gender inequality: Evidence from Denmark." American Economic Journal: Applied Economics, 11(4), 181-209.

Krepp, Lisa. (2007). The Effect of Children on Women's Earnings: Evidence from Australian Data'. Department of Economics, University of Melbourne, Research Paper, (1004).

Kulakac, Ozen, Kadriye Buldukoglu, Mualla Yilmaz, and Saliha Alkan. (2006). "An analysis of the motherhood concept in employed women in south Turkey." Social Behavior and Personality: an international journal, 34(7), 837-852.

Küçükşen, Kübra, and Şerife Didem Kaya. (2016). "Yönetici pozisyondaki akademisyen kadınlarda aile-iş-özel yaşam dengesi." Akademik Sosyal Araştırmalar Dergisi, 4(37), 662-674.

Livermore, Tanya, Joan Rodgers, and Peter Siminski. (2011). "The effect of motherhood on wages and wage growth: Evidence for Australia." Economic Record, 87, 80-91.

Magadla, Sibahle Siphokazi, Murray Leibbrandt, and Cecil Mlatsheni. (2019). Does a motherhood penalty exist in the post-apartheid South African labour market? NIDS Discussion Paper Series. Working Paper: 247

Mandel, Hadas, and Moshe Semyonov. (2005). "Family Policies, Wage Structures, and Gender Gaps: Sources of Earnings Inequality in 20 Countries." American Sociological Review, 70(6), 949–967. https://doi.org/10.1177/000312240507000604

Metin, Şahin. And Rabia Arabacı Kariman (2013). TBMM Kadın Erkek Fırsat Eşitliği Komisyon Raporu 2014 (TBMM Kadın Erkek Fırsat Eşitliği Komisyonu Yayınları No: 12). Retrieved from http://tbmm.gov.tr/komisyon/kefe/docs/komisyon raporu2014 1.pdf

Molina, José Alberto, and Víctor M. Montuenga. (2009). The motherhood wage penalty in Spain. "Journal of Family and Economic Issues", 30(3), 237-251.

Negiz, Nilüfer. And Emine, Tokmakçı. (2011). "Çalışma yaşamında kadının tükenmişliği: Aile-iş sosyal yaşam açısından tükenmişlik (Süleyman Demirel Üniversitesi Örneği)." Journal of Yaşar University, 24(6), 4041-4070.

Nielsen, Helena Skyt, Marianne Simonsen, and Mette Verner. (2004). Does the gap in family-friendly policies drive the family gap?. Scandinavian Journal of Economics, 106(4), 721-744.

Nizalova, Olena Y., Tamara Sliusarenko, and Solomiya Shpak. (2013). "Motherhood Wage Penalty in Times of Transition," IZA Discussion Papers 7810, Institute of Labor Economics (IZA).

Nizalova, Olena Y., Tamara Sliusarenko, and Solomiya Shpak. (2016). "The motherhood wage penalty in times of transition." Journal of Comparative Economics, 44(1), 56-75.

Olarte, Liliana, and Ximena Peña. (2010). The Effect of Motherhood on Earnings in Colombia. Ensayos sobre POLÍTICA ECONÓMICA, 28(63), 190-230.

Piras, Claudia, and Laura Ripani. (2005). The effects of motherhood on wages and labor force participation: evidence from Bolivia, Brazil, Ecuador and Peru (No. 49638). Washington, DC: Inter-American Development Bank.

Pritchett, Irina. (2016). Three Essays in Applied Microeconomics: A Study of the Motherhood Wage Penalty, Risk Mitigation Through Farming, and the Economics of Abortion in Post-Soviet Russia.

Sigle-Rushton, Wendy, and Jane Waldfogel. (2007). "Motherhood and women's earnings in Anglo-American, Continental European, and Nordic countries." Feminist economics, 13(2), 55-91.

Soyseçkin, İdil Safiye. (2016). "Balance between work and family life: Middle class working mothers in Turkey." Fe Dergi, 8(1), 130-143.

Sürgevil-Dalkılıç, Olca. (2015). Annelerin öykülerinden açığa çıkanlar: Annelik ve çalışan anneliğe yüklenen anlamlar, çalışma hayatından örnek olaylar, ihtiyaçlar ve beklentiler (Ed.). ÇalışAnne: Kadın akademisyenlerin kaleminden çalışma yaşamında annelik (pp.407-466). Ankara: Nobel Yayınları.

Tansel, Aysit, Başak Dalgıç, and Aytekin Güven. (2019). "Wage inequality and wage mobility in Turkey." Social Indicators Research, 142(1), 107-129.

Tekgüç, Hasan, Değer Eryar, and Dilek Cindoğlu. (2017). "Women's tertiary education masks the gender wage gap in Turkey." Journal of Labor Research, 38(3), 360-386.

Topgül, Seda. (2016). "İş ve aile yaşamı dengesizliğinin kadın çalışanlar üzerindeki etkileri." Yönetim ve Ekonomi, 23(1), 217-231.

Ünlütürk-Ulutaş, Çağla. (2015). "İş ve aile yaşamını uzlaştırma politikaları: Türkiye'de yeni politika arayışları." Ankara Üniversitesi SBF Dergisi, 70(3), 723-750.

Villanueva, Aida, and Ken-Hou Lin. (2020). "Motherhood wage penalties in Latin America: The significance of labor informality." Social Forces, 99(1), 59-85.

Waldfogel, Jane. (1997). "The Effects of Children on Women's Wages." American Sociological Review 62:209-17.

Waldfogel, Jane.(1998a). "The Family Gap for Young Women in the United States and Britain: Can Maternity Leave Make a Difference?" Journal of Labor Economics 16:505-45.

Waldfogel, Jane. (1998b). "Understanding the 'Family Gap' in Pay for Women with Children." Journal of Economic Perspectives 12:137-56.

Weeden, Kim A., Youngjoo Cha, and Mauricio Bucca. (2016). "Long work hours, part-time work, and trends in the gender gap in pay, the motherhood wage penalty, and the fatherhood wage premium." RSF: The Russell Sage Foundation Journal of the Social Sciences, 2(4), 71-102.

Zhao, Menghan. (2018). "From motherhood premium to motherhood penalty? Heterogeneous effects of motherhood stages on women's economic outcomes in urban China." Population Research and Policy Review, 37(6), 967-1002.