

# **Gender Differences in Children's Domestic Work: Evidence from Turkey**

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## **Abstract**

This paper analyzes the role of mother's employment and mother's gender role attitudes in determining children's participation of domestic work using micro data from the 2008 and 2013 rounds of Turkey Demographic and Health Surveys. The probability of a child participating in domestic work is estimated separately for girls and boys in order to know i) whether mother's employment status increases the demand for child domestic work equally for male and female children, and ii) whether women's gender role attitudes reinforce gender stereotypes by setting different expectations for female and male children. Mother's employment is found to increase female children's domestic work significantly and more than male children's domestic work. Additionally, mother's progressive values positively effect male children's domestic work for employed mothers only.

*Keywords:* Children's domestic work, gender equality, gender attitudes, Turkey

*JEL Classifications Codes:* B54, J22, O57

## 1. Introduction

The paper analyzes the gender gap in children's participation in housework and care work. Time-use patterns among adults are widely studied, with global research showing, for example, that women perform 76 percent of the total hours of unpaid care work (ILO 2018). Time-use patterns among children, however, are not as well-documented. There is evidence from both developed and developing countries that girls spend more time on housework and care work, but the conclusions are based on child labour surveys focusing on mostly market work instead of time use surveys with better accounts of distribution of unpaid housework.

While it is true that children gain experience and skills by taking responsibility and being independent through their participation in housework, it can also bring trade-offs. Household duties can crowd out other constructive activities including education, creative play, and self-development. The gender gap in children's household duties can therefore put girls at a disadvantage from an early age. Moreover, the children's gender gap contributes to the gendered division of labour among adults through gender socialization. Individuals learn to 'do' gender through internalizing gender norms and roles as they socialize in their family, at school and other social institutions (John et al. 2017). In other words, gender and how children 'do gender' is a performance socially and culturally constructed (Butler 1990). The gender identity of children is more about what they do on an ongoing basis than who they are. How they perform who they are and what they do is affected by what is acceptable, desirable and rewarded (Blaise and Taylor 2012). Within the context of distribution of household roles, the child understands the division of labor is based on gender and performs accordingly.

The most common explanation for the gender gap in children's housework is based on behavior modeling as a mechanism for the reproduction of gender roles – i.e., girls learn how to do the tasks that will later be asked of them as wives and mothers. Children develop behavior based on their parental models (Cunningham 2001a). For example, girls in families with a strong traditional division of labour will participate more in housework following their mothers as a role model, or boys with a father involved in housework might take on more household responsibilities as well. According to this explanation, children's housework is strongly associated with the adult division of labour at home (Hu 2015, Alvarez and Touya 2012). Parents might assign different tasks to their male and female children and they might praise or criticize them differently about their performance of household chores (Blair 1992a). Even in cases where parents express an intention not to discriminate between children based on sex, a gendered pattern of housework among children is often observed.

There is also an extensive literature on the relationship between mothers' employment and children's housework. The number of hours that mothers are employed in the paid labour force is positively correlated with the amount of time children spend on housework, especially for daughters (Benin and Edwards 1990, Dayioglu 2008, Self 2011). Theoretically, there are two opposing effects that can explain this outcome. Women's labour force participation increases their bargaining power in the household and changes household resource allocation in favor of children's education instead of

their domestic work, which should reduce household labour by children (income effect). On the other hand, as the mother increases her work activity outside the home, someone from the household has to take over the mother's duties, and that tends to be the daughters (substitution effect).

Parental attitudes toward gender roles and equality also affect children's behavior. Mothers with more egalitarian beliefs are found to influence their children's beliefs according to the household division of labour (Cunningham 2001a). There is a significant association between mothers' attitudes towards gender equality when their sons were in their teens on the one hand, and son's gender role attitudes when they were in thirties on the other (Cunningham 2001b).

In sum, there are three major issues that the existing literature poses about the children's gender gap in house and care work. First, the extent to which the division of labour between men and women is related to the division of labour between boys and girls in the household. Second, the effect of women's employment on the total time spent by, and division of time between, boys and girls on house and care work. Third, the role that parental beliefs play in shaping the children's gender gap in time spent on house and care work.

This paper explores these three issues with micro-level data on children's time use. I first conduct a comparative analysis of children's time use with the second wave of the International Survey of Children's Well-Being (ISCWeB). I analyze representative data from children across 16 developed and developing countries – Algeria, Colombia, Estonia, Ethiopia, Germany, Israel, Malta, Nepal, Norway, Poland, Romania, South Africa, South Korea, Spain, Turkey and the UK. I then use micro data from the Turkey Demographic and Health Surveys (2008 and 2013) to analyze the determinants of children's domestic work and the resulting gender gap in time use.

Among the 16 countries covered by ISCWeB data, Turkey stands out as a country with a large gender gap in children's domestic work (there is a 15 percent gap between girls' and boys' participation in housework, the second largest gap in the sample, behind only Colombia). There are 720 thousand employed children at the age of 5-17 in Turkey according to the recent statistics based on the 2019 Child Labour Survey. Agriculture is the main sector of employment where child labourers are usually unpaid family workers. Children who are neither in school nor in employment or training (the NEET group) constitute 11 % of the child population at the of 15-17 years (13.4% for girls, 8.8 % for boys). Using four rounds of Child Labour Surveys (1994, 1999, 2006 and 2012), Dayioglu and Kirdar (2020) show that girls are more likely to spend long hours on household chores. Among the older children (aged 12-17), 16.6 percent of girls do household chores for 16 hours or more per week while only 1.9 of boys put the same hours into housework. The gender gap in housework shrinks a little bit for younger children (aged 7-11); 11.1 percent of girls and 3.8 percent of boys spend 8 hours or more per week on household chores (Dayioglu and Kirdar 2020).

On the other hand, women's labour force participation is still very low in Turkey (33% in 2019). Married women have even lower participation rates, the gap between married and single women exceeding 10 percentage points in urban areas (Dayioglu 2008). The large gender gaps in employment and labour force participation rates in Turkey are usually explained by a combination of social, economic and cultural factors (Ilkcaracan 2012, Goksel 2013, Tunali et al. 2019, Dildar 2020). The gender inequality in the distribution of housework is also striking. The average total time devoted to housework and family care is 4,17 hours per day among women while it is only 0,51 hours among men according to the most recent time use surveys (TurkStat 2016). Having a relatively strong sexual division of labour among adults make Turkey an interesting case study to understand the determinants of gender gap in children's domestic work.

This paper focuses on the role of the mother's employment and mother's gender role attitudes on the probability of being responsible for the main household chores among children. Using the 2008 and 2013 Turkey Demographic and Health Surveys data, I analyze i) whether mother's employment status increases the demand for child domestic work equally for male and female children, and ii) whether women's gender role attitudes reinforce gender stereotypes by setting different expectations for female and male children. The main contribution of the paper is including mother's gender role attitudes into the analysis and finding that progressive values among the working mothers have a positive influence on boys' participation in housework. Father's gender role attitudes can be an important determinant of child's domestic work as well but are not included in the analysis because the dataset does not have any information about father's values.

## **2. A Comparative Analysis of Gender Gap in Children's Domestic Work**

International Labour Organization (ILO) defines child labour as work that “is mentally, physically, socially or morally dangerous and harmful to children; and/or interferes with their schooling” (Hilowitz 2004, 16). Children's performance of household chores in their own homes is not considered as domestic labour but referred as children's domestic work. Children's domestic work can be permissible or non-permissible according to ILO, depending on how hazardous the household task is and whether it interferes with schooling.<sup>1</sup>

According to UNICEF data from 36 countries in 2000, 65 percent of children age 5-14 participate in domestic work. The participation rates are especially high among older children age 10–14, girls (70 percent as opposed to 59 percent among boys), and children in rural areas (Edmonds and Pavcnik 2005). Using data from 16 countries, Dayioglu (2013) shows that 66 per cent of girls perform household services, compared to 44 percent of boys. In terms of the specific chores, the biggest gender gaps are in cooking, cleaning and laundry.

There are several studies documented a negative relationship between children's work and schooling outcomes such as attendance, grade advancement and test scores

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<sup>1</sup> ILO presents the detailed definitions of child labour and child domestic work in their website: <https://www.ilo.org/ipecc/areas/Childdomesticlabour/lang--en/index.htm>.

(Gunnarsson et al. 2006, Woldehanna et al. 2011, Dornan and Woodhead 2015, Cueto and Escobal D'Angelo 2011, Allais 2009, Assaad et al. 2010). For example, using data from 12 Latin American countries Gunnarsson et al. (2006) find that third and fourth graders (8- and 9-year-olds) who do not participate in domestic or market work perform 28 percent better on mathematics tests and 19 percent better on language tests than children who do participate in such work. Negative correlations can be a result of low performing students choosing to work instead of work affecting school performance. However, studies controlling for endogeneity also find a negative relationship between work and school attainment (Boozer and Suri 2001, Beegle et al. 2009). Dayioglu and Kirdar (2020) find that the 1997 compulsory schooling reform extending the duration of schooling from 5 to 7 years reduced child labour significantly in Turkey. According to their results, child labour was reduced by 4.8 percentage points (28 percent) for 12-to 17-year-olds and by 1.7 percentage points (81 percent) for 7- to 11-year-olds. The reform also lowered girls' probability of spending long hours on household chores.

Focusing only on unpaid domestic work, Dayioglu (2013) shows that as domestic work hours increase, school attendance decreases, and that the decline is sharper for girls. For instance, while the school attendance of boys who perform domestic work is only a single percentage point lower than their counterparts who do not work, a 10-percentage-point gap emerges between these two groups among girls. Dayioglu (2013) does not find a significant relationship between child domestic work and grade progression or grade repetition. In other words, gender gap in domestic work can deepen gender inequalities through putting girls at a disadvantage in terms of schooling outcomes.

An inverse relationship between child labour and poverty is well-established (Ranjan 1999, Baland and Robinson 2000, Rogers and Swinnerton 2003, Amin, Quayes and Rives 2004). But there are few studies looking at the relationship between gender gap in children's' domestic work and macro-level variables. Reese (2017) finds a negative relationship between children's' participation in housework and GNI per person using ISCWeB data. Norway is an outlier with high child domestic labour among the wealthy countries. Reese (2017) does not find a meaningful relationship between gender gap in children's domestic work in a country and gender inequality index score for that country.

This paper uses the same data for comparative analysis, the second wave of International Survey of Children's Well-Being data (ISCWeB). Table 1 presents the gender differences in housework and care work among children at the age of 12. The total sample consists of 19,212 children across 16 countries. Country weights are used to increase the representativity of the sample in relation to the population within each country. The time use section of the survey asks children how they spent time on various different activities, including "helping around the house" and "taking care of brothers or sisters or other family members". The response options include, 'rarely or never', 'less than once a week', 'once or twice a week' and 'every day or almost every day'. Housework and care work variables are calculated using percentages of children who engaged in these activities frequently (every day or almost every day).

The gender gap in housework is positive for all 16 countries, meaning that the percentage of girls frequently doing housework is larger than percentage of boys, for all countries. The gap is relatively small and not statistically significant for only Norway and South Korea (Table 1). Columbia has the largest gap, where 66.3 percent of girls do housework every day in comparison to 40.8 percent of the boys. Turkey and Estonia have the second and third largest gaps respectively. The gender gap in care work is only significant for Ethiopia, Malta and Norway. Ethiopia and Malta have positive gaps where girl do more care work than boys, while Norway has the opposite situation where boys do more care work.

[Table 1 here]

Children's participation in domestic work is affected by broader culture and social norms related to sexual division of labour in a country. When we look at the gender equality indicators for these countries, we observe some correlation between gender gap in unpaid domestic work for adults and gender gap for children, confirming that gender socialization plays a role in creating these gaps. Table 2 presents the gender equality variables which include female labour force participation rate, gender inequality index, gender segregation Duncan index and the gender gap in unpaid domestic work for adults. World Development Indicators are the main data source for these variables. Countries with large gender gaps in children's domestic work tend to have higher gender inequality, higher occupational gender segregation, and larger gaps in adults' unpaid domestic work. For example, Turkey has one of the lowest female labour force participation rates (34%) and the second largest gender gap in adults domestic work (15 percentage points). Norway has the lowest gender gap in adults domestic labour, at 3 percentage points (Table 2).

[Table 2 here]

Although gender socialization is strongly influenced by these broader social and cultural norms, family is still the most important site where children learn how to "do gender". There is a large literature on the impact of parental education, parental values, and adult household division of labour on gender differences among children's time use and engagement of domestic work, confirming the importance of family in childhood gender socialization. The next section analyzes the role of mother's employment and mother's gender role attitudes on children's domestic work using Turkey as a case study. As the cross-country data show, Turkey has one of the largest gender gaps in children's domestic work. Moreover, it has one the lowest female labour force participation rate and high gender segregation in labour markets, indicating a strong sexual division of labour in society. This paper contributes to the literature by incorporating mother's values into the analysis of children's domestic work in a country where sexual division of labour is still very strong.

### **3. The Role of Mother's Employment and Gender-Role Attitudes: Case of Turkey**

Parents can affect children's time use patterns directly through their gender ideologies and attitudes or indirectly through serving as role models (Blair 1992a). There is usually a

negative correlation between parental education and children's domestic work (Webbing et al. 2011, Basu et al. 2010, Mukherjee and Das 2008, Emerson and Souza 2007). Mother's education is particularly important for girls. Educated mothers have more bargaining power in household decisions regarding to children's education and they tend to value girls' schooling more. Parental education can also lower child domestic work through wealth effect. Mother's employment, on the other hand, can increase child domestic work through substitution effect. As mothers spend time outside, some of the household tasks can be picked up by children particularly girls. There is empirical evidence that children with employed mothers do more housework than children with full-time homemaker mothers (Benin and Edwards 1990, Peters and Haldeman 1987) and mother's employment increases girls' domestic work more than boys (Blair 1992b, Susanli et al. 2016, Self 2011). For example, Self (2011) finds that a mother's participation in the labour force increases the child domestic work in Rural India with a gender bias. Girls are 30 percent more likely to participate in housework when their mothers are employed.

Susanli et al. (2016) analyzes the relationship between child domestic labour and mother's employment in Turkey using the 2003 round of Demographic and Health Survey. Assuming that children's time is an extension of mother's time, they model mother's employment and child domestic labour as joint decisions. They find that gender is the most important determinant and that the likelihood of child domestic labour increases with the mother's employment in a household if the oldest child is female. Using more recent data, this paper adds mother's gender role attitudes to the analysis and contributes to the literature with an important finding. Progressive values among the working mothers have a positive influence on boys' participation in housework. Father's gender role attitudes could not be included in the analysis because of the data limitations.

### **3.1 Data and Methodology**

Two rounds of Demographic and Health Surveys are used to analyze the determinants of children's domestic work. The Turkey Demographic and Health Survey, 2008 (TDHS-2008) is a nationally representative survey of 10,525 households and 7,405 ever-married women age 15-49. TDHS-2013 surveyed 11,794 households and 9,746 ever-married women. A weighted, multistage, stratified cluster sampling approach was used in the selection of the samples for both years. The samples were designed in this way to provide representative information for various domains. These domains include i) Turkey as a whole; ii) urban and rural areas; iii) major five regions of the country (the West, South, Central, North, and East region); (iv) the 12 Nomenclature of Territorial Units for Statistics (NUTS) 13 regions; and (v) the seven largest metropolitan cities each with populations above one million (İstanbul, Ankara, İzmir, Bursa, Adana, Konya, Gaziantep).<sup>2</sup> I generate the final samples for each year by merging household sample with data from ever-married sample where women who married at least once-might be

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<sup>2</sup> For an additional description of these aspects of sample designs for DHS surveys, see the DHS Sampling Manual: [http://dhsprogram.com/pubs/pdf/DHSM4/DHS6\\_Sampling\\_Manual\\_Sept2012\\_DHSM4.pdf](http://dhsprogram.com/pubs/pdf/DHSM4/DHS6_Sampling_Manual_Sept2012_DHSM4.pdf), ICF International. 2012. Demographic and Health Survey Sampling and Household Listing Manual. MEASURE DHS, Calverton, Maryland, U.S.A.: ICF International.

divorced or separated currently-are interviewed. Then, I pooled the data for the regression analysis with a year dummy for 2013.

The ever-married women survey collects information about performance of household chores. Women are asked to report who is primarily responsible for cooking, setting and cleaning the dining table, wiping and sweeping, washing the dishes, doing the laundry, ironing, doing reparations, spending time with children at home or outside, and helping children with homework. The child domestic work variable, the independent variable in the analysis, is constructed using this information.<sup>3</sup> Ten dummy variables are formed for each category of housework such as cooking or doing laundry if a child is primarily responsible for that type of work in the household. The child domestic work variable is equal to one if the female (male) child is primarily responsible for at least one type of housework in the regressions for girls (boys).

The working sample in this paper is restricted to the households where both parents currently live with their children. Moreover, a second restriction is used about the age of the children. The dataset does not include information about the age of the child who is mainly responsible for household tasks. A single or divorced woman older than 17 could be responsible for some household chores when she is living with her parents. To exclude those cases, the sample is restricted to the households where the oldest child living with parents is 17 years old.<sup>4</sup> Table 3 present summary statistics for both the working and full samples. The means for the domestic work variable for girls are higher in the working sample in both years (0.15 vs. 0.14 in 2008; and 0.13 vs. 0.11 in 2013). Mother’s average age is slightly lower in the working sample in 2008 while it is higher in 2013. Most of the other independent variables have similar means in the working and full samples.

[Table 3 here]

The probability of a child performing domestic work is estimated separately for girls and boys using logistic regression analysis. The model takes the following form:

$Pr(y=1) = \exp(\alpha + \beta x_i + \delta d_i) / (1 + \exp(\alpha + \beta x_i + \delta d_i))$ ; where  $i$  indicates the observation,  $y = 1$  if the outcome occurs—here, if children perform domestic work— $x$  is a vector of continuous variables, and  $\delta$  is a vector of dichotomous variables. I interpret the results of the model in terms of the changes in the odds. The odds ratios indicate that for a unit change in  $x_i$ , the probability is expected to change by  $\beta_i$ , holding all the other independent variables constant.

I estimate the following model for boys and girls for the pooled sample (2008 and 2013):

$$Child\ domestic\ work_i^* = \beta_0 + \beta_1 Mother's\ employment_i + \beta_2 Mother's\ gender\ role\ attitudes_i + \beta_3 X_i + \beta_4 Region\ dummies + \varepsilon_i$$

<sup>3</sup> The ever-married women survey asks the following question specifically: “Who does the types of housework in your house that I will list now *primarily*?”

<sup>4</sup> Susanli et al. (2016) use the same sample restrictions for 2003 TDHS data.



Where child domestic work is a dummy variable. The link between the observed binary *child domestic work*<sub>*i*</sub> and the latent *child domestic work*<sub>*i*</sub><sup>\*</sup> is made with a simple measurement equation (Long and Freese 2006):

$$\text{Child domestic work}_i = \begin{cases} = 1 & \text{if } \text{Child domestic work}_i^* > 0 \\ = 0 & \text{if } \text{Child domestic work}_i^* = 0 \end{cases}$$

*Mother's employment* is a dummy variable taking the value of one if mother is currently working outside the home. The control variables in the regression analysis (*X<sub>i</sub>*) include mother's age, education, father's age, father's education, household size, presence of other women, father's domestic work, household wealth status, urban dummy and region dummies.

*Presence of other women* is a dummy variable equal to one if household head's mother, mother-in-law, sister or co-spouse is living with the family. The presence of grandparents in the household is expected to affect both mother's employment and child domestic work. Similarly, any other women available for housework can increase mother's probability to work outside and decrease children's probability to do the household chores. *Household size* can affect child domestic work in multiple different ways. It might increase children's work as the amount of housework increases with the number of people. On the other hand, some of these members can take up housework and lower children's share. *Father's domestic work* is a dummy variable taking the value of one if husband is primarily responsible for at least one of the household chores.

*Wealth quintile* is a categorical variable that shows household wealth in five wealth quintiles. The wealth quintiles are constructed using the Filmer-Pritchett asset index in the DHS surveys. The asset index was already constructed in the raw TDHS dataset using the durable goods in the household and some other characteristics of the household. Wealth Quintile 5 (reference group) is the richest and Wealth Quintile 1 is the poorest.

The main variable of interest, *mother's gender role attitudes*, is formed using the following questions in the survey:

- Men should also do the housework like cooking, washing, ironing, and cleaning
- A married woman should not work outside the home
- Women should be more involved in politics
- The important decisions in the family should be made only by men of the family
- Women should be virgins when they get married
- It is better to educate a son than a daughter
- Can you tell me whether you agree or disagree with a husband's performance of physical violence to his wife under the situations of wife i) burning food; ii) neglecting children; iii) refusing sex; iv) arguing with the husband?

*Mother's gender role attitudes* variable is an index constructed by taking the average of the z-scores of ten dummy variables each of which equals to one if the respondent gave a progressive answer to questions listed above. Two alternative indexes are also used in the

regressions, one created by principal component analysis with the ten dummy variables and another one by taking a simple arithmetic average of the dummy variables.<sup>5</sup>

Table 4 presents summary data about women's responses to these questions. In almost all of the questions, the percentage of progressive answers increased from 2008 to 2013 while the only exception is women's work outside the home. The percentage of women who disagree with the statement that a married woman should not work outside the home decreased from ninety to forty-five percent. About sixty-five percent of women agree with the statement that men should also do the housework in 2008, while this number increased to seventy percent in 2013. The percentage of women who think women should be more involved with politics increased from seventy-seven to eighty-three. The percentage of women who disagree with the statement that the important decisions in the family should be made by men increased from eighty to eighty-six percent. The number of women who think husband's physical violence is justified under certain conditions is very low and decreased over time. Son preference is not very common and decreased further in 2013. The only patriarchal norm still strongly supported by women is virginity before marriage. About eighty-five percent of women support the statement that women should be virgins when they get married in 2008, while this number decreases to eight-one percent in 2013.

[Table 4 here]

### 3.2 Results

The distribution of household chores among children is strongly gendered. Very few boys are reported as being primarily responsible for housework. They are not responsible for cooking. For most of the other categories (setting and cleaning dining table, wiping and sweeping, dishwashing, laundry and ironing), less than 1 percent of boys are primarily responsible. The only exception is doing reparations and amendments, in which they participate a little more. Girls, on the other hand, are primarily responsible for setting and cleaning the dining table (9%), wiping and sweeping (8%), and dishes (7%) in larger numbers. Their responsibility for housework declined slightly from 2008 to 2013 (Table 5). Similarly, girls are held responsible in larger percentages for taking care of other children at home, outside and helping other children with their homework.

[Table 5 here]

Table 6 shows the odds ratios from the logistic regression analysis. Mother's employment increases the odds of participating in domestic work by 1.6 for girls. For a standard deviation increase in the gender role attitude index (having more progressive attitudes) the odds of participating in domestic work is about ten percent lower for girls (odds with standard deviation = 0.89).<sup>6</sup> Both of these effects are statistically significant for girls (p-

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<sup>5</sup> The regressions with the alternative gender role attitudes indexes provide similar results. The attitude variable created with the principal component analysis has the expected impact but it is not statistically significant in some of the regressions for girls. These results can be provided by the author upon request.

<sup>6</sup> The listcoef command after logit regression provides coefficient ( $b = -0.24$ ), odds ratio ( $e^b = 0.79$ ), and odds with standard deviation ( $e^{bstdx} = 0.89$ ). Odds with standard deviation is easier to interpret with

value  $< 0.01$ ) while there is no statistically significant relationship for boys. Parental education lowers the domestic work for children, as expected. Father's education has a slightly stronger effect on girls' domestic work than boys while mother's education has a slightly stronger impact on boys. As wealth quintiles increase, girls' domestic work declines, confirming the previous literature on poverty and child labour. Household size also has a statistically significant effect, increasing domestic work for both boys and girls. An interesting result from the Table 5 is that the father's participation in housework lowers the odds of domestic work for only girls. In other words, fathers and daughters' domestic work seem to be substitutes while boys are not involved. Table A1 in appendix provides the same results for 2008 and 2013 separately. Mother's employment increases the odds of participating in domestic work for girls by 1.5 in 2008 and by 1.7 in 2013. For a standard deviation increase in the gender role attitude index, the odds of participating in domestic work for girls is nine percent lower in 2008 and thirteen percent lower in 2013 (odds with standard deviation is 0.91 in 2008 and 0.87 in 2013). Different from the pooled results, we see a statistically significant decline in boys domestic work with mothers' progressive values in 2013. For a standard deviation increase in the gender role attitude index, the odds of participating in domestic work is fourteen percent lower for boys (odds with standard deviation = 0.86).

[Table 6 here]

The positive correlation between mother's employment and girls' domestic work may be the result of a number of factors. Mother's labour force participation decisions and girls' domestic work decisions might be joint decisions. A mother might decide to take up paid work based on her daughter's willingness to help with household chores (Self 2011). The direction of causality can be in both ways. Daughter's willingness to help in that case can still be product of gender socialization instead of being a completely independent decision. Moreover, there can be unobserved characteristics affecting both of these decisions. For example, a mother who believes that women's main responsibility is housework and child care would be less likely to participate in labour force and more likely to assign some household tasks to her daughter. I attempt to control for some of these effects with mother's gender role attitudes variable but endogeneity is still a problem for the standard logit estimations.

Following Dayioglu (2008) and Susanli et al. (2016), I estimate a bivariate probit model for mother's employment and child domestic work as joint decisions. The bivariate probit model is basically two separate probit models with correlated error terms. Table 7 presents the coefficient estimates from the regressions. The results confirm that mother's employment decisions and girls' domestic work decisions are not taken independently. The correlation coefficient between the two error terms,  $\rho$ , is positive and statistically significant for girls. In other words, unobservable factors that increase the probability of mother's employment also increase girls' probability of taking up domestic work. But this is not the case for boys – in that case,  $\rho$  is small and not statistically significant. Mother's

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continuous variables while the standard odds ratios give more straightforward interpretation for dummy variables. Tables in this paper provide the standard odds ratios. The odds with standard deviation is only used for gender role attitudes index.

progressive gender role attitudes and fathers' housework lowers the probability of domestic work for only girls similar to the findings of the logistics model.

[Table 7 here]

Focusing on the impact of mother's gender role attitudes, a final set of regressions is estimated for employed mothers and full-time homemakers separately. Table 8 presents the odds ratios from the logistic regression for the sub-samples. Mother's progressive attitudes have the expected effect of lowering girls' domestic work for both employed mothers and full-time homemakers. For boys, on the other hand, mother's progressive values increase the odds of participation in domestic work for only currently employed women. For a standard deviation increase in the gender role attitude index the odds of participating in domestic work increase by 20 percent (odds ratio with standard deviation=1.2).<sup>7</sup> In other words, for full-time homemakers, having progressive values lowers the child domestic work for both genders. For employed mothers, progressive values lower girls' domestic work while increasing boy's likelihood to participate in domestic work. This is an important finding because Turkey is a country where female labour force participation is still very low (33% in 2019). Mother's employment seems to be crucial if children are going to socialize in households where a fair division of household labour is expected from both genders.

[Table 8 here]

#### **4 Conclusion**

Using a comparative analysis for 16 countries, this paper finds that the gender gap in children's participation in housework is larger for countries with lower female labour force participation, larger gender gaps in adults' unpaid housework and higher gender inequality index. For example, the difference between women and men's unpaid work hours are largest for Columbia and Turkey where we see the largest gender gap in children's domestic work as well. In other words, material basis of gender inequality and patriarchal norms affect gender socialization and influence household division of labour among girls and boys.

The largest gender gaps in children's housework in Turkey are seen in stereotypical female tasks such as cleaning the dining table, washing the dishes, wiping and sweeping. Mothers' employment is strongly associated with daughter's domestic work and father's involvement in domestic chores reduces girls' household duties while we do not see any of these associations with boy's domestic work. Boys are raised almost completely exempt from household work.

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<sup>7</sup> The odds ratio with standard deviation ( $e^{bstdx}$ ) for girls with full-time homemaker mothers is 0.88 while it is 0.89 for boys. The odds ratio with standard deviation for girls with employed mothers is 0.89 while it is 1.21 for boys.

The case study from Turkey contributes to the literature on the relationship between mother's employment and gendered division of domestic work among children with an important finding. Having progressive gender role attitudes among working mothers do not only lower girls' participation in domestic work but also increases boy's participation. Previous studies found that the substitution effect tends to dominate and girls' domestic work increase with mothers' paid work which is also confirmed by this paper. However, mothers' values matter, boys can be encouraged to substitute for a decline in mothers' domestic work. This would not only help close the current gender gap in children's domestic work but would also positively affect adult's gender gap through teaching boys to do their fair share of housework.

The findings of this paper have multiple policy implications. Supporting women's employment would not only affect children's gender socialization in a positive way with less stereotypical gender role models for girls but can also immediately increase boys' participation in housework which might have life-long effects on them. Moreover, since parental education lowers children's domestic work, investing in education could have the additional benefit of lowering gender gap in children's housework, especially given that father's education lowers girls' domestic work more than boys. Finally, the positive significant association with poverty and girls' domestic work suggests that increasing household income in the poorest wealth quintiles can also help with closing the gender gap in children's domestic work.

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## Tables

Table 1: Gender differences in housework and care work among children

	Housework			Care work		
	Girl	Boy	Gender gap	Girl	Boy	Gender gap
<b>Algeria</b>	61.5	51.1	10.4*	59.3	58.6	0.7
<b>Colombia</b>	66.3	40.8	25.5*	34.6	32.5	2.2
<b>Estonia</b>	50.1	37.6	12.5*	43.2	45.2	-2.1
<b>Ethiopia</b>	72.6	65.0	7.6*	48.6	42.3	6.4*
<b>Germany</b>	36.3	27.5	8.8*	8.9	8.5	0.4
<b>Israel</b>	53.3	47.4	5.9*	36.3	35.3	1.1
<b>Malta</b>	47.5	42.3	5.2*	44.3	36.9	7.4*
<b>Nepal</b>	75.5	69.8	5.7*	52.2	47.9	4.3
<b>Norway</b>	58.5	53.5	5.0	17.1	31.1	-14.0*
<b>Poland</b>	62.1	52.0	10.1*	31.6	26.6	5.0
<b>Romania</b>	67.0	55.5	11.5*	38.3	35.0	3.3
<b>South Africa</b>	67.6	57.9	9.7*	52.7	57.7	-5.0
<b>South Korea</b>	22.5	22.0	0.5	17.8	18.4	-0.5
<b>Spain</b>	58.4	54.7	3.6*	48.3	45.5	2.8
<b>Turkey</b>	34.2	20.7	13.5*	15.5	18.7	-3.2
<b>United Kingdom</b>	49.9	43.8	6.1*	36.3	37.2	-0.9

Source: The International Survey of Children's Well-Being (ISCWeB)

Notes: \* gender gap is statistically significant (p-value <0.01). Girls do this activity significantly more (less) for positive (negative) values of gender gap.

Table 2: Selected gender equality indicators for the 16 countries in the survey

	<b>Female labour force participation rate (%)</b>	<b>Gender inequality index</b>	<b>Gender segregation Duncan index</b>	<b>Gender gap in unpaid domestic work</b>
<b>Algeria</b>	15	0.442	0.675	18
<b>Colombia</b>	59	0.383	na*	13
<b>Estonia</b>	57	0.122	0.56	9
<b>Ethiopia</b>	74	0.502	na	12
<b>Germany</b>	55	0.072	0.456	6
<b>Israel</b>	59	0.098	0.424	na
<b>Malta</b>	43	0.216	0.459	12
<b>Nepal</b>	82	0.48	na	na
<b>Norway</b>	60	0.048	0.495	3
<b>Poland</b>	49	0.132	0.448	8
<b>Romania</b>	46	0.311	0.368	10
<b>South Africa</b>	49	0.389	0.439	11
<b>South Korea</b>	53	0.063	na	11
<b>Spain</b>	51	0.08	0.473	10
<b>Turkey</b>	34	0.317	0.376	15
<b>United Kingdom</b>	57	0.116	0.51	6

Source: World Development Indicators

\*na: not applicable (data is not available).

Notes: Gender Inequality Index measures the gender disparity using three dimensions of human development-*reproductive health* (measured by maternal mortality ratio and adolescent birth rates), *empowerment* (measured by proportion of parliamentary seats occupied by females and proportion of adult females and males aged 25 years and older and with at least some secondary education), and *economic status* (measured by labour force participation rate of female and male populations aged 15 years and older). Duncan segregation index measures occupational segregation based on gender by identifying the percentage of employed women (or men) who would have to change occupations for an equal distribution of occupations among men and women. The data for Duncan index for the available countries come from Das and Kotikula (2018).

Table 3: Summary statistics, 2008 and 2013

	Working Sample			Full Sample		
	Mean	SD	Obs.	Mean	SD	Obs.
<b>2008</b>						
Girls' domestic work	0.15	0.35	5,971	0.14	0.34	7,405
Boys' domestic work	0.04	0.19	5,971	0.04	0.19	7,405
Mother's employment status	0.29	0.45	5,971	0.29	0.45	7,405
Mother's gender role attitudes	0.78	0.17	5,025	0.79	0.17	6,238
Mother's gender role attitudes (z)	-0.05	0.52	5,962	-0.05	0.51	7,396
Mother's age	33.55	7.50	5,971	34.08	8.39	7,405
Mother's years of schooling	5.48	3.87	5,971	5.62	3.94	7,405
Father's age	37.7	7.98	5,775	38.16	8.94	7,038
Father's years of schooling	7.45	3.72	5,941	7.52	3.73	7,367
Household size	5.39	2.48	5,971	5.11	2.54	7,405
Presence of other women	0.01	0.08	5,971	0.01	0.09	7,405
Father's housework	0.03	0.17	5,971	0.03	0.18	7,405
Wealth quintile 1	0.22	0.41	5,971	0.21	0.40	7,405
Wealth quintile 2	0.22	0.41	5,971	0.21	0.41	7,405
Wealth quintile 3	0.21	0.40	5,971	0.21	0.41	7,405
Wealth quintile 4	0.19	0.39	5,971	0.20	0.40	7,405
Wealth quintile 5	0.15	0.37	5,971	0.17	0.38	7,405
Urban	0.73	0.44	5,971	0.73	0.44	7,405
<b>2013</b>						
Girls' domestic work	0.13	0.34	5,859	0.11	0.31	9,746
Boys' domestic work	0.03	0.16	5,859	0.03	0.16	9,746
Mother's employment status	0.30	0.46	5,859	0.31	0.46	9,746
Mother's gender role attitudes	0.77	0.15	4,952	0.78	0.15	8,238
Mother's gender role attitudes (z)	-0.01	0.49	5,857	-0.01	0.48	9,744
Mother's age	34.38	7.29	5,859	31.19	9.79	9,746
Mother's years of schooling	6.32	4.13	5,858	7.35	4.34	9,744
Father's age	38.54	7.81	5,623	38.98	8.74	7,168
Father's years of schooling	8.00	3.91	5,828	8.08	3.94	6,824
Household size	5.20	2.30	5,859	5.07	2.47	9,746
Presence of other women	0.01	0.08	5,859	0.01	0.12	9,746
Father's housework	0.10	0.29	5,859	0.08	0.27	9,746
Wealth quintile 1	0.23	0.42	5,859	0.21	0.41	9,746
Wealth quintile 2	0.23	0.42	5,859	0.22	0.42	9,746
Wealth quintile 3	0.20	0.40	5,859	0.20	0.40	9,746
Wealth quintile 4	0.18	0.38	5,859	0.19	0.39	9,746
Wealth quintile 5	0.16	0.37	5,859	0.17	0.38	9,746
Urban	0.73	0.44	5,859	0.73	0.44	9,746

Source: TDHS 2008 and TDHS 2013

Notes: Mother's gender role attitudes is the simple arithmetic average of ten dummy variables. Mother's gender role attitudes (z) constructed by taking the average of the z-scores of ten dummy variables.

Table 4: Women's gender role attitudes, 2008 and 2013

	<b>2008</b>	<b>2013</b>
Men should also do the housework ( <i>Agree, %</i> )	64.4	70
A married woman should not work outside the home ( <i>Disagree</i> )	90.4	44.8
Women should be more involved in politics ( <i>Agree</i> )	77.3	82.7
The important decisions in the family should be made by men ( <i>D</i> )	79.6	86.2
Women should be virgins when they get married ( <i>Disagree</i> )	14.5	18.7
It is better to educate a son than a daughter ( <i>Disagree</i> )	87.5	88.9
Husband's performance of physical violence is justified if wife		
Burns food ( <i>Disagree</i> )	96.5	98.2
Neglects children ( <i>Disagree</i> )	82.8	88.1
Refuses sex ( <i>Disagree</i> )	93.4	95.9
Argue with the husband ( <i>Disagree</i> )	86.8	98.2

Source: TDHS 2008 and TDHS 2013

Table 5: Gender differences in housework and care work among children in Turkey, 2008 and 2013

	2008				2013			
	Girls		Boys		Girls		Boys	
	N	%	N	%	N	%	N	%
Child domestic work	881	14.75	228	3.82	758	12.94	159	2.71
Cooking	116	1.94	0	0	97	1.66	0	0
Setting and cleaning the dining table	521	8.73	12	0.2	469	8	22	0.38
Wiping and sweeping	459	7.69	1	0.02	358	6.11	2	0.03
Washing the dishes	420	7.03	1	0.02	338	5.77	6	0.1
Doing the laundry	212	3.55	0	0	183	3.12	2	0.03
Ironing	425	7.12	12	0.2	343	5.85	13	0.22
Doing reparations or amendments	6	0.1	73	1.22	4	0.07	40	0.68
Spending time with children at home	77	1.29	9	0.15	69	1.18	12	0.21
Spending time with children outside	67	1.13	22	0.37	60	1.03	13	0.22
Helping children with homework	365	6.13	150	2.52	280	4.79	81	1.38
Number of households	5971				5859			

Source: TDHS 2008 and TDHS 2013

Table 6: Logistic regression results: Determinants of child domestic work

Domestic Work	Odds Ratios	
	Girls	Boys
<b>Mother's employment status</b>	1.576*** (0.12)	1.135 (0.15)
<b>Mothers' gender role attitudes</b>	0.785*** (0.05)	0.923 (0.10)
<b>Mother's age</b>	1.092*** (0.01)	1.089*** (0.01)
<b>Mother's years of schooling</b>	0.906*** (0.01)	0.878*** (0.02)
<b>Father's age</b>	1.059*** (0.01)	1.029*** (0.01)
<b>Father's years of schooling</b>	0.964*** (0.01)	0.986 (0.02)
<b>Household size</b>	1.230*** (0.02)	1.104*** (0.02)
<b>Other women</b>	0.728 (0.30)	0.149 (0.17)
<b>Father's housework</b>	0.413*** (0.10)	0.964 (0.33)
<b>Wealth Quintile 1</b>	1.438** (0.24)	1.062 (0.30)
<b>Wealth Quintile 2</b>	1.661*** (0.25)	1.073 (0.28)
<b>Wealth Quintile 3</b>	1.364** (0.20)	0.965 (0.24)
<b>Wealth Quintile 4</b>	1.333** (0.19)	0.862 (0.22)
<b>Urban</b>	1.049 (0.09)	1.257 (0.18)
<b>Year 2013</b>	0.925 (0.14)	0.490** (0.15)
<b>Istanbul</b>	0.554*** (0.11)	0.751 (0.25)
<b>West Marmara</b>	0.516*** (0.090)	0.688 (0.205)
<b>Aegean</b>	0.505*** (0.09)	1.050 (0.27)
<b>East Marmara</b>	0.566*** (0.09)	0.437** (0.15)
<b>West Anatolia</b>	0.548*** (0.07)	0.652** (0.14)
<b>Mediterranean</b>	0.970 (0.13)	0.608* (0.18)
<b>Central Anatolia</b>	0.501*** (0.08)	0.644 (0.18)

<b>West Black Sea</b>	0.483*** (0.07)	0.688 (0.19)
<b>East Black Sea</b>	0.812* (0.10)	0.445*** (0.11)
<b>Northeast Anatolia</b>	0.730** (0.09)	0.846 (0.17)
<b>Central East Anatolia</b>	1.049 (0.09)	1.257 (0.18)
<b>Observations</b>	11,346	11,346
<b>Pseudo R<sup>2</sup></b>	0.2622	0.1455

*Notes:* Odds ratios are reported. Robust standard errors are shown in parenthesis below the odds ratios. Estimation is performed using STATA 15.0.

\* p<0.1.

\*\* p<0.05.

\*\*\* p<0.01.



Table 7: Bivariate probit regression results: Determinants of child domestic work and mothers' employment

	Girls		Boys	
	Child work	Mothers' employment	Child work	Mothers' employment
<b>Mothers' gender role attitudes</b>	-0.145*** (0.04)	-0.045 (0.03)	-0.055 (0.06)	-0.046 (0.03)
<b>Mother's age</b>	0.266*** (0.02)	0.178*** (0.02)	0.249*** (0.04)	0.179*** (0.02)
<b>Mother's years of schooling</b>	-0.0445*** (0.01)	0.0585*** (0.01)	-0.0544*** (0.01)	0.0584*** (0.01)
<b>Father's age</b>	0.0443*** (0.01)	0.002 (0.01)	0.0140** (0.01)	0.002 (0.01)
<b>Father's years of schooling</b>	-0.0215*** (0.01)	-0.004 (0.01)	-0.008 (0.01)	-0.004 (0.01)
<b>Household size</b>	0.117*** (0.01)	-0.008 (0.01)	0.0442*** (0.01)	-0.008 (0.01)
<b>Other women</b>	-0.243 (0.26)	-0.006 (0.24)	-0.463 (0.46)	-0.005 (0.24)
<b>Father's housework</b>	-0.377*** (0.13)	0.467*** (0.06)	0.038 (0.15)	0.467*** (0.06)
<b>Wealth Quintile 1</b>	0.276*** (0.09)	0.195*** (0.06)	-0.017 (0.14)	0.194*** (0.06)
<b>Wealth Quintile 2</b>	0.302*** (0.09)	-0.006 (0.06)	-0.004 (0.12)	-0.007 (0.06)
<b>Wealth Quintile 3</b>	0.186** (0.08)	-0.143*** (0.05)	-0.067 (0.12)	-0.144*** (0.05)
<b>Wealth Quintile 4</b>	0.152* (0.08)	-0.161*** (0.05)	-0.111 (0.12)	-0.161*** (0.05)
<b>Urban</b>	0.013 (0.05)	-0.521*** (0.04)	0.025 (0.07)	-0.521*** (0.04)
<b>Year 2013</b>	-0.116*** (0.04)	-0.120*** (0.03)	-0.103* (0.06)	-0.118*** (0.03)
<b>Correlation of errors</b>	0.160***		0.031	
<b>Wald test of rho=0:</b>	Pr>chi2=0.000		Pr>chi2=0.4221	
<b>Observations</b>	10,351	10,351	10,351	10,351

Notes: Bivariate probit coefficient estimates are reported. Robust standard errors are shown in parenthesis below the coefficient estimates. Region dummies are included (12 geographical regions). Estimation is performed using STATA 15.0.

\* p<0.1.

\*\* p<0.05.

\*\*\* p<0.01.

Table 8: Logistic regression results: Determinants of child domestic work according to mothers' employment status

Domestic Work	Odds Ratios			
	Full-time homemakers	Full-time homemakers	Employed mothers	Employed mothers
	Girls	Boys	Girls	Boys
<b>Mothers gender role attitudes</b>	0.768*** (0.06)	0.787* (0.10)	0.801** (0.08)	1.451* (0.33)
<b>Mother's age</b>	1.091*** (0.01)	1.091*** (0.02)	1.091*** (0.02)	1.087*** (0.03)
<b>Mother's years of schooling</b>	0.907*** (0.01)	0.892*** (0.03)	0.904*** (0.02)	0.844*** (0.04)
<b>Father's age</b>	1.061*** (0.01)	1.034*** (0.01)	1.057*** (0.01)	1.018 (0.02)
<b>Father's years of schooling</b>	0.976* (0.01)	0.977 (0.02)	0.942*** (0.02)	0.997 (0.04)
<b>Household size</b>	1.236*** (0.02)	1.102*** (0.03)	1.222*** (0.03)	1.120*** (0.04)
<b>Other women</b>	0.879 (0.41)		0.417 (0.34)	1.027 (1.13)
<b>Father's housework</b>	0.365*** (0.12)	0.692 (0.35)	0.490** (0.17)	1.259 (0.60)
<b>Wealth Quintile 1</b>	1.662** (0.34)	1.065 (0.38)	1.180 (0.35)	1.062 (0.51)
<b>Wealth Quintile 2</b>	1.607*** (0.29)	1.135 (0.37)	1.797** (0.48)	0.870 (0.40)
<b>Wealth Quintile 3</b>	1.353* (0.24)	1.074 (0.33)	1.399 (0.37)	0.740 (0.33)
<b>Wealth Quintile 4</b>	1.355* (0.23)	0.839 (0.27)	1.277 (0.33)	0.916 (0.39)
<b>Urban</b>	0.994 (0.10)	1.280 (0.23)	1.195 (0.16)	1.207 (0.31)
<b>Year 2013</b>	0.963 (0.16)	0.340*** (0.13)	0.905 (0.26)	1.140 (0.61)
<b>Istanbul</b>	0.526** (0.13)	0.541 (0.25)	0.642 (0.20)	1.467 (0.82)
<b>West Marmara</b>	0.492*** (0.12)	0.381** (0.19)	0.605* (0.16)	1.411 (0.65)
<b>Aegean</b>	0.506*** (0.11)	0.848 (0.27)	0.551** (0.16)	1.872 (0.91)
<b>East Marmara</b>	0.516*** (0.10)	0.436** (0.17)	0.728 (0.21)	0.430 (0.34)
<b>West Anatolia</b>	0.520*** (0.07)	0.531** (0.14)	0.659* (0.15)	1.251 (0.53)
<b>Mediterranean</b>	0.833 (0.14)	0.547* (0.19)	1.447 (0.37)	0.931 (0.52)
<b>Central Anatolia</b>	0.492*** (0.10)	0.405** (0.16)	0.568** (0.14)	1.362 (0.60)
<b>West Black Sea</b>	0.410***	0.466	0.581**	1.193

	(0.11)	(0.24)	(0.13)	(0.52)
<b>East Black Sea</b>	0.835	0.405***	0.678	0.490
	(0.12)	(0.11)	(0.18)	(0.28)
<b>Northeast Anatolia</b>	0.602***	0.796	1.476	0.658
	(0.09)	(0.17)	(0.38)	(0.40)
<b>Central East Anatolia</b>	0.994	1.280	1.195	1.207
	(0.10)	(0.23)	(0.16)	(0.31)
<b>Observations</b>	8,044	8,005	3,302	3,302
<b>Pseudo R<sup>2</sup></b>	0.2673	0.1726	0.2546	0.1133

*Notes:* Odds ratios are reported. Robust standard errors are shown in parenthesis below the odds ratios.

Estimation is performed using STATA 15.0.

\* p<0.1.

\*\* p<0.05.

\*\*\* p<0.01.

## Appendix A

Table A1: Logistic regression results: Determinants of child domestic work, 2008 and 2013

Domestic Work	Odds Ratios			
	2008 Girls	2008 Boys	2013 Girls	2013 Boys
<b>Mother's employment</b>	1.497*** (0.15)	1.011 (0.18)	1.680*** (0.18)	1.288 (0.26)
<b>Mothers gender role attitudes</b>	0.826** (0.07)	1.088 (0.16)	0.749*** (0.07)	0.726** (0.12)
<b>Mother's age</b>	1.072*** (0.01)	1.092*** (0.02)	1.121*** (0.01)	1.085*** (0.02)
<b>Mother's years of schooling</b>	0.912*** (0.02)	0.888*** (0.03)	0.904*** (0.02)	0.877*** (0.03)
<b>Father's age</b>	1.073*** (0.01)	1.042*** (0.02)	1.042*** (0.01)	1.017 (0.02)
<b>Father's years of schooling</b>	0.960** (0.02)	0.991 (0.03)	0.970* (0.02)	0.982 (0.03)
<b>Household size</b>	1.260*** (0.03)	1.114*** (0.03)	1.203*** (0.03)	1.084*** (0.03)
<b>Other women</b>	1.479 (0.74)	0.175 (0.23)	0.252* (0.18)	
<b>Father's housework</b>	0.697 (0.30)	2.433* (1.18)	0.341*** (0.10)	0.646 (0.31)
<b>Wealth Quintile 1</b>	1.527* (0.36)	1.308 (0.52)	1.387 (0.34)	0.989 (0.41)
<b>Wealth Quintile 2</b>	1.894*** (0.39)	1.504 (0.53)	1.455* (0.32)	0.777 (0.31)
<b>Wealth Quintile 3</b>	1.661** (0.32)	1.135 (0.38)	1.122 (0.24)	0.880 (0.34)
<b>Wealth Quintile 4</b>	1.310 (0.26)	0.905 (0.30)	1.403 (0.29)	0.890 (0.35)
<b>Urban</b>	1.101 (0.12)	1.115 (0.22)	0.989 (0.12)	1.482* (0.33)
<b>Istanbul</b>	1.460** (0.28)	0.561 (0.24)	0.588** (0.13)	0.412** (0.18)
<b>West Marmara</b>	0.626* (0.16)	0.924 (0.38)	0.484** (0.14)	0.532 (0.31)
<b>Aegean</b>	0.402*** (0.10)	0.544 (0.24)	0.629* (0.15)	0.850 (0.35)
<b>East Marmara</b>	0.577** (0.13)	1.738* (0.56)	0.422*** (0.11)	0.266** (0.16)
<b>West Anatolia</b>	0.444*** (0.11)	0.247** (0.15)	0.678* (0.14)	0.612 (0.25)
<b>Mediterranean</b>	0.608*** (0.09)	0.543** (0.16)	0.497*** (0.09)	0.778 (0.24)
<b>Central Anatolia</b>	1.050 (0.20)	0.618 (0.25)	0.904 (0.18)	0.575 (0.24)
<b>West Black Sea</b>	0.556***	0.706	0.450***	0.571

	(0.12)	(0.26)	(0.10)	(0.24)
<b>East Black Sea</b>	0.328***	0.770	0.556***	0.626
	(0.09)	(0.33)	(0.11)	(0.24)
<b>Northeast Anatolia</b>	0.875	0.598*	0.759	0.294***
	(0.15)	(0.18)	(0.14)	(0.13)
<b>Central East Anatolia</b>	0.870	1.075	0.543***	0.446**
	(0.14)	(0.27)	(0.11)	(0.16)
<b>Observations</b>	5,745	5,745	5,601	5,577
<b>Pseudo R<sup>2</sup></b>	0.2698	0.1720	0.2682	0.1372

*Notes:* Odds ratios are reported. Robust standard errors are shown in parenthesis below the odds ratios.

Estimation is performed using STATA 15.0.

\* p<0.1.

\*\* p<0.05.

\*\*\* p<0.01.