HACETTEPE UNIVERSITY
INSTITUTE OF POPULATION STUDIES

ESSAYS ON EDUCATIONAL INEQUALITY OF WOMEN IN TURKEY

Serdar POLAT

Department of Demography
Ph.D. Thesis

Ankara
July 2021

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To my mother, Gülay Polat,

who made all the sacrifices

through this dissertation journey

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ABSTRACT

Despite advances in women's educational attainment in Turkey over the past 50 years, improvements in persistent inequality cohorts, lower intergenerational mobility and unequal opportunities in transition have remained important. This dissertation consists of three essays examining inequalities at the interface between demographic change and the educational level of women. Each essay has its own introduction, methods, results and conclusions. The essays have one thing in common that they are based on data from the TDHS 2013 and differ in their approach to the demographic perspective.

In the first essay I examined the development of educational inequality in the women's cohorts in Turkey. Using non-parametric and parametric methods, I have found that the relationship between early life circumstances and women's education levels has not weakened over time. In addition to the inequality of opportunity, changes in the socio-economic composition of the population across the cohorts are also driving the result. In the second essay, I examined the divergent paths of young women in transition to adulthood in relation to education and employment. Despite the decreasing gender gap in schooling at all levels, labor force participation is still low, which increases the NEET rate. The results show that inactivity status is not only related to early life circumstances, but also to preferences and efforts. In the third essay, I examined intergenerational educational mobility between mothers and daughters using conventional and demographic methods. Mobility has not improved in the older cohorts. Affected by the most recent educational reforms, the younger daughters show greater mobility, the extent of which has been dampened by assortative mating and increased by differences in fertility.

Key words: education inequality; demographic effects; transition to adulthood; intergenerational mobility

ÖZET

Türkiye'de son 50 yılda kadınların eğitim düzeyindeki ilerlemeye rağmen, kuşaklar itibarıyla devam eden eşitsizlik, düşük nesiller arası hareketlilik ve yetişkinliğe geçişteki fırsat eşitsizlikleri önemini korumuştur. Bu tez, demografik değişim ve kadınların eğitimi bağlamında eşitsizlikleri inceleyen üç makaleden oluşmaktadır. Makaleler TNSA 2013 verilerini kullanmaları bakımından birliktelik ve demografik perspektifleri ise farklılık göstermektedir.

İlk makalede, Türkiye'deki kadınlar arasındaki eğitim eşitsizliğinin evrimini araştırdım. Parametrik ve parametrik olmayan yöntemler; endojen koşullar ve kadınların eğitimsel kazanımı arasındaki ilişkinin zamanla zayıflamadığını gösterdi. Ayrıca, koşulların etkisine ilave olarak, kuşakların demografik ve sosyo-ekonomik kırılımlar itibarıyla nüfus yapısı da söz konusu sonucu ortaya çıkarmaktadır. İkinci makalede, genç kadınların eğitim ve istihdam özelinde farklılaşan kaderlerini inceledim. Türkiye'de tüm eğitim düzeylerinde toplumsal cinsiyet eşitsizliği kapanmış olsa da, genç kadınların istihdama katılımı uluslararası ortalamaların altında olup bu da NEET oranını artırmaktadır. Elde edilen bulgular, genç kadınların aktif olma durumunun sadece geçmiş koşullarıyla değil, aynı zamanda tercihleri ve çabalarıyla da ilgili olduğunu göstermektedir. Üçüncü makalede, geleneksel ve demografik eğitim hareketliliği yöntemlerini kullanarak beşeri sermayenin anneler ve kızlar arasında aktarımını araştırdım. Geçmiş kuşaklarda eğitim hareketliliğinde önemli bir gelişme olmamıştır. En son eğitim reformlarından etkilenen daha genç kuşaktaki kadınların eğitim hareketliliği ise daha yüksek olup, bunda doğurganlığın pozitif ve seçici evliliğin ise negatif katkısı olmuştur.

Anahtar kelimeler: eğitim eşitsiliği; demografik etkiler; yetişkinliğe geçiş; kuşaklararası hareketlilik

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ABBREVIATIONS

EEA	Educational and Employment Attitude
GE	Generelized Entrophy
IECC	Intergenerational Education Correlation Coefficient
IOP	Inequality of Opportunity
OB	Oaxaca Blinder
OLS	Ordinary Least Square
MICS	Multi-Indicator Cluster Survey
MYE	Mean Years of Education
NEET	Not in Education, Employment, or Training
SDG	Sustainable Development Goals
TDHS	Turkey Demographic and Health Survey

1. INTRODUCTION

This dissertation comprises three essays at the interface between demography and educational inequality of women. Each essay has its own introduction, methods, results, and conclusions. The essays contained herein address a wide variety of topics including demographic change, inequality of outcomes and opportunities in education, transition to adulthood, inactivity of young people, and educational mobility. They have one thing in common in that they are based on the 2013 Turkey Demographic and Health Survey (TDHS 2013). In the following I give a general framework for the research objectives of this dissertation and a brief overview of the essays it contains.

1.1. Demography and Educational Inequality

Over the past 50 years, schooling has expanded dramatically in most low and middle income countries. Another pattern is the fast expansion of post-primary education, although many young people are excluded from primary education themselves. However, refugee issue constitute a new threat for schooling. According to the Human Development Report 2020, the average length of education in developing countries is 7.5 years. It is 6.9 years and 8.3 years for women and men. These numbers are also comparable to the average for countries with high human development and medium human development. However, the countries with low human development have a considerably low level of education. As a result, even in countries with a high school enrollment rate, exclusion remains due to poverty, gender, ethnicity, disability and location. Patterns of educational attainment vary greatly across countries, and across population groups within countries. In some countries, virtually all children complete basic education whereas in others large groups fall short. Besides education policies and macroeconomic conditions, population structure, demographic transformation, inequalities, transition to adulthood, and intergenerational mobility all affect the expected years of schooling and hence mean years of schooling. In this regard,

the demographic process is an essential part of understanding why some countries and sub-populations in countries perform better.

Next, various factors that are believed to originate in people's lives could hinder progress in education. Early life circumstances, individual preferences and efforts, cohort size and composition, gender roles, social capital, family composition, intergenerational mobility, and neighborhood effects can all lead to some failures in educational attainment. In a population, distribution and opportunities/mobility in relation to the level of education can be both results and causes of demographic processes such as fertility, mortality and migration. Indeed, the current inequality in society could spread to the next generation if the level of mobility between generations is weak. In other words, today's high inequality of opportunity could be the harbinger of a future. In this context, inequality research has long focused on why these benefits are more pervasive for certain groups and which circumstances are more relevant to distribution, opportunities and mobility in the education sector. A better understanding of demographic change in a country requires understanding the dynamics of human capital accumulation, namely educational attainment.

It therefore makes sense to divide dimensions that examine women's educational inequality into three groups, each with different demographic approaches to the formation of inequality. The first dimension is the cohort comparison, which includes the breakdown of the effects of demographic change and inequality of opportunity on the educational progress of women over time. Each cohort represents its own time of the political situation, social and economic development. The second dimension is the transition to adulthood, when most of the inequalities in education and employment arise. During this time, young people make critical decisions about their education, employment and marital status. The third dimension is intergenerational mobility, which indicates the extent to which the socio-economic outcomes persist from the parents' generation to the children. Lower intergenerational mobility suggests that family background plays an important role in children's later success. In this context, each essay examines women's educational inequality from a different demographic perspective. Therefore, each essay in this dissertation is devoted to examining the effects of the above dimensions on the formation of educational inequalities among women.

In summary, while improving education levels in developing countries can be an effective strategy for reducing poverty, increasing prosperity and better income equity, its success largely depends on how education is distributed among people. Therefore, the average educational attainment of the adult population does not provide an

accurate picture of a country's educational progress, as it does not take into account the distribution of education among the people. In addition, educational resources that target the general increase in education may not be optimal for equity and efficiency. On the other hand, the distribution of education is largely determined by demographic processes, cohort and period effects, the transition to adulthood and early life circumstances. Therefore, this dissertation tries to contribute to the development of the literature on inequality at the interface of demography and education with a special interest for women in Turkey.

1.2. Overview of Essays

The first essay is concerned with understanding the effects of demographic change and inequality of opportunity on the educational distribution in the successive female cohorts. Each cohort represents their time in terms of circumstances, educational systems, and socio-economic challenges and opportunities. There are previous studies that have examined educational inequality across all cohorts and inequality of opportunities in access to school. However, there is less evidence of how demographic change and inequality of opportunity are affecting educational progress. It is therefore necessary to decompose the relative contribution of both effects.

Therefore, this essay focuses on the development of human capital accumulation as measured by the average number of school years completed and its distribution among the population of female cohorts aged 25 to 49. Using the dataset from TDHS-2013, it assesses the pattern of educational attainment and its distribution, convergence, endowment and coefficient effects across cohorts of women. It uses the methods of decomposition and inequality. The results show that both the population structure according to early life circumstances and the inequality of opportunity have influenced the educational progress of women in successive cohorts.

The second essay looks at the various pathways young people take in transition to adulthood, where most inequalities in education and employment occur. In this phase of life, unlike children, they are responsible for their preferences and efforts. They make critical decisions about their education, work, migration and marriage. It is therefore important to consider not only the young people's early life circumstances but also their preferences and the effort involved in access to education and participation in the labor market.

In this context, this paper focuses on the inequality of opportunity in terms of inactivity, namely Not in Education, Employment, or Training (NEET), of young women aged 15-29 years. This topic has received more attention, especially after economic and learning crises. The proportion of NEET people is particularly high in developing countries and among women. Using the dataset from TDHS-2013, the paper examines the factors associated with NEET status, the corresponding level of inequality of opportunity (IOP), and the partial impact of factors on IOP. The results show that early life circumstances have both direct and indirect effects on NEET status. And these effects vary depending on the age group, region and place of residence. The main contribution of this essay is the first application of the IOP methodology in the NEET status to our knowledge. And it's safe to say that IOP studies should consider preferences and effort in addition to circumstances.

The third essay deals with educational mobility between mothers and their daughters. The demographic processes in the first generation can dramatically change the educational level of the second generation. However, research on educational mobility has focused more on the intergenerational transfer of education. It is therefore necessary to obtain more evidence on the effects of demographic processes on educational mobility.

In this context, the third essay assesses intergenerational educational mobility between mothers and daughters using the TDHS-2013 dataset. It provides the measures of both conventional and demographic educational mobility. The evidence shows that mobility has not increased in the female cohorts examined. The categories of non-education and higher education in the mother generation are the main reason for immobility in education. The fertility channels and the assortative mating have also opposite effects on mobility. However, thanks to the recent educational reforms that raise the level of education, these effects are comparatively small. The contribution of this study is that a demographic perspective on mobility is also needed to observe the effects of fertility and assortative mating. In addition, both conventional and demographic approaches to educational mobility would complement each other better. In addition, the imputation method enables us to work with an originally retrospective by transforming it into a prospective data set.

All essays show that demographic processes at the family and population level in Turkey are not only important for the level of education of a female population, but also for its distribution and transmission over the generations in Turkey. Education policy should therefore take into account demographic change, the socio-cultural

distribution of the population, the extent of mobility over the generations and the family composition. Finally, inequality in the employment of women is becoming more apparent in some developing countries, where gender roles persist despite general advances and the closing of gender educational gaps.

1.3. Study Background

Mean years of schooling in developing countries is 7.5 according to the 2020 Human Development Index (HDI) report, which is less than lower secondary education on average. This number is 8.1 years in Turkey. Overall HDI ranking of Turkey is 54 among 189 countries, and it is classified as a very High Development Country. Concerning the components of overall HDI, indicators of Turkey is as follows; (i) life expectancy at birth is 77.7 years, (ii) expected years of schooling is 16.6 years, (iii) mean years of schooling is 8.1 years, and GNI per income (PPP) is $ 27,701. With respect to expected years of schooling, Turkey do well compared to the average (16.2 years) of countries in the same development group, however, mean years of schooling is considerably low compared to the average (12.2 years) of countries in the same development group. Mean years of schooling is 7.3 and 9, respectively for women and men in 2019. The same figures were 3.3 and 5.8 in 1990. While gender gap is closing over time, men are still better educated than men.

Despite the overall rising level of education and the closing of the gender gap, the educational progress of women in Turkey was determined by factors that are presumably based on the educational distribution, the inequality of opportunities and mobility, the demographic change and the different paths in the transition to adulthood. Such problems can manifest as a lack of efficiency in the education sector and create further inequalities in other social and economic outcomes such as health, wealth, income, employment and well-being in Turkey.

Therefore, Turkey is an interesting case to study educational inequality from a demographic perspective, as political preferences, sociocultural values and population structure change over time. Distribution, equal opportunities and mobility in education have always been a concern, especially for women. Understanding Turkey's case of women's human capital accumulation, namely educational attainment, will therefore contribute to demographic research and policies to be adopted in developing countries. In this context, this dissertation consists of three essays, each examining the human

capital accumulation of women from a different time perspective.

Finally, this dissertation focuses on the educational inequality of women in Turkey, which is particularly well suited to examine the topic from a demographic perspective due to population change and the inequality of opportunities for women over time. There are three things to keep in mind in this regard. First, why educational attainment have not progressed well among adult female cohorts and what impact demographic change and inequality of opportunity are having on this trend. These questions provide a historical perspective and aim to understand the low educational level of women. Second, rising school enrollment rates have no significant impact on employment. While recent educational reforms have increased expected schooling for women, youth employment rates are still low compared to countries with the same level of human development. Third, demographic educational mobility could be important for shaping the future distribution of education. Turkey thus presents itself as a suitable context in which to examine the educational inequality of women in developing countries.

1.4. Data

This dissertation is based on the Turkey Demographic and Health Survey 2013 (TDHS-2013) carried out by the Institute of Population Studies at Hacettepe University. TDHS-2013 contains two questionnaires: one for household members and another for female respondents aged 15-49. While the first gathers more general information about the household, the second contains more detailed information about women and their children. The first essay examines the role of demographic change and inequality in educational progression of women across all cohorts, and therefore the sample of data includes women aged 25 to 49 who have theoretically completed their school life. The second essay looks at factors of employment status of young women in relation to education and employment, therefore the data sample includes female adolescents aged 15-29 years. The third essay examines women's educational mobility using retrospective and prospective approaches. While the first approach uses the sample of women aged 25 to 49 years, the second approach uses the sample of women aged 40 to 49 years whose fertility has largely ended and their daughters. Further details on the data and empirical strategy of each essay are provided in the respective chapters.

1.5. Roadmap

The rest of this dissertation is structured as follows. The next chapter presents the first essay, which analyzes the effects of demographic change and inequality of opportunity on the educational level of women in Turkey. Chapter 3 consists of the second essay, which focuses on different patterns in transition to adulthood in relation to the NEET status of young women in Turkey. Chapter 4 analyzes conventional and demographic educational mobility between mothers and daughters in Turkey. Chapter 5 concludes.

2. ESSAY 1: EDUCATIONAL PROGRESS OF WOMEN IN TURKEY: MECHANISMS OF DEMOGRAPHIC CHANGE AND INEQUALITY OF OPPORTUNITY

2.1. Introduction

Different fertility, mortality and migration patterns shape the relative cohort size and its decomposition in a population that has direct and indirect relationships with the distribution of social and economic outcomes such as education, income, employment, wealth and health (Mare, 1979; Mare and Maralani, 2006; Connelly and Gottschalk, 1995; Middendorf, 2007; Jones, 2014; Fertig et al., 2009; Lutz et al., 2019; Neumark and Yen, 2020). Literally, interactions between demographic forces and early childhood circumstances determine educational growth over time. Disadvantaged subpopulations would be less likely to accumulate human capital. In addition, the fertility rate of parents mainly determines the composition of the cohort to which their children belong. Parents with relatively more disadvantages produce more of themselves than their advantageous peers and, accordingly, the size of the disadvantaged second generation within a given cohort would also increase. Therefore, both the level of education and its distribution within a population can be the result or cause of demographic change. While the former is about who gets education, the second examines how human capital affects fertility, mortality, and migration patterns. Discovering the links between the demographic changes, namely cohort size and their composition, and the education distribution of women in Turkey is the key motivation of this essay.

Addressing the relationship between cohort composition and human capital accumulation in Turkey is important for at least two reasons. First, the total educational level of the adult population is 7.7 years, that is 6.9 years for women and 8.4 years for men. Aside from the low level of education, there are persistent concerns about its distribution, i.e. who gets it. Second, despite the decreasing gender gap in the adult population's schooling over time, there is still less evidence of how the composition

and size of the cohorts affected the total human capital accumulation of women in Turkey.

Using the TDHS-2013 dataset, this paper examines the evolution of human capital accumulation and distribution of women in Turkey. Accordingly, the study has the following specific research questions;

1. How does the level of education and its distribution within the female cohorts change over time in Turkey?
2. How has the decomposition of the educational level of women changed over time in Turkey according to current conditions and past circumstances? Is there a convergence between different population groups?
3. How does the women's inequality of opportunity in educational attainment change over time in Turkey?
4. What is the relative importance of cohort composition and the impact of inequality on the human capital accumulation of women in Turkey over time?

The essay is structured as follows. Section 2 provides a brief overview of the literature on the effects of cohort composition on human capital accumulation. Section 3 describes the data set used. Section 4 introduces the descriptive statistics on the composition of the cohort and the level of education according to conditions and circumstances. Section 5 sets out the methodological approach and shows empirical results for general educational inequality, its decomposition, inequality of opportunity and the Oaxaca-Blinder decomposition method. Section 6 concludes the results briefly.

2.2. Demographic Change and Educational Distribution

Raising levels of education and reducing educational inequality between and within countries is a top priority on the international agenda. In relation to human capital and its impact on socio-economic life, at least three objectives can be achieved in the education of a given population: (i) increasing the general level of education; (ii) more even distribution; and (iii) diminishing relationship between circumstances and educational level. The distribution of a population's education according to different conditions is just as important as the average level of education because of its direct and

indirect effects on socio-economic processes and outcomes. Hence, there is a growing literature, including demographics, that studies such effects. For example, an even distribution of skills among a population leads to; higher economic growth and lower poverty rates (Castelló and Doménech, 2002; Birdsall and Londoño, 1997; Thomas et al., 1999; Lopez et al., 1999; Solow, 1988); greater income equality, higher mobility rates, better health and more social cohesion (Green et al., 2006; Green, 2011); and better implementation and sustainability of democracy (Castelló-Climent, 2008).

Demographic change, which is often characterized by fertility, mortality and migration patterns, determines the relative cohort size and its composition in a population according to social and demographic circumstances. Gender and age are accepted as the most basic dimensions in demography due to their direct effects on fertility, mortality and migration. However, the biological, social and behavioral characteristics of a society can also shape demographic processes. Some of these are place of residence, citizenship, race, immigration status, marital status, employment status, income level, health, disability and educational achievement. However, education is probably the most important source of observable heterogeneity in a population (Lutz and Samir, 2011).

In the case of human capital accumulation, for example, the educational profile of a country depends not only on the educational processes themselves, but also on the composition and size of the population, which is shaped by demographic dynamics (Barakat and Blossfeld, 2010). Demographic research should therefore provide more evidence of the links between demographics and education, as suggested by (Lutz et al., 2008; Lutz and Samir, 2011; Barakat and Blossfeld, 2010; Mare, 1979; Mare and Maralani, 2006).

The effects of cohort composition and size are documented in the literature for a wide range of socio-economic outcomes. The studies on the influence of cohort size include; starting salaries of university graduates from various fields of study in the USA (Berger, 1988), human capital and demographic dividend (Lutz et al., 2019), earnings in Europe (Brunello, 2010), decline in unemployment in eastern (Fuchs, 2016), secondary school diploma in Norway (Reiling, 2016), youth unemployment in Europe (Moffat and Roth, 2014); employment in Germany (Garloff et al., 2013), men's income in Great Britain (Wright, 1991), labor force participation and wages in the USA (Neumark and Yen, 2020), investment in club goods for children in sub-Saharan Africa (Jones, 2014), educational attainment in Europe (Middendorf, 2007), educational attainment in the USA (Stapleton and Young, 1988), collegiate education in the

USA (Bound and Turner, 2007), youth earnings in Canada (Morin, 2015), and school choices and cohort-specific social interventions for US-born white men (Flinn, 1993). Studies examining the effects of cohort composition on social and economic outcomes include: higher education degrees in the USA (Connelly and Gottschalk, 1995), intergenerational educational mobility in Indonesia (Mare and Maralani, 2006), and relative difference in educational attainment by ethno-cultural group and gender in Canada (Spielauer, 2010).

According to the Human Development Index, Turkey has better prospects in terms of per capita income and life expectancy compared to educatıonal attainment. Despite recent educational reforms, the average educational level of the adult population is still eight years. There are also persistent concerns that the educational expansion in Turkey has not brought a convergence between socio-economic groups. In this regard, this essay aims to examine how the cohort composition of women has affected their human capital accumulation in Turkey.

2.3. Data and Descriptive Statistics

2.3.1 Data Source

Investigating the level of education and its distribution requires a conceptual distinction between educational flows and stocks. While the former relates to school processes, the latter is the level of education of adults (Lutz and Samir, 2011). Of course, the general goal of the education system can be more than teaching soft skills and other technical skills. However, most international surveys and policy documents such as the SDGs, the United Nations Human Development Report, the OECD's PISA and PIAAC surveys all refer to years of education or cognitive skills such as math, science, reading and problems. to solve. This paper relies on the Year of Education indicator due to its wide use in the literature and its ability to make reliable comparisons between different censuses, surveys and countries.

Finally, as mentioned in the introduction above, this paper aims to understand educational convergence patterns and their potential socio-demographic roots for women in Turkey over time using the age cohorts studied. To this end, the data to be used in the analysis should include some variables such as years of education completed, demographic breakdown of convergence and certainly a time period that

allows for a cohort approach. In this sense, the 2013 Turkey Demographic and Health Survey (TDHS) largely meets these criteria.

The aim of the study requires two restrictions on the age interval of the population to be covered. The first concerns the lower bound. Since the analysis focuses on completed years of education, people should have completed their educational life. As officially recognized in Turkey, most people finish their formal education at the age of 24. According to the international definition, the adult population is defined as older than 24 years. Therefore it makes sense to use the age of 25 as the lower limit. The second choice or optional restriction concerns the upper limit. Due to the different mortality rates from education in older cohorts in Turkey, including this population could skew the measurement of educational attainment. It therefore seems rational to choose the upper limit of 65 years for the entire sample and 49 years for the female sample.

In TDHSs, household members who have graduated from or are currently in school give us information about what type of school and grade they have reached. So the educational level considered in this paper is the completed years of education obtained from the TDHS 2013 data. While income and wealth, which are the subject of typical inequality studies, are continuous variables and can change over the course of a lifetime, the level of education is discrete and changes very rarely after the age of 25. On the other hand, the years of education can be viewed as a continuous variable from 0 to 22 years, i.e. from no school education to doctorate. The continuous educational scale (years) prevents the loss of information gained through discrete educational levels. Apart from income and wealth, which theoretically has no upper limit, education has. Therefore, countries or different groups in each country will converge in educational attainment over time (Jordá and Alonso, 2017).

Assessing the convergence of educational attainment over time by social and demographic groups requires the collection of some socio-demographic variables that may relate to current and past circumstances. While women can change the former, that is, endogenously, they cannot change the latter, which is exogenous for women. The household questionnaire in TDHS mainly covers the current circumstance variables that people were having at the time of the survey. The women's questionnaire contains additional information on past circumstances such as place and region of birth and childhood, sibling size, parental education and mother tongue. Table 2.1 introduces those variables used in the analysis.

In the literature, most studies compare different points in time (period approach) to assess progress towards equality. Nevertheless, Cuaresma et al. (2013) examined educational inequalities according to several demographic groups using the cohort approach. The latter makes it possible to observe changes in the educational level of people born in different times, changes that may be due to the different institutional characteristics of different school systems. This approach is particularly useful for analyzing the determinants of educational outcomes. Since the majority of formal education mainly takes place in the early phases of life and remains invariant over the life cycle, a cohort approach seems more sensible (Cuaresma et al., 2013).

Table 2.1: Outcome Indicator, Early Life Circumstances and Current Conditions

Variables	Definition
Outcome Variable	
Education Level	Years of schooling ranging from 0 to 22.
Early Life Circumstances	
Mother Tongue	Turkish=0, otherwise=1
Sibling Size	Woman's living siblings
Share of Male Siblings	Share of living male siblings of woman
Children Ever Born	Number of children born by woman's mother
Birth Place	1=Province, 2=District, 3=Sub-district/Village
Birth Region	1= West, 2= South, 3= Central ,4= North, 5=East
Childhood Place	1=Province, 2=District, 3=Sub-district/Village
Childhood Region	1= West, 2= South, 3) Central ,4= North, 5=East
Mother's Education	1= Less than Primary Education, 2=Primary Education, 3=Lower Secondary Education or More
Father's Education	1= Less than Primary Education, 2=Primary Education, 3=Lower Secondary Education or More
Parent's Marriage	Consanguineous=1, otherwise=0
Deceased Siblings	At least One=1, None=0
Current Conditions	
Age Cohorts	25-29, 30-34, 35-39, 40-44, 45-49
Place of Residence	1=Urban, 2=Rural
Current Region	1=West, 2=South, 3=Central, 4=North, 5=East
Household Wealth	1=Richest, 2=Richer, 3=Middle, 4=Poorer, 5=Poorest
Migrated	=1 if migrated from childhood place, 0 otherwise

Note: Early life circumstances are considered to be exogenous. Hence they are included in the regression analysis.

2.3.2 Demographic Change: Cohort Size and Composition

As discussed in the previous section, the size and composition of a cohort to which people belong can affect its socio-economic outcomes. Before starting the inequality analysis, this section first presents the absolute and relative share of 25 to 49 year old women according to their past circumstances in order to observe cohort-specific disadvantage.

Table 2.2 and Table 2.3 show the proportion of women according to circumstances and help to understand the change in the population structure both in absolute and relative terms (see also Tables A.4, A.5, A.6, A.7, A.8, A.9 for all sample including their current circumstances as well). There are a few points worth mentioning. First, as can be seen from Table 2.2, there is an absolute population increase of about 42% (21.4 / 15.1 = 1.42) from the 45-49 cohort to the 25-29 cohort. On the other hand, the female population whose mother has an educational qualification below primary level decreased slightly by around 9% (10.2 / 11.2 = 0.91). However, the number of women with a mother tongue other than Turkish doubled (4.5 / 2.2 = 2), and women born in the eastern region increased by 80% (6.5 / 3.6 = 1.8) too. Second, Table 2.3 shows the relative proportions of women within each cohort according to their circumstances. The relative proportion of women with disadvantaged living conditions in terms of educational attainment decreases to varying degrees from the 45-49 cohort to the 25-29 cohort, with the exception of their mother tongue and the region of childhood. The proportion of women with a mother tongue other than Turkish rose from 14.7% in the 45-49 cohort to 21% in the 25-29 cohort. The proportion of women born in the East has also increased from 22.9% to 29.4%.

Table 2.2: Absolute Share of the Female Population by Early Life Circumstances and Current Conditions, Cell Percentage

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	%	CI	%	CI	%	CI	%	CI	%	CI	%	CI
Mother's Education												
Less Than Primary (n=4,414)	10.3	[9.3,11.3]	12.3	[11.3,13.3]	13.4	[12.5,14.5]	12.3	[11.4,13.4]	11.2	[10.3,12.1]	59.5	[57.5,61.4]
Primary (n=1,970)	8.5	[7.7,9.4]	8.2	[7.5,9.0]	7.2	[6.4,8.1]	5.0	[4.4,5.7]	3.2	[2.7,3.9]	32.2	[30.6,33.8]
Lower Sec/More (n=463)	2.8	[2.3,3.4]	2.4	[2.0,3.0]	1.5	[1.2,2.0]	0.9	[0.6,1.2]	0.7	[0.4,1.0]	8.3	[7.1,9.7]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Father's Education												
Less Than Primary (n=2,037)	4.3	[3.7,5.0]	4.8	[4.2,5.4]	6.1	[5.4,6.8]	6.1	[5.5,6.8]	5.9	[5.2,6.6]	27.2	[25.6,28.8]
Primary (n=3,295)	10.7	[9.8,11.7]	12.1	[11.1,13.1]	11.3	[10.4,12.3]	8.7	[7.9,9.7]	6.9	[6.1,7.7]	49.7	[47.8,51.6]
Lower Sec/More (n=1,515)	6.6	[5.9,7.4]	6.1	[5.3,6.9]	4.7	[4.1,5.5]	3.4	[2.9,4.0]	2.3	[1.9,2.9]	23.1	[21.3,25.0]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Mother Tongue												
Turkish (n=5,397)	17.1	[16.0,18.2]	18.1	[17.1,19.3]	18.2	[17.0,19.5]	15.0	[14.1,16.1]	12.9	[11.8,14.0]	81.4	[79.6,83.0]
Other (n=1,450)	4.5	[3.9,5.3]	4.8	[4.1,5.5]	3.9	[3.4,4.6]	3.2	[2.6,3.9]	2.2	[1.8,2.7]	18.6	[17.0,20.4]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Parent's Marriage												
(n=5,202)	15.9	[14.9,17.0]	17.3	[16.3,18.4]	17.6	[16.5,18.7]	14.3	[13.3,15.4]	12.1	[11.2,13.1]	77.3	[76.1,78.4]
(n=1,645)	5.7	[5.0,6.4]	5.6	[5.0,6.2]	4.6	[4.0,5.2]	4.0	[3.4,4.6]	2.9	[2.5,3.4]	22.7	[21.6,23.9]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Sibling Size												
1-2 (n=729)	4.0	[3.5,4.5]	3.5	[2.9,4.2]	2.5	[2.0,3.2]	1.6	[1.2,2.0]	1.3	[1.0,1.7]	12.8	[11.5,14.2]
3 (n=1,038)	4.5	[3.9,5.3]	3.8	[3.3,4.4]	4.1	[3.6,4.7]	2.2	[1.9,2.7]	2.3	[1.9,2.9]	17.0	[15.9,18.2]
4 (n=1,178)	4.0	[3.5,4.7]	3.7	[3.2,4.3]	3.7	[3.2,4.3]	3.0	[2.5,3.5]	2.8	[2.4,3.3]	17.3	[16.2,18.3]
5 or 6 (n=1,895)	4.2	[3.7,4.8]	5.9	[5.3,6.6]	6.1	[5.4,6.8]	5.8	[5.2,6.5]	4.6	[4.1,5.3]	26.7	[25.5,28.0]
7 and more (n=2,007)	4.8	[4.2,5.6]	5.9	[5.3,6.7]	5.8	[5.2,6.5]	5.7	[5.0,6.4]	4.0	[3.5,4.5]	26.2	[24.7,27.8]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Share of Male Siblings												
0 (n=734)	3.4	[2.9,4.0]	2.9	[2.4,3.5]	2.5	[2.1,3.0]	1.8	[1.4,2.2]	1.7	[1.3,2.0]	12.2	[11.2,13.4]

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Table 2.2 – *Continued from previous page*

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
0-1/3 (n=1,386)	3.7	[3.3,4.2]	4.3	[3.8,4.9]	4.0	[3.5,4.5]	4.2	[3.7,4.8]	3.5	[3.0,4.0]	19.7	[18.7,20.7]
1/3-1/2 (n=1,900)	5.2	[4.6,6.0]	6.8	[6.1,7.6]	6.1	[5.6,6.8]	4.9	[4.3,5.6]	4.4	[3.8,5.0]	27.4	[26.3,28.6]
1/2 (n=1,311)	4.9	[4.3,5.6]	4.6	[4.0,5.3]	4.4	[3.7,5.1]	3.1	[2.7,3.6]	2.6	[2.2,3.2]	19.6	[18.4,20.9]
More 1/2 (n=1,516)	4.4	[3.8,5.0]	4.3	[3.8,4.8]	5.2	[4.6,5.9]	4.2	[3.7,4.8]	3.0	[2.5,3.4]	21.0	[19.9,22.2]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Deceased Siblings												
None (n=3,091)	12.7	[11.7,13.8]	11.9	[11.0,12.8]	10.8	[9.9,11.8]	7.2	[6.5,8.0]	5.2	[4.5,5.9]	47.8	[46.3,49.3]
At Least One (n=3,756)	8.9	[8.1,9.9]	11.0	[10.2,11.9]	11.3	[10.4,12.4]	11.0	[10.1,11.9]	9.9	[9.1,10.8]	52.2	[50.7,53.7]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Childhood Place												
Province/District (n=3,693)	14.4	[13.4,15.4]	14.6	[13.5,15.7]	12.8	[11.6,14.0]	9.6	[8.7,10.5]	7.7	[6.7,8.7]	59.0	[56.8,61.1]
Subdistrict/Village (n=3,150)	7.2	[6.5,8.1]	8.3	[7.6,9.1]	9.4	[8.5,10.3]	8.7	[7.8,9.6]	7.4	[6.7,8.2]	41.0	[38.9,43.2]
Total (n=6,843)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Childhood Region												
West (n=1,351)	6.2	[5.4,7.0]	6.6	[5.9,7.4]	6.6	[5.7,7.5]	5.0	[4.3,5.8]	3.9	[3.2,4.6]	28.2	[26.4,30.0]
South (n=936)	2.8	[2.3,3.3]	2.9	[2.4,3.4]	2.8	[2.4,3.3]	2.3	[2.0,2.7]	2.1	[1.7,2.6]	12.9	[11.9,14.0]
Central (n=1,450)	4.9	[4.3,5.6]	5.1	[4.5,5.7]	5.1	[4.5,5.9]	4.4	[3.8,5.0]	3.8	[3.3,4.3]	23.3	[21.9,24.7]
North (n=1,152)	2.0	[1.6,2.5]	2.8	[2.3,3.3]	2.7	[2.3,3.2]	2.4	[2.0,3.0]	2.0	[1.7,2.4]	11.9	[10.8,13.1]
East (n=1,958)	5.7	[5.0,6.5]	5.7	[5.1,6.3]	5.0	[4.4,5.6]	4.1	[3.5,4.9]	3.3	[2.8,3.9]	23.8	[22.2,25.4]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Birth Place												
Province/District (n=3,454)	13.3	[12.3,14.3]	13.8	[12.8,15.0]	11.9	[10.9,13.1]	8.7	[7.9,9.6]	6.8	[6.0,7.8]	54.6	[52.3,56.8]
Subdistrict/Village (n=3,393)	8.3	[7.4,9.3]	9.1	[8.2,10.1]	10.2	[9.4,11.2]	9.5	[8.7,10.4]	8.2	[7.5,9.0]	45.4	[43.2,47.7]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Birth Region												
West (n=1,236)	5.1	[4.5,5.9]	6.1	[5.3,6.9]	6.1	[5.3,7.0]	4.5	[3.9,5.2]	3.6	[3.0,4.4]	25.4	[23.5,27.3]
South (n=885)	2.6	[2.2,3.1]	2.7	[2.3,3.2]	2.6	[2.2,3.0]	2.2	[1.8,2.6]	2.0	[1.7,2.5]	12.1	[11.1,13.1]
Central (n=1,475)	5.2	[4.6,5.8]	5.1	[4.5,5.8]	5.4	[4.8,6.1]	4.6	[4.1,5.3]	3.8	[3.4,4.3]	24.2	[22.8,25.6]
North (n=1,186)	2.3	[1.9,2.9]	2.8	[2.3,3.4]	2.8	[2.4,3.3]	2.5	[2.1,3.1]	2.2	[1.8,2.6]	12.6	[11.5,13.9]
East (n=2,065)	6.4	[5.6,7.2]	6.2	[5.6,7.0]	5.3	[4.7,6.0]	4.4	[3.8,5.2]	3.5	[2.9,4.1]	25.7	[24.1,27.5]

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Table 2.2 – *Continued from previous page*

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Current Wealth												
Poorest (n=1,362)	3.1	[2.6,3.6]	3.4	[2.9,3.9]	3.1	[2.6,3.7]	2.6	[2.2,3.0]	2.4	[2.1,2.9]	14.6	[13.1,16.3]
Poorer (n=1,478)	4.1	[3.6,4.7]	4.3	[3.8,4.9]	4.0	[3.5,4.6]	3.5	[3.0,4.0]	2.9	[2.5,3.3]	18.8	[17.3,20.4]
Middle (n=1,395)	4.7	[4.1,5.4]	4.7	[4.0,5.5]	4.8	[4.2,5.5]	3.6	[3.1,4.1]	2.9	[2.5,3.5]	20.7	[19.1,22.3]
Richer (n=1,312)	5.0	[4.2,5.9]	5.1	[4.5,5.8]	4.7	[4.0,5.4]	4.1	[3.5,4.7]	3.2	[2.7,3.7]	21.9	[20.3,23.7]
Richest (n=1,300)	4.7	[4.1,5.5]	5.5	[4.7,6.3]	5.6	[4.7,6.7]	4.5	[3.8,5.3]	3.6	[3.0,4.4]	23.9	[21.7,26.4]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Current Region												
West (n=1,810)	8.6	[7.6,9.7]	10.1	[9.2,11.1]	10.0	[9.0,11.1]	8.2	[7.4,9.1]	6.4	[5.6,7.3]	43.4	[41.7,45.1]
South (n=966)	2.6	[2.2,3.2]	2.7	[2.4,3.1]	3.0	[2.5,3.5]	2.4	[2.1,2.8]	2.2	[1.8,2.5]	12.9	[12.0,13.9]
Central (n=1,327)	4.5	[3.9,5.1]	4.3	[3.8,5.0]	4.4	[3.8,5.0]	3.3	[2.9,3.8]	3.0	[2.6,3.4]	19.5	[18.3,20.8]
North (n=1,050)	1.3	[1.1,1.6]	1.8	[1.5,2.1]	1.5	[1.3,1.8]	1.5	[1.2,1.8]	1.3	[1.1,1.5]	7.4	[6.8,8.0]
East (n=1,694)	4.6	[4.1,5.1]	3.9	[3.5,4.4]	3.4	[3.0,3.8]	2.8	[2.3,3.4]	2.2	[1.8,2.6]	16.8	[15.9,17.7]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Current Place												
Urban (n=5,073)	18.0	[16.8,19.2]	19.0	[17.9,20.2]	18.4	[17.2,19.6]	14.4	[13.3,15.5]	11.1	[10.2,12.2]	80.9	[79.8,82.0]
Rural (n=1,774)	3.6	[3.2,4.1]	3.9	[3.4,4.4]	3.8	[3.4,4.4]	3.8	[3.4,4.3]	3.9	[3.5,4.4]	19.1	[18.0,20.2]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	
Migrated												
No (n=2,727)	10.2	[9.3,11.1]	8.8	[8.0,9.7]	8.2	[7.3,9.1]	7.0	[6.3,7.8]	5.6	[4.9,6.3]	39.7	[38.0,41.4]
Yes (n=4,120)	11.4	[10.5,12.5]	14.1	[13.1,15.1]	14.0	[13.0,15.1]	11.2	[10.2,12.3]	9.5	[8.6,10.5]	60.3	[58.6,62.0]
Total (n=6,847)	21.6	[20.4,22.9]	22.9	[21.8,24.1]	22.2	[21.0,23.4]	18.2	[17.1,19.4]	15.1	[14.0,16.2]	100.0	

Source: Author's own calculation based on TDHS-2013.
Note: Lower bound and upper bound are estimated using the design of complex survey sampling in TDHS-2013. Percentages in the total row shows the relative population size of the cohort compared to other ones. The cell percentages reports the absolute size of women with various circumstances in all population of women aged 25-49.

Table 2.3: Relative Share of the Female Population by Early Life and Circumstances and Current Conditions, Column Percentage

	Age Groups (Cohorts)											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
Mother's Education												
Less than Primary (n=4,414)	47.6	[44.3,51.0]	53.6	[50.3,56.8]	60.6	[57.1,64.0]	67.6	[64.2,70.9]	74.1	[70.1,77.7]	59.5	[57.5,61.4]
Primary (n=1,970)	39.4	[36.0,42.9]	35.9	[33.0,38.9]	32.4	[29.4,35.7]	27.5	[24.5,30.8]	21.5	[18.3,25.0]	32.2	[30.6,33.8]
Lower Sec/More (n=463)	13.0	[10.7,15.7]	10.5	[8.6,12.8]	7.0	[5.4,8.9]	4.8	[3.4,6.8]	4.4	[2.9,6.6]	8.3	[7.1,9.7]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Father's Education												
Less than Primary (n=2,037)	19.9	[17.5,22.6]	21.0	[18.6,23.6]	27.5	[24.7,30.4]	33.4	[30.4,36.6]	39.0	[35.1,43.0]	27.2	[25.6,28.8]
Primary (n=3,295)	49.4	[46.3,52.5]	52.6	[49.4,55.8]	51.2	[48.0,54.3]	48.0	[44.4,51.6]	45.5	[41.6,49.5]	49.7	[47.8,51.6]
Lower Sec/More (n=1,515)	30.6	[27.6,33.8]	26.4	[23.4,29.6]	21.4	[18.6,24.4]	18.6	[15.9,21.7]	15.5	[12.8,18.6]	23.1	[21.3,25.0]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Mother Tongue												
Turkish (n=5,397)	79.0	[75.9,81.9]	79.1	[76.2,81.8]	82.2	[79.5,84.7]	82.5	[79.4,85.3]	85.3	[82.2,88.0]	81.4	[79.6,83.0]
Non Turkish (n=1,450)	21.0	[18.1,24.1]	20.9	[18.2,23.8]	17.8	[15.3,20.5]	17.5	[14.7,20.6]	14.7	[12.0,17.8]	18.6	[17.0,20.4]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Parent's Marriage												
(n=5,202)	73.8	[70.8,76.5]	75.6	[73.2,77.8]	79.3	[76.7,81.7]	78.3	[75.4,80.9]	80.6	[77.6,83.3]	77.3	[76.1,78.4]
(n=1,645)	26.2	[23.5,29.2]	24.4	[22.2,26.8]	20.7	[18.3,23.3]	21.7	[19.1,24.6]	19.4	[16.7,22.4]	22.7	[21.6,23.9]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Sibling Size												
1-2 (n=729)	18.4	[16.2,20.7]	15.3	[12.9,18.0]	11.2	[8.9,14.0]	8.5	[6.7,10.9]	8.7	[6.6,11.3]	12.8	[11.5,14.2]
3 (n=1,038)	20.9	[18.2,23.9]	16.7	[14.5,19.1]	18.5	[16.4,20.8]	12.2	[10.4,14.3]	15.5	[12.9,18.5]	17.0	[15.9,18.2]
4 (n=1,178)	18.7	[16.4,21.3]	16.2	[14.0,18.8]	16.9	[14.8,19.2]	16.2	[13.9,18.9]	18.6	[15.9,21.5]	17.3	[16.2,18.3]
5 or 6 (n=1,895)	19.6	[17.3,22.1]	25.9	[23.6,28.4]	27.4	[24.7,30.3]	31.9	[28.9,35.0]	30.8	[27.4,34.5]	26.7	[25.5,28.0]
7 and more (n=2,007)	22.4	[19.7,25.4]	25.9	[23.2,28.8]	26.1	[23.3,29.0]	31.1	[28.1,34.4]	26.5	[23.4,29.8]	26.2	[24.7,27.8]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Share of Male Siblings												
0 (n=734)	15.7	[13.4,18.3]	12.7	[10.7,15.1]	11.4	[9.7,13.4]	9.6	[7.5,12.2]	11.0	[8.9,13.4]	12.2	[11.2,13.4]
0-1/3 (n=1,386)	17.2	[15.3,19.3]	18.9	[16.7,21.2]	17.8	[15.9,19.9]	23.0	[20.6,25.7]	23.0	[20.3,26.0]	19.7	[18.7,20.7]

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Table 2.3 – *Continued from previous page*

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
1/3-1/2 (n=1,900)	24.3	[21.7,27.1]	29.6	[26.9,32.4]	27.7	[25.2,30.3]	27.0	[24.3,29.9]	28.9	[25.9,32.1]	27.4	[26.3,28.6]
1/2 (n=1,311)	22.6	[20.0,25.3]	20.2	[17.9,22.8]	19.7	[17.0,22.7]	17.1	[14.9,19.5]	17.5	[14.7,20.8]	19.6	[18.4,20.9]
More 1/2 (n=1,516)	20.3	[18.0,22.8]	18.7	[16.6,20.9]	23.3	[20.7,26.2]	23.3	[20.9,25.8]	19.6	[17.1,22.4]	21.0	[19.9,22.2]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Deceased Siblings												
None (n=3,091)	58.7	[55.2,62.0]	52.0	[49.0,54.9]	48.8	[45.5,52.2]	39.7	[36.5,42.9]	34.2	[30.5,38.0]	47.8	[46.3,49.3]
At Laest One (n=3,756)	41.3	[38.0,44.8]	48.0	[45.1,51.0]	51.2	[47.8,54.5]	60.3	[57.1,63.5]	65.8	[62.0,69.5]	52.2	[50.7,53.7]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Childhood Place												
Province/District (n=3,693)	66.5	[63.3,69.5]	63.7	[60.5,66.8]	57.6	[53.8,61.3]	52.5	[48.8,56.1]	50.8	[46.3,55.3]	59.0	[56.8,61.1]
Subdistrict/Village (n=3,150)	33.5	[30.5,36.7]	36.3	[33.2,39.5]	42.4	[38.7,46.2]	47.5	[43.9,51.2]	49.2	[44.7,53.7]	41.0	[38.9,43.2]
Total (n=6,843)	100.0		100.0		100.0		100.0		100.0		100.0	
Childhood Region												
West (n=1,351)	28.6	[25.6,31.7]	28.7	[26.0,31.6]	29.6	[26.3,33.2]	27.2	[23.6,31.2]	25.7	[22.0,29.8]	28.2	[26.4,30.0]
South (n=936)	12.9	[10.8,15.4]	12.5	[10.6,14.7]	12.7	[10.9,14.7]	12.7	[11.0,14.6]	14.0	[11.6,16.7]	12.9	[11.9,14.0]
Central (n=1,450)	22.7	[20.1,25.4]	22.1	[19.8,24.6]	23.2	[20.5,26.1]	24.0	[21.2,27.1]	25.1	[22.2,28.2]	23.3	[21.9,24.7]
North (n=1,152)	9.3	[7.6,11.4]	12.0	[10.0,14.3]	12.2	[10.4,14.2]	13.4	[10.9,16.2]	13.3	[11.3,15.6]	11.9	[10.8,13.1]
East (n=1,958)	26.5	[23.7,29.6]	24.7	[22.2,27.3]	22.4	[19.7,25.2]	22.7	[19.7,25.9]	21.9	[18.6,25.5]	23.8	[22.2,25.4]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Birth Place												
Province/District (n=3,454)	61.5	[57.8,65.0]	60.3	[56.7,63.8]	53.8	[50.3,57.3]	47.8	[44.2,51.4]	45.3	[40.9,49.8]	54.6	[52.3,56.8]
Subdistrict/Village (n=3,393)	38.5	[35.0,42.2]	39.7	[36.2,43.3]	46.2	[42.7,49.7]	52.2	[48.6,55.8]	54.7	[50.2,59.1]	45.4	[43.2,47.7]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Birth Region												
West (n=1,236)	23.8	[21.0,26.8]	26.4	[23.4,29.6]	27.5	[24.4,30.8]	24.5	[21.2,28.1]	23.9	[20.3,28.0]	25.4	[23.5,27.3]
South (n=885)	12.1	[10.1,14.4]	11.7	[10.0,13.7]	11.7	[10.0,13.6]	11.9	[10.2,13.9]	13.4	[11.2,16.1]	12.1	[11.1,13.1]
Central (n=1,475)	24.0	[21.6,26.6]	22.4	[20.1,24.9]	24.4	[21.7,27.3]	25.4	[22.5,28.6]	25.3	[22.5,28.4]	24.2	[22.8,25.6]
North (n=1,186)	10.7	[8.6,13.2]	12.3	[10.2,14.7]	12.6	[10.8,14.6]	13.9	[11.5,16.8]	14.4	[12.3,16.9]	12.6	[11.5,13.9]
East (n=2,065)	29.4	[26.3,32.7]	27.2	[24.5,30.0]	23.9	[21.1,26.9]	24.3	[21.3,27.5]	22.9	[19.7,26.5]	25.7	[24.1,27.5]

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Table 2.3 – *Continued from previous page*

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Wealth index												
Poorest (n=1,362)	14.3	[12.3,16.6]	14.8	[12.8,17.1]	14.0	[11.8,16.5]	14.2	[12.1,16.6]	16.3	[13.9,18.9]	14.6	[13.1,16.3]
Poorer (n=1,478)	19.1	[16.7,21.7]	18.8	[16.5,21.3]	17.9	[15.6,20.5]	19.2	[16.9,21.8]	19.1	[16.4,22.0]	18.8	[17.3,20.4]
Middle (n=1,395)	21.8	[19.2,24.7]	20.4	[17.6,23.4]	21.6	[18.9,24.5]	19.7	[17.3,22.3]	19.6	[16.8,22.7]	20.7	[19.1,22.3]
Richer (n=1,312)	22.9	[19.6,26.6]	22.2	[19.8,24.8]	21.1	[18.4,24.1]	22.3	[19.5,25.2]	21.1	[18.2,24.3]	21.9	[20.3,23.7]
Richest (n=1,300)	21.9	[18.8,25.2]	23.8	[20.7,27.3]	25.4	[21.6,29.7]	24.6	[21.5,28.1]	24.0	[20.3,28.3]	23.9	[21.7,26.4]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Region												
West (n=1,810)	39.7	[36.2,43.4]	44.2	[41.2,47.3]	45.1	[41.7,48.5]	45.2	[41.6,48.8]	42.8	[39.0,46.6]	43.4	[41.7,45.1]
South (n=966)	12.2	[10.2,14.5]	11.9	[10.4,13.7]	13.4	[11.4,15.7]	13.3	[11.4,15.5]	14.3	[12.3,16.7]	12.9	[12.0,13.9]
Central (n=1,327)	20.8	[18.3,23.5]	18.9	[16.7,21.4]	19.6	[17.1,22.5]	18.3	[16.0,20.8]	19.8	[17.5,22.4]	19.5	[18.3,20.8]
North (n=1,050)	6.1	[5.0,7.3]	7.8	[6.7,9.2]	6.8	[5.8,7.9]	8.0	[6.5,10.0]	8.5	[7.4,9.8]	7.4	[6.8,8.0]
East (n=1,694)	21.2	[19.0,23.6]	17.1	[15.3,19.1]	15.1	[13.5,16.9]	15.2	[12.6,18.3]	14.6	[12.3,17.1]	16.8	[15.9,17.7]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Place of residence												
Urban (n=5,073)	83.1	[80.9,85.1]	83.0	[81.0,84.9]	82.7	[80.5,84.8]	79.0	[76.3,81.4]	74.0	[71.1,76.6]	80.9	[79.8,82.0]
Rural (n=1,774)	16.9	[14.9,19.1]	17.0	[15.1,19.0]	17.3	[15.2,19.5]	21.0	[18.6,23.7]	26.0	[23.4,28.9]	19.1	[18.0,20.2]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	
Migrated-2												
No (n=2,727)	47.0	[43.7,50.3]	38.5	[35.5,41.5]	36.8	[33.5,40.2]	38.4	[34.9,42.0]	36.9	[33.0,40.9]	39.7	[38.0,41.4]
Yes (n=4,120)	53.0	[49.7,56.3]	61.5	[58.5,64.5]	63.2	[59.8,66.5]	61.6	[58.0,65.1]	63.1	[59.1,67.0]	60.3	[58.6,62.0]
Total (n=6,847)	100.0		100.0		100.0		100.0		100.0		100.0	

Source: Author's own calculation based on TDHS-2013.
Note: Lower bound and upper bound are estimated using the design of complex survey sampling in TDHS-2013. The column percentages reports the relative size of women with various circumstances in each cohort of women aged 25-49.

The size of the siblings of women, i.e. the mother's birth rate, determines their cohort size and composition through the circumstances. That is, if the number of children in a household depends heavily on parental education, mother tongue and region, this in turn would change the relative proportion of women in a given cohort. To better understand the relationship between the fertility preferences of the first generation women (mothers) and the population distribution of the second generation women (daughters), Table 2.4 and Table 2.5 give the average living children and the average children ever born of the first generation according to the circumstances of second generation of women. The former table only considers living siblings, but the latter table also includes deceased siblings of women. The results show that women with special living conditions that reduce educational opportunities reproduce more. This increases the proportion of disadvantaged women of the second generation. The average sibling size (living children) of women with mothers with less than primary school education is 5.67 and 6.1 in cohorts 25-29 and 45-49 (See Table 2.4). But more educated mothers tended to have fewer children. The same applies to all disadvantaged circumstances such as less educated fathers and a mother tongue other than Turkish, born / raised in a subdistrict / village and in the east. As a result, the fertility rate of the mothers (first generation) affects the relative size of women (second generation) in different circumstances.

The composition and size of the female cohort in Turkey could have an impact on the level of education, distribution and inequality of opportunity. In other words, even if the individual impact of disadvantaged past circumstances (coefficient effect) on access to education diminishes over time, this may not be enough to improve human capital and its distribution, namely the cohort composition effect, due to the increasing proportion of women living in disadvantaged past circumstances (endowment effect). A more detailed analysis is carried out in the following sections.

Table 2.4: Average Size of Living Siblings by Circumstances and Cohorts

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
Mother's Education												
Less than Primary (n=4,414)	6.10	[5.86,6.35]	6.28	[6.07,6.48]	6.05	[5.86,6.24]	6.17	[6.00,6.34]	5.67	[5.49,5.85]	6.06	[5.96,6.16]
Primary (n=1,970)	3.65	[3.49,3.81]	3.95	[3.75,4.14]	3.95	[3.74,4.16]	4.15	[3.90,4.40]	4.12	[3.86,4.39]	3.92	[3.83,4.01]
Lower Sec/More (n=463)	2.86	[2.61,3.10]	2.96	[2.64,3.28]	3.28	[2.86,3.70]	3.32	[2.70,3.95]	3.36	[2.70,4.02]	3.06	[2.86,3.25]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Father's Education												
Less than Primary (n=2,037)	6.78	[6.39,7.16]	6.93	[6.62,7.25]	6.29	[6.04,6.54]	6.38	[6.14,6.63]	5.81	[5.56,6.06]	6.40	[6.26,6.54]
Primary (n=3,295)	4.49	[4.29,4.68]	4.96	[4.76,5.15]	4.94	[4.74,5.14]	5.16	[4.97,5.36]	4.94	[4.73,5.15]	4.89	[4.79,4.99]
Lower Sec/More (n=1,515)	3.73	[3.50,3.97]	3.88	[3.63,4.14]	4.31	[3.99,4.63]	4.65	[4.23,5.08]	4.66	[4.17,5.15]	4.12	[3.95,4.29]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Mother Tongue												
Turkish (n=5,397)	3.96	[3.84,4.08]	4.44	[4.29,4.60]	4.69	[4.53,4.85]	5.09	[4.92,5.25]	4.95	[4.77,5.12]	4.60	[4.52,4.68]
Non Turkish (n=1,450)	7.56	[7.24,7.89]	7.55	[7.23,7.87]	7.40	[6.99,7.80]	7.32	[7.00,7.63]	6.91	[6.48,7.35]	7.41	[7.24,7.57]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Parent's Marriage												
(n=5,202)	4.50	[4.30,4.70]	4.93	[4.75,5.10]	5.08	[4.88,5.27]	5.36	[5.18,5.54]	5.22	[5.03,5.41]	5.00	[4.90,5.10]
(n=1,645)	5.31	[5.03,5.58]	5.60	[5.23,5.97]	5.54	[5.24,5.84]	5.89	[5.57,6.21]	5.30	[4.95,5.65]	5.53	[5.37,5.68]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Sibling Size												
1-2 (n=729)	1.88	[1.83,1.94]	1.89	[1.84,1.94]	1.87	[1.81,1.94]	1.85	[1.77,1.92]	1.91	[1.85,1.97]	1.88	[1.85,1.91]
3 (n=1,038)	3.00	[3.00,3.00]	3.00	[3.00,3.00]	3.00	[3.00,3.00]	3.00	[3.00,3.00]	3.00	[3.00,3.00]	3.00	[3.00,3.00]
4 (n=1,178)	4.00	[4.00,4.00]	4.00	[4.00,4.00]	4.00	[4.00,4.00]	4.00	[4.00,4.00]	4.00	[4.00,4.00]	4.00	[4.00,4.00]
5 or 6 (n=1,895)	5.38	[5.32,5.45]	5.46	[5.41,5.52]	5.40	[5.34,5.45]	5.47	[5.41,5.54]	5.44	[5.37,5.50]	5.43	[5.41,5.46]
7 and more (n=2,007)	8.64	[8.48,8.81]	8.64	[8.49,8.80]	8.66	[8.47,8.85]	8.21	[8.06,8.37]	8.26	[8.08,8.45]	8.50	[8.42,8.57]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Share of Male Siblings												
0 (n=734)	2.58	[2.40,2.75]	2.65	[2.46,2.83]	3.23	[2.91,3.54]	2.99	[2.65,3.33]	3.17	[2.87,3.46]	2.87	[2.75,2.98]

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Table 2.4 – *Continued from previous page*

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
0-1/3 (n=1,386)	5.64	[5.41,5.87]	6.05	[5.76,6.34]	5.82	[5.57,6.08]	6.01	[5.77,6.24]	6.00	[5.70,6.30]	5.91	[5.79,6.03]
1/3-1/2 (n=1,900)	5.42	[5.07,5.77]	5.88	[5.60,6.16]	5.55	[5.28,5.83]	5.99	[5.70,6.27]	5.59	[5.27,5.91]	5.69	[5.55,5.84]
1/2 (n=1,311)	3.89	[3.59,4.18]	4.00	[3.70,4.31]	4.36	[3.99,4.74]	4.68	[4.31,5.06]	4.54	[4.15,4.92]	4.23	[4.07,4.40]
More 1/2 (n=1,516)	5.65	[5.25,6.05]	5.71	[5.42,6.01]	5.87	[5.52,6.22]	5.96	[5.68,6.24]	5.59	[5.25,5.93]	5.77	[5.62,5.92]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Deceased Siblings												
None (n=3,091)	4.05	[3.87,4.23]	4.46	[4.25,4.66]	4.60	[4.37,4.83]	4.88	[4.63,5.13]	4.79	[4.49,5.09]	4.48	[4.37,4.59]
At Least One (n=3,756)	5.66	[5.40,5.92]	5.78	[5.58,5.97]	5.72	[5.53,5.92]	5.87	[5.68,6.06]	5.47	[5.26,5.67]	5.71	[5.60,5.81]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Childhood Place												
Province/District (n=3,693)	4.26	[4.06,4.46]	4.47	[4.27,4.67]	4.54	[4.32,4.75]	4.90	[4.68,5.12]	4.84	[4.61,5.06]	4.55	[4.44,4.66]
Subdistrict/Village (n=3,150)	5.61	[5.36,5.86]	6.18	[5.94,6.41]	6.04	[5.79,6.29]	6.11	[5.89,6.33]	5.65	[5.43,5.86]	5.94	[5.82,6.05]
Total (n=6,843)	4.71	[4.54,4.88]	5.09	[4.92,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Childhood Region												
West (n=1,351)	3.39	[3.16,3.62]	3.66	[3.40,3.93]	3.75	[3.54,3.96]	4.04	[3.78,4.30]	4.07	[3.80,4.35]	3.75	[3.62,3.87]
South (n=936)	4.86	[4.40,5.33]	5.39	[5.02,5.76]	5.72	[5.29,6.16]	6.22	[5.80,6.63]	6.10	[5.63,6.57]	5.61	[5.41,5.82]
Central (n=1,450)	3.73	[3.55,3.90]	4.54	[4.22,4.86]	4.75	[4.52,4.98]	5.25	[4.98,5.51]	4.78	[4.51,5.06]	4.59	[4.46,4.71]
North (n=1,152)	4.47	[4.09,4.85]	4.52	[4.22,4.81]	5.05	[4.65,5.45]	5.64	[5.35,5.94]	5.31	[4.92,5.70]	4.99	[4.80,5.19]
East (n=1,958)	6.99	[6.71,7.28]	7.37	[7.11,7.64]	7.26	[6.91,7.60]	6.93	[6.68,7.18]	6.52	[6.19,6.85]	7.06	[6.91,7.21]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Birth Place												
Province/District (n=3,454)	4.19	[4.00,4.37]	4.42	[4.23,4.61]	4.52	[4.32,4.72]	4.79	[4.56,5.02]	4.74	[4.50,4.99]	4.49	[4.38,4.59]
Subdistrict/Village (n=3,393)	5.55	[5.31,5.79]	6.11	[5.88,6.34]	5.93	[5.70,6.17]	6.10	[5.90,6.31]	5.64	[5.45,5.84]	5.88	[5.77,5.99]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Birth Region												
West (n=1,236)	3.16	[2.95,3.37]	3.59	[3.33,3.86]	3.66	[3.45,3.86]	3.93	[3.65,4.20]	4.06	[3.76,4.36]	3.65	[3.52,3.77]
South (n=885)	4.79	[4.37,5.20]	5.31	[4.91,5.70]	5.67	[5.31,6.02]	6.22	[5.79,6.64]	6.08	[5.62,6.53]	5.56	[5.37,5.76]
Central (n=1,475)	3.70	[3.51,3.90]	4.52	[4.22,4.82]	4.71	[4.48,4.94]	5.24	[4.98,5.49]	4.72	[4.44,4.99]	4.56	[4.43,4.68]
North (n=1,186)	4.37	[4.02,4.72]	4.49	[4.22,4.77]	5.03	[4.64,5.42]	5.64	[5.36,5.92]	5.22	[4.84,5.60]	4.95	[4.77,5.13]
East (n=2,065)	6.89	[6.61,7.17]	7.19	[6.93,7.46]	7.23	[6.88,7.58]	6.83	[6.58,7.09]	6.55	[6.23,6.87]	6.98	[6.82,7.13]

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Table 2.4 – *Continued from previous page*

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Wealth Level												
Poorest (n=1,362)	6.65	[6.23,7.07]	6.95	[6.61,7.28]	6.82	[6.38,7.26]	6.58	[6.26,6.91]	5.88	[5.53,6.23]	6.61	[6.38,6.85]
Poorer (n=1,478)	5.53	[5.23,5.84]	6.08	[5.72,6.44]	5.88	[5.54,6.22]	6.10	[5.76,6.44]	5.70	[5.32,6.09]	5.86	[5.69,6.04]
Middle (n=1,395)	4.96	[4.56,5.37]	5.33	[4.93,5.72]	5.35	[5.04,5.66]	5.77	[5.49,6.05]	5.45	[5.09,5.80]	5.34	[5.16,5.53]
Richer (n=1,312)	3.95	[3.70,4.21]	4.45	[4.16,4.75]	4.82	[4.53,5.12]	5.11	[4.79,5.44]	5.30	[4.90,5.70]	4.66	[4.50,4.82]
Richest (n=1,300)	3.28	[3.06,3.50]	3.55	[3.27,3.83]	3.91	[3.62,4.20]	4.44	[4.07,4.82]	4.20	[3.88,4.53]	3.85	[3.69,4.00]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Current Region												
West (n=1,810)	4.06	[3.76,4.37]	4.46	[4.19,4.74]	4.53	[4.23,4.83]	4.82	[4.53,5.12]	4.72	[4.44,4.99]	4.51	[4.34,4.67]
South (n=966)	5.16	[4.61,5.72]	5.66	[5.19,6.14]	5.60	[5.19,6.00]	6.13	[5.74,6.52]	6.02	[5.54,6.49]	5.69	[5.42,5.97]
Central (n=1,327)	3.88	[3.72,4.05]	4.54	[4.21,4.86]	4.81	[4.56,5.07]	5.33	[5.06,5.59]	4.84	[4.58,5.10]	4.63	[4.50,4.75]
North (n=1,050)	4.31	[3.94,4.68]	4.71	[4.38,5.04]	5.07	[4.65,5.50]	5.63	[5.26,5.99]	5.31	[4.96,5.66]	5.00	[4.81,5.19]
East (n=1,694)	6.59	[6.22,6.96]	7.10	[6.73,7.47]	7.23	[6.84,7.62]	6.94	[6.62,7.26]	6.49	[6.08,6.89]	6.88	[6.67,7.10]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Current Place												
Urban (n=5,073)	4.53	[4.34,4.72]	4.89	[4.71,5.08]	5.00	[4.81,5.20]	5.38	[5.18,5.58]	5.12	[4.91,5.32]	4.96	[4.85,5.06]
Rural (n=1,774)	5.62	[5.30,5.94]	6.05	[5.76,6.34]	5.98	[5.60,6.36]	5.84	[5.58,6.10]	5.57	[5.30,5.83]	5.81	[5.65,5.98]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]
Migrated												
No (n=2,727)	4.53	[4.30,4.77]	4.81	[4.55,5.07]	4.89	[4.63,5.14]	5.13	[4.89,5.38]	5.15	[4.90,5.41]	4.86	[4.74,4.98]
Yes (n=4,120)	4.87	[4.63,5.12]	5.26	[5.06,5.47]	5.34	[5.13,5.56]	5.69	[5.49,5.89]	5.28	[5.07,5.50]	5.29	[5.17,5.41]
Total (n=6,847)	4.71	[4.54,4.88]	5.09	[4.93,5.25]	5.17	[5.00,5.35]	5.48	[5.31,5.64]	5.24	[5.07,5.40]	5.12	[5.03,5.21]

Source: Author's own calculation using TDHS-2013.
Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. Significance level of confidence intervals is 0.05.

Table 2.5: Average Size of All Siblings by Circumstances and Cohorts

	Age Groups (Cohorts)											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
Mother's Education												
Less than Primary (n=4,414)	7.31	[7.01,7.61]	7.55	[7.32,7.79]	7.40	[7.18,7.63]	7.75	[7.51,7.98]	7.40	[7.16,7.64]	7.49	[7.37,7.61]
Primary (n=1,970)	4.09	[3.88,4.29]	4.49	[4.25,4.74]	4.53	[4.26,4.80]	4.94	[4.62,5.26]	5.19	[4.83,5.55]	4.53	[4.41,4.66]
Lower Sec/More (n=463)	3.12	[2.81,3.43]	3.33	[2.93,3.73]	3.71	[3.18,4.23]	4.14	[3.19,5.09]	3.76	[2.91,4.60]	3.45	[3.19,3.71]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Father's Education												
Less than Primary (n=2,037)	8.13	[7.65,8.62]	8.39	[8.02,8.77]	7.89	[7.60,8.19]	8.20	[7.86,8.53]	7.77	[7.43,8.11]	8.06	[7.89,8.24]
Primary (n=3,295)	5.28	[5.03,5.53]	5.87	[5.64,6.10]	5.82	[5.57,6.07]	6.31	[6.07,6.56]	6.22	[5.95,6.48]	5.86	[5.73,5.99]
Lower Sec/More (n=1,515)	4.13	[3.84,4.41]	4.40	[4.11,4.70]	5.00	[4.61,5.39]	5.55	[4.91,6.18]	5.85	[5.19,6.50]	4.76	[4.55,4.97]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Mother Tongue												
Turkish (n=5,397)	4.60	[4.43,4.77]	5.24	[5.04,5.43]	5.61	[5.40,5.82]	6.33	[6.09,6.57]	6.38	[6.13,6.63]	5.57	[5.46,5.68]
Non Turkish (n=1,450)	8.87	[8.48,9.26]	8.95	[8.54,9.36]	9.01	[8.56,9.46]	9.04	[8.63,9.44]	9.00	[8.41,9.58]	8.96	[8.77,9.16]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Parent's Marriage												
(n=5,202)	5.19	[4.93,5.45]	5.81	[5.59,6.03]	6.05	[5.80,6.30]	6.64	[6.40,6.89]	6.61	[6.35,6.86]	6.02	[5.89,6.15]
(n=1,645)	6.36	[6.02,6.70]	6.62	[6.20,7.04]	6.84	[6.45,7.23]	7.36	[6.95,7.78]	7.42	[6.93,7.91]	6.83	[6.63,7.03]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Sibling Size												
1-2 (n=729)	2.19	[2.05,2.32]	2.29	[2.17,2.42]	2.43	[2.23,2.64]	2.40	[2.20,2.60]	3.16	[2.68,3.64]	2.39	[2.30,2.48]
3 (n=1,038)	3.50	[3.36,3.63]	3.49	[3.37,3.61]	3.55	[3.40,3.71]	4.03	[3.69,4.37]	4.16	[3.90,4.42]	3.67	[3.59,3.75]
4 (n=1,178)	4.64	[4.50,4.78]	4.76	[4.58,4.94]	4.96	[4.74,5.18]	5.01	[4.81,5.20]	5.47	[5.18,5.76]	4.93	[4.84,5.02]
5 or 6 (n=1,895)	6.37	[6.20,6.54]	6.58	[6.39,6.77]	6.77	[6.56,6.98]	7.11	[6.77,7.45]	7.18	[6.90,7.45]	6.81	[6.68,6.94]
7 and more (n=2,007)	10.02	[9.76,10.28]	10.05	[9.80,10.30]	9.95	[9.73,10.18]	9.71	[9.49,9.93]	9.90	[9.65,10.14]	9.93	[9.81,10.04]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Share of Male Siblings												
0 (n=734)	2.98	[2.73,3.22]	3.26	[2.98,3.53]	4.32	[3.80,4.84]	4.07	[3.58,4.56]	4.48	[3.97,4.98]	3.68	[3.50,3.87]
0-1/3 (n=1,386)	6.63	[6.30,6.97]	6.98	[6.63,7.32]	7.06	[6.71,7.42]	7.39	[7.09,7.70]	7.58	[7.21,7.96]	7.13	[6.97,7.28]

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Table 2.5 – *Continued from previous page*

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
1/3-1/2 (n=1,900)	6.25	[5.81,6.69]	7.06	[6.68,7.44]	6.61	[6.24,6.98]	7.53	[7.05,8.00]	7.27	[6.84,7.69]	6.92	[6.72,7.12]
1/2 (n=1,311)	4.49	[4.10,4.88]	4.72	[4.34,5.11]	5.17	[4.71,5.63]	5.72	[5.24,6.20]	5.98	[5.52,6.45]	5.09	[4.87,5.31]
More 1/2 (n=1,516)	6.70	[6.22,7.17]	6.64	[6.29,7.00]	6.91	[6.52,7.30]	7.29	[6.90,7.68]	7.03	[6.59,7.48]	6.90	[6.72,7.09]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Deceased Siblings												
None (n=3,091)	4.05	[3.87,4.23]	4.46	[4.25,4.66]	4.60	[4.37,4.83]	4.88	[4.63,5.13]	4.79	[4.49,5.09]	4.48	[4.37,4.59]
At Least One (n=3,756)	7.55	[7.23,7.88]	7.69	[7.45,7.93]	7.76	[7.51,8.01]	8.06	[7.78,8.34]	7.79	[7.52,8.06]	7.78	[7.64,7.92]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Childhood Place												
Province/District (n=3,693)	4.89	[4.65,5.14]	5.17	[4.93,5.42]	5.24	[4.98,5.49]	6.05	[5.71,6.39]	6.18	[5.87,6.48]	5.39	[5.25,5.53]
Subdistrict/Village (n=3,150)	6.69	[6.34,7.04]	7.48	[7.18,7.78]	7.54	[7.22,7.86]	7.63	[7.38,7.89]	7.37	[7.07,7.67]	7.37	[7.21,7.52]
Total (n=6,843)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Childhood Region												
West (n=1,351)	3.85	[3.54,4.15]	4.18	[3.87,4.49]	4.30	[4.02,4.58]	4.93	[4.54,5.32]	5.03	[4.68,5.39]	4.38	[4.22,4.55]
South (n=936)	5.65	[5.07,6.23]	6.36	[5.86,6.86]	6.79	[6.30,7.29]	7.39	[6.89,7.90]	7.51	[6.93,8.08]	6.67	[6.40,6.95]
Central (n=1,450)	4.37	[4.12,4.62]	5.45	[5.06,5.84]	5.88	[5.56,6.19]	6.55	[6.19,6.92]	6.49	[6.08,6.90]	5.70	[5.53,5.86]
North (n=1,152)	5.33	[4.83,5.84]	5.41	[5.04,5.79]	5.99	[5.50,6.49]	7.02	[6.67,7.38]	7.04	[6.50,7.59]	6.14	[5.90,6.37]
East (n=1,958)	8.21	[7.84,8.58]	8.76	[8.43,9.10]	8.89	[8.50,9.28]	8.84	[8.42,9.26]	8.47	[8.01,8.92]	8.63	[8.43,8.83]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Birth Place												
Province/District (n=3,454)	4.80	[4.57,5.03]	5.10	[4.87,5.33]	5.21	[4.96,5.46]	5.92	[5.56,6.28]	6.04	[5.71,6.37]	5.30	[5.16,5.44]
Subdistrict/Village (n=3,393)	6.61	[6.28,6.94]	7.39	[7.09,7.69]	7.38	[7.09,7.68]	7.60	[7.36,7.85]	7.37	[7.08,7.65]	7.29	[7.14,7.43]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Birth Region												
West (n=1,236)	3.59	[3.29,3.89]	4.10	[3.79,4.41]	4.19	[3.91,4.48]	4.84	[4.41,5.27]	5.04	[4.65,5.42]	4.28	[4.11,4.45]
South (n=885)	5.57	[5.03,6.10]	6.26	[5.72,6.80]	6.78	[6.34,7.22]	7.28	[6.79,7.77]	7.46	[6.91,8.01]	6.61	[6.34,6.87]
Central (n=1,475)	4.33	[4.05,4.60]	5.38	[5.02,5.74]	5.81	[5.49,6.12]	6.53	[6.18,6.88]	6.40	[5.99,6.80]	5.63	[5.46,5.80]
North (n=1,186)	5.16	[4.70,5.62]	5.36	[5.02,5.71]	5.97	[5.46,6.48]	6.99	[6.64,7.35]	6.90	[6.36,7.43]	6.05	[5.84,6.27]
East (n=2,065)	8.08	[7.70,8.46]	8.58	[8.24,8.91]	8.81	[8.43,9.20]	8.72	[8.30,9.14]	8.48	[8.05,8.91]	8.52	[8.31,8.72]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]

Continued on next page

Table 2.5 – *Continued from previous page*

	Age Category											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
Wealth Level												
Poorest (n=1,362)	7.91	[7.42,8.40]	8.32	[7.87,8.77]	8.65	[8.17,9.14]	8.26	[7.91,8.62]	7.78	[7.33,8.22]	8.20	[7.93,8.48]
Poorer (n=1,478)	6.54	[6.12,6.95]	7.29	[6.87,7.71]	7.40	[7.03,7.76]	7.62	[7.18,8.06]	7.45	[6.95,7.95]	7.23	[7.03,7.43]
Middle (n=1,395)	5.83	[5.32,6.33]	6.38	[5.94,6.82]	6.36	[5.98,6.73]	7.15	[6.78,7.52]	6.90	[6.46,7.34]	6.46	[6.24,6.68]
Richer (n=1,312)	4.61	[4.28,4.95]	5.20	[4.82,5.58]	5.58	[5.23,5.93]	6.54	[5.99,7.10]	6.88	[6.35,7.42]	5.64	[5.43,5.85]
Richest (n=1,300)	3.60	[3.36,3.84]	4.00	[3.68,4.32]	4.44	[4.12,4.77]	5.27	[4.83,5.70]	5.33	[4.88,5.77]	4.46	[4.27,4.66]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Current Region												
West (n=1,810)	4.71	[4.31,5.10]	5.21	[4.89,5.54]	5.27	[4.89,5.66]	6.07	[5.65,6.48]	6.00	[5.59,6.41]	5.41	[5.18,5.63]
South (n=966)	6.05	[5.27,6.82]	6.71	[6.11,7.30]	6.85	[6.33,7.37]	7.42	[6.93,7.91]	7.41	[6.86,7.96]	6.86	[6.49,7.22]
Central (n=1,327)	4.52	[4.29,4.76]	5.44	[5.02,5.86]	5.96	[5.62,6.31]	6.48	[6.10,6.87]	6.58	[6.13,7.04]	5.70	[5.52,5.88]
North (n=1,050)	5.04	[4.54,5.55]	5.59	[5.19,5.98]	6.04	[5.56,6.51]	6.98	[6.62,7.35]	6.73	[6.24,7.22]	6.06	[5.84,6.28]
East (n=1,694)	7.73	[7.28,8.19]	8.41	[7.97,8.86]	8.86	[8.40,9.33]	8.72	[8.31,9.13]	8.65	[8.12,9.18]	8.40	[8.12,8.68]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Current Place												
Urban (n=5,073)	5.27	[5.01,5.52]	5.76	[5.54,5.99]	5.96	[5.70,6.21]	6.68	[6.40,6.95]	6.57	[6.27,6.86]	5.97	[5.83,6.11]
Rural (n=1,774)	6.62	[6.23,7.02]	7.22	[6.83,7.61]	7.45	[6.99,7.90]	7.27	[6.97,7.56]	7.33	[6.97,7.69]	7.18	[6.98,7.38]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]
Migrated												
No (n=2,727)	5.28	[5.00,5.57]	5.62	[5.30,5.95]	5.72	[5.42,6.03]	6.41	[6.05,6.78]	6.64	[6.29,7.00]	5.84	[5.68,5.99]
Yes (n=4,120)	5.68	[5.35,6.02]	6.25	[6.00,6.51]	6.50	[6.22,6.78]	7.04	[6.79,7.30]	6.84	[6.53,7.14]	6.44	[6.29,6.60]
Total (n=6,847)	5.50	[5.28,5.72]	6.01	[5.81,6.21]	6.21	[5.99,6.44]	6.80	[6.58,7.02]	6.76	[6.52,7.00]	6.20	[6.08,6.32]

Source: Author's own calculation using TDHS-2013.

Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. Significance level of confidence intervals is 0.05.

2.3.3 Educational Attainment of Women

This section briefly explains the educational progress across the cohorts for the entire sample (all people aged 25-64) and woman sample (women aged 25-49). While the use of the first sample provides a snapshot of the assessment of the gender gap over time, the second sample exclusively describes the educational level of women, the main interest of this essay. To see the general trend in the educational level of the total population between the ages of 25 and 64, Table 2.6 reports the share of men and women by education level in TDHS-2013. The percentage of women (men) not completing primary education and high school is 21.7 (6.1) and 74.3 (61.4) respectively. This overall picture implies that women in Turkey still have less schooling than men. Table 2.6 shows educational progress in the successive cohorts by gender. Men aged 25-64 in Turkey perform better than women in all cohorts. Fortunately, however, the gender gap closes over time.

According to the estimate based on the information in TDHS-2013, the mean years of education (MYE) in Turkey for the population aged 25-64 is 7.32 years, which is on average less than a lower secondary education . The MYE was steadily increased from 5.06 years for the oldest age cohort (60-64) to 9.36 years for the youngest age cohort (25-29). All socio-demographic groups have made progress, but to varying degrees. Figure 2.1 shows the MYE by gender, current region, current place of residence, wealth, place of birth and region of birth for the entire population aged 25 to 64 in Turkey. As expected, women in Turkey approach men with educational qualifications. The gender gap decreased from 2.79 in the oldest cohort to 1.56 in the youngest cohort, but it did not close completely. Convergence is faster between cohorts 40-44 and 60-64 due to the stable MYE in men.

Despite the shrinking gender gap in MYE, convergence in other areas of the current circumstances is unsatisfactory (Figure 2.1). A few points are worth mentioning in this context. First, the Eastern MYE is lowest in all cohorts and has not converged on other regions over this period. Despite the convergence of north, center and west, the south has deviated slightly from these three regions. The route of migration from the less educated eastern provinces to the southern ones could be decisive for this trend. Second, there is significant difference in the MYE between rural and urban dwellers. In fact, this gap did not close over time and even increased slightly from 2.24 in the 60-64 to 2.35 in the 25-29 cohort. Third, people's prosperity and education went hand in hand. It is interesting that even the 25 to 29 year olds in the

poorer and poorest categories of wealth have an education less than lower secondary level (8 years) on average. The education gap between the richest and poorest people seems to have been constant through the successive five-year cohorts. Finally, there is also no convergence between the MYEs of people born in the provincial center, the district center, and the subdistrict / village. With regard to the region of birth, the East explicitly deviated from the others through all cohorts. On the other hand, the distribution of education among the current regions of people is more balanced than in the regions of birth, probably due to the internal migration of less educated people. This overall picture shows us that while the gender gap has narrowed over time, the territorial segregation and wealth segregation in education in Turkey is more persistent from the cohort 60-64 to the cohort 25-29.

Table 2.6: Share of Population aged 25-64 by Education Level Across the Age Cohorts

Education Level	Age Cohort								
	25-29	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	**Total**
	%	%	%	%	%	%	%	%	%
					All				
No education	5.3	5.6	4.9	8.3	10.6	14.0	18.3	24.2	10.0
Incomplete primary	3.6	3.5	2.6	2.6	4.0	4.4	5.8	7.0	3.9
Complete primary	19.8	32.1	42.1	46.5	47.1	45.4	46.8	43.4	39.1
Incomplete secondary	20.8	17.1	14.8	15.6	13.5	12.0	9.3	9.8	14.8
Complete secondary	19.8	20.5	18.6	14.7	12.7	15.0	10.2	7.8	15.9
Higher	30.8	21.1	17.0	12.4	12.0	9.3	9.6	7.8	16.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	3,353	3,492	3,146	2,886	2,558	2,713	2,078	1,751	21,977
					Men				
No education	2.4	2.4	1.4	2.8	3.4	4.1	6.8	8.4	3.5
Incomplete primary	2.1	2.2	2.1	1.4	2.5	2.7	3.6	5.6	2.6
Complete primary	15.2	26.0	34.1	42.7	45.0	43.8	48.6	49.9	36.0
Incomplete secondary	24.5	21.0	18.5	19.8	19.1	17.5	13.8	15.4	19.3
Complete secondary	20.8	26.2	23.0	17.7	14.4	19.2	14.4	10.7	19.2
Higher	35.0	22.2	20.9	15.5	15.6	12.8	12.8	9.9	19.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	1,649	1,739	1,533	1,463	1,322	1,262	994	900	10,862
					Women				
No education	8.0	8.8	8.3	14.0	18.6	22.6	29.1	41.1	16.5
Incomplete primary	5.0	4.7	3.0	3.8	5.6	5.9	7.9	8.4	5.2
Complete primary	24.2	38.3	49.8	50.4	49.5	46.8	45.1	36.4	42.2
Incomplete secondary	17.1	13.3	11.2	11.1	7.4	7.2	5.0	3.9	10.4
Complete secondary	18.8	14.8	14.5	11.5	10.9	11.3	6.2	4.7	12.5
Higher	26.8	20.1	13.2	9.2	8.0	6.2	6.7	5.4	13.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	1,704	1,753	1,613	1,423	1,236	1,451	1,084	851	11,115

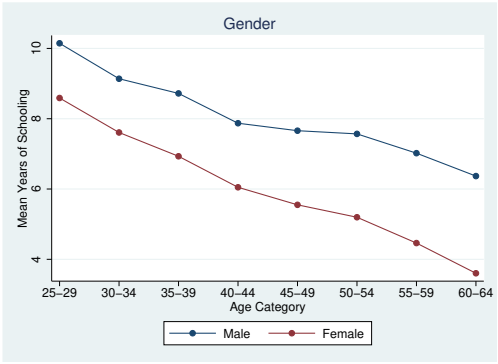
Source: Author's own calculation using TDHS-2013

After evaluation of educational progress for the whole population, Figure 2.2, Figure 2.3 and Figure 2.4 give the convergence level of educational attainment for the women sample aged 25-49 by their conditions and circumstances. In terms of current conditions, namely region, residence, wealth, and migration status, it is hard to say that there is an evident convergence between sub-groups, rather than a divergence seems between some of them. As a first point, the education gap between women residing in urban and rural areas increased slightly from 2.51 in the 45-49 cohort to 2.63 in the 25-29 cohort, probably due to the rural-urban outmigration of more educated women and the relatively inadequate education service deliveries in the rural settlements. Secondly, the women currently living in the east and south regions have less education than the average of Turkey. While the highest MYE belonged to the West in the 45-49 cohort, the central region surpassed all others specifically in the 25-29 cohort. The gap between the central and east regions has actually increased slightly from 2.54 years in the 45-49 cohort to 3.16 years in the 25-29 cohort. Thirdly, there is not any graphical sign of educational convergence between different wealth groups across the women cohorts. And lastly, educated women broadly tended to migrate more than others, and so the trend of the gap over time is getting more complicated.

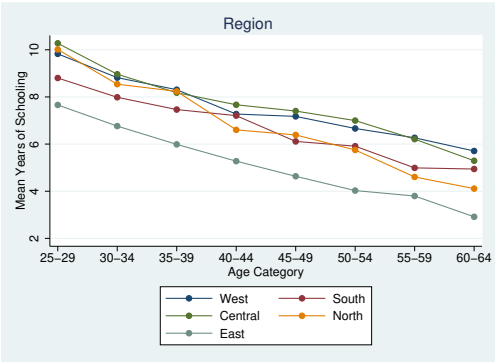
For this essay, it is more functional to focus on the educational progress resulted from the circumstances, namely mother and father education, birthplace and birth region, childhood place and childhood region, sibling size, and mother tongue. In this context, firstly, it seems that the educational attainment of women diverged by parental education level, mother tongue, and sibling size over the years. Secondly, the education gap between birth and childhood locations is almost stable over the time concerned. But, the East did not keep up with the progress of the others regions in educational attainment.

Figure 2.1: MYE of Adult Population Aged 25-64 by Socio-demographic Groups

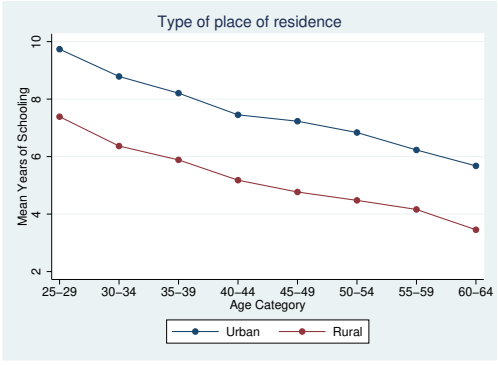
(a) Gender



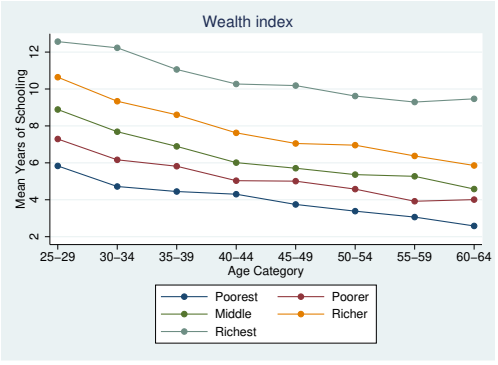
(b) Region



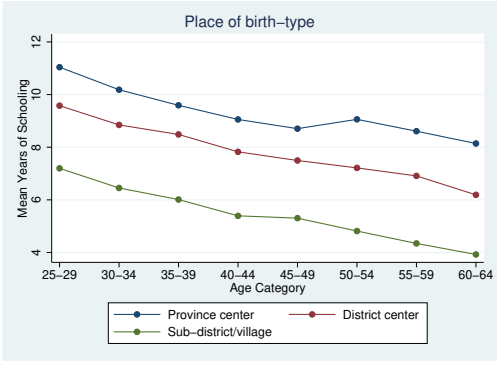
(c) Residence



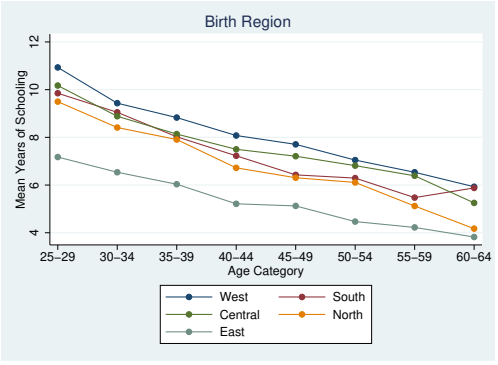
(d) Wealth



(e) Birth Place



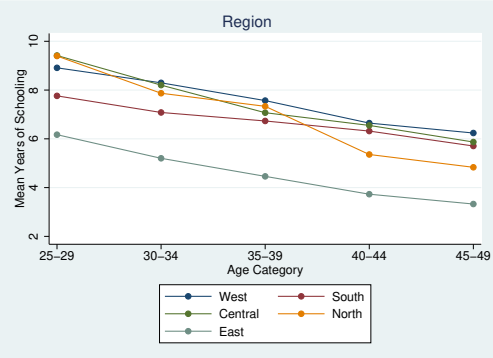
(f) Birth Region



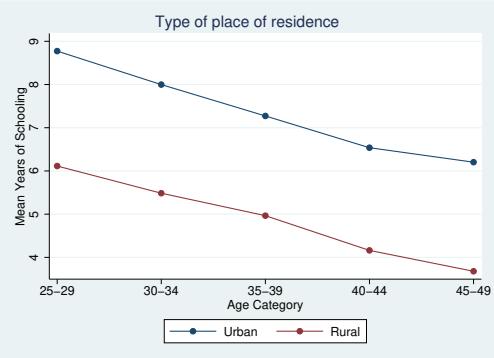
Note: See Table A.10.
Source: Author's own figures using TDHS-2013

Figure 2.2: MYE of Women Aged 25-49 by Socio-demographic Groups (I)

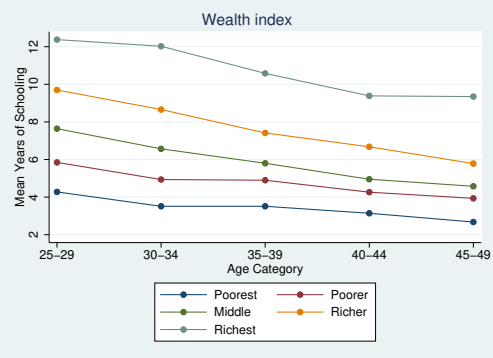
(a) Region



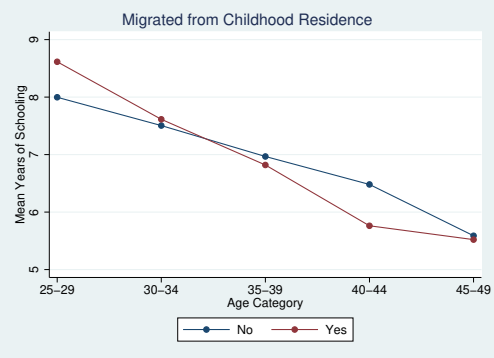
(b) Residence



(c) Wealth



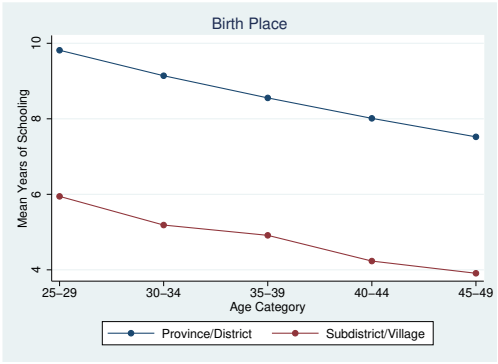
(d) Migration Status



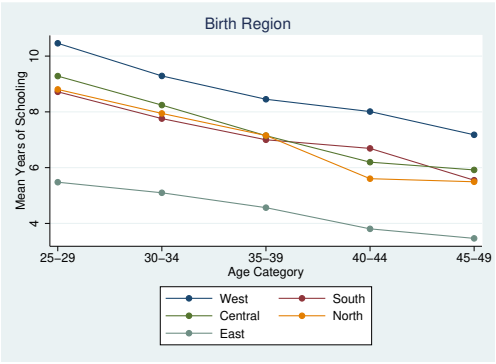
Note: See Tables A.11 and A.12
Source: Author's own figures using TDHS-2013

Figure 2.3: MYE of Women aged 25-49 by Socio-demographic Groups (II)

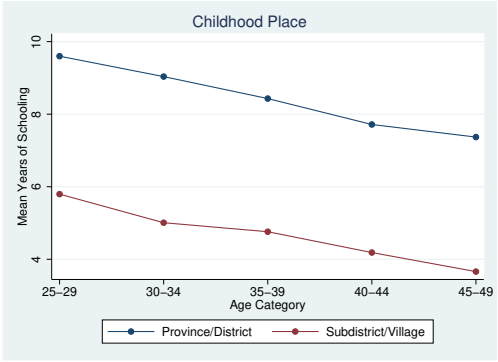
(a) Birth Place



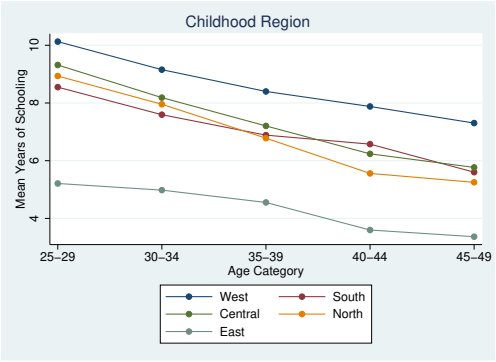
(b) Birth Region



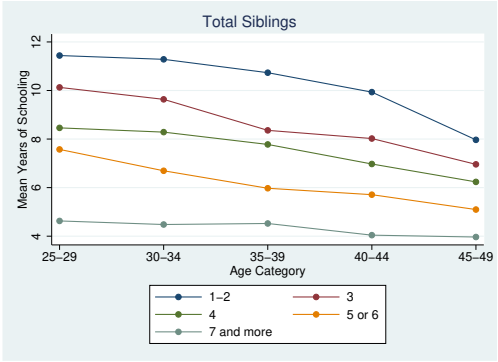
(c) Childhood Place



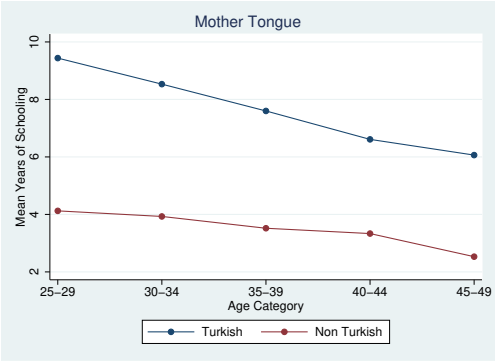
(d) Childhood Region



(e) Sibling Size



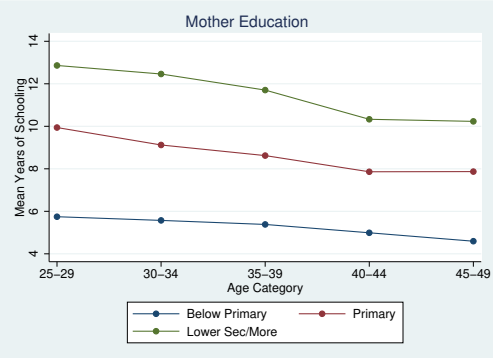
(f) Mother Tongue



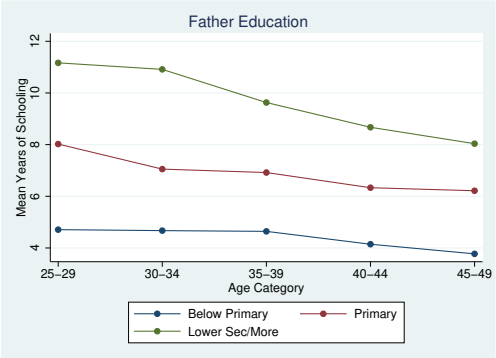
Note: See Tables A.11 and A.12
Source: Author's own figures using TDHS-2013

Figure 2.4: MYE of Women Aged 25-49 by Socio-demographic Groups (III)

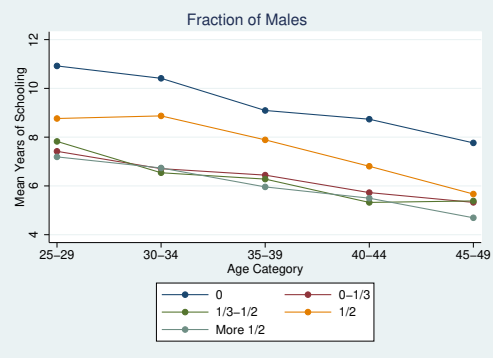
(a) Mother's Education



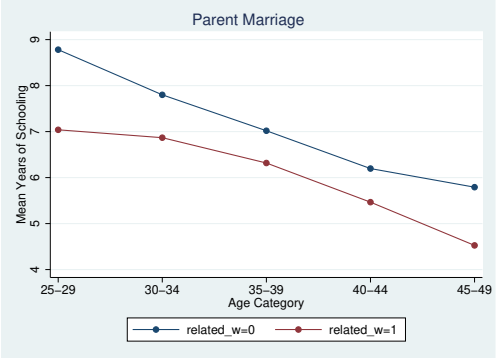
(b) Father's Education



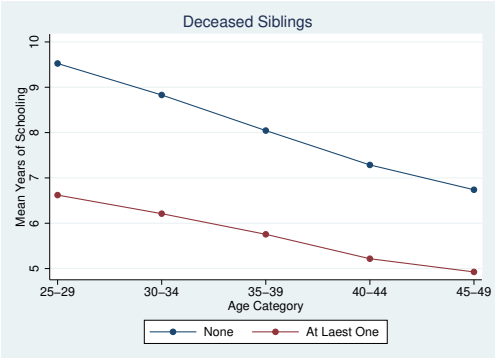
(c) Fraction of Male Siblings



(d) Parent's Marriage



(e) Deceased Siblings



Note: See Tables A.11 and A.12
Source: Author's own figures using TDHS-2013

2.4. Educational Inequality of Women

The emergence of inequalities, evolution, and the interaction with other economic and social variables have long been in the interests of researchers because they are one of the great problems of our time and cause significant costs to modern societies. So all social disciplines, including demography, have contributed to the inequality literature on two major pillars. While the first focused on conceptualizing and measuring inequality (Van De Gaer, 1995; Roemer, 1998; Thomas et al., 1999; Checchi, 2001; Bourguignon et al., 2007; McKenzie, 2005), the second one studied the relationship between the inequality and other social, economic and demographic outcomes (Pickett and Wilkinson, 2015; Kawachi and Kennedy, 1999; Galea and Ahern, 2005). Before moving on to the next section, it would also make sense at this point to distinguish between the concepts of inequality of results and inequality of opportunity. While the former deals with the distribution of different rewards and living conditions, the latter aims to ensure that the results should be neutral to ascribed traits such as race, gender, or class origin (Breen and Jonsson, 2005).

2.4.1 Distribution of Education

As shown in the previous section, the average educational attainment of women in Turkey has increased over time. However, it must also be carefully examined how its distribution (inequality) has changed. There are several studies in the relevant literature measuring educational inequality in both developing and developed countries (see Table A.1 for a summary of these studies). These studies differ in terms of measurement indices and their regional focus. However, their general evidence shows that the education distribution, as measured by relative metrics such as education GINI, has improved over time due to increased access to educational services and the theoretical upper limit of educational attainment in years. But the extent of progress certainly differs depending on the socio-economic group.

There are several indices to measure the overall level of inequality; Variance, coefficient of variation, standard deviation, Gini index, Theil index and mean logarithmic deviation. Cowell (2011) describes the detailed measurement of inequality indices and their properties. One of them is the class of general entropy (GE), which enables total inequality to be broken down into between and within terms. However, other indices such as GINI have a third component that reflects interactions or over-

laps between the subsets of the distributions. Hence, this paper uses GINI and GE(2) to measure the overall inequality in the women's education level. The education Gini formula, firstly adopted from Thomas et al. (1999), is shown in the following equation as:

$$G^E = \frac{1}{\mu N(N-1)} \sum_{i<j}^{2} \sum |x_i - x_j| \tag{2.1}$$

Here, G^E is the education Gini index; μ is the mean value of average years of education (MYE) with the the total sample; N is the total number of observations in the sample; x_i and x_j are MYE of the unit of interest. For a population with values y_i, i = 1 to n, that are indexed in non-decreasing order ($y_i \leq y_i + 1$):

$$G = \frac{1}{n}\left(n + 1 - 2\frac{\sum_n^{i=1}(n+1-i)y_i}{\sum_n^{i=1} y_i}\right) \tag{2.2}$$

While the first equation below defines Generelized Entrophy (GE) class, the second one calculates GE(2) for the value of α=2 as follows:

$$GE(\alpha) = \frac{1}{\alpha^2 - \alpha}\left[\frac{1}{N}\sum_i \left(\frac{x^i}{\mu}\right)^{\alpha} - 1\right] \tag{2.3}$$

$$GE(2) = \frac{1}{2}\left[\frac{1}{N}\sum_i \left(\frac{x^i}{\mu}\right)^{2} - 1\right] \tag{2.4}$$

Table 2.7 shows the general inequality level in MYE as GINI and GE(2) and the GE(2) decomposition as within-part and between-part for the variables of past circumstances and current conditions. That is, the inequality in dice measured by GE(2) equals to total of within-part and between part. Also, I calculate R in the last column by dividing the value of 25-29 cohort by that of 45-49 cohort to observe an improvement. If R is closer to zero, improvement is greater (see also Table A.18 for the results of the entire sample aged 25-64).

Both GE2 and GINI measurements show that the overall distribution of education among women has improved from the 45-49 cohort to the 25-29 cohort. Gini decreased from 0.38 in the 45-49 cohort to 0.309 in the 25-29 cohort. Likewise, GE (2)

decreased from 0.271 to 0.15. However, another important issue to address is how inequality has changed between women with different socio-demographic groups. That is, how the general expansion of education has affected the convergence between these subgroups. There might be two sources. First, the within-part, that is, there might be an overall increase in years of education within all sub-groups. The second, the between-part, that is, there could be a convergence between the sub-groups. Hence, the share of between-part indicates the relative importance of the condition or the circumstance on the overall inequality level over time. When decomposing for the subgroups of mother's education, the contribution of the GE (2) coefficient between the subgroups is 0.046 in the 49-49 cohort and 0.05 in the 25-29 cohort. However, its share increased from 17% to 33.3%. This means that general educational inequality is more dependent on the educational differences of the mother. A similar trend can be seen for other variables. However, mother's education and birth region has highest shares of between-inequality in the 25-29.

In this section, Gini and GE2 coefficients and decomposition analysis have been used to examine educational inequality within and between various socio-economic and demographic groups. The empirical evidence supports the Figures 2.2, 2.3 and 2.4 that there has not been a significant convergence in educational attainment measured as the average years of education of the women in Turkey from the 45-49 cohort to the 25-29 cohort despite the decreasing education inequality.

Table 2.7: Decomposition of Education Inequality (GE2) of the Women by Cohorts

		Age Cohorts					
		25-29	**30-34**	**35-39**	**40-45**	**45-49**	**R**
	GINI	0.309	0.33	0.31	0.347	0.38	0.81
	GE(2)	0.15	0.179	0.176	0.224	0.271	0.55
Mother's Education	**Between**	0.05	0.048	0.042	0.035	0.046	1.09
	Within	0.1	0.131	0.134	0.189	0.226	0.44
	Between pct	33.3	26.8	23.9	15.6	17.0	1.96
Father's Education	**Between**	0.037	0.042	0.032	0.035	0.039	0.95
	Within	0.113	0.137	0.144	0.189	0.232	0.49
	Between pct	24.7	23.5	18.2	15.6	14.4	1.71
Mother Tongue	**Between**	0.034	0.03	0.026	0.021	0.025	1.36
	Within	0.116	0.149	0.15	0.203	0.246	0.47
	Between pct	22.7	16.8	14.8	9.4	9.2	2.46
Parent's Marriage	**Between**	0.041	0.049	0.041	0.044	0.026	1.58
	Within	0.109	0.131	0.135	0.18	0.245	0.44
	Between pct	27.3	27.4	23.3	19.6	9.6	2.85
Sibling Size	**Between**	0.011	0.017	0.012	0.014	0.011	1.00
	Within	0.139	0.162	0.164	0.21	0.26	0.53
	Between pct	7.3	9.5	6.8	6.3	4.1	1.81
Share of Males	**Between**	0.015	0.015	0.014	0.014	0.012	1.25
	Within	0.135	0.164	0.162	0.21	0.259	0.52
	Between pct	10.0	8.4	8.0	6.3	4.4	2.26
Deceased Siblings	**Between**	0.025	0.036	0.037	0.045	0.062	0.40
	Within	0.125	0.143	0.138	0.179	0.209	0.60
	Between pct	16.7	20.1	21.0	20.1	22.9	0.73
Childhood Place	**Between**	0.027	0.022	0.02	0.032	0.03	0.90
	Within	0.123	0.158	0.155	0.192	0.241	0.51
	Between pct	18.0	12.3	11.4	14.3	11.1	1.63
Childhood Region	**Between**	0.027	0.035	0.039	0.052	0.057	0.47
	Within	0.123	0.144	0.137	0.172	0.214	0.57
	Between pct	18.0	19.6	22.2	23.2	21.0	0.86
Birth Place	**Between**	0.027	0.022	0.021	0.031	0.027	1.00
	Within	0.123	0.157	0.155	0.193	0.244	0.50
	Between pct	18.0	12.3	11.9	13.8	10.0	1.81
Birth Region	**Between**	0.055	0.078	0.064	0.067	0.09	0.61
	Within	0.095	0.101	0.111	0.157	0.182	0.52
	Between pct	36.7	43.6	36.4	29.9	33.2	1.10

Source: Author's own calculation based on TDHS-2013.
Note: Total of between and within inequality equals to GE(2). Between pct is the share of between inequality in the GE(2). R is calculated by dividing the value of the 25-29 cohort by that of the 45-49 cohort.

2.4.2 Educational Inequality of Opportunity

In the previous section, nonparametric methods such as GINI and GE (2) were used to analyze educational inequality and its decomposition for women in Turkey. These models do not require functional forms and therefore do not suffer from specification errors, which is the main advantage of their use. However, the parametric methods allow us to use data more efficiently by including continuous variables and estimating their partial effect in the model (Bourguignon et al., 2007).

The inequality of opportunity observed in the parametric approach is regarded as the lower limit estimate, since the available circumstances used in the model are a subset of the theoretical circumstances (Ferreira and Gignoux, 2011; Ferreira et al., 2011). In addition, the construction of alternative counterfactual distributions, namely the Shapley decomposition, enables the partial effects to be estimated. Instead of keeping all circumstance variables at a constant value, only one circumstance is balanced between the individuals, while all the others are allowed to assume their actual values (Ferreira and Gignoux, 2011).

The estimation of the total inequality of opportunity and its decomposition require the definition of an econometric model. Eq. 2.5 shows the model used to predict educational attainment of the women aged 25-49;

$$EDU_i^* = \alpha_0 + \alpha_1 AGE + \beta_2 ME + \beta_3 FE + \beta_4 MT + \beta_5 CM + \beta_6 SS + \beta_7 SC + \beta_8 SD + \beta_9 CP + \beta_{10} CR + e_i \tag{2.5}$$

where EDU^* denotes years of education attained for woman i. Additionally, the following circumstances are observed in the TDHS-2013 data: mother tongue (MT), father's highest education level (FE), mother's highest education level (ME), marriage type of parents (CM), sibling size (SS), sibling composition (SC), siblings deceased (SD), childhood place of residence (PC), childhood region (RC). These circumstances are economically exogenous factors for women. They can affect a person's outcomes but cannot be changed by women.

Table 2.8 shows the Ordinary Least Square (OLS) regression estimates of the Eq. 2.5 for the five successive cohorts in the columns 1-5 and the entire women sample in the last column. In general, the results show that past circumstances continue to affect women's access to education over time. As expected, the positive and significant effects of higher parental education increased over time. The estimate for the marriage type of the parents is not significant for any of the cohorts. Larger siblings have a negative but diminishing effect on women's schooling in all cohorts. On the other hand, the male sibling proportion was not powerful. Its effect was presumably captured by the variable of deceased siblings, the sign of which is significantly negative for all cohorts. With regard to the childhood region and the place of residence, the eastern region and the subdistrict / village have a negative, but decreasing effect over time.

Table 2.8: Relationship Between Educational Attainment and Circumstances Across the Cohorts

	Age Category					
	25-29	**30-34**	**35-39**	**40-44**	**45-49**	**25-49**
Mother's Education						
Below Primary (Ref.)						
Primary	1.632***	1.229***	1.185***	0.603*	1.021**	1.190***
	(5.94)	(4.06)	(5.11)	(2.29)	(2.69)	(8.75)
Lower Secondary/More	3.272***	2.662***	2.636***	1.315	2.146**	2.558***
	(7.98)	(6.19)	(5.60)	(1.76)	(2.83)	(11.61)
Father's Education						
Below Primary (Ref.)						
Primary	0.841*	0.260	0.440*	0.772**	0.986***	0.624***
	(2.23)	(1.03)	(2.20)	(3.14)	(3.72)	(5.24)
Lower Secondary/More	2.404***	2.362***	2.123***	2.293***	1.885***	2.275***
	(5.97)	(6.81)	(7.05)	(4.20)	(4.70)	(12.17)
Mother Tongue						
Turkish (Ref.)						
Other	-2.024***	-2.453***	-2.452***	-0.947**	-1.337**	-1.968***
	(-4.93)	(-6.70)	(-7.88)	(-2.62)	(-2.86)	(-11.06)
Parent's Marriage						
Not Consanguineous (Ref.)						
Consanguineous	-0.328	0.231	-0.0549	0.0307	-0.355	-0.0622
	(-1.47)	(0.92)	(-0.24)	(0.12)	(-1.19)	(-0.55)
Sibling Size						
1-2 (Ref.)						
3	-0.823	-0.184	-1.476**	-0.499	-0.937	-0.699***
	(-1.93)	(-0.43)	(-3.08)	(-0.83)	(-1.54)	(-3.45)
4	-1.228**	-1.004*	-1.504***	-1.400**	-0.670	-1.143***
	(-3.19)	(-2.54)	(-3.73)	(-2.68)	(-1.16)	(-6.05)
5-6	-1.249**	-1.283**	-2.230***	-1.342*	-1.243*	-1.454***
	(-2.78)	(-2.72)	(-4.84)	(-2.42)	(-1.99)	(-6.68)
7 or more	-2.002***	-1.755**	-2.354***	-2.017***	-1.556*	-1.909***
	(-4.21)	(-3.27)	(-5.13)	(-3.36)	(-2.60)	(-8.15)
Share of Male Siblings						
0 (Ref.)						
0-1/3	0.350	-0.266	-0.296	-0.526	-0.0299	-0.119
	(0.82)	(-0.59)	(-0.70)	(-1.16)	(-0.05)	(-0.59)
1/3-1/2	0.334	-0.601	-0.403	-1.212**	-0.126	-0.404*
	(0.83)	(-1.52)	(-0.97)	(-3.08)	(-0.23)	(-2.12)
1-2	-0.444	-0.206	-0.379	-0.677	-0.823	-0.444*

Continued on next page

Table 2.8 – *Continued from previous page*

	Age Category					
	25-29	**30-34**	**35-39**	**40-44**	**45-49**	**25-49**
	(-1.29)	(-0.60)	(-0.93)	(-1.70)	(-1.51)	(-2.30)
More 1/2	0.132	-0.355	-0.435	-0.744	-0.926	-0.419*
	(0.33)	(-0.83)	(-1.05)	(-1.92)	(-1.57)	(-2.29)
Deceased Siblings						
None (Ref.)						
At Least One	-0.623**	-0.680**	-0.506**	-0.479*	-0.657*	-0.598***
	(-3.08)	(-3.04)	(-2.66)	(-2.16)	(-2.38)	(-6.45)
Childhood Place						
Province (Ref.)						
District	-0.0543	-0.514	-0.403	-0.470	-1.316**	-0.467**
	(-0.20)	(-1.47)	(-1.25)	(-1.32)	(-3.01)	(-2.85)
Sub-district/Village	-1.875***	-2.223***	-2.101***	-2.527***	-3.051***	-2.291***
	(-6.67)	(-7.98)	(-9.06)	(-9.07)	(-9.59)	(-16.46)
Childhood Region						
West (Ref.)						
South	0.0320	0.423	0.328	0.332	-0.354	0.261
	(0.08)	(1.07)	(0.97)	(0.84)	(-0.83)	(1.22)
Central	-0.483	0.239	0.0728	-0.340	-0.629	-0.122
	(-1.75)	(0.72)	(0.25)	(-0.94)	(-1.78)	(-0.77)
North	0.504	0.742*	0.177	-0.282	-0.132	0.262
	(1.43)	(2.40)	(0.58)	(-0.81)	(-0.28)	(1.58)
East	-0.569	0.299	0.0518	-1.504***	-1.102**	-0.419*
	(-1.52)	(0.77)	(0.15)	(-3.73)	(-2.83)	(-2.21)
Constant	8.751***	8.849***	9.318***	9.250***	8.826***	8.074***
	(16.42)	(18.15)	(18.72)	(15.15)	(11.43)	(29.80)
N	1462	1551	1475	1275	1080	6843
r2	0.508	0.485	0.472	0.418	0.404	0.481

Source: Author's own calculation using TDHS-2013.
Note: Calculation of standard errors considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.9 shows the partial impact of circumstances on access to education for 25 to 49 year old women by sub-cohorts. The lower bound estimate of IOP (R-squared) gradually increased from 0.404 in the 45-49 cohort to 0.508 in the 25-29 cohort. This means that women with different early life circumstances in Turkey did not benefit equally from the educational expansion. Parental education, mother tongue, and sibling size have become increasingly important for access to education over time. While the influence of child wealth (represented by deceased siblings) and the proportion of male siblings is relatively small, they nonetheless persist. On the other hand, the influence of the childhood location fell sharply from 33.5% in the 45-49 cohort to 12.4% in the 25-29 cohort, but remains high. The partial effect of the childhood region decreased slightly from 10.2% to 8.6% over the same period. The eastern and central regions have the highest partial influence on inequality of opportunity. Even if women's education varies greatly depending on the type of marriage between the parents, their share in the IOP is low. Other variables are likely to capture the relationship.

Table 2.9: Shapeley's Decomposition of Inequality of Opportunity in Educational Attainment

	25-29		30-34		35-39		40-44		45-49		25-49	
	Value	**Percent**	**Value**	**Percent**	**Value**	**Percent**	**Value**	**Percent**	**Value**	**Percent**	**Value**	**Percent**
Mother's Education	0.105	20.7	0.092	18.9	0.073	15.5	0.052	12.4	0.061	15.2	0.086	17.9
Father's Education	0.083	16.2	0.094	19.3	0.073	15.4	0.064	15.2	0.049	12.1	0.077	16.1
Mother Tongue	0.075	14.7	0.07.3	15.1	0.068	14.4	0.040	9.6	0.048	12.0	0.056	11.7
Parent's Marriage	0.005	1.0	0.002	0.4	0.002	0.3	0.001	0.3	0.003	0.7	0.002	0.3
Sibling Size	0.081	15.9	0.089	18.3	0.079	16.8	0.057	13.6	0.038	9.3	0.071	14.8
Share of Males	0.018	3.5	0.018	3.7	0.018	3.8	0.016	3.9	0.011	2.7	0.015	3.2
Deceased Siblings	0.024	4.8	0.027	5.5	0.019	4.1	0.017	4.1	0.016	4.1	0.025	5.2
Childhood Place	0.063	12.4	0.078	16.1	0.095	20.1	0.116	27.9	0.136	33.5	0.091	19.0
Childhood Region	0.044	8.6	0.035	7.1	0.034	7.2	0.049	11.7	0.041	10.2	0.034	7.1
Age											0.025	0.051
R^2	0.508		0.485		0.472		0.418		0.404		0.481	
N	1462	100	1551	100	1475	100	1275	100	1080	100	6843	100

Source: Author's own calculation using TDHS-2013.
Note: R^2 values show lower bound estimate of inequality of opportunity in educational attainment of women across cohorts. Each circumstance's contribution to IOP is also given in Table. Their total equals to R^2.

2.4.3 Impact of Demographic Change on the Education Distribution: Oaxaca-Blinder Approach

In the previous sections it was shown that while overall educational inequality decreased, the IOP in access to education for women increased slightly in all consecutive cohorts from 25-29 to 45-49 in Turkey. Due to the increasing level of education and the theoretical limitation of the years of education in the right tail, the improvement in the distribution corresponds to the existing literature. On the other hand, based on our available circumstances, we could not find any significant educational convergence between various sub-groups of women aged 25-49. It is easy to conclude from this that equal opportunities have not improved significantly. This could therefore result from the changes in the demographic distribution of women by circumstances and the discriminatory effects of the circumstances over time. While the former include the changes in compositions of cohorts by various circumstances, the latter is the change in the power of transforming endowments into educational attainment.

There are several studies applying the Oaxaca-Blinder (OB) approach to decompose the social and econimic gaps in various areas. some of them are the gender gaps in the early educational achievement in USA (Cobb-Clark and Moschion, 2017); the gender achievement gap in Turkey (Gevrek and Seiberlich, 2014); the overqualification gap in Germany (Erdsiek, 2016); the urban-rural differences in the educational achievement in Thailand (Lounkaew, 2013); differences in educational achievement in middle-income countries (Nieto and Ramos, 2014); the gender gap in math scores in Korea (Sohn, 2012); the change in the learning outcomes over time in Indonesia (Barrera-Osorio et al., 2011); the change in the wage gap between white and black men over time (Kim, 2010); and the educational gap of children (Di Paolo, 2012).

This study also uses a standard OB (Oaxaca-Blinder) approach to decompose the cohort gaps in mean years of education of women into two components: one due to endowment effects (i.e., the different characteristics of successive cohorts) and one due to differential responses (i.e., the differences in outcomes for different cohorts with the same conditions, that is discrimination part).

Lets assume that educational attainment of women in years is E_c. Hence, $E_{25-34} - E_{40-49}$ shows the difference between expected MYEs of the 25-34 cohort and the 40-49 cohort. Also, let β be such a nondiscriminatory, and β_{25-34} and β_{40-49} cohort specific discriminatory coefficient vectors.

$$(E_{25-34}-E_{40-49}) = (X_{25-34}-X_{40-49})\beta^{*}+(X_{25-34}(\beta_{25-34}-\beta^{*})+X_{40-49}(\beta^{*}-\beta_{40-49})) \tag{2.6}$$

We have now a "two-fold" decomposition;

$$(E_{25-34} - E_{40-49}) = Q + U$$

where the first component is as follows;

$$Q = (X_{-25-34} - X_{40-49})\beta^{*}$$

is the part of the outcome differential that is "explained" by group differences in the predictors (the endowment effect) and the second summand;

$$U = X_{25-34}(\beta_{25-34} - \beta^{*}) + X_{40-49}(\beta^{*} - \beta_{40-49})$$

is the "unexplained" part. The latter is usually attributed to discrimination, but it is important to recognize that it also captures all potential effects of differences in unobserved variables.

Table 2.10 reports the result of the Oaxaca-Blinder decomposition of the educational level of women across the cohorts. I break down each educational difference between the consecutive five years of the cohorts into the explained and unexplained parts in the first four columns. The fifth column gives the gap between the 25-29 cohort and the 45-49 cohort, which allows for a longer time span. The sixth column gives the breakdown of the gap between the 25-34 cohort and the 40-49 cohort, which enables a larger sample size. In the fifth column, for example, I observe that the educational attainment of women increased from 5.546 years to 8.324 years, that is 2.778 years in a period of 20 years. While 1.325 years (47 %) of this progress comes from the explained part, the size of the unexplained part is 1.453 years (53 %). That is, the relative change in the demographic compositions of 25-29 and 45-49 cohorts explains 47 % of the educational progress. The unexplained part includes the coefficient effect and the constant increase. Since the constant term, 2.058 years, is greater than the unexplained

part, the coefficient effect is negative.

As can be seen from the explained part of Table 2.10, the coefficients of circumstance variables covered in the model have different signs. While the cohort compositions with regard to parental education, sibling size, childhood fortunes (represented by deceased siblings) and childhood location make a positive contribution to the education of women, the influence of the mother tongue is negative. Childhood region, proportion of men and marriage of parents are also negative, but not significant. As discussed in the previous section (see Table 2.3), over time, rural-to-urban migration, decreasing fertility rate, improving wealth level, and rising parental education regarding the composition of the women population had a positive effect on their educational attainment. Nevertheless, the increase in the relative share of women having a mother tongue other than Turkish lowered the average educational attainment.

With regard to the unexplained part in Table 2.10, the coefficient effects of the circumstances also have negative signs, but their level of significance is low. Since the comparison of 25-34 and 40-49 cohorts results in a larger sample size, the negative signs of maternal education and mother tongue become significant, which is also in line with the indications of a persistent IOP score found in the previous section. The sign and importance of the regions also change across the cohorts.

In what follows, I focus on the magnitude of the aggregate educational endowments vs. educational responses components of the educational gap. Both are instrumental in highlighting the source of the cohort gap in educational attainment of women.

Table 2.10: Oaxaca-Blinder Decomposition of the Change in MYE Between the Cohorts

Cohort t	**25-29**	**30-34**	**35-39**	**40-44**	**25-29**	**25-34**
Cohort $t-1$	**30-34**	**35-39**	**40-44**	**45-49**	**45-49**	**40-49**
Differential						
Prediction_1	8.324***	7.575***	6.875***	6.039***	8.324***	7.939***
	(50.48)	(46.32)	(44.33)	(37.41)	(50.48)	(61.55)
Prediction_2	7.575***	6.875***	6.039***	5.546***	5.546***	5.816***
	(46.32)	(44.33)	(37.41)	(29.40)	(29.40)	(43.47)
Difference	0.749***	0.700***	0.836***	0.492*	2.778***	2.123***
	(3.73)	(3.71)	(4.31)	(2.23)	(11.94)	(13.94)
Explained						
Mother's Education	0.121**	0.135***	0.0885**	0.0544*	0.514***	0.340***
	(2.73)	(3.78)	(3.04)	(2.14)	(6.61)	(7.67)
Below Primary	0.0862**	0.0897**	0.0696**	0.0527*	0.390***	0.252***
	(2.61)	(3.16)	(2.96)	(2.32)	(6.76)	(7.64)
Primary	-0.00105	-0.00230	-0.00436	-0.00160	-0.00410	-0.00577
	(-0.27)	(-0.47)	(-0.51)	(-0.11)	(-0.16)	(-0.47)
Lower Secondary/More	0.0361	0.0480**	0.0232	0.00330	0.128***	0.0931***
	(1.76)	(2.86)	(1.82)	(0.41)	(4.67)	(5.40)
Father's Education	0.0824*	0.119**	0.0820*	0.0892*	0.374***	0.289***
	(2.04)	(2.96)	(2.29)	(2.27)	(5.84)	(7.32)
Below Primary	0.00942	0.0564***	0.0574**	0.0563*	0.198***	0.154***
	(0.63)	(3.41)	(2.85)	(2.23)	(5.16)	(6.42)
Primary	0.0146	-0.00765	-0.0104	-0.00295	-0.00641	-0.0137
	(1.50)	(-0.70)	(-1.30)	(-0.67)	(-1.06)	(-1.97)
Lower Secondary/More	0.0584*	0.0704**	0.0350	0.0358	0.182***	0.148***
	(2.11)	(2.62)	(1.50)	(1.61)	(5.40)	(6.69)
Mother Tongue	-0.00324	-0.0742	-0.00552	-0.0321	-0.115**	-0.0853**
	(-0.08)	(-1.64)	(-0.18)	(-1.48)	(-2.85)	(-2.97)
Parent's Marriage	-0.000276	0.00415	0.0000791	-0.00305	-0.0231	-0.00248
	(-0.09)	(0.66)	(0.05)	(-0.57)	(-1.67)	(-0.40)
Sibling Size	0.0985**	0.0506	0.122**	-0.0499	0.171***	0.168***
	(2.67)	(1.53)	(3.03)	(-1.84)	(3.36)	(4.99)
1-2	0.0292	0.0466*	0.0356	-0.00108	0.0944**	0.0755***
	(1.70)	(2.31)	(1.62)	(-0.08)	(3.31)	(4.26)
3	0.0203	-0.00666	0.0162	-0.0103	0.00982	0.0218**
	(1.74)	(-0.93)	(1.32)	(-1.18)	(0.95)	(2.60)
4	-0.00407	0.000412	-0.00104	0.00258	-0.0000151	-0.000276
	(-0.78)	(0.27)	(-0.38)	(0.56)	(-0.05)	(-0.16)
5-6	0.0220	0.00814	0.0243	-0.00355	0.0324	0.0284**
	(1.92)	(0.75)	(1.84)	(-0.46)	(1.61)	(2.61)
7 or more	0.0312	0.00214	0.0465*	-0.0376*	0.0346	0.0427**
	(1.75)	(0.13)	(2.32)	(-2.05)	(1.64)	(2.64)
Share of Males	-0.000136	0.00499	-0.000482	-0.0127	-0.0544	-0.00297
	(-0.01)	(0.48)	(-0.03)	(-0.79)	(-1.88)	(-0.20)
0	0.00433	0.00361	0.00716	-0.00710	0.00401	0.0110
	(0.68)	(0.76)	(1.01)	(-0.73)	(0.37)	(1.54)

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Table 2.10 – *Continued from previous page*

Cohort t	**25-29**	**30-34**	**35-39**	**40-44**	**25-29**	**25-34**
Cohort $t-1$	**30-34**	**35-39**	**40-44**	**45-49**	**45-49**	**40-49**
0-1/3	-0.00224	0.000198	-0.00431	-0.00000324	-0.0207	-0.00973
	(-0.61)	(0.13)	(-0.52)	(-0.00)	(-1.68)	(-1.47)
1/3-1/2	0.00286	-0.00397	-0.00205	0.00381	-0.0117	0.00126
	(0.33)	(-0.80)	(-0.36)	(0.72)	(-1.23)	(0.56)
1/2	-0.00461	0.000113	-0.00121	0.00113	-0.0246	-0.00833
	(-0.85)	(0.13)	(-0.27)	(0.25)	(-1.82)	(-1.39)
1/2 more	-0.000470	0.00504	-0.0000717	-0.0106	-0.00143	0.00281
	(-0.18)	(0.75)	(-0.03)	(-1.41)	(-0.37)	(1.01)
Deceased Siblings	0.0455*	0.0187	0.0446*	0.0303	0.158***	0.118***
	(2.41)	(1.27)	(2.56)	(1.79)	(3.80)	(5.28)
Childhood Place	0.0551	0.129**	0.0988	0.0368	0.333***	0.287***
	(1.42)	(2.85)	(1.87)	(0.55)	(5.06)	(6.92)
Province	0.0157	0.0496*	0.00839	0.00746	0.0870***	0.0738***
	(0.99)	(2.36)	(0.40)	(0.27)	(3.44)	(4.44)
District	0.00382	0.00170	0.0195	0.00369	0.0285*	0.0258**
	(0.40)	(0.24)	(1.81)	(0.55)	(2.13)	(2.72)
Sub-district/Village	0.0356	0.0782**	0.0709*	0.0256	0.217***	0.188***
	(1.40)	(2.78)	(2.10)	(0.62)	(5.06)	(6.86)
Childhood Region	-0.0178	0.000522	0.00274	-0.00687	-0.0321	-0.0227
	(-1.49)	(0.06)	(0.19)	(-0.26)	(-1.37)	(-1.83)
West	0.000192	0.00209	0.00193	0.00564	0.00468	0.000880
	(0.08)	(0.45)	(0.46)	(0.58)	(0.77)	(0.35)
South	0.000496	-0.000347	-0.000140	-0.00599	-0.00173	-0.00167
	(0.31)	(-0.16)	(-0.03)	(-0.76)	(-0.48)	(-0.46)
Central	-0.00124	0.000721	0.000143	0.000912	0.00620	0.00298
	(-0.33)	(0.34)	(0.10)	(0.36)	(1.00)	(0.91)
North	-0.0129	-0.000334	-0.00107	0.0000456	-0.0176	-0.00857
	(-1.58)	(-0.10)	(-0.46)	(0.02)	(-1.64)	(-1.88)
East	-0.00434	-0.00161	0.00188	-0.00748	-0.0237	-0.0163
	(-0.77)	(-0.38)	(0.16)	(-0.39)	(-1.62)	(-1.84)
Total	0.381*	0.389**	0.432***	0.106	1.325***	1.089***
	(2.54)	(2.91)	(3.39)	(0.81)	(7.28)	(10.03)
Unexplained						
Mother's Education	-0.112	-0.00504	-0.384	0.278	-0.339	-0.365*
	(-0.95)	(-0.03)	(-1.57)	(0.92)	(-1.40)	(-2.14)
Below Primary	-0.170	-0.0127	-0.409	0.297	-0.386	-0.403*
	(-1.14)	(-0.07)	(-1.84)	(1.07)	(-1.61)	(-2.56)
Primary	0.0245	0.00674	-0.0146	-0.000913	0.0106	-0.00367
	(0.27)	(0.09)	(-0.16)	(-0.01)	(0.11)	(-0.05)
Lower Secondary/More	0.0326	0.000918	0.0392	-0.0190	0.0365	0.0419
	(0.81)	(0.03)	(1.26)	(-0.60)	(1.00)	(1.53)
Father's Education	0.101	-0.0573	-0.0329	-0.0973	-0.0883	-0.0909
	(1.65)	(-1.02)	(-0.46)	(-0.96)	(-1.24)	(-1.70)
Below Primary	-0.0420	-0.00525	0.0498	-0.0248	-0.0410	0.0262
	(-0.76)	(-0.10)	(0.61)	(-0.23)	(-0.45)	(0.43)
Primary	0.189	-0.103	-0.0819	-0.130	-0.126	-0.166

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Table 2.10 – *Continued from previous page*

Cohort t	**25-29**	**30-34**	**35-39**	**40-44**	**25-29**	**25-34**
Cohort $t-1$	**30-34**	**35-39**	**40-44**	**45-49**	**45-49**	**40-49**
	(1.72)	(-1.01)	(-0.78)	(-1.16)	(-1.03)	(-1.83)
Lower Secondary/More	-0.0465	0.0512	-0.000761	0.0575	0.0787	0.0486
	(-0.61)	(0.75)	(-0.01)	(0.82)	(1.21)	(0.87)
Mother Tongue	0.0897	-0.000246	-0.265**	0.0625	-0.113	-0.211**
	(0.77)	(-0.00)	(-3.06)	(0.69)	(-1.11)	(-2.92)
Parent's Marriage	-0.142	0.0636	-0.0181	0.0787	0.00592	0.0261
	(-1.76)	(0.78)	(-0.26)	(0.99)	(0.07)	(0.42)
Sibling Size	0.00147	0.0524	-0.0670	-0.0592	-0.0227	-0.0283
	(0.05)	(0.85)	(-0.72)	(-0.54)	(-0.38)	(-0.57)
1-2	0.0365	-0.0869	0.0441	0.0146	0.0243	0.00710
	(0.49)	(-1.42)	(0.86)	(0.29)	(0.38)	(0.17)
3	-0.0809	0.110	-0.0768	0.0864	0.0485	0.0337
	(-1.42)	(1.76)	(-1.27)	(1.55)	(0.77)	(0.79)
4	-0.00146	-0.0278	0.0589	-0.0980	-0.0705	-0.00599
	(-0.03)	(-0.49)	(1.10)	(-1.51)	(-1.07)	(-0.14)
5-6	0.0547	0.0746	-0.128	0.0224	0.0421	-0.0168
	(0.81)	(1.00)	(-1.50)	(0.23)	(0.54)	(-0.28)
7 or more	-0.00735	-0.0177	0.0349	-0.0845	-0.0670	-0.0464
	(-0.08)	(-0.18)	(0.38)	(-0.83)	(-0.77)	(-0.70)
Share of Males	0.0436	-0.0171	0.0681	-0.105	0.0358	0.0427
	(1.32)	(-0.35)	(1.16)	(-1.47)	(0.77)	(1.17)
0	-0.0523	-0.00189	-0.0333	0.0260	-0.0574	-0.0418
	(-1.03)	(-0.04)	(-0.73)	(0.50)	(-0.96)	(-1.15)
0-1/3	0.0458	0.00236	-0.0189	-0.0565	-0.0129	-0.0144
	(0.77)	(0.04)	(-0.29)	(-0.68)	(-0.17)	(-0.27)
1/3-1/2	0.153*	-0.0615	0.131	-0.234**	0.00107	0.0393
	(2.08)	(-0.72)	(1.75)	(-2.65)	(0.01)	(0.67)
1/2	-0.128*	0.0309	-0.00615	0.0687	-0.0149	0.00755
	(-2.01)	(0.49)	(-0.12)	(1.15)	(-0.20)	(0.16)
1/2 more	0.0250	0.0131	-0.00470	0.0912	0.120	0.0519
	(0.39)	(0.21)	(-0.08)	(1.36)	(1.66)	(1.11)
Deceased Siblings	0.0239	-0.0867	-0.0143	0.113	0.0174	-0.0658
	(0.18)	(-0.57)	(-0.09)	(0.46)	(0.08)	(-0.50)
Childhood Place	-0.0375	0.00426	0.0430	-0.0464	-0.0491	-0.00471
	(-1.03)	(0.12)	(0.84)	(-0.62)	(-0.86)	(-0.12)
Province	-0.111	0.0291	-0.0557	-0.151	-0.294**	-0.152*
	(-1.22)	(0.34)	(-0.70)	(-1.60)	(-2.96)	(-2.25)
District	0.0459	-0.00782	-0.0199	0.0720	0.0904	0.0275
	(0.78)	(-0.13)	(-0.35)	(1.15)	(1.52)	(0.66)
Sub-district/Village	0.0272	-0.0171	0.119	0.0325	0.154	0.120
	(0.37)	(-0.22)	(1.37)	(0.29)	(1.44)	(1.57)
Childhood Region	-0.0163	-0.0383	0.0226	-0.0304	-0.0517	-0.0151
	(-0.26)	(-0.88)	(0.47)	(-0.55)	(-0.87)	(-0.37)
West	0.127	-0.0627	-0.137	-0.0220	-0.0893	-0.140*
	(1.47)	(-0.79)	(-1.58)	(-0.24)	(-1.07)	(-2.37)

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Table 2.10 – *Continued from previous page*

Cohort t	**25-29**	**30-34**	**35-39**	**40-44**	**25-29**	**25-34**
Cohort $t-1$	**30-34**	**35-39**	**40-44**	**45-49**	**45-49**	**40-49**
South	0.00674	-0.0150	-0.0620	0.0812	0.00670	-0.0446
	(0.14)	(-0.40)	(-1.70)	(1.64)	(0.13)	(-1.45)
Central	-0.0624	-0.0108	-0.0169	0.0500	-0.0457	-0.0333
	(-1.09)	(-0.19)	(-0.28)	(0.57)	(-0.61)	(-0.61)
North	0.0211	0.0424	-0.00304	-0.0312	0.0325	0.0361
	(0.64)	(1.45)	(-0.08)	(-0.60)	(0.74)	(1.28)
East	-0.109	0.00787	0.241**	-0.108	0.0441	0.167*
	(-1.17)	(0.09)	(3.09)	(-1.36)	(0.52)	(2.57)
Constant	0.417	0.396	1.052**	0.193	2.058***	1.746***
	(1.78)	(1.53)	(3.20)	(0.46)	(5.15)	(6.45)
Total	0.368**	0.311*	0.404**	0.386*	1.453***	1.034***
	(2.63)	(2.29)	(2.64)	(2.17)	(7.29)	(7.95)
N	3014	3029	2753	2356	2542	5370

Source: Author's own calculation using TDHS-2013.
Note: Calculation of standard errors considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.11 is the summary of the OB analysis comparing the educational attainment of the 25-34 cohort and the 40-49 cohort. It shows the regression means of the circumstances in columns 3 and 4 (X1 for 25-34, X2 for 40-49) and their respective coefficients in columns 1, 2 and 3 (B1 for 25-34, B2 for 40-49, B-ref for the pooled sample of both cohorts). The share of the educational gap attributable to differences in the cohorts' educational endowments is presented in column 8, while column 9 show the educational responses.

There is a statistically significant gap of around 2.123 years in the educational level of women between two cohorts. Younger cohorts (25-34) do better than older cohorts (40-49). The differences in the educational endowment of two cohorts (explained part) account for 51.3% of the educational gap for women. On the other hand, the unexplained part makes up 48.7% of the gap, which is the sum of the educational responses to the circumstances (33.5%) and the constant term of the model (82.2%).

Differences in some educational endowments seem particularly important. First, the parents of the women in the younger cohort are better educated. The proportion of mothers and fathers with less than primary education decreased from 70.5% to 50.6% and 35.9% to 20.4%, respectively, which indicates more parental support. The corresponding benefits associated with increased education for mothers and fathers are 16% and 13.6%, respectively. Second, the proportion of women whose mother tongue is not Turkish rose from 16.2% in the 40-49 age group to 20.8% in the 25-34 age group, suggesting that they were less ready for school at the start. And the loss associated with this trend is 4%. Thirdly, the proportion of women with 1-2 siblings doubled, namely from 8.5% to 16.7%. And the benefit associated with fewer siblings is 7.9%. Fourth, the proportion of women with at least one deceased sibling fell from 62.8% to 44.7%, ie living conditions improved over time. And the corresponding benefit on this trend is 5.6%. Fifthly, fewer women in the younger cohort had a childhood in subdistricts or villages; in particular, their share fell from 48.3% to 34.9%. The changed distribution of places of residence in childhood led to a positive effect of 13.5% due to better access to educational opportunities. Finally, the change in the proportions of parental marriage type and childhood region has negligible effects on the educational gap between the two cohorts.

Although half of the cohort gap in years of education is due to the fact that the age group of 25 to 34 year olds and that of 40 to 49 year olds have different educational endowment, which is associated with better educational outcomes, it is also the case that two cohorts with the same educational endowments (e.g., parental education,

mother tongue, sibling-size composition, etc.) do not achieve the same education level on average. This part mainly relates to progress on inequality of opportunity in education, and some results are particularly noteworthy. First, educational attainment is related to parental education of disadvantaged women in different ways for the 25-34 age group and the 45-49 age group. And the corresponding loss (17.2%) related to the changing response of the education of the mother is more severe than that (4.6%) of the education of the father. In particular, a mother with less than primary school education tended to have a more negative effect on the level of education among younger women. As a result, educational progress is reduced from one cohort to another. That is, if educational attainment responded to successive cohorts' parental education in the same way, I estimate that the education progress would be nearly 21.5% larger. Second, there are cohort differences in the relationship between women's educational level and their mother tongue. The negative effect of the non-Turkish mother tongue is statistically greater in the younger cohort. In fact, if the cohort-specific response of the level of education to the mother tongue were eliminated, the educational level of the younger cohort would increase by a further 9.9% compared to that of the older cohort. Finally, women's educational attainment is increased by cohort differences in the response of educational attainment to: (i) living conditions (i.e., less effect of deceased siblings on the attainment level), (ii) childhood in sub-district/village and in the East region and (iii) sibling composition. On the contrary it is reduced by cohort differences in the response of educational attainment to: (i) childhood in province and in the West region, (ii) parent's marriage type, and (iii) larger sibling size.

This section analyzed how demographic change and inequality of opportunity have influenced the educational progress of women using a decomposition approach. In summary, it can be said that the changes in the demographic composition (endowment effect) of women in Turkey have a positive effect on their educational progress. Apart from a general improvement of the system (constant term), however, the negative coefficient effect (inequality of opportunity), namely the disadvantaged circumstances, has reduced the average education of women.

Table 2.11: Summary of Oaxaca-Blinder Decomposition of the Change in MYE Between the 25-34 and 40-49 Cohorts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b1	**b2**	**b_ref**	**x1**	**x2**	**Explained**	**Unexplained**	**Explained Pct**	**Unexplained Pct**
Mother's Education						0.340***	-0.365*	16.0	-17.2
Less than Primary	-1.453***	-0.830***	-1.268***	0.506	0.705	0.252***	-0.403*	11.9	-19.0
Primary	-0,273	-0.003	-0.045	0.376	0.247	-0.005	-0.003	-0.3	-0.2
Lower Sec/More	1.481***	0.833**	1.313***	0.117	0.046	0.093***	0.041	4.4	2.0
Father's Education						0.289***	-0.090	13.6	-4.3
Less than Primary	-0.925	-1.029***	-0.997***	0.204	0.359	0.154***	0.0262	7.3	1.2
Primary	-0.464	-0.123	-0.323***	0.510	0.468	-0.013	-0.166	-0.6	-7.8
Lower Sec/More	1.390	1.152***	1.321***	0.284	0.172	0.148***	0.041	7	2.3
Mother Tongue	-2.282***	-1.112***	-1.820***	0.208	0.162	-0.0853**	-0.211**	-4.0	-9.9
Parent's Marriage	-0.002	-1.112	-0.053	0.253	0.206	-0.002	0.026	-0.1	1.2
Sibling Size						0.168***	-0.028	7.9	-1.3
1-2	0.956***	0.908***	0.920***	0.167	0.085	0.075***	0.007	3.6	0.3
3	0.504***	0.284	0.432***	0.187	0.137	0.022**	0.033	1.0	1.6
4	-0.154	-0.120	-0.142	0.174	0.172	-0.0002	-0.005	0.0	-0.3
5-6	-0.369**	-0.305*	-0.331***	0.228	0.314	0.028**	-0.016	1.3	-0.8
7 or more	-0.936***	-0.766***	-0.877***	0.241	0.290	0.042**	-0.046	2	-2.2
Share of Male Siblings						-0.002	0.042	-0.1	2
0	0.153	0.513**	0.280*	0.141	0.102	0.011	-0.041	0.5	-2.0
0-1/3	0.131	0.207	0.194	0.180	0.230	-0.009	-0.014	-0.5	-0.7
1/3-1/2	-0.070	-.0214	-0.141	0.269	0.278	0.001	0.039	0.1	1.9

Continued on next page

Table 2.11 – *Continued from previous page*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b1	**b2**	**b_ref**	**x1**	**x2**	**Explained**	**Unexplained**	**Explained Pct**	**Unexplained Pct**
1/2	-0.192	-0.233	-0.202	0.213	0.172	-0.008	0.007	-0.4	0.4
1/2 more	-0.022	-0.273	-0.130	0.194	0.216	0.002	0.051	0.1	2.4
Deceased Siblings	-.0694***	-0.578***	-0.656***	0.447	0.628	0.118***	-0.065	5.6	3.1
Childhood Place						0.287***	-0.0004	13.5	-0.2
Province	0.776***	1.198***	0.938***	0.409	0.331	0.073***	-0.152**	3.5	-7.2
District	0.505***	0.367**	0.471***	0.240	0.186	0.025**	0.027	1.2	1.3
Sub-district/Village	-1.282***	1.565***	-1.409***	0.349	0.483	0.188***	0.120	8.9	5.7
Childhood Region						-0.022	-0.015	-1.1	-0.7
West	-0.128	0.384**	0.042	0.286	0.265	0.0008	-0.140*	0.0	-6.6
South	0.109	0.453**	0.277*	0.126	0.132	-0.0001	-0.044	-0.1	-2.1
Central	-0.224	-0.081	-0.142	0.223	0.244	0.002	-0.033	0.1	-1.6
North	0.452***	0.156	0.322***	0.106	0.133	-0.008	0.036	-0.4	1.7
East	-0.209	-0.913***	-0.500***	0.255	0.223	-0.016	0.167*	-0.8	7.9
Sub-total								51.3	-33.5
Constant	9.519***	7.773***	9.307***	1	1		1.746***		82.2
Total						0.189***	1.034***	51.3	48.7
Overall							2.123***		100

Source: Author's own calculation using TDHS-2013.
Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

2.5. Discussion and Conclusion

This essay is motivated by the question of how demographic change and inequality of opportunity have influenced the educational progress of women in successive cohorts in Turkey. Apart from the previous literature, this question concerns the aggregate effect of population composition and educational inequality for women in a developing country.

I am studying these effects using the TDHS-2013 dataset. I divide the female population aged 25-49 into age groups of five. Therefore, each age group represents a cohort that has indeed been exposed to different educational systems, legislative changes and economic opportunities, as well as different social systems. Since the level of education, unlike income or wealth, is less likely to change after the age of 25, such a cohort approach would make sense for the objectives of this study.

The research questions were introduced in the introductory part of this paper. Insights gives some answers to these questions.

1. How does the level of education and its distribution within the female cohorts change over time in Turkey?

   Increasing school enrollment rates at all levels have improved the educational level of the adult population and narrowed the gender gap in successive cohorts. In addition, educational inequality, namely the distribution of education among women, has decreased over time.

2. Is there an educational convergence between different population groups of women over time?

   The educational convergence between different demographic groups of women is not significant from the 45-49 cohort (born 1968-1964) to the 25-29 cohort (born 1988-1984).

3. How does the women's inequality of opportunity in educational attainment change over time in Turkey?

   Women with different early life circumstances in Turkey did not benefit equally from the educational expansion. This means that the inequality of opportunity has not decreased in the period under review.

4. What is the relative importance of cohort composition and the impact of inequality on the human capital accumulation of women in Turkey over time?

   Cohort composition and inequality of opportunity are almost equally important. While the change in the composition of the cohort has a positive overall effect on educational progress, the contribution of the IOP is negative.

Next, the low educational convergence between different sub-populations of women can be explained by two possible mechanisms: demographic change and inequality of opportunity. The first mechanism points to the change in the composition of woman population by the past circumstances. Over time, more women had better parental education, more wealth, fewer siblings, and urban childhoods. All allowed the women to attend more school. On the contrary, the relative increase in the proportion of the female population with a mother tongue other than Turkish decreased the average years of education. The second mechanism is the inequality of opportunity. The increasing loss associated with the disadvantage of having a non Turkish mother tongue, as well as poor mother education and the disadvantage of not being in the province or in the region of West, had a negative coefficient effect on educational progress.

This study has contributed to the literature in several ways. First, the development of educational inequality among women in Turkey was examined using survey data. Second, the educational convergence between different subpopulations of women was explored. Third, while the previous research largely examined the effects of cohort size and composition on social and economic outcomes in developed countries, this paper also showed the partial effects of population structure and inequality of opportunity according to various early life circumstances in a developing country setting. ex

The results obtained here may have implications for understanding the aggregate effects of demographic change and inequality on the educational progress of women in developing countries. This gives insights into the design of educational policy, especially in the early stages of educational expansion. The political implications are as follows. First, education policy should take into account the composition of the population in order to better cater to disadvantaged children. Because these groups tend to drop out before high school and university, they may not benefit from public investment in tertiary education. Second, if highly subsidized higher education suppresses spending in lower education, the quality of which is still problematic,

the marginal utility of additional investment would be lower. That is, even if disadvantaged groups were to attend university, their relatively inadequate skills and poor teaching quality of the institutions rarely allow them to benefit from the fruits. Last but not least, equal opportunities does not mean improving the access of disadvantaged people to poor quality education, but rather creating equal opportunities for everyone with access to high quality education.

This analysis has some potential limitations that remain for future research. Firstly, since the population is relatively older cohorts in our analysis, we are unable to fully cover the effects of some recent reforms in the education sector, such as extending compulsory schooling and expanding university capacities. These reform areas are likely to increase MYE on average. However, overall inequality and IOP may not have decreased. Second, convergence in the number of years completed is likely to increase in the future, but new forms of educational inequality in quality and expenditure will emerge. Additional research should therefore examine the effects of educational inequality and demographic changes on different forms of educational outcomes, especially for the younger cohorts.

In conclusion, this study highlights that educational expansion at all levels should be more balanced and able to narrow the gap between different social groups in order to achieve better educational distribution and equity. For this reason, education policy must take into account the composition of the population according to the circumstances, especially for women in developing countries. In addition, the public education budget should initially be an instrument for disadvantaged population groups as they have such a potential to increase both overall human capital and equal opportunities in society. The most important contribution of the essay that all kinds of inequality studies comparing different periods or cohorts should also consider the demographic change. Inequality of opportunity and population change might have different effects on the formation of overall inequalities.

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A. APPENDIX

Table A.1: Selected Studies on the Distribution of Educational Attainment

Authors	Methodology	Major Findings
Thomas et al. (1999)	Used education inequality indexes such as GINI and Theil for 85 countries between 1960 and 1990.	Inequality in education decreased in many countries.
Zhang and Li (2002)	Coefficient of variation, Gini coefficient, and standard deviation of log average years of schooling were estimated for the period of 1960-1990	Educational attainment exhibited β and σ convergence over the period
Sahn and Younger (2006)	Demographic and Health Survey data from six Latin American countries to analyze levels and trends of inequality for two important non-income measures of well-being, children's stature and adult women's educational attainment.	Lower inequality has contributed to a significant reduction in educational poverty and, to a lesser extent, in health poverty, in contrast to the results of the literature on income inequality.
Lin (2007)	Used education GINI instead of standard deviation to measure the inequality.	It is shown that there is an inverse U-shaped relationship between average school years and GINI education. The turning point of this Kuznets curve is 6.57 years. The expansion of higher education in Taiwan increased average school years and reduced educational inequality over the 1976-2003 period. Both developments also improved income inequality.
Qian and Smyth (2008)	Educational inequality between the coastal and inland provinces and compares them to rural-urban educational inequality in China using Gini education coefficients and a decomposition analysis.	Differences in access to education between rural and urban areas, rather than between coastal and inland provinces, are the main cause of educational inequality in China.
Hojo (2009)	Calculated the GINI coefficient for schooling years in census data to measure levels of educational inequality and examined the factors behind it in Japan.	General inequality is decreasing, but not uniformly for all groups.
Tomul (2011)	Census data were used to measure MYE and education by provincial level.	MYE in Turkey in all regions increased during the period of 1975–2000 while inequality in education decreased.
Dorius (2013)	Educational inequality between countries was measured using the standard deviation from 1870 to 2010. The absolute measurement of inequality (standard deviation) has relative advantages over GINI.	The cross-national trend in the dispersion of education has been roughly normal over the past 140 years, but with significant differences between the measures of education.

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Table A.1 – *Continued from previous page*

Authors	Methodology	Major Findings
Cuaresma et al. (2013)	Education GINI was estimated for 175 countries by age group and gender for the period 1960-2010. The demographic dimension was taken into account.	General trend towards a more even distribution of education among individuals. The degree of educational inequality varies significantly depending on age and gender. Education should not only be more evenly distributed among men than among women, but also among young people compared to older cohorts.
Meschi and Scervini (2014)	Years of education, highest educational qualification and competencies were used as educational qualifications. Standard deviation, coefficient of variation, GINI index, general entropy, and Atkinson index were used to measure inequality using a cohort approach for 48 countries	Educational inequality decreased significantly, but the rate and extent of the decrease varied from country to country.
Agrawal (2014)	Calculated the Education Gini Index separately for the rural and urban sectors and examined changes in inequality over time.	Much of the general educational inequality is due to sectoral inequality. In addition, inequality within sectors has increased and inequality between sectors has decreased over the above period.
Yang et al. (2014)	Analyzes both the current situation of educational inequality in China and its mechanisms of origin with the help of GINI and decomposition.	The largest factors contributing to educational inequality are urban-rural and social stratification.
Jordá and Alonso (2017)	Transforming discrete education level into continuous one, inter-country education inequality, within and between decompositioın was estimated.	The discrete approach appears to be extremely sensitive to assumptions about the number of school years assigned to the incomplete levels.

Table A.2: Selected Studies on the Educational Inequality of Opportunity

Authors	Methodology	Major Findings
Raftery and Hout (1993)	Analyzes the changes in the effects of social origin on educational transitions for those born 1908-56 in Ireland, with an emphasis on egalitarian reforms.	Overall class differences in educational attainment declined, but class barriers were not removed; they simply became less consequential because the educational system expanded to the point where it could afford to be less selective.
Breen et al. (2009)	Ordered logit model was used.	The social class disadvantages in children's educational careers are less pronounced in the countries covered.
Asadullah and Yalonetzky (2012)	Pearson-Cramer, Overlap, Reardon indices were estimated for 25 states in India in 1983 ad 2004 using ordinal education levels.	The reduction in inequality in educational opportunities varies significantly across states and regions.
Reiling (2016)	Examine the relationship between cohort size and the likelihood of completing upper secondary education using birth cohort size as a tool for cohort size in an IV approach.	Students who complete lower secondary in a relatively large cohort are more likely to complete upper secondary within five years. A ten percent increase in cohort size is associated with a 0.10.5 percentage point higher probability of completing upper secondary education.

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Table A.2 – *Continued from previous page*

Authors	Methodology	Major Findings
Blossfeld (2020)	A multidimensional social origin that combines parental class, parenting education and parental status was used as a circumstance. Binary education outcome was used to estimate the likelihood of different socio-economic groups in binary education variables.	Overall origin-specific inequalities and the demand for the highest educational qualification within the various social groups of origin have remained surprisingly stable across the birth cohorts. Instead, the general trend towards educational growth at universities in Germany seems to be mainly driven by changes in the social background composition between the cohorts.

Table A.3: Selected Studies on the Demographic Change and Socio-Economic Outcomes

Authors	Methodology	Major Findings
Berger (1988)	The study examines the influence of cohort size on the starting salaries of university graduates from various fields of study in the USA.	The increase in graduate classes relative to the population is pushing their starting salaries down compared to other workers in the US.
Wright (1991)	The cohort size is measured as the relative share of the labor force by age and time. Its pure interaction effect with age on UK male income is examined using an income function.	Large cohorts have reduced income as assumed. However, this effect does not continue with increasing age of the cohort.
Flinn (1993)	A partial equilibrium model is calibrated with the data on investment in education and total wages in the United States. The parameters of the model are used to study the size of lifetime cohort wealth and school elasticities calculated with respect to the entire cohort size sequence.	The negative effects of the increase in own and neighboring cohorts on cohort wealth are not significantly migrated through adjustments in educational investments.
Connelly and Gottschalk (1995)	The model is based on the fact that changes in children's educational levels are caused by changes in two exogenous demographic factors: changes in cohort size and changes in the proportion of children raised by university graduates.	Changes in parental education levels and relative birth rates between education classes affect the human capital accumulation of the next generation.
Mare and Maralani (2006)	Intergenerational educational mobility in Indonesia is examined using the cohort composition of women in the first generation.	Assortative mating and fertility of women influence the degree of mobility.
Bound and Turner (2007)	Measure the elasticity of the university degree, defined as the log of BA degrees awarded, in relation to the cohort size.	Large cohorts within states have relatively low bachelor degrees, reflecting an imperfect elasticity of supply in the college market.
Fertig et al. (2009)	Investigated the effects of demographic change, measured in terms of relative cohort size and composition, on the human capital accumulation of people born in Germany between 1966 and 1986.	Negative influence of the relative cohort size on the educational level of men and women.
Brunello (2010)	The influence of cohort size on real income in Europe was examined on the basis of the transnational and temporal variation of the demographic structure.	Cohort size has a negative and statistically significant effect on income, especially for the older age groups.

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Table A.3 – *Continued from previous page*

Authors	Methodology	Major Findings
Garloff et al. (2013)	Using an extensive panel of population and labor market data for West Germany, the relationship between cohort size and (un)employment is examined.	The direct impact of the age composition of the labor force on unemployment is negligible. In contrast, the elasticity of unemployment in relation to the cohort entering the labor market is clearly positive.
Moffat and Roth (2014)	Based on the variation in the proportion of the youth population in the European countries and regions, the effect of the nationally and regionally defined age cohort size on the probability of young people becoming unemployed is examined.	People in larger cohorts are more likely to be unemployed and this effect is more pronounced when the analysis is carried out at the regional level.
Jones (2014)	It assesses how the size and gender composition of a child cohort affect immunization in Senegal.	Children with larger (or predominantly male) cohorts of vaccinable age are significantly more likely to be vaccinated.
Morin (2015)	It examined the effects of a labor supply shock caused by the elimination of the 13th grade in Ontario on the income of young high school graduates.	The effect of the supply shock is statistically and economically significant and depresses weekly earnings.
Fuchs (2016)	It examines the relationship between population aging and the decline in unemployment in East Germany using a direct (based on decomposition) and an indirect approach (based on a regression analysis).	The falling youth share and an increasing age share in East Germany led to a falling unemployment rate.
Reiling (2016)	It examines the relationship between cohort size and the likelihood of completing upper secondary education by using panel data from Norway and considering possible Tiebout sorting across school districts and using birth cohort size as a tool for cohort size.	A potentially adverse effect of cohort size when working with educational resources is not strong enough to offset the positive effect of larger cohorts on student performance.
Lutz et al. (2019)	It assesses the relative importance of changes in age structure and increases in human capital for economic growth for a group of 165 countries over the period 1980-2015.	Education instead of age structure brings demographic dividends.
Neumark and Yen (2020)	It examines the effects of the size of older cohorts on labor force participation and wages of older workers in the United States by using panel data in the United States and treating the age structure of the population as endogenous due to migration.	Cohort size can have important effects on labor force participation and wages of older workers, but requires a more nuanced view than just whether the older cohort is large in relation to the population.

Table A.4: Share of Adult Population Aged 25-64 by Circumstances and Cohorts, Cell Percentages

	Age Category																	
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**50-54**		**55-59**		**60-64**		**Total**	
	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI
Sex																		
Male (n=10,900)	7.6	[7.2,8.1]	8.2	[7.8,8.6]	7.1	[6.8,7.5]	6.6	[6.3,7.0]	5.9	[5.6,6.3]	5.7	[5.3,6.1]	4.7	[4.3,5.0]	3.9	[3.6,4.2]	49.8	[49.4,50.1]
Female (n=11,135)	7.8	[7.3,8.3]	8.1	[7.7,8.5]	7.5	[7.1,7.9]	6.3	[5.9,6.7]	5.4	[5.0,5.7]	6.6	[6.3,7.0]	5.0	[4.6,5.3]	3.7	[3.4,4.0]	50.2	[49.9,50.6]
Total (n=22,035)	15.4	[14.7,16.2]	16.2	[15.6,16.9]	14.6	[14.0,15.2]	12.9	[12.3,13.5]	11.3	[10.7,11.9]	12.3	[11.8,12.9]	9.6	[9.1,10.2]	7.6	[7.1,8.1]	100.0	
Current Region																		
West (n=6,122)	6.3	[5.8,6.9]	7.3	[6.8,7.8]	6.6	[6.1,7.1]	5.9	[5.4,6.3]	5.1	[4.7,5.6]	5.3	[4.9,5.8]	4.4	[4.0,4.8]	3.2	[2.9,3.6]	44.1	[42.8,45.3]
South (n=3,015)	1.9	[1.7,2.1]	1.8	[1.6,2.1]	1.9	[1.7,2.2]	1.6	[1.4,1.9]	1.4	[1.3,1.6]	1.6	[1.5,1.8]	1.2	[1.0,1.4]	0.8	[0.7,1.0]	12.3	[11.5,13.1]
Central (n=4,488)	3.1	[2.7,3.6]	3.1	[2.8,3.5]	2.8	[2.5,3.2]	2.4	[2.2,2.7]	2.2	[1.9,2.4]	3.1	[2.8,3.4]	2.3	[2.0,2.6]	1.8	[1.6,2.1]	20.9	[20.0,21.9]
North (n=3,406)	1.0	[0.8,1.1]	1.2	[1.0,1.3]	1.0	[0.9,1.1]	1.0	[0.9,1.2]	1.0	[0.9,1.2]	1.0	[0.9,1.1]	0.7	[0.6,0.8]	0.8	[0.6,0.9]	7.6	[7.1,8.1]
East (n=5,004)	3.2	[2.9,3.4]	2.8	[2.6,3.1]	2.3	[2.1,2.5]	1.9	[1.7,2.2]	1.6	[1.4,1.8]	1.3	[1.2,1.5]	1.1	[0.9,1.3]	0.9	[0.8,1.0]	15.1	[14.4,15.8]
Total (n=22,035)	15.4	[14.7,16.2]	16.2	[15.6,16.9]	14.6	[14.0,15.2]	12.9	[12.3,13.5]	11.3	[10.7,11.9]	12.3	[11.8,12.9]	9.6	[9.1,10.2]	7.6	[7.1,8.1]	100.0	
Current Place																		
Urban (n=15,931)	13.0	[12.3,13.7]	13.5	[12.9,14.1]	12.1	[11.5,12.7]	10.2	[9.7,10.8]	8.7	[8.1,9.2]	9.5	[9.0,10.0]	7.2	[6.7,7.7]	5.4	[5.0,5.8]	79.5	[78.6,80.3]
Rural (n=6,104)	2.5	[2.3,2.7]	2.8	[2.5,3.0]	2.5	[2.3,2.8]	2.6	[2.4,2.9]	2.6	[2.4,2.9]	2.8	[2.6,3.1]	2.5	[2.2,2.7]	2.2	[2.0,2.5]	20.5	[19.7,21.4]
Total (n=22,035)	15.4	[14.7,16.2]	16.2	[15.6,16.9]	14.6	[14.0,15.2]	12.9	[12.3,13.5]	11.3	[10.7,11.9]	12.3	[11.8,12.9]	9.6	[9.1,10.2]	7.6	[7.1,8.1]	100.0	
Current Wealth																		
Poorest (n=4,748)	2.3	[2.0,2.6]	2.4	[2.1,2.7]	2.1	[1.8,2.4]	1.9	[1.7,2.2]	1.8	[1.6,2.1]	2.3	[2.0,2.5]	1.9	[1.7,2.1]	1.6	[1.4,1.9]	16.3	[14.9,17.9]
Poorer (n=4,739)	2.8	[2.5,3.2]	3.1	[2.7,3.4]	2.7	[2.4,3.0]	2.4	[2.2,2.8]	1.9	[1.7,2.2]	2.1	[1.9,2.4]	1.8	[1.6,2.0]	1.7	[1.4,1.9]	18.5	[17.1,19.9]
Middle (n=4,407)	3.3	[3.0,3.7]	3.5	[3.1,3.9]	2.9	[2.6,3.2]	2.5	[2.2,2.8]	2.3	[2.0,2.6]	2.2	[2.0,2.5]	1.8	[1.6,2.1]	1.6	[1.4,1.9]	20.2	[18.9,21.6]
Richer (n=4,129)	3.5	[3.0,4.0]	3.5	[3.1,3.9]	3.1	[2.7,3.5]	2.8	[2.5,3.1]	2.6	[2.3,2.9]	2.6	[2.3,2.9]	2.0	[1.7,2.3]	1.5	[1.3,1.8]	21.5	[20.0,23.1]
Richest (n=4,012)	3.5	[3.1,3.9]	3.8	[3.4,4.3]	3.8	[3.3,4.5]	3.2	[2.8,3.7]	2.7	[2.4,3.1]	3.2	[2.8,3.6]	2.1	[1.8,2.5]	1.2	[0.9,1.4]	23.5	[21.4,25.8]
Total (n=22,035)	15.4	[14.7,16.2]	16.2	[15.6,16.9]	14.6	[14.0,15.2]	12.9	[12.3,13.5]	11.3	[10.7,11.9]	12.3	[11.8,12.9]	9.6	[9.1,10.2]	7.6	[7.1,8.1]	100.0	
Migrated																		
No (n=15,067)	9.2	[8.7,9.7]	9.1	[8.5,9.6]	8.4	[7.9,8.9]	7.5	[7.0,7.9]	6.7	[6.3,7.3]	7.3	[6.8,7.8]	5.7	[5.2,6.1]	4.6	[4.2,5.1]	58.4	[56.4,60.4]
Yes (n=6,968)	6.3	[5.6,6.9]	7.2	[6.6,7.8]	6.2	[5.8,6.7]	5.4	[5.0,5.9]	4.6	[4.1,5.0]	5.0	[4.6,5.5]	4.0	[3.6,4.4]	2.9	[2.6,3.3]	41.6	[39.6,43.6]
Total (n=22,035)	15.4	[14.7,16.2]	16.2	[15.6,16.9]	14.6	[14.0,15.2]	12.9	[12.3,13.5]	11.3	[10.7,11.9]	12.3	[11.8,12.9]	9.6	[9.1,10.2]	7.6	[7.1,8.1]	100.0	
Birth Place																		
Province center (n=5,090)	6.2	[5.7,6.7]	5.3	[4.9,5.8]	4.5	[4.0,5.0]	3.3	[2.9,3.7]	2.6	[2.3,3.0]	2.6	[2.3,2.9]	1.9	[1.7,2.3]	1.1	[0.9,1.3]	27.5	[25.9,29.2]
District center (n=5,043)	3.9	[3.5,4.4]	4.1	[3.7,4.5]	3.5	[3.2,3.9]	2.9	[2.6,3.3]	2.6	[2.3,2.9]	2.7	[2.4,3.0]	1.9	[1.6,2.1]	1.5	[1.3,1.7]	23.1	[21.8,24.5]
Sub-district/village (n=11,546)	5.4	[4.9,5.9]	6.6	[6.1,7.2]	6.5	[6.1,7.0]	6.6	[6.1,7.1]	6.2	[5.8,6.6]	7.2	[6.7,7.6]	5.9	[5.5,6.3]	5.0	[4.6,5.4]	49.4	[47.5,51.3]
Total (n=21,679)	15.5	[14.8,16.3]	16.1	[15.5,16.7]	14.5	[13.9,15.1]	12.8	[12.2,13.4]	11.4	[10.8,12.0]	12.4	[11.9,13.0]	9.7	[9.2,10.3]	7.6	[7.1,8.1]	100.0	
Birth Region																		
West (n=3,732)	3.5	[3.3,3.9]	3.7	[3.4,4.1]	3.5	[3.1,4.0]	2.8	[2.5,3.1]	2.6	[2.2,3.1]	2.9	[2.5,3.2]	2.4	[2.1,2.7]	1.7	[1.4,2.1]	23.1	[21.6,24.7]
South (n=2,649)	1.9	[1.6,2.1]	1.8	[1.6,2.2]	1.7	[1.5,2.0]	1.5	[1.3,1.7]	1.3	[1.2,1.5]	1.4	[1.2,1.6]	1.0	[0.8,1.2]	0.7	[0.6,0.9]	11.3	[10.4,12.2]
Central (n=4,985)	3.8	[3.4,4.3]	3.9	[3.6,4.3]	3.5	[3.2,3.8]	3.3	[3.0,3.7]	2.9	[2.6,3.2]	3.7	[3.4,4.1]	2.9	[2.6,3.3]	2.1	[1.9,2.4]	26.3	[25.2,27.4]
North (n=3,948)	1.7	[1.4,2.0]	2.0	[1.7,2.3]	2.0	[1.8,2.3]	1.9	[1.7,2.3]	1.8	[1.5,2.1]	1.9	[1.6,2.1]	1.3	[1.1,1.5]	1.3	[1.1,1.6]	13.9	[12.9,15.0]
East (n=6,340)	4.6	[4.2,5.1]	4.6	[4.2,5.0]	3.8	[3.4,4.2]	3.3	[2.9,3.7]	2.7	[2.4,3.1]	2.6	[2.3,3.0]	2.2	[1.9,2.5]	1.6	[1.4,1.8]	25.4	[23.8,27.1]
Total (n=21,654)	15.5	[14.8,16.3]	16.0	[15.4,16.7]	14.5	[13.9,15.2]	12.8	[12.2,13.4]	11.4	[10.8,12.0]	12.4	[11.9,13.0]	9.7	[9.2,10.3]	7.6	[7.1,8.1]	100.0	

Source: Author's own calculation using TDHS-2013.

Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. Significance level of confidence intervals is 0.05.

Table A.5: Share of Adult Population Aged 25-64 by Circumstances and Cohorts, Column Percentages

	Age Category																	
	25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		Total	
	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI
Sex																		
Male (n=10,900)	49.5	[47.7,51.3]	50.3	[48.8,51.8]	48.8	[47.1,50.5]	51.3	[49.5,53.1]	52.5	[50.6,54.4]	46.3	[44.3,48.2]	48.5	[46.3,50.7]	51.6	[49.3,54.0]	49.8	[49.4,50.1]
Female (n=11,135)	50.5	[48.7,52.3]	49.7	[48.2,51.2]	51.2	[49.5,52.9]	48.7	[46.9,50.5]	47.5	[45.6,49.4]	53.7	[51.8,55.7]	51.5	[49.3,53.7]	48.4	[46.0,50.7]	50.2	[49.9,50.6]
Total (n=22,035)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Current Region																		
West (n=6,122)	40.7	[38.0,43.5]	45.0	[42.7,47.4]	45.0	[42.4,47.6]	45.5	[42.9,48.2]	45.2	[42.4,48.0]	43.2	[40.7,45.7]	45.5	[42.7,48.4]	42.5	[39.3,45.8]	44.1	[42.8,45.3]
South (n=3,015)	12.3	[10.9,13.8]	11.1	[9.7,12.8]	13.1	[11.4,15.1]	12.7	[11.2,14.5]	12.5	[11.2,13.9]	13.2	[11.8,14.8]	12.0	[10.1,14.1]	11.2	[9.8,12.8]	12.3	[11.5,13.1]
Central (n=4,488)	20.2	[17.9,22.8]	19.4	[17.6,21.3]	19.4	[17.5,21.5]	18.6	[16.8,20.6]	19.2	[17.3,21.4]	25.1	[23.1,27.3]	23.9	[21.4,26.5]	24.4	[21.7,27.2]	20.9	[20.0,21.9]
North (n=3,406)	6.3	[5.5,7.2]	7.1	[6.3,8.0]	6.8	[6.0,7.7]	8.1	[6.9,9.5]	9.0	[7.8,10.3]	7.7	[6.9,8.7]	7.6	[6.7,8.6]	10.1	[8.5,12.1]	7.6	[7.1,8.1]
East (n=5,004)	20.5	[18.9,22.2]	17.4	[15.8,19.0]	15.6	[14.2,17.2]	15.0	[13.4,16.8]	14.1	[12.4,16.0]	10.7	[9.5,12.1]	11.0	[9.4,12.9]	11.8	[10.3,13.4]	15.1	[14.4,15.8]
Total (n=22,035)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Current Place																		
Urban (n=15,931)	84.0	[82.4,85.4]	83.1	[81.6,84.5]	82.7	[80.9,84.3]	79.4	[77.5,81.2]	76.7	[74.7,78.6]	77.0	[75.1,78.8]	74.4	[72.2,76.6]	70.9	[67.9,73.7]	79.5	[78.6,80.3]
Rural (n=6,104)	16.0	[14.6,17.6]	16.9	[15.5,18.4]	17.3	[15.7,19.1]	20.6	[18.8,22.5]	23.3	[21.4,25.3]	23.0	[21.2,24.9]	25.6	[23.4,27.8]	29.1	[26.3,32.1]	20.5	[19.7,21.4]
Total (n=22,035)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Current Wealth																		
Poorest (n=4,748)	15.0	[13.1,17.1]	14.7	[13.0,16.6]	14.3	[12.5,16.4]	15.1	[13.2,17.2]	16.0	[14.0,18.2]	18.3	[16.3,20.5]	19.6	[17.3,22.0]	21.4	[18.8,24.3]	16.3	[14.9,17.9]
Poorer (n=4,739)	18.4	[16.5,20.5]	18.9	[16.9,21.0]	18.3	[16.2,20.6]	18.9	[16.9,21.2]	16.9	[15.0,19.0]	17.2	[15.2,19.5]	18.4	[16.3,20.7]	21.9	[19.3,24.7]	18.5	[17.1,19.9]
Middle (n=4,407)	21.6	[19.3,24.0]	21.6	[19.4,24.0]	19.9	[18.0,21.9]	19.3	[17.3,21.5]	20.3	[18.2,22.6]	17.9	[15.9,19.9]	19.2	[16.7,21.9]	21.2	[18.4,24.3]	20.2	[18.9,21.6]
Richer (n=4,129)	22.5	[20.0,25.2]	21.4	[19.2,23.8]	21.2	[18.9,23.7]	21.6	[19.5,23.9]	22.7	[20.5,25.1]	20.8	[18.6,23.3]	21.0	[18.3,24.0]	20.3	[17.6,23.4]	21.5	[20.0,23.1]
Richest (n=4,012)	22.6	[19.9,25.4]	23.4	[20.7,26.3]	26.3	[23.0,29.9]	25.1	[22.2,28.1]	24.0	[21.1,27.2]	25.8	[22.8,29.0]	21.9	[18.8,25.3]	15.2	[12.5,18.4]	23.5	[21.4,25.8]
Total (n=22,035)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Migrated																		
No (n=15,067)	59.5	[56.3,62.5]	55.8	[52.9,58.6]	57.3	[54.7,59.9]	58.1	[55.3,60.8]	59.6	[56.4,62.8]	59.2	[56.0,62.3]	58.8	[55.4,62.1]	61.2	[57.3,65.0]	58.4	[56.4,60.4]
Yes (n=6,968)	40.5	[37.5,43.7]	44.2	[41.4,47.1]	42.7	[40.1,45.3]	41.9	[39.2,44.7]	40.4	[37.2,43.6]	40.8	[37.7,44.0]	41.2	[37.9,44.6]	38.8	[35.0,42.7]	41.6	[39.6,43.6]
Total (n=22,035)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Birth Place																		
Province center (n=5,090)	39.9	[37.2,42.6]	33.2	[30.6,35.9]	30.8	[28.2,33.5]	25.6	[23.3,28.2]	22.9	[20.2,25.8]	20.7	[18.3,23.4]	20.0	[17.4,22.8]	14.8	[12.5,17.4]	27.5	[25.9,29.2]
District center (n=5,043)	25.4	[23.1,27.8]	25.5	[23.4,27.7]	24.4	[22.2,26.7]	22.9	[20.7,25.3]	22.7	[20.5,25.1]	21.6	[19.3,24.0]	19.1	[16.8,21.6]	19.2	[16.7,22.0]	23.1	[21.8,24.5]
Sub-district/village (n=11,546)	34.8	[32.0,37.6]	41.3	[38.5,44.3]	44.9	[41.9,47.8]	51.5	[48.3,54.6]	54.4	[51.0,57.7]	57.7	[54.7,60.6]	60.9	[57.7,64.0]	65.9	[62.6,69.1]	49.4	[47.5,51.3]
Total (n=21,679)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Birth Region																		
West (n=3,732)	22.8	[20.9,24.7]	23.1	[21.0,25.3]	24.3	[21.8,26.9]	21.6	[19.4,24.0]	23.0	[20.0,26.3]	23.1	[20.7,25.6]	24.3	[21.6,27.2]	22.9	[19.3,26.9]	23.1	[21.6,24.7]
South (n=2,649)	11.9	[10.4,13.6]	11.4	[9.8,13.4]	11.8	[10.3,13.4]	11.4	[10.0,12.9]	11.7	[10.2,13.4]	10.9	[9.4,12.7]	10.1	[8.3,12.3]	9.8	[8.1,11.7]	11.3	[10.4,12.2]
Central (n=4,985)	24.5	[22.2,27.0]	24.5	[22.4,26.7]	24.3	[22.4,26.3]	26.1	[23.9,28.5]	25.6	[23.1,28.2]	29.8	[27.5,32.3]	29.9	[27.0,33.0]	28.3	[25.3,31.5]	26.3	[25.2,27.4]
North (n=3,948)	10.8	[9.3,12.5]	12.5	[10.8,14.4]	13.7	[12.1,15.6]	15.2	[13.1,17.5]	15.6	[13.4,17.9]	15.0	[13.3,16.9]	13.4	[11.5,15.4]	17.7	[14.6,21.1]	13.9	[12.9,15.0]
East (n=6,340)	29.9	[27.4,32.6]	28.5	[26.2,30.9]	25.9	[23.4,28.6]	25.7	[23.2,28.3]	24.1	[21.5,27.0]	21.2	[18.8,23.8]	22.4	[19.5,25.5]	21.3	[18.6,24.3]	25.4	[23.8,27.1]
Total (n=21,654)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	

Source: Author's own calculation using TDHS-2013.

Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. Significance level of confidence intervals is 0.05.

Table A.6: Share of Men by Circumstances and Age Cohorts, Cell Percentages

	Age Category																	
	25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		Total	
	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI
Region																		
West (n=3,053)	6.3	[5.7,7.0]	7.5	[6.9,8.1]	6.5	[5.9,7.1]	6.1	[5.5,6.7]	5.5	[4.9,6.1]	5.0	[4.5,5.7]	4.3	[3.8,4.8]	3.4	[2.9,3.9]	44.5	[43.1,45.9]
South (n=1,480)	1.9	[1.6,2.2]	1.7	[1.4,2.0]	1.8	[1.5,2.2]	1.7	[1.4,2.0]	1.4	[1.3,1.6]	1.6	[1.4,1.8]	1.2	[0.9,1.4]	0.9	[0.8,1.1]	12.1	[11.3,12.9]
Central (n=2,210)	3.2	[2.7,3.8]	3.3	[2.9,3.7]	2.7	[2.4,3.1]	2.5	[2.3,2.8]	2.3	[1.9,2.7]	2.7	[2.4,3.1]	2.3	[2.0,2.7]	1.8	[1.6,2.2]	20.8	[19.8,21.9]
North (n=1,669)	0.9	[0.8,1.1]	1.1	[0.9,1.2]	1.0	[0.8,1.1]	1.1	[0.9,1.3]	1.1	[0.9,1.3]	0.9	[0.7,1.0]	0.6	[0.5,0.8]	0.8	[0.7,1.0]	7.5	[7.0,8.0]
East (n=2,488)	3.0	[2.8,3.3]	2.9	[2.6,3.3]	2.4	[2.1,2.7]	2.0	[1.8,2.2]	1.6	[1.4,1.9]	1.3	[1.1,1.5]	1.0	[0.8,1.3]	0.9	[0.8,1.1]	15.1	[14.4,15.9]
Total (n=10,900)	15.3	[14.5,16.2]	16.4	[15.7,17.2]	14.3	[13.6,15.1]	13.3	[12.6,14.0]	11.9	[11.2,12.7]	11.5	[10.7,12.2]	9.4	[8.7,10.1]	7.8	[7.2,8.5]	100.0	
Type of place of residence																		
Urban (n=7,886)	12.9	[12.1,13.8]	13.6	[12.9,14.4]	11.8	[11.1,12.6]	10.6	[9.9,11.3]	9.4	[8.7,10.1]	8.8	[8.1,9.5]	6.9	[6.3,7.6]	5.6	[5.1,6.2]	79.6	[78.6,80.6]
Rural (n=3,014)	2.4	[2.1,2.7]	2.8	[2.5,3.1]	2.5	[2.3,2.8]	2.7	[2.4,3.0]	2.6	[2.3,2.9]	2.7	[2.4,3.0]	2.4	[2.1,2.7]	2.2	[1.9,2.5]	20.4	[19.4,21.4]
Total (n=10,900)	15.3	[14.5,16.2]	16.4	[15.7,17.2]	14.3	[13.6,15.1]	13.3	[12.6,14.0]	11.9	[11.2,12.7]	11.5	[10.7,12.2]	9.4	[8.7,10.1]	7.8	[7.2,8.5]	100.0	
Wealth index																		
Poorest (n=2,381)	2.5	[2.1,2.9]	2.4	[2.1,2.8]	2.1	[1.8,2.4]	2.1	[1.8,2.5]	1.9	[1.6,2.2]	2.0	[1.8,2.4]	1.9	[1.7,2.3]	1.6	[1.4,1.9]	16.6	[15.1,18.3]
Poorer (n=2,331)	2.8	[2.5,3.3]	3.2	[2.8,3.6]	2.7	[2.4,3.2]	2.4	[2.1,2.8]	1.9	[1.7,2.2]	1.9	[1.7,2.3]	1.6	[1.3,1.9]	1.8	[1.5,2.1]	18.4	[17.0,19.9]
Middle (n=2,158)	3.2	[2.8,3.8]	3.8	[3.4,4.4]	2.7	[2.4,3.1]	2.6	[2.3,3.0]	2.5	[2.2,2.8]	1.9	[1.7,2.3]	1.8	[1.5,2.2]	1.5	[1.3,1.8]	20.1	[18.7,21.6]
Richer (n=2,030)	3.4	[2.9,3.9]	3.3	[2.8,3.8]	3.0	[2.6,3.5]	2.9	[2.5,3.3]	2.9	[2.5,3.3]	2.3	[2.0,2.8]	1.8	[1.5,2.2]	1.7	[1.4,2.1]	21.3	[19.8,22.8]
Richest (n=2,000)	3.4	[2.9,4.0]	3.7	[3.2,4.3]	3.8	[3.2,4.4]	3.2	[2.8,3.8]	2.7	[2.4,3.2]	3.2	[2.7,3.8]	2.3	[1.9,2.7]	1.2	[1.0,1.6]	23.6	[21.5,25.8]
Total (n=10,900)	15.3	[14.5,16.2]	16.4	[15.7,17.2]	14.3	[13.6,15.1]	13.3	[12.6,14.0]	11.9	[11.2,12.7]	11.5	[10.7,12.2]	9.4	[8.7,10.1]	7.8	[7.2,8.5]	100.0	
Migrated																		
No (n=7,554)	9.2	[8.6,9.8]	9.4	[8.8,10.1]	8.2	[7.6,8.9]	7.7	[7.1,8.3]	7.0	[6.5,7.7]	6.9	[6.3,7.5]	5.5	[4.9,6.0]	4.8	[4.3,5.3]	58.7	[56.5,60.8]
Yes (n=3,346)	6.2	[5.4,7.0]	7.0	[6.4,7.7]	6.1	[5.6,6.7]	5.6	[5.0,6.2]	4.9	[4.3,5.5]	4.6	[4.1,5.1]	3.9	[3.4,4.5]	3.0	[2.6,3.6]	41.3	[39.2,43.5]
Total (n=10,900)	15.3	[14.5,16.2]	16.4	[15.7,17.2]	14.3	[13.6,15.1]	13.3	[12.6,14.0]	11.9	[11.2,12.7]	11.5	[10.7,12.2]	9.4	[8.7,10.1]	7.8	[7.2,8.5]	100.0	
Birth Place																		
Province center (n=2,474)	6.2	[5.6,6.8]	5.3	[4.8,5.9]	4.3	[3.8,4.9]	3.3	[2.8,3.8]	2.6	[2.2,3.1]	2.3	[1.9,2.7]	1.8	[1.5,2.2]	1.2	[0.9,1.5]	26.9	[25.1,28.7]
District center (n=2,492)	4.0	[3.5,4.5]	4.0	[3.6,4.5]	3.4	[3.0,3.9]	3.0	[2.7,3.4]	2.7	[2.3,3.1]	2.5	[2.1,2.9]	1.9	[1.6,2.2]	1.5	[1.3,1.8]	23.1	[21.6,24.6]
Sub-district/village (n=5,774)	5.2	[4.7,5.8]	7.1	[6.5,7.7]	6.6	[6.0,7.1]	6.8	[6.2,7.4]	6.8	[6.2,7.4]	6.7	[6.1,7.3]	5.8	[5.2,6.4]	5.2	[4.6,5.7]	50.1	[48.0,52.2]
Total (n=10,740)	15.4	[14.6,16.3]	16.4	[15.6,17.1]	14.3	[13.5,15.1]	13.1	[12.4,13.8]	12.1	[11.3,12.8]	11.5	[10.7,12.2]	9.5	[8.8,10.2]	7.9	[7.3,8.5]	100.0	
Birth Region																		
West (n=1,846)	3.4	[3.0,3.8]	3.8	[3.4,4.3]	3.4	[2.9,3.9]	2.9	[2.5,3.3]	2.7	[2.3,3.2]	2.7	[2.2,3.1]	2.3	[2.0,2.7]	1.8	[1.4,2.2]	22.9	[21.3,24.7]
South (n=1,292)	1.9	[1.6,2.2]	1.7	[1.4,2.2]	1.6	[1.3,2.0]	1.4	[1.2,1.7]	1.3	[1.1,1.5]	1.3	[1.1,1.6]	0.9	[0.7,1.2]	0.8	[0.6,1.0]	11.0	[10.1,12.0]
Central (n=2,462)	3.9	[3.4,4.5]	4.1	[3.7,4.7]	3.3	[3.0,3.7]	3.4	[3.0,3.9]	3.1	[2.7,3.6]	3.3	[2.9,3.8]	2.9	[2.5,3.3]	2.1	[1.8,2.5]	26.3	[25.1,27.6]
North (n=1,961)	1.6	[1.4,1.9]	1.9	[1.6,2.3]	2.1	[1.8,2.5]	2.1	[1.8,2.4]	1.9	[1.6,2.3]	1.7	[1.4,2.0]	1.3	[1.1,1.6]	1.4	[1.1,1.8]	14.0	[12.9,15.1]
East (n=3,165)	4.6	[4.1,5.2]	4.7	[4.2,5.3]	3.9	[3.4,4.4]	3.3	[2.9,3.8]	3.0	[2.6,3.4]	2.5	[2.2,2.8]	2.1	[1.7,2.5]	1.7	[1.5,2.0]	25.8	[24.0,27.6]
Total (n=10,726)	15.4	[14.6,16.3]	16.3	[15.6,17.1]	14.3	[13.6,15.1]	13.1	[12.5,13.8]	12.1	[11.3,12.9]	11.4	[10.7,12.2]	9.5	[8.8,10.2]	7.8	[7.2,8.5]	100.0	

Source: Author's own calculation using TDHS-2013.
Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. Significance level of confidence intervals is 0.05.

Table A.7: Share of Men by Circumstances and Age Cohorts, Column Percentages

	Age Category																	
	25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		Total	
	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI
Region																		
West (n=3,053)	41.2	[38.1,44.5]	45.5	[42.8,48.3]	45.0	[42.0,48.2]	45.6	[42.5,48.7]	46.0	[42.7,49.3]	43.9	[40.5,47.4]	45.5	[41.5,49.6]	42.9	[38.7,47.2]	44.5	[43.1,45.9]
South (n=1,480)	12.2	[10.6,14.2]	10.3	[8.6,12.2]	12.6	[10.6,15.1]	12.5	[10.7,14.6]	11.9	[10.6,13.3]	13.6	[11.8,15.6]	12.4	[10.1,15.1]	11.7	[10.0,13.7]	12.1	[11.3,12.9]
Central (n=2,210)	20.7	[17.8,23.9]	19.9	[17.8,22.2]	19.1	[17.1,21.2]	19.1	[17.1,21.3]	19.2	[16.6,22.1]	23.8	[21.1,26.7]	24.4	[21.3,27.8]	23.3	[20.1,26.9]	20.8	[19.8,21.9]
North (n=1,669)	6.1	[5.1,7.3]	6.6	[5.7,7.6]	6.8	[5.8,7.9]	8.1	[6.9,9.4]	9.1	[7.7,10.8]	7.6	[6.5,8.9]	6.8	[5.5,8.2]	10.3	[8.5,12.5]	7.5	[7.0,8.0]
East (n=2,488)	19.8	[17.9,21.8]	17.7	[15.9,19.7]	16.4	[14.5,18.6]	14.7	[13.3,16.3]	13.8	[12.0,15.8]	11.1	[9.5,12.8]	11.0	[8.9,13.5]	11.8	[9.9,13.9]	15.1	[14.4,15.9]
Total (n=10,900)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Type of place of residence																		
Urban (n=7,886)	84.3	[82.4,86.0]	82.9	[81.2,84.5]	82.3	[80.2,84.2]	79.6	[77.5,81.6]	78.4	[76.1,80.6]	76.4	[73.8,78.8]	74.1	[70.9,77.0]	71.8	[68.1,75.2]	79.6	[78.6,80.6]
Rural (n=3,014)	15.7	[14.0,17.6]	17.1	[15.5,18.8]	17.7	[15.8,19.8]	20.4	[18.4,22.5]	21.6	[19.4,23.9]	23.6	[21.2,26.2]	25.9	[23.0,29.1]	28.2	[24.8,31.9]	20.4	[19.4,21.4]
Total (n=10,900)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Wealth index																		
Poorest (n=2,381)	16.1	[13.8,18.7]	14.8	[12.9,16.9]	14.6	[12.6,17.0]	15.9	[13.7,18.4]	15.9	[13.5,18.6]	17.8	[15.3,20.6]	20.7	[18.0,23.8]	20.7	[17.6,24.2]	16.6	[15.1,18.3]
Poorer (n=2,331)	18.5	[16.2,21.1]	19.3	[17.1,21.7]	19.2	[16.7,22.0]	18.4	[16.1,21.1]	16.2	[14.0,18.6]	16.9	[14.5,19.6]	16.8	[14.3,19.6]	22.7	[19.6,26.1]	18.4	[17.0,19.9]
Middle (n=2,158)	21.2	[18.4,24.3]	23.3	[20.7,26.3]	18.9	[16.8,21.3]	19.6	[17.1,22.4]	20.6	[18.2,23.2]	16.9	[14.6,19.4]	19.1	[16.1,22.6]	19.4	[16.4,22.9]	20.1	[18.7,21.6]
Richer (n=2,030)	22.0	[19.2,25.0]	19.9	[17.3,22.8]	21.1	[18.4,24.0]	21.6	[19.0,24.4]	24.3	[21.7,27.2]	20.4	[17.4,23.7]	19.2	[16.2,22.6]	21.5	[18.1,25.5]	21.3	[19.8,22.8]
Richest (n=2,000)	22.2	[19.1,25.7]	22.6	[19.6,26.0]	26.2	[22.8,29.8]	24.4	[21.1,28.0]	23.0	[20.0,26.3]	28.0	[24.1,32.2]	24.1	[20.5,28.2]	15.7	[12.6,19.4]	23.6	[21.5,25.8]
Total (n=10,900)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Migrated																		
No (n=7,554)	59.8	[56.0,63.4]	57.4	[54.1,60.6]	57.5	[54.4,60.5]	57.8	[54.2,61.3]	58.9	[55.0,62.7]	60.0	[56.6,63.3]	58.2	[53.9,62.4]	61.3	[56.2,66.1]	58.7	[56.5,60.8]
Yes (n=3,346)	40.2	[36.6,44.0]	42.6	[39.4,45.9]	42.5	[39.5,45.6]	42.2	[38.7,45.8]	41.1	[37.3,45.0]	40.0	[36.7,43.4]	41.8	[37.6,46.1]	38.7	[33.9,43.8]	41.3	[39.2,43.5]
Total (n=10,900)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Place of birth-type																		
Province center (n=2,474)	40.3	[37.1,43.6]	32.5	[29.6,35.4]	30.0	[26.8,33.4]	24.9	[21.9,28.1]	21.4	[18.4,24.8]	19.9	[16.8,23.3]	18.9	[15.7,22.7]	14.8	[12.0,18.2]	26.9	[25.1,28.7]
District center (n=2,492)	25.9	[23.2,28.7]	24.5	[22.1,27.1]	24.0	[21.4,26.9]	23.2	[20.6,26.0]	22.2	[19.6,25.1]	21.8	[18.8,25.1]	20.0	[17.0,23.3]	19.4	[16.4,22.9]	23.1	[21.6,24.6]
Sub-district/village (n=5,774)	33.8	[30.7,37.1]	43.1	[39.9,46.2]	46.0	[42.5,49.5]	52.0	[48.0,55.9]	56.4	[52.7,59.9]	58.3	[54.5,62.1]	61.1	[56.8,65.3]	65.7	[61.7,69.5]	50.1	[48.0,52.2]
Total (n=10,740)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Birth Region																		
West (n=1,846)	22.1	[19.7,24.7]	23.4	[20.9,26.1]	23.7	[20.8,26.7]	21.8	[19.0,24.9]	22.5	[19.4,26.1]	23.2	[20.1,26.5]	24.4	[21.1,28.0]	22.7	[18.5,27.5]	22.9	[21.3,24.7]
South (n=1,292)	12.0	[10.1,14.2]	10.7	[8.7,13.0]	11.3	[9.4,13.5]	10.8	[9.2,12.7]	10.9	[9.3,12.6]	11.8	[9.7,14.3]	9.8	[7.6,12.6]	10.2	[8.2,12.5]	11.0	[10.1,12.0]
Central (n=2,462)	25.4	[22.4,28.6]	25.3	[22.6,28.2]	23.3	[21.1,25.7]	26.2	[23.5,29.1]	26.0	[23.0,29.2]	29.0	[25.9,32.2]	30.4	[26.9,34.1]	27.3	[23.6,31.4]	26.3	[25.1,27.6]
North (n=1,961)	10.5	[8.8,12.4]	11.7	[9.7,14.0]	14.5	[12.3,17.0]	15.8	[13.5,18.4]	15.9	[13.4,18.8]	14.5	[12.5,16.8]	13.7	[11.3,16.5]	18.0	[14.3,22.5]	14.0	[12.9,15.1]
East (n=3,165)	30.0	[27.0,33.1]	28.9	[26.2,31.7]	27.2	[24.2,30.5]	25.5	[22.4,28.8]	24.7	[21.7,28.1]	21.6	[18.8,24.7]	21.7	[18.2,25.6]	21.7	[18.5,25.4]	25.8	[24.0,27.6]
Total (n=10,726)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	

Source: Author's own calculation using TDHS-2013.
Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. Significance level of confidence intervals is 0.05.

Table A.8: Share of Women by Circumstances and Age Cohorts, Cell Percentage

	Age Category																	
	25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		Total	
	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI	Cell %	CI
Region																		
West (n=3,069)	6.2	[5.5,7.0]	7.1	[6.5,7.8]	6.7	[6.1,7.4]	5.7	[5.1,6.3]	4.7	[4.2,5.3]	5.6	[5.1,6.2]	4.5	[4.1,5.0]	3.1	[2.7,3.5]	43.7	[42.5,44.9]
South (n=1,535)	1.9	[1.6,2.2]	1.9	[1.7,2.2]	2.0	[1.7,2.4]	1.6	[1.4,1.9]	1.4	[1.2,1.6]	1.7	[1.5,1.9]	1.1	[0.9,1.4]	0.8	[0.6,1.0]	12.5	[11.7,13.3]
Central (n=2,278)	3.1	[2.7,3.5]	3.0	[2.7,3.4]	2.9	[2.6,3.4]	2.3	[1.9,2.6]	2.1	[1.8,2.4]	3.5	[3.1,3.8]	2.3	[2.0,2.7]	1.9	[1.6,2.1]	21.0	[20.1,21.9]
North (n=1,737)	1.0	[0.8,1.2]	1.2	[1.1,1.4]	1.0	[0.9,1.2]	1.0	[0.8,1.3]	0.9	[0.8,1.1]	1.0	[0.9,1.2]	0.8	[0.7,0.9]	0.7	[0.6,0.9]	7.8	[7.3,8.3]
East (n=2,516)	3.3	[3.0,3.6]	2.7	[2.5,3.0]	2.2	[2.0,2.5]	1.9	[1.6,2.3]	1.5	[1.3,1.8]	1.4	[1.2,1.6]	1.1	[0.9,1.3]	0.9	[0.7,1.1]	15.0	[14.4,15.7]
Total (n=11,135)	15.5	[14.6,16.4]	16.1	[15.3,16.9]	14.9	[14.1,15.7]	12.5	[11.7,13.3]	10.7	[10.0,11.4]	13.2	[12.5,13.9]	9.9	[9.2,10.5]	7.3	[6.8,7.8]	100.0	
Type of place of residence																		
Urban (n=8,045)	13.0	[12.1,13.9]	13.4	[12.6,14.2]	12.4	[11.6,13.2]	9.9	[9.2,10.7]	8.0	[7.4,8.7]	10.2	[9.6,10.9]	7.4	[6.8,8.0]	5.1	[4.6,5.6]	79.3	[78.5,80.1]
Rural (n=3,090)	2.5	[2.3,2.8]	2.7	[2.4,3.0]	2.5	[2.2,2.9]	2.6	[2.3,2.9]	2.7	[2.4,3.0]	3.0	[2.7,3.3]	2.5	[2.2,2.8]	2.2	[1.9,2.5]	20.7	[19.9,21.5]
Total (n=11,135)	15.5	[14.6,16.4]	16.1	[15.3,16.9]	14.9	[14.1,15.7]	12.5	[11.7,13.3]	10.7	[10.0,11.4]	13.2	[12.5,13.9]	9.9	[9.2,10.5]	7.3	[6.8,7.8]	100.0	
Wealth index																		
Poorest (n=2,367)	2.2	[1.9,2.5]	2.4	[2.0,2.7]	2.1	[1.8,2.5]	1.8	[1.5,2.1]	1.7	[1.5,2.0]	2.5	[2.2,2.8]	1.8	[1.6,2.1]	1.6	[1.4,1.9]	16.0	[14.6,17.5]
Poorer (n=2,408)	2.8	[2.5,3.3]	3.0	[2.6,3.4]	2.6	[2.3,3.0]	2.4	[2.1,2.8]	1.9	[1.6,2.2]	2.3	[2.0,2.7]	2.0	[1.7,2.3]	1.5	[1.3,1.8]	18.5	[17.1,20.0]
Middle (n=2,249)	3.4	[3.0,3.9]	3.2	[2.8,3.7]	3.1	[2.7,3.5]	2.4	[2.1,2.7]	2.1	[1.8,2.5]	2.5	[2.1,2.8]	1.9	[1.7,2.2]	1.7	[1.4,2.0]	20.2	[18.9,21.6]
Richer (n=2,099)	3.6	[3.0,4.2]	3.7	[3.2,4.2]	3.2	[2.7,3.7]	2.7	[2.3,3.1]	2.2	[1.9,2.6]	2.8	[2.4,3.2]	2.2	[1.9,2.7]	1.4	[1.1,1.7]	21.8	[20.2,23.4]
Richest (n=2,012)	3.5	[3.1,4.1]	3.9	[3.4,4.4]	3.9	[3.3,4.7]	3.2	[2.8,3.7]	2.7	[2.3,3.2]	3.1	[2.7,3.6]	2.0	[1.6,2.4]	1.1	[0.8,1.4]	23.4	[21.3,25.8]
Total (n=11,135)	15.5	[14.6,16.4]	16.1	[15.3,16.9]	14.9	[14.1,15.7]	12.5	[11.7,13.3]	10.7	[10.0,11.4]	13.2	[12.5,13.9]	9.9	[9.2,10.5]	7.3	[6.8,7.8]	100.0	
Migrated																		
No (n=7,513)	9.2	[8.5,9.9]	8.7	[8.1,9.3]	8.5	[7.9,9.2]	7.3	[6.7,7.9]	6.5	[5.9,7.1]	7.7	[7.1,8.3]	5.9	[5.4,6.4]	4.5	[4.0,4.9]	58.2	[56.1,60.2]
Yes (n=3,622)	6.3	[5.6,7.1]	7.4	[6.7,8.1]	6.4	[5.8,7.0]	5.2	[4.7,5.8]	4.2	[3.8,4.8]	5.5	[4.9,6.1]	4.0	[3.6,4.5]	2.8	[2.5,3.2]	41.8	[39.8,43.9]
Total (n=11,135)	15.5	[14.6,16.4]	16.1	[15.3,16.9]	14.9	[14.1,15.7]	12.5	[11.7,13.3]	10.7	[10.0,11.4]	13.2	[12.5,13.9]	9.9	[9.2,10.5]	7.3	[6.8,7.8]	100.0	
Place of birth-type																		
Province center (n=2,616)	6.2	[5.6,6.8]	5.3	[4.8,6.0]	4.7	[4.1,5.3]	3.3	[2.9,3.7]	2.6	[2.2,3.1]	2.9	[2.4,3.4]	2.1	[1.7,2.5]	1.1	[0.8,1.4]	28.1	[26.4,29.9]
District center (n=2,551)	3.9	[3.4,4.5]	4.2	[3.7,4.7]	3.6	[3.2,4.1]	2.8	[2.4,3.3]	2.5	[2.2,2.9]	2.9	[2.5,3.3]	1.8	[1.5,2.2]	1.4	[1.1,1.7]	23.1	[21.7,24.6]
Sub-district/village (n=5,772)	5.6	[5.0,6.3]	6.2	[5.6,6.9]	6.5	[5.9,7.1]	6.3	[5.8,7.0]	5.6	[5.1,6.1]	7.6	[7.1,8.2]	6.0	[5.6,6.6]	4.9	[4.4,5.3]	48.8	[46.8,50.7]
Total (n=10,939)	15.6	[14.8,16.6]	15.8	[15.0,16.6]	14.7	[13.9,15.6]	12.5	[11.7,13.3]	10.7	[10.0,11.4]	13.4	[12.7,14.1]	10.0	[9.3,10.7]	7.3	[6.8,7.9]	100.0	
Birth Region																		
West (n=1,886)	3.7	[3.2,4.2]	3.6	[3.1,4.1]	3.7	[3.2,4.2]	2.7	[2.3,3.1]	2.5	[2.1,3.1]	3.1	[2.7,3.5]	2.4	[2.0,2.8]	1.7	[1.4,2.1]	23.3	[21.7,25.0]
South (n=1,357)	1.9	[1.6,2.2]	1.9	[1.6,2.3]	1.8	[1.6,2.1]	1.5	[1.3,1.7]	1.4	[1.1,1.6]	1.4	[1.2,1.6]	1.0	[0.8,1.3]	0.7	[0.5,0.9]	11.5	[10.6,12.5]
Central (n=2,523)	3.7	[3.3,4.2]	3.7	[3.3,4.2]	3.7	[3.3,4.2]	3.2	[2.9,3.7]	2.7	[2.4,3.1]	4.1	[3.7,4.5]	2.9	[2.5,3.4]	2.2	[1.8,2.5]	26.3	[25.1,27.4]
North (n=1,987)	1.7	[1.4,2.1]	2.1	[1.7,2.5]	1.9	[1.6,2.3]	1.8	[1.5,2.2]	1.6	[1.4,1.9]	2.1	[1.7,2.4]	1.3	[1.1,1.5]	1.3	[1.0,1.6]	13.8	[12.7,15.0]
East (n=3,175)	4.7	[4.1,5.3]	4.4	[4.0,4.9]	3.6	[3.3,4.1]	3.2	[2.8,3.7]	2.5	[2.2,2.9]	2.8	[2.4,3.2]	2.3	[2.0,2.7]	1.5	[1.3,1.8]	25.1	[23.5,26.8]
Total (n=10,928)	15.6	[14.8,16.6]	15.8	[15.0,16.6]	14.7	[13.9,15.6]	12.5	[11.7,13.3]	10.7	[10.1,11.4]	13.4	[12.7,14.1]	10.0	[9.3,10.6]	7.3	[6.8,7.9]	100.0	

Source: Author's own calculation using TDHS-2013.
Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. Significance level of confidence intervals is 0.05.

Table A.9: Share of Women by Circumstances and Age Cohorts, Column Percentages

	Age Groups (Cohorts)																	
	25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		Total	
	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI
Current Region																		
West (n=3,069)	40.2	[36.9,43.7]	44.5	[41.6,47.4]	45.0	[41.8,48.2]	45.5	[42.1,48.9]	44.4	[40.9,47.9]	42.6	[39.6,45.6]	45.6	[42.3,48.8]	42.2	[38.4,46.0]	43.7	[42.5,44.9]
South (n=1,535)	12.3	[10.4,14.4]	12.0	[10.3,13.8]	13.6	[11.7,15.7]	12.9	[11.2,14.9]	13.1	[11.3,15.2]	12.9	[11.3,14.6]	11.6	[9.6,13.9]	10.7	[8.8,13.0]	12.5	[11.7,13.3]
Central (n=2,278)	19.8	[17.5,22.3]	18.8	[16.8,21.0]	19.8	[17.4,22.4]	18.1	[15.8,20.7]	19.3	[16.9,21.9]	26.3	[24.0,28.7]	23.4	[20.6,26.5]	25.5	[22.3,28.9]	21.0	[20.1,21.9]
North (n=1,737)	6.5	[5.5,7.6]	7.7	[6.6,8.9]	6.7	[5.8,7.9]	8.1	[6.5,10.0]	8.8	[7.6,10.2]	7.8	[6.9,8.9]	8.4	[7.3,9.6]	9.9	[8.1,12.0]	7.8	[7.3,8.3]
East (n=2,516)	21.2	[19.2,23.4]	17.1	[15.4,18.9]	14.9	[13.4,16.5]	15.3	[13.0,17.9]	14.4	[12.4,16.7]	10.4	[9.0,12.0]	11.1	[9.4,13.1]	11.8	[9.6,14.4]	15.0	[14.4,15.7]
Total (n=11,135)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Current Residence																		
Urban (n=8,045)	83.6	[81.7,85.4]	83.2	[81.3,84.9]	83.0	[80.9,84.9]	79.2	[76.8,81.5]	74.8	[72.1,77.2]	77.5	[75.3,79.6]	74.8	[72.2,77.2]	70.0	[66.6,73.2]	79.3	[78.5,80.1]
Rural (n=3,090)	16.4	[14.6,18.3]	16.8	[15.1,18.7]	17.0	[15.1,19.1]	20.8	[18.5,23.2]	25.2	[22.8,27.9]	22.5	[20.4,24.7]	25.2	[22.8,27.8]	30.0	[26.8,33.4]	20.7	[19.9,21.5]
Total (n=11,135)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Current Wealth																		
Poorest (n=2,367)	13.9	[12.1,16.0]	14.6	[12.7,16.8]	14.1	[12.0,16.5]	14.2	[12.1,16.5]	16.2	[14.0,18.6]	18.7	[16.6,21.0]	18.4	[16.1,21.1]	22.1	[19.1,25.5]	16.0	[14.6,17.5]
Poorer (n=2,408)	18.3	[16.0,20.8]	18.4	[16.2,20.9]	17.4	[15.2,19.8]	19.4	[17.1,22.0]	17.7	[15.4,20.3]	17.5	[15.2,20.1]	19.9	[17.3,22.8]	21.1	[18.1,24.3]	18.5	[17.1,20.0]
Middle (n=2,249)	21.9	[19.3,24.8]	19.9	[17.3,22.7]	20.8	[18.4,23.4]	19.1	[16.8,21.5]	20.0	[17.4,22.8]	18.7	[16.3,21.3]	19.2	[16.6,22.2]	23.1	[19.5,27.0]	20.2	[18.9,21.6]
Richer (n=2,099)	23.0	[19.9,26.5]	23.0	[20.4,25.7]	21.3	[18.6,24.3]	21.6	[19.0,24.4]	21.0	[18.2,24.0]	21.2	[18.7,23.9]	22.6	[19.3,26.3]	19.0	[15.8,22.7]	21.8	[20.2,23.4]
Richest (n=2,012)	22.9	[19.9,26.2]	24.1	[21.2,27.3]	26.5	[22.6,30.8]	25.7	[22.6,29.2]	25.2	[21.5,29.3]	23.9	[21.0,27.0]	19.8	[16.5,23.5]	14.7	[11.3,19.0]	23.4	[21.3,25.8]
Total (n=11,135)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Migrated																		
No (n=7,513)	59.2	[55.4,62.8]	54.1	[50.8,57.4]	57.2	[54.1,60.2]	58.4	[54.9,61.7]	60.4	[56.6,64.1]	58.5	[54.6,62.4]	59.3	[55.6,62.9]	61.1	[56.8,65.3]	58.2	[56.1,60.2]
Yes (n=3,622)	40.8	[37.2,44.6]	45.9	[42.6,49.2]	42.8	[39.8,45.9]	41.6	[38.3,45.1]	39.6	[35.9,43.4]	41.5	[37.6,45.4]	40.7	[37.1,44.4]	38.9	[34.7,43.2]	41.8	[39.8,43.9]
Total (n=11,135)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Birth Place																		
Province center (n=2,616)	39.4	[36.2,42.7]	33.9	[30.5,37.4]	31.5	[28.4,34.8]	26.4	[23.6,29.4]	24.5	[21.3,28.1]	21.4	[18.4,24.8]	21.0	[17.7,24.8]	14.8	[11.7,18.5]	28.1	[26.4,29.9]
District center (n=2,551)	24.9	[21.9,28.2]	26.5	[24.0,29.2]	24.7	[21.9,27.7]	22.6	[19.7,25.9]	23.3	[20.6,26.3]	21.4	[18.7,24.4]	18.3	[15.7,21.3]	19.0	[15.7,22.9]	23.1	[21.7,24.6]
Sub-district/village (n=5,772)	35.7	[32.3,39.2]	39.6	[36.1,43.1]	43.8	[40.4,47.3]	50.9	[47.3,54.5]	52.2	[47.9,56.4]	57.2	[53.8,60.5]	60.7	[56.7,64.5]	66.2	[61.9,70.2]	48.8	[46.8,50.7]
Total (n=10,939)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
Birth Region																		
West (n=1,886)	23.4	[20.7,26.4]	22.7	[20.0,25.7]	24.9	[22.0,27.9]	21.4	[18.5,24.7]	23.5	[20.0,27.5]	23.0	[20.1,26.1]	24.2	[20.8,27.9]	23.2	[19.2,27.7]	23.3	[21.7,25.0]
South (n=1,357)	11.9	[10.0,14.0]	12.2	[10.3,14.4]	12.3	[10.6,14.1]	12.0	[10.4,13.8]	12.7	[10.6,15.1]	10.2	[8.7,12.0]	10.4	[8.5,12.7]	9.3	[7.3,11.9]	11.5	[10.6,12.5]
Central (n=2,523)	23.7	[21.2,26.5]	23.6	[21.4,26.0]	25.2	[22.6,27.9]	26.1	[23.2,29.1]	25.1	[22.2,28.3]	30.6	[28.0,33.4]	29.4	[26.0,33.0]	29.3	[25.8,33.2]	26.3	[25.1,27.4]
North (n=1,987)	11.1	[9.1,13.5]	13.4	[11.2,15.9]	13.0	[11.1,15.1]	14.6	[12.2,17.5]	15.2	[12.9,17.9]	15.4	[13.2,17.9]	13.0	[11.0,15.4]	17.2	[14.0,21.0]	13.8	[12.7,15.0]
East (n=3,175)	29.8	[26.7,33.2]	28.1	[25.4,30.9]	24.7	[22.1,27.5]	25.9	[23.1,28.9]	23.4	[20.4,26.8]	20.8	[18.2,23.7]	23.0	[19.8,26.5]	20.9	[17.6,24.7]	25.1	[23.5,26.8]
Total (n=10,928)	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	

Source: Author's own calculation using TDHS-2013.
Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. Significance level of confidence intervals is 0.05.

Table A.10: Average Education of Whole Sample aged 25-64 by Current Conditions and Circumstances

	Age Groups (Cohorts)																	
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**50-54**		**55-59**		**60-64**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
Sex of household member																		
Male (n=10,900)	10.1	[9.8,10.5]	9.1	[8.8,9.4]	8.7	[8.4,9.1]	7.9	[7.5,8.2]	7.7	[7.3,8.0]	7.6	[7.2,7.9]	7.0	[6.6,7.4]	6.4	[6.0,6.7]	8.3	[8.1,8.5]
Female (n=11,135)	8.6	[8.2,9.0]	7.6	[7.3,8.0]	6.9	[6.6,7.3]	6.0	[5.7,6.4]	5.6	[5.2,5.9]	5.2	[4.9,5.5]	4.5	[4.1,4.8]	3.6	[3.2,4.0]	6.3	[6.1,6.5]
Total (n=22,035)	9.4	[9.1,9.7]	8.4	[8.1,8.7]	7.8	[7.5,8.1]	7.0	[6.7,7.3]	6.7	[6.4,7.0]	6.3	[6.0,6.6]	5.7	[5.4,6.0]	5.0	[4.7,5.3]	7.3	[7.1,7.5]
Current Place																		
Urban (n=15,931)	9.7	[9.4,10.1]	8.8	[8.5,9.1]	8.2	[7.9,8.6]	7.5	[7.1,7.8]	7.2	[6.9,7.6]	6.8	[6.5,7.2]	6.2	[5.8,6.6]	5.7	[5.3,6.1]	7.8	[7.6,8.1]
Rural (n=6,104)	7.4	[6.9,7.8]	6.4	[6.0,6.7]	5.9	[5.5,6.3]	5.2	[4.8,5.5]	4.8	[4.4,5.1]	4.5	[4.2,4.8]	4.2	[3.7,4.6]	3.5	[3.1,3.8]	5.2	[5.0,5.5]
Total (n=22,035)	9.4	[9.1,9.7]	8.4	[8.1,8.7]	7.8	[7.5,8.1]	7.0	[6.7,7.3]	6.7	[6.4,7.0]	6.3	[6.0,6.6]	5.7	[5.4,6.0]	5.0	[4.7,5.3]	7.3	[7.1,7.5]
Current Region																		
West (n=6,122)	9.8	[9.3,10.3]	8.8	[8.4,9.2]	8.3	[7.8,8.8]	7.3	[6.8,7.8]	7.2	[6.6,7.7]	6.7	[6.1,7.2]	6.3	[5.8,6.8]	5.7	[5.2,6.3]	7.7	[7.4,8.1]
South (n=3,015)	8.8	[8.0,9.7]	8.0	[7.1,8.9]	7.5	[6.7,8.2]	7.2	[6.5,7.9]	6.1	[5.5,6.7]	5.9	[5.1,6.8]	5.0	[4.2,5.8]	4.9	[4.2,5.7]	6.9	[6.3,7.5]
Central (n=4,488)	10.3	[9.8,10.8]	9.0	[8.4,9.6]	8.2	[7.6,8.7]	7.7	[7.1,8.3]	7.4	[6.8,8.0]	7.0	[6.6,7.4]	6.2	[5.6,6.9]	5.3	[4.7,5.9]	7.8	[7.5,8.2]
North (n=3,406)	10.0	[9.5,10.5]	8.5	[8.0,9.0]	8.2	[7.7,8.8]	6.6	[6.1,7.1]	6.4	[5.9,6.9]	5.8	[5.2,6.3]	4.6	[4.0,5.2]	4.1	[3.4,4.8]	7.0	[6.6,7.3]
East (n=5,004)	7.7	[6.8,8.5]	6.8	[6.0,7.5]	6.0	[5.2,6.8]	5.3	[4.4,6.1]	4.6	[4.0,5.3]	4.0	[3.4,4.7]	3.8	[2.8,4.8]	2.9	[2.4,3.5]	5.7	[5.1,6.3]
Total (n=22,035)	9.4	[9.1,9.7]	8.4	[8.1,8.7]	7.8	[7.5,8.1]	7.0	[6.7,7.3]	6.7	[6.4,7.0]	6.3	[6.0,6.6]	5.7	[5.4,6.0]	5.0	[4.7,5.3]	7.3	[7.1,7.5]
Current Wealth																		
Poorest (n=4,748)	5.8	[5.4,6.3]	4.7	[4.4,5.1]	4.4	[4.2,4.7]	4.3	[4.0,4.6]	3.7	[3.5,4.0]	3.4	[3.1,3.7]	3.1	[2.8,3.3]	2.6	[2.3,2.9]	4.1	[3.9,4.3]
Poorer (n=4,739)	7.3	[6.8,7.7]	6.2	[5.8,6.5]	5.8	[5.5,6.1]	5.0	[4.8,5.3]	5.0	[4.7,5.4]	4.6	[4.2,4.9]	3.9	[3.6,4.3]	4.0	[3.7,4.4]	5.4	[5.3,5.6]
Middle (n=4,407)	8.9	[8.4,9.4]	7.7	[7.4,8.0]	6.9	[6.6,7.2]	6.0	[5.7,6.3]	5.7	[5.3,6.1]	5.4	[5.0,5.7]	5.3	[4.8,5.7]	4.6	[4.1,5.0]	6.6	[6.5,6.8]
Richer (n=4,129)	10.6	[10.2,11.0]	9.3	[9.0,9.7]	8.6	[8.2,9.0]	7.6	[7.2,8.0]	7.0	[6.7,7.4]	7.0	[6.6,7.4]	6.4	[5.8,6.9]	5.9	[5.4,6.4]	8.1	[7.9,8.3]
Richest (n=4,012)	12.6	[12.1,13.0]	12.2	[11.8,12.7]	11.1	[10.6,11.5]	10.3	[9.7,10.9]	10.2	[9.6,10.8]	9.6	[9.1,10.2]	9.3	[8.6,10.0]	9.5	[8.7,10.2]	10.8	[10.5,11.2]
Total (n=22,035)	9.4	[9.1,9.7]	8.4	[8.1,8.7]	7.8	[7.5,8.1]	7.0	[6.7,7.3]	6.7	[6.4,7.0]	6.3	[6.0,6.6]	5.7	[5.4,6.0]	5.0	[4.7,5.3]	7.3	[7.1,7.5]
Birth Place																		
Province center (n=5,090)	11.0	[10.6,11.4]	10.2	[9.8,10.6]	9.6	[9.2,10.0]	9.1	[8.5,9.6]	8.7	[8.2,9.3]	9.1	[8.5,9.6]	8.6	[8.0,9.3]	8.1	[7.4,8.9]	9.7	[9.4,10.0]
District center (n=5,043)	9.6	[9.1,10.0]	8.8	[8.4,9.3]	8.5	[8.0,9.0]	7.8	[7.4,8.3]	7.5	[6.9,8.0]	7.2	[6.7,7.7]	6.9	[6.3,7.6]	6.2	[5.5,6.9]	8.1	[7.8,8.4]

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Table A.10 – *Continued from previous page*

	Age Category																	
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**50-54**		**55-59**		**60-64**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
Sub-district/village (n=11,546)	7.2	[6.9,7.5]	6.5	[6.2,6.7]	6.0	[5.8,6.3]	5.4	[5.2,5.6]	5.3	[5.1,5.5]	4.8	[4.6,5.1]	4.3	[4.1,4.6]	3.9	[3.7,4.2]	5.4	[5.3,5.6]
Total (n=21,679)	9.3	[9.0,9.6]	8.3	[8.0,8.6]	7.7	[7.4,8.0]	6.9	[6.6,7.2]	6.6	[6.3,6.9]	6.2	[5.9,6.5]	5.7	[5.4,6.0]	5.0	[4.7,5.3]	7.2	[7.0,7.4]
Migrated																		
No (n=15,067)	9.2	[8.9,9.5]	8.1	[7.7,8.4]	7.5	[7.2,7.7]	6.7	[6.5,7.0]	6.2	[5.9,6.5]	5.9	[5.6,6.1]	5.4	[5.1,5.7]	4.6	[4.3,4.9]	7.0	[6.8,7.1]
Yes (n=6,968)	9.6	[9.1,10.1]	8.8	[8.4,9.2]	8.3	[7.8,8.7]	7.3	[6.8,7.8]	7.3	[6.8,7.9]	6.9	[6.3,7.4]	6.1	[5.6,6.7]	5.8	[5.2,6.4]	7.8	[7.4,8.1]
Total (n=22,035)	9.4	[9.1,9.7]	8.4	[8.1,8.7]	7.8	[7.5,8.1]	7.0	[6.7,7.3]	6.7	[6.4,7.0]	6.3	[6.0,6.6]	5.7	[5.4,6.0]	5.0	[4.7,5.3]	7.3	[7.1,7.5]
Birth Region																		
West (n=3,732)	10.9	[10.5,11.4]	9.4	[9.0,9.9]	8.8	[8.2,9.4]	8.1	[7.6,8.6]	7.7	[7.1,8.3]	7.0	[6.6,7.5]	6.5	[6.1,7.0]	5.9	[5.4,6.4]	8.4	[8.0,8.7]
South (n=2,649)	9.8	[9.2,10.5]	9.1	[8.3,9.8]	8.0	[7.5,8.6]	7.2	[6.7,7.7]	6.4	[5.8,7.1]	6.3	[5.6,6.9]	5.5	[4.7,6.3]	5.9	[4.9,6.9]	7.6	[7.2,8.1]
Central (n=4,985)	10.2	[9.7,10.6]	8.9	[8.4,9.4]	8.1	[7.7,8.6]	7.5	[7.0,8.0]	7.2	[6.8,7.6]	6.8	[6.4,7.2]	6.4	[5.8,7.0]	5.3	[4.7,5.8]	7.7	[7.5,8.0]
North (n=3,948)	9.5	[9.0,10.0]	8.4	[8.0,8.9]	7.9	[7.5,8.4]	6.7	[6.3,7.2]	6.3	[5.8,6.8]	6.1	[5.6,6.6]	5.1	[4.5,5.7]	4.2	[3.6,4.7]	6.9	[6.7,7.2]
East (n=6,340)	7.2	[6.6,7.7]	6.5	[6.1,7.0]	6.0	[5.5,6.6]	5.2	[4.7,5.7]	5.1	[4.7,5.5]	4.5	[3.9,5.0]	4.2	[3.7,4.8]	3.8	[3.2,4.4]	5.7	[5.3,6.0]
Total (n=21,654)	9.3	[9.0,9.7]	8.3	[8.0,8.6]	7.7	[7.4,8.0]	6.9	[6.6,7.2]	6.6	[6.3,6.9]	6.2	[5.9,6.5]	5.7	[5.4,6.0]	5.0	[4.7,5.3]	7.2	[7.0,7.4]

Source: Author's own calculation using TDHS-2013.
Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHs-2013. Significance level of confidence intervals is 0.05.

Table A.11: Average Education of Women aged 25-49 by Circumstances

	Age Groups (Cohorts)											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
Mother's Education												
Below Primary (n=4,414)	5.7	[5.3,6.2]	5.6	[5.2,5.9]	5.4	[5.1,5.7]	5.0	[4.7,5.3]	4.6	[4.3,4.9]	5.3	[5.1,5.4]
Primary (n=1,970)	9.9	[9.6,10.3]	9.1	[8.7,9.6]	8.6	[8.1,9.2]	7.9	[7.3,8.4]	7.9	[7.1,8.6]	8.9	[8.6,9.2]
Lower Sec/More (n=463)	12.9	[12.3,13.5]	12.5	[11.6,13.3]	11.7	[10.8,12.6]	10.3	[8.7,11.9]	10.2	[8.0,12.5]	12.1	[11.6,12.5]
Total (n=6,847)	8.3	[7.9,8.7]	7.6	[7.2,7.9]	6.9	[6.5,7.2]	6.0	[5.7,6.4]	5.5	[5.1,5.9]	7.0	[6.8,7.2]
Father's Education												
Below Primary (n=2,037)	4.7	[4.0,5.4]	4.7	[4.2,5.1]	4.6	[4.3,5.0]	4.1	[3.8,4.5]	3.8	[3.4,4.1]	4.4	[4.1,4.6]
Primary (n=3,295)	8.0	[7.6,8.4]	7.1	[6.7,7.4]	6.9	[6.5,7.3]	6.3	[6.0,6.7]	6.2	[5.7,6.7]	7.0	[6.8,7.2]
Lower Sec/More (n=1,515)	11.2	[10.7,11.7]	10.9	[10.4,11.5]	9.6	[9.0,10.3]	8.7	[7.8,9.6]	8.0	[7.0,9.1]	10.1	[9.7,10.5]
Total (n=6,847)	8.3	[7.9,8.7]	7.6	[7.2,7.9]	6.9	[6.5,7.2]	6.0	[5.7,6.4]	5.5	[5.1,5.9]	7.0	[6.8,7.2]
Mother Tongue												
Turkish (n=5,397)	9.4	[9.1,9.8]	8.5	[8.2,8.9]	7.6	[7.2,8.0]	6.6	[6.3,6.9]	6.1	[5.6,6.5]	7.8	[7.5,8.0]
Other (n=1,450)	4.1	[3.5,4.8]	3.9	[3.3,4.5]	3.5	[2.9,4.1]	3.3	[2.5,4.2]	2.5	[1.8,3.3]	3.6	[3.3,4.0]
Total (n=6,847)	8.3	[7.9,8.7]	7.6	[7.2,7.9]	6.9	[6.5,7.2]	6.0	[5.7,6.4]	5.5	[5.1,5.9]	7.0	[6.8,7.2]
Siblingsize												
Three or Less (n=1,767)	10.7	[10.3,11.2]	10.4	[9.9,10.9]	9.3	[8.7,9.8]	8.8	[8.1,9.5]	7.3	[6.4,8.2]	9.7	[9.3,10.0]
Four or Five (n=2,227)	8.3	[7.8,8.7]	7.6	[7.1,8.1]	7.0	[6.6,7.5]	6.6	[6.2,7.0]	5.8	[5.3,6.3]	7.1	[6.9,7.4]
Six or More (n=2,853)	5.2	[4.7,5.7]	5.2	[4.7,5.6]	4.8	[4.5,5.1]	4.4	[4.0,4.8]	4.3	[3.8,4.7]	4.8	[4.5,5.0]
Total (n=6,847)	8.3	[7.9,8.7]	7.6	[7.2,7.9]	6.9	[6.5,7.2]	6.0	[5.7,6.4]	5.5	[5.1,5.9]	7.0	[6.8,7.2]
Birth Place												
Province (n=1,738)	10.2	[9.6,10.7]	9.6	[9.1,10.0]	9.1	[8.5,9.7]	8.3	[7.7,9.0]	8.0	[7.1,8.9]	9.2	[8.9,9.6]
District (n=1,595)	9.2	[8.6,9.8]	8.3	[7.7,8.9]	7.6	[7.0,8.2]	7.2	[6.5,7.9]	6.6	[5.9,7.4]	8.0	[7.6,8.3]
Subdistrict/village (n=3,393)	5.9	[5.6,6.3]	5.2	[4.9,5.5]	4.9	[4.6,5.2]	4.2	[4.0,4.5]	3.9	[3.7,4.2]	4.8	[4.7,5.0]
Total (n=6,726)	8.3	[7.9,8.6]	7.4	[7.1,7.8]	6.7	[6.4,7.1]	5.9	[5.6,6.2]	5.5	[5.1,5.9]	6.9	[6.7,7.1]
Birth Region												
West (n=1,095)	10.4	[9.8,11.0]	8.9	[8.3,9.5]	8.1	[7.4,8.8]	7.6	[7.0,8.2]	6.9	[6.0,7.8]	8.5	[8.1,8.9]
South (n=885)	8.7	[7.8,9.6]	7.8	[7.0,8.5]	7.0	[6.3,7.6]	6.7	[6.0,7.4]	5.5	[4.8,6.3]	7.2	[6.8,7.7]
Central (n=1,475)	9.3	[8.7,9.9]	8.2	[7.6,8.9]	7.1	[6.7,7.6]	6.2	[5.6,6.8]	5.9	[5.3,6.5]	7.5	[7.1,7.8]
North (n=1,186)	8.8	[8.0,9.6]	7.9	[7.4,8.5]	7.2	[6.5,7.8]	5.6	[5.1,6.2]	5.5	[4.6,6.4]	7.0	[6.7,7.4]
East (n=2,065)	5.5	[4.9,6.1]	5.1	[4.5,5.7]	4.6	[4.0,5.1]	3.8	[3.1,4.5]	3.5	[2.9,4.0]	4.6	[4.3,5.0]
Total (n=6,706)	8.3	[7.9,8.7]	7.4	[7.1,7.7]	6.7	[6.4,7.1]	5.9	[5.6,6.2]	5.5	[5.1,5.8]	6.9	[6.6,7.1]
Childhood Place												
Province (n=2,055)	10.0	[9.5,10.6]	9.6	[9.1,10.1]	8.8	[8.2,9.4]	7.9	[7.3,8.5]	7.8	[7.0,8.6]	9.0	[8.7,9.4]
District (n=1,534)	8.8	[8.2,9.5]	8.0	[7.3,8.7]	7.7	[7.0,8.3]	6.9	[6.3,7.6]	6.2	[5.4,7.0]	7.7	[7.4,8.1]
Subdistrict/village (n=3,150)	5.8	[5.4,6.2]	5.0	[4.7,5.3]	4.8	[4.5,5.0]	4.2	[3.9,4.4]	3.7	[3.4,3.9]	4.7	[4.5,4.8]
Total (n=6,739)	8.3	[7.9,8.7]	7.5	[7.1,7.8]	6.8	[6.4,7.1]	5.9	[5.6,6.2]	5.4	[5.1,5.8]	6.9	[6.7,7.1]
Childhood Region												
West (n=1,232)	10.1	[9.5,10.7]	9.0	[8.4,9.6]	8.2	[7.5,8.9]	7.5	[6.9,8.0]	7.0	[6.2,7.9]	8.5	[8.1,8.9]
South (n=936)	8.6	[7.5,9.6]	7.6	[6.8,8.4]	6.9	[6.2,7.5]	6.6	[5.9,7.3]	5.6	[4.8,6.4]	7.1	[6.6,7.6]
Central (n=1,450)	9.3	[8.8,9.8]	8.2	[7.5,8.9]	7.2	[6.7,7.7]	6.2	[5.6,6.9]	5.8	[5.2,6.4]	7.4	[7.1,7.8]
North (n=1,152)	8.9	[8.1,9.7]	8.0	[7.4,8.5]	6.8	[6.3,7.3]	5.6	[5.1,6.0]	5.3	[4.3,6.2]	6.9	[6.5,7.3]
East (n=1,958)	5.2	[4.6,5.8]	5.0	[4.4,5.6]	4.6	[4.0,5.1]	3.6	[2.8,4.4]	3.4	[2.8,3.9]	4.5	[4.1,4.9]
Total (n=6,728)	8.3	[7.9,8.7]	7.5	[7.1,7.8]	6.8	[6.4,7.1]	5.9	[5.6,6.2]	5.4	[5.1,5.8]	6.9	[6.7,7.1]

Source: Author's own calculation based on TDHS-2013.
Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHS-2013. Significance level of confidence intervals is 0.05.

Table A.12: Average Education of the Women aged 25-49 by Current Conditions

	Age Groups (Cohorts)											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
Current Region												
West (n=1,810)	8.9	[8.2,9.6]	8.3	[7.7,8.9]	7.6	[7.0,8.2]	6.6	[6.1,7.2]	6.2	[5.5,7.0]	7.6	[7.2,8.0]
South (n=966)	7.8	[6.5,9.0]	7.1	[6.2,8.0]	6.7	[5.9,7.6]	6.3	[5.6,7.0]	5.7	[4.8,6.7]	6.8	[6.1,7.5]
Central (n=1,327)	9.4	[8.9,9.9]	8.2	[7.4,9.0]	7.1	[6.5,7.6]	6.6	[5.8,7.3]	5.9	[5.3,6.5]	7.6	[7.2,8.0]
North (n=1,050)	9.4	[8.5,10.3]	7.9	[7.2,8.5]	7.3	[6.6,8.1]	5.4	[4.8,6.0]	4.8	[4.2,5.4]	7.0	[6.5,7.5]
East (n=1,694)	6.2	[5.4,7.0]	5.2	[4.4,6.0]	4.5	[3.7,5.2]	3.7	[2.7,4.8]	3.3	[2.4,4.2]	4.8	[4.2,5.5]
Total (n=6,847)	8.3	[7.9,8.7]	7.6	[7.2,7.9]	6.9	[6.5,7.2]	6.0	[5.7,6.4]	5.5	[5.1,5.9]	7.0	[6.8,7.2]
Current Residence												
Urban (n=5,073)	8.8	[8.3,9.2]	8.0	[7.6,8.4]	7.3	[6.9,7.7]	6.5	[6.1,6.9]	6.2	[5.7,6.7]	7.5	[7.2,7.8]
Rural (n=1,774)	6.1	[5.6,6.7]	5.5	[5.0,6.0]	5.0	[4.5,5.5]	4.2	[3.8,4.5]	3.7	[3.2,4.1]	4.9	[4.5,5.2]
Total (n=6,847)	8.3	[7.9,8.7]	7.6	[7.2,7.9]	6.9	[6.5,7.2]	6.0	[5.7,6.4]	5.5	[5.1,5.9]	7.0	[6.8,7.2]
Current Wealth												
Poorest (n=1,362)	4.3	[3.8,4.8]	3.5	[3.1,4.0]	3.5	[3.1,3.9]	3.1	[2.8,3.5]	2.7	[2.3,3.0]	3.5	[3.2,3.7]
Poorer (n=1,478)	5.8	[5.3,6.4]	4.9	[4.5,5.3]	4.9	[4.6,5.2]	4.3	[3.9,4.6]	3.9	[3.4,4.4]	4.8	[4.6,5.1]
Middle (n=1,395)	7.6	[7.0,8.3]	6.6	[6.1,7.0]	5.8	[5.4,6.2]	5.0	[4.5,5.4]	4.6	[4.0,5.1]	6.1	[5.8,6.3]
Richer (n=1,312)	9.7	[9.2,10.2]	8.7	[8.1,9.2]	7.4	[6.8,8.0]	6.7	[6.2,7.2]	5.8	[5.3,6.3]	7.8	[7.6,8.1]
Richest (n=1,300)	12.4	[11.8,12.9]	12.0	[11.5,12.5]	10.6	[10.0,11.2]	9.4	[8.6,10.2]	9.3	[8.5,10.2]	10.9	[10.5,11.2]
Total (n=6,847)	8.3	[7.9,8.7]	7.6	[7.2,7.9]	6.9	[6.5,7.2]	6.0	[5.7,6.4]	5.5	[5.1,5.9]	7.0	[6.8,7.2]
Migrated												
No (n=4,554)	8.1	[7.8,8.5]	7.1	[6.7,7.5]	6.5	[6.1,6.8]	5.9	[5.6,6.3]	5.2	[4.8,5.5]	6.7	[6.4,6.9]
Yes (n=2,293)	8.6	[7.9,9.2]	8.2	[7.6,8.8]	7.4	[6.9,7.9]	6.2	[5.7,6.7]	6.2	[5.5,6.9]	7.5	[7.1,7.9]
Total (n=6,847)	8.3	[7.9,8.7]	7.6	[7.2,7.9]	6.9	[6.5,7.2]	6.0	[5.7,6.4]	5.5	[5.1,5.9]	7.0	[6.8,7.2]

Source: Author's own calculation based on TDHS-2013.
Note: Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sampling weights of the TDHS-2013. Significance level of confidence intervals is 0.05.

Table A.13: Share of Adult Population by Education Level and Age Group

Education Level	Age Group (Cohorts)																	
	25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		Total	
	Col %	Cum %	Col %	Cum %	Col %	Cum %	Col %	Cum %	Col %	Cum %	Col %	Cum %	Col %	Cum %	Col %	Cum %	Col %	Cum %
All Population																		
No education	5.3	5.3	5.6	5.6	4.9	4.9	8.3	8.3	10.6	10.6	14.0	14.0	18.3	18.3	24.2	24.2	10.0	10.0
Incomplete primary	3.6	8.8	3.5	9.1	2.6	7.5	2.6	10.9	4.0	14.6	4.4	18.4	5.8	24.1	7.0	31.2	3.9	13.9
Complete primary	19.8	28.6	32.1	41.2	42.1	49.6	46.5	57.3	47.1	61.8	45.4	63.8	46.8	70.9	43.4	74.6	39.1	53.0
Incomplete secondary	20.8	49.4	17.1	58.4	14.8	64.4	15.6	72.9	13.5	75.3	12.0	75.8	9.3	80.2	9.8	84.4	14.8	67.8
Complete secondary	19.8	69.2	20.5	78.9	18.6	83.0	14.7	87.6	12.7	88.0	15.0	90.7	10.2	90.4	7.8	92.2	15.9	83.7
Higher	30.8	100.0	21.1	100.0	17.0	100.0	12.4	100.0	12.0	100.0	9.3	100.0	9.6	100.0	7.8	100.0	16.3	100.0
Total	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
N	3,353		3,492		3,146		2,886		2,558		2,713		2,078		1,751		21,977	
Men																		
No education	2.4	2.4	2.4	2.4	1.4	1.4	2.8	2.8	3.4	3.4	4.1	4.1	6.8	6.8	8.4	8.4	3.5	3.5
Incomplete primary	2.1	4.5	2.2	4.7	2.1	3.5	1.4	4.2	2.5	5.9	2.7	6.8	3.6	10.4	5.6	14.1	2.6	6.1
Complete primary	15.2	19.7	26.0	30.7	34.1	37.6	42.7	47.0	45.0	50.9	43.8	50.5	48.6	59.0	49.9	64.0	36.0	42.1
Incomplete secondary	24.5	44.2	21.0	51.6	18.5	56.1	19.8	66.7	19.1	70.0	17.5	68.0	13.8	72.8	15.4	79.4	19.3	61.4
Complete secondary	20.8	65.0	26.2	77.8	23.0	79.1	17.7	84.5	14.4	84.4	19.2	87.2	14.4	87.2	10.7	90.1	19.2	80.6
Higher	35.0	100.0	22.2	100.0	20.9	100.0	15.5	100.0	15.6	100.0	12.8	100.0	12.8	100.0	9.9	100.0	19.4	100.0
Total	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
N	1,649		1,739		1,533		1,463		1,322		1,262		994		900		10,862	
Women																		
No education	8.0	8.0	8.8	8.8	8.3	8.3	14.0	14.0	18.6	18.6	22.6	22.6	29.1	29.1	41.1	41.1	16.5	16.5
Incomplete primary	5.0	13.1	4.7	13.5	3.0	11.3	3.8	17.8	5.6	24.2	5.9	28.5	7.9	37.0	8.4	49.5	5.2	21.7
Complete primary	24.2	37.3	38.3	51.9	49.8	61.1	50.4	68.2	49.5	73.7	46.8	75.2	45.1	82.1	36.4	86.0	42.2	63.9
Incomplete secondary	17.1	54.4	13.3	65.1	11.2	72.3	11.1	79.4	7.4	81.1	7.2	82.5	5.0	87.1	3.9	89.9	10.4	74.3
Complete secondary	18.8	73.2	14.8	79.9	14.5	86.8	11.5	90.8	10.9	92.0	11.3	93.8	6.2	93.3	4.7	94.6	12.5	86.8
Higher	26.8	100.0	20.1	100.0	13.2	100.0	9.2	100.0	8.0	100.0	6.2	100.0	6.7	100.0	5.4	100.0	13.2	100.0
Total	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	
N	1,704		1,753		1,613		1,423		1,236		1,451		1,084		851		11,115	

Source: Author's own calculation using TDHS-2013

Table A.14: Educational Inequality (GE2) of the Women aged 25-49 by Cohorts

	Age Group (Cohorts)					
	25-29	**30-34**	**35-39**	**40-44**	**45-49**	$R_{25-29/60-64}$
Total	0.150	0.178	0.745	0.221	0.269	0.557
	Current Conditions					
Current Region						
West	0.120	0.132	0.129	0.176	0.205	0.588
South	0.165	0.170	0.175	0.163	0.296	0.557
Central	0.082	0.158	0.141	0.159	0.185	0.441
North	0.092	0.133	0.161	0.020	0.253	0.363
East	0.327	0.040	0.440	0.677	0.766	0.426
Current Residence						
Urban	0.133	0.160	0.159	0.197	0.226	0.588
Rural	0.222	0.242	0.219	0.248	0.353	0.631
Current Wealth						
Poorest	0.307	0.340	0.263	0.306	0.452	0.678
Poorer	0.200	0.179	0.147	0.210	0.307	0.650
Middle	0.140	0.130	0.108	0.196	0.202	0.690
Richer	0.076	0.092	0.132	0.132	0.134	0.565
Richest	0.033	0.047	0.064	0.096	0.108	0.309
	Early Life Circumstances					
Birth Place						
Province	0.086	0.105	0.107	0.121	0.134	0.646
District	0.117	0.157	0.134	0.166	0.220	0.532
Sub-district/Village	0.202	0.197	0.178	0.225	0.283	0.715
Childhood Place						
Province	0.089	0.107	0.117	0.141	0.147	0.607
District	0.130	0.169	0.137	0.175	0.227	0.570
Sub-district/Village	0.212	0.187	0.167	0.215	0.270	0.785
Birth Region						
West	0.066	0.104	0.118	0.123	0.154	0.427
South	0.115	0.134	0.134	0.139	0.258	0.446
Central	0.088	0.136	0.129	0.144	0.201	0.439
North	0.094	0.110	0.140	0.173	0.246	0.384
East	0.348	0.397	0.365	0.613	0.611	0.570
Childhood Region						
West	0.080	0.106	0.118	0.131	0.154	0.521
South	0.132	0.145	0.144	0.152	0.268	0.491
Central	0.082	0.146	0.131	0.143	0.200	0.410
North	0.094	0.112	0.136	0.155	0.258	0.363
East	0.322	0.404	0.382	0.657	0.602	0.535
Father's Education						
Less Than Primary	0.342	0.291	0.221	0.283	0.304	1.125
Primary	0.122	0.150	0.130	0.159	0.193	0.633
Lower Sec and More	0.064	0.081	0.117	0.157	0.203	0.314
Mother's Education						
Less Than Primary	0.239	0.220	0.178	0.264	0.300	0.798
Primary	0.065	0.102	0.109	0.106	0.117	0.561
Lower Sec and More	0.030	0.045	0.054	0.118	0.140	0.217
Mother Tongue						
Turkish	0.09	0.120	0.12	0.16	0.21	0.420
Other	0.5	0.482	0.53	0.82	0.97	0.520

Source: Author's own calculation based on TDHS-2013.
Note: Education inequality is measured by General Entropy Index with $alpha = 2$.

Table A.15: Educational Inequality (GINI) of the Women aged 25-49

	Age Groups (Cohorts)					
	25-29	**30-34**	**35-39**	**40-44**	**45-49**	$R_{25-29/45-49}$
Total	0.309	0.329	0.308	0.345	0.380	0.812
	Current Conditions					
Current Region						
West	0.275	0.287	0.268	0.306	0.328	0.840
South	0.323	0.315	0.304	0.289	0.405	0.797
Central	0.227	0.307	0.252	0.283	0.299	0.758
North	0.241	0.269	0.294	0.303	0.342	0.706
East	0.452	0.483	0.494	0.596	0.629	0.718
Current Residence						
Urban	0.291	0.315	0.299	0.332	0.352	0.826
Rural	0.364	0.350	0.294	0.332	0.425	0.855
Current Wealth						
Poorest	0.425	0.428	0.359	0.395	0.498	0.853
Poorer	0.342	0.290	0.240	0.320	0.395	0.865
Middle	0.294	0.263	0.207	0.314	0.299	0.982
Richer	0.218	0.240	0.268	0.261	0.250	0.871
Richest	0.137	0.168	0.199	0.246	0.258	0.533
	Early Life Circumstances					
Birth Place						
Province	0.230	0.258	0.257	0.271	0.284	0.810
District	0.272	0.317	0.278	0.310	0.352	0.773
Subdistrict/Village	0.345	0.311	0.268	0.323	0.367	0.940
Childhood Place						
Province	0.235	0.259	0.268	0.293	0.297	0.793
District	0.287	0.328	0.282	0.313	0.351	0.818
Subdistrict/Village	0.351	0.294	0.257	0.311	0.364	0.965
Birth Region						
West	0.203	0.252	0.258	0.255	0.281	0.724
South	0.270	0.276	0.256	0.257	0.373	0.724
Central	0.235	0.284	0.243	0.259	0.319	0.736
North	0.242	0.249	0.265	0.275	0.334	0.724
East	0.460	0.479	0.454	0.577	0.566	0.813
Childhood Region						
West	0.23	0.26	0.26	0.27	0.28	0.799
South	0.29	0.29	0.27	0.27	0.38	0.756
Central	0.23	0.29	0.25	0.26	0.32	0.715
North	0.24	0.25	0.25	0.26	0.34	0.719
East	0.46	0.48	0.47	0.59	0.57	0.814
Father's Education						
Less Than Primary	0.45	0.4	0.32	0.38	0.39	1.147
Primary	0.27	0.29	0.26	0.29	0.32	0.867
Lower Sec and More	0.19	0.22	0.27	0.31	0.36	0.537
Mother's Education						
Less Than Primary	0.38	0.35	0.29	0.36	0.39	0.970
Primary	0.2	0.25	0.25	0.25	0.26	0.796
Lower Sec and More	0.13	0.16	0.18	0.27	0.29	0.429
Mother Tongue						
Turkish	0.24	0.27	0.26	0.28	0.33	0.716
Other	0.53	0.52	0.53	0.63	0.67	0.793

Source: Author's own calculation based on TDHS-2013.
Note: $R_{25-29/45-49}$ is the ratio of $GINI_{25-29}$ to $GINI_{45-49}$. It measures the improvement over time.

Table A.16: Educational Inequality (GE2) of the Adult Population Aged 25-64 by Current Conditions and Circumstances

	Age Groups (Cohorts)								
	25-29	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	$R_{25-29/60-64}$
Total	0.110	0.137	0.138	0.172	0.199	0.219	0.276	0.335	0.329
Sex									
Male	0.077	0.099	0.101	0.123	0.138	0.134	0.168	0.179	0.427
Female	0.146	0.180	0.173	0.228	0.277	0.305	0.401	0.599	0.244
Current Region									
West	0.092	0.111	0.108	0.145	0.164	0.176	0.208	0.247	0.374
South	0.116	0.140	0.138	0.139	0.212	0.230	0.354	0.361	0.321
Central	0.067	0.114	0.118	0.139	0.154	0.170	0.209	0.307	0.219
North	0.070	0.113	0.122	0.175	0.192	0.256	0.439	0.450	0.156
East	0.215	0.260	0.293	0.375	0.425	0.628	0.750	0.804	0.268
Current Residence									
Urban	0.099	0.124	0.126	0.155	0.176	0.192	0.238	0.294	0.337
Rural	0.160	0.183	0.171	0.206	0.236	0.273	0.374	0.361	0.443
Current Wealth									
Poorest	0.234	0.254	0.193	0.234	0.275	0.338	0.390	0.500	0.467
Poorer	0.153	0.155	0.121	0.162	0.203	0.234	0.319	0.299	0.511
Middle	0.098	0.104	0.111	0.142	0.163	0.186	0.219	0.267	0.369
Richer	0.059	0.081	0.094	0.118	0.127	0.130	0.179	0.213	0.279
Richest	0.031	0.045	0.059	0.079	0.094	0.097	0.116	0.125	0.249
Birthplace									
Province	0.063	0.086	0.094	0.106	0.121	0.099	0.124	0.143	0.441
District	0.096	0.118	0.114	0.145	0.175	0.173	0.220	0.266	0.363
Subdistrict/Village	0.162	0.170	0.152	0.183	0.215	0.245	0.314	0.380	0.427
Birth Region									
West	0.060	0.092	0.101	0.118	0.135	0.130	0.162	0.176	0.341
South	0.086	0.117	0.121	0.130	0.215	0.188	0.313	0.307	0.282
Central	0.069	0.104	0.113	0.134	0.151	0.168	0.207	0.301	0.231
North	0.074	0.103	0.104	0.143	0.192	0.215	0.373	0.397	0.185
East	0.222	0.249	0.245	0.330	0.346	0.500	0.535	0.660	0.336
Migrated									
No	0.11	0.142	0.145	0.173	0.196	0.214	0.288	0.337	0.325
Yes	0.112	0.132	0.129	0.173	0.191	0.222	0.262	0.32	0.349

Source: Author's own calculation based on TDHS-2013
Note: $R_{25-29/60-64}$ is the ratio of $GE(2)_{25-29}$ to $GE(2)_{60-64}$. It measures the improvement over time.

Table A.17: Educational Inequality (GINI) of the Adult Population by Current Conditions and Circumstances

	Age Groups (Cohorts)								
	25-29	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	$R_{25-29/60-64}$
Total	0.265	0.292	0.286	0.311	0.334	0.354	0.392	0.431	0.614
Sex									
Male	0.220	0.248	0.250	0.266	0.278	0.277	0.305	0.309	0.712
Female	0.306	0.332	0.309	0.351	0.389	0.411	0.464	0.558	0.548
Current Region									
West	0.242	0.263	0.254	0.282	0.304	0.316	0.333	0.367	0.659
South	0.271	0.292	0.281	0.276	0.336	0.359	0.452	0.451	0.601
Central	0.205	0.267	0.260	0.281	0.294	0.312	0.335	0.408	0.503
North	0.209	0.261	0.267	0.300	0.312	0.367	0.496	0.495	0.424
East	0.373	0.402	0.415	0.466	0.486	0.580	0.618	0.635	0.588
Current Residence									
Urban	0.250	0.279	0.276	0.301	0.319	0.338	0.371	0.412	0.607
Rural	0.316	0.316	0.282	0.304	0.336	0.355	0.421	0.433	0.729
Current Wealth									
Poorest	0.378	0.372	0.302	0.331	0.372	0.421	0.454	0.519	0.729
Poorer	0.307	0.295	0.235	0.278	0.321	0.346	0.409	0.400	0.767
Middle	0.249	0.248	0.244	0.270	0.282	0.314	0.342	0.377	0.660
Richer	0.193	0.226	0.240	0.258	0.265	0.268	0.312	0.345	0.559
Richest	0.133	0.163	0.191	0.223	0.242	0.244	0.268	0.280	0.477
Birthplace									
Province/District	0.196	0.232	0.243	0.256	0.273	0.246	0.275	0.297	0.661
District	0.246	0.273	0.263	0.292	0.355	0.324	0.362	0.394	0.625
Subdistrict/Village	0.318	0.310	0.272	0.298	0.322	0.355	0.400	0.445	0.714
Birth Region									
West	0.194	0.239	0.248	0.257	0.276	0.262	0.283	0.290	0.668
South	0.235	0.268	0.263	0.262	0.333	0.318	0.425	0.418	0.561
Central	0.209	0.254	0.252	0.269	0.291	0.307	0.334	0.405	0.517
North	0.216	0.249	0.242	0.268	0.310	0.340	0.454	0.465	0.464
East	0.378	0.391	0.376	0.436	0.441	0.537	0.541	0.598	0.632
Migrated									
No	0.264	0.295	0.29	0.031	0.326	0.342	0.277	0.427	0.617
Yes	0.266	0.289	0.028	0.316	0.336	0.366	0.002	0.433	0.615

Source: Author's own calculation based on TDHS-2013.
Note: $R_{25-29/60-64}$ is the ratio of $GINI_{25-29}$ to $GINI_{60-64}$. It measures the improvement over time.

Table A.18: Decomposition of Educational Inequality (GE2) of the Adult Population aged 25-64

	Age Groups (Cohorts)							
	25-29	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**
Total	0.110	0.137	0.138	0.172	0.199	0.219	0.276	0.335
Sex								
Within	0.107	0.133	0.132	0.164	0.187	0.201	0.250	0.297
Between	0.004	0.004	0.007	0.009	0.013	0.018	0.025	0.038
Between pct	3.175	3.126	4.775	5.067	6.273	8.159	9.160	11.323
Current Region								
Within	0.105	0.133	0.133	0.166	0.190	0.209	0.264	0.319
Between	0.005	0.005	0.006	0.006	0.009	0.010	0.011	0.016
Between pct	4.744	3.301	3.980	3.471	4.739	4.397	4.161	4.753
Current Residence								
Within	0.106	0.131	0.132	0.164	0.187	0.207	0.263	0.315
Between	0.004	0.006	0.006	0.009	0.012	0.012	0.013	0.020
Between pct	3.837	4.350	4.559	4.963	6.148	5.577	4.636	5.976
Current Wealth								
Within	0.080	0.090	0.094	0.123	0.143	0.154	0.200	0.243
Between	0.031	0.047	0.044	0.050	0.057	0.064	0.075	0.092
Between pct	27.719	34.203	32.074	28.790	28.384	29.424	27.381	27.610
Birth Place								
Within	0.094	0.119	0.120	0.147	0.176	0.178	0.231	0.290
Between	0.016	0.019	0.021	0.027	0.025	0.039	0.048	0.049
Between pct	14.361	14.008	15.048	15.375	12.207	17.913	17.071	14.437
Birth Region								
Within	0.098	0.130	0.132	0.162	0.190	0.206	0.266	0.327
Between	0.012	0.010	0.009	0.012	0.010	0.012	0.013	0.014
Between pct	11.215	6.975	6.437	6.951	5.212	5.459	4.639	4.195

Source: Author's own calculation based on TDHS-2013.
Note: Total of between and within inequality equals to GE(2). Between pct is the share of between inequality in the GE(2). R is calculated by dividing the value of the 25-29 cohort by that of the 45-49 cohort.

Figure A.1: GE2 Decomposition Trend for Adult Population by Demographic Groups

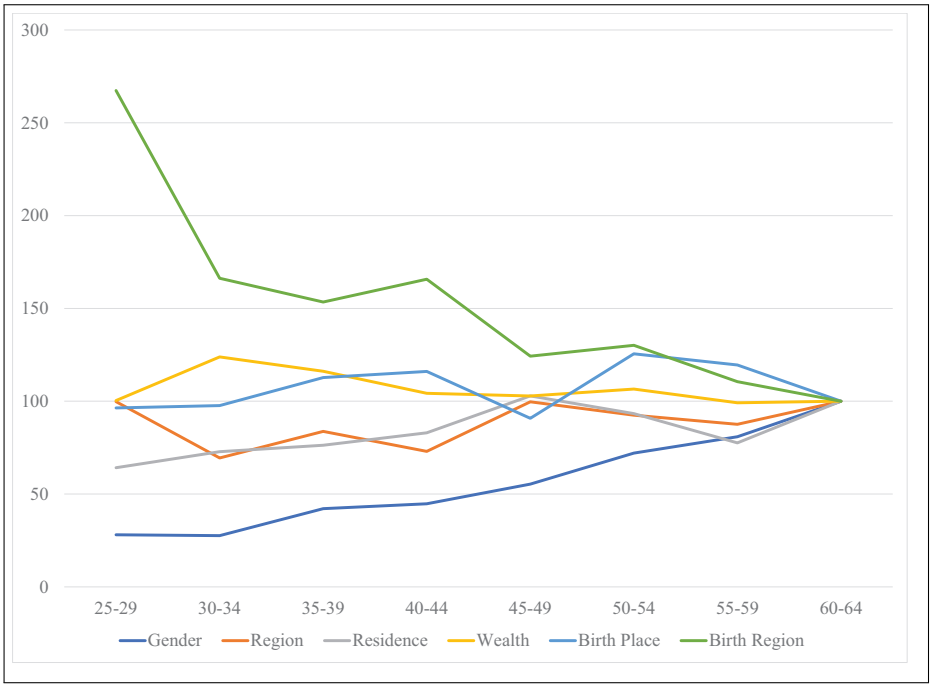
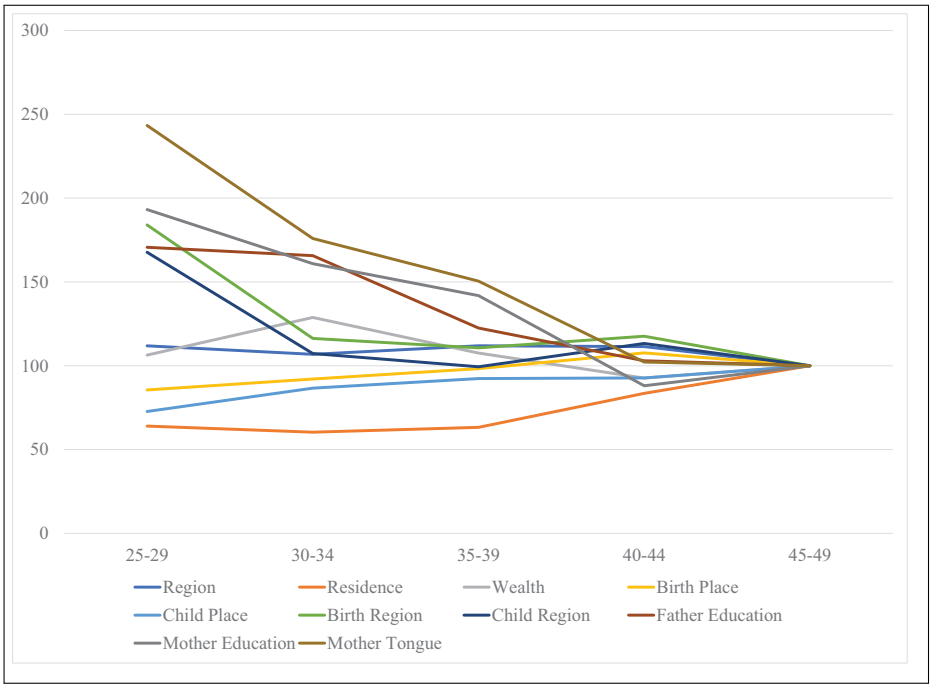


Figure A.2: GE2 Decomposition Trend for Women by Demographic Groups



3. ESSAY 2: INEQUALITY OF OPPORTUNITIES IN THE NEET STATUS: DIFFERENT PATHS OF YOUNG WOMEN IN THE TRANSITION TO ADULTHOOD IN TURKEY

3.1. Introduction

The transition to adulthood in human life is the time when most inequalities in education and employment appear. During this time, young people make critical decisions about their education, employment and marital status. Of course, these decisions not only affect social and economic consequences such as income, health, wealth, social capital, parenthood, but also at the macro level a lifelong impact on society and the economy. On the other hand, early life circumstances, preferences and efforts can have an impact on the different fates of adolescents in transition to adulthood (Mooyaart et al., 2019; Billari and Liefbroer, 2010; McLanahan, 2004).

In the transition to adulthood, educational and employment status can vary significantly in countries with particularly high levels of social and economic inequalities. In this context, young people who are neither employed nor in education (NEET) became a major political issue for a number of reasons. First, these people are likely to suffer more in adulthood, as they neither gain professional experience nor acquire or develop skills through education or training in this formative phase of life. Second, young people's NEET status could even be indicative of inequality in health, income and social exclusion in adulthood. Third, in addition to the individual risks mentioned above, less education and work experience can certainly lead to a decline in the productivity of the economy and human capital and competitiveness. After all, in times of an aging population, they make access to the welfare state more difficult.

As one of the main types of inequality, the NEET concept became popular after the recent economic crises and COVID-19 that left many young people unemployed. The most recent UN report (2019) on the Sustainable Development Goals (SDG) concluded that one fifth of young people worldwide had NEET status in 2018. In terms of

gender differences, young women were more than twice as likely to be unemployed or inactive as young men were out of school or training. The NEET rate for women and men is 30% and 13%, respectively. In Central and South Asia, 46% of young women fall into this category, compared with 10% of young men. As a result, politicians and governments have agreed on the importance of NEET status, and the SDGs have reserved a policy and goal to raise awareness of the NEET problem around the world. The eighth goal of the SDGs is to promote inclusive and sustainable economic growth, employment and decent work for all. The relevant goal of the number 8.6 is;

"By 2020, substantially reduce the proportion of youth not in employment, education or training"

Turkey has come a long way in increasing schooling and youth employment. But nearly 3 million young people aged 15 to 24 are neither employed nor trained, and two-thirds of them are women. And the problem is becoming pervasive, especially for women. However, there is still a lack of analyzes of the consequences and risk factors of the NEET status. On the other hand, NEET studies are mostly carried out in developed countries. As a developing country with a high proportion of inactive young women, Turkey presents an interesting case for examining the NEET concept. Given the adverse consequences, the root causes of NEET need to be identified in order to develop appropriate policies to ensure the productive engagement of young people in business and society. There can be several risk factors for becoming a NEET, including past life circumstances, personal exertion, preferences, and luck. Age, parental education, place of birth and childhood and state, sibling size and their composition belong to the circumstances. On the other hand, some post-childhood conditions might be more related to people's preferences, efforts, and luck.

The main aim of this essay is to analyze the situation of female NEETs in Turkey by comparing them with their non-NEET counterparts in terms of birth and childhood circumstances and post-childhood conditions using an inequality of opportunity (IOP) based approach. In detail, three research questions are dealt with in this article as follows:

1. Is there a strong relationship between circumstances and the NEET status of aged by women?

2. How the IOP change by current conditions?

The contribution of this paper to the literature is twofold. Firstly, an empirical identification and quantification of the inequality of opportunity regarding the NEET status of young women in Turkey will contribute to a better understanding of the economic and social justice problems of young women in a developing country. Second, the study of inequality of opportunity in NEET status extends the dichotomous approach in IOP to benefit other than income, education and health.

The rest of the paper works as follows. Section 2 discusses the NEET concept and the relevant literature. Section 3 deals with the NEET case in Turkey with some considerations from the education system and the youth labor market. Section 4 describes the data sources and the methodology. Section 5 presents the analysis results and Section 6 concludes and offers policy implications.

3.2. Youth Inactivity and NEET

The NEET concept is relatively new and has different definitions. In general, however, the term defines the proportion of people who are neither employed nor in training in relation to the total number of young people in the corresponding age group. Istance et al. (1994) initially classified these people between the ages of 16 and 18 as Status0. In 1999, the term NEET was officially introduced at the political level in the UK with the publication of the Bridging the Gap report (Social Exclusion Unit, 1999). The global economic recession in 2008 gave EU countries in particular a stronger impetus to use the NEET indicator to better measure labor market health. Hence, the concept has appeared in many political documents one after another (Abayasekara and Gunasekara, 2019). More recently, it has been included on the SDG agenda and has garnered a lot of attention worldwide. In this regard, Goal 8, which focuses on decent work and economic growth, has a specific goal devoted to combating NEET; Goal 8.6 specifies the global intention [by 2020] to significantly reduce the proportion of young people who are neither employed nor attending school or vocational training. SDG 4, which deals with the quality of education, is also aimed at the NEET population by focusing on equal educational opportunities for all. In addition, some international studies, such as the Multi-Indicator Cluster Survey, have started adding new modules to better understand the NEET profile.

As consensus on the NEET problem has grown around the world, efforts to understand the profile of NEETs and their associated consequences have increased

accordingly. However, the existing literature is mainly focused on developed countries. On the other hand, a better understanding of the reasons and consequences of the NEET status, especially for developing countries, helps national governments, international organizations and non-governmental organizations to develop tailor-made strategies for people at risk of NEET.

In the health sector, some of the main negative effects of NEET have been identified as: poor physical and mental health, drug and excessive alcohol use, less physical activity, unhealthy body mass index (BMI), smoking, and suicidal behavior (Baggio et al., 2015; Carcillo and Königs, 2015; Feng et al., 2015; Goldman-Mellor et al., 2016; Stewart et al., 2017; Gutiérrez-García et al., 2017).

While the number of studies separately focuses on the determinants of school and career choices, the literature for the NEET, a common inactivity decision, is still emerging. In relation to the determinants of NEET status, some of these are discussed in the exciting literature as follows: uncertain or misaligned aspirations (Yates et al., 2011); socio-economic disadvantage, low educational attainment and unsuccessful vocational and apprenticeship programs (Ryan, 2001); Femininity, Migration Background and Early School Leaving (Tamesberger and Bacher, 2014); Grain size and control location (Mendolia and Walker, 2014); the earlier onset of depression (Cornaglia et al., 2015); less parental education and support, cognitive skills, general and mental health, and aspirations of adolescents and their parents (Gladwell et al., 2016); Lack of adequate services for older people and childcare disadvantages women and discrimination as stereotypes related to gender and race (Quintano et al., 2018); educational level and marriage status (Vancea and Utzet, 2018); Unemployment among men and family responsibility among women, problematic and delayed transitions from school to work (Mascherini and Ledermaier, 2016). As shown in recent literature, there is a certain heterogeneity of preferences at the individual, household, and country level that determine the decision to be a NEET.

3.3. Education, Employment and Inactivity Status of Youth in Turkey

3.3.1 Education and Employment

Since NEET risk is related to the absence in education and employment (EE), studying recent developments in the education sector of Turkey can provide a solid

foundation for the NEET issue. As shown in Figure 3.1, enrollment rates have increased remarkably across all levels of education in Turkey. In terms of improved access, the expansion of compulsory education and the increased capacity in higher education, combined with additional investments in infrastructure and the recruitment of teachers, played an important role overall. Compulsory schooling was extended to 8 years in 1997-1998 and then to 12 years in 2012-2013. Today in Turkey there is 12 years of compulsory schooling beginning at the age of six and comprising the primary level (grades 1-4), lower secondary level (grades 5-8) and upper secondary level (grades 9-12). Thanks to the progress made in extending compulsory education, there has been an increase in upper secondary education and higher education, which is crucial for NEET status for 15-29 year olds.

Over the past two decades, net enrollment ratios for both women and men have increased in upper secondary education and the gender gap has gradually closed (see Figure 3.1). In the years 2012-2013 the upper secondary level became compulsory with a law, which also considers open education as an alternative to formal education. So far, the enrollment rate of women in this educational levels has risen steadily. From 2018-2019 it reached 84%. As a result of this progress, the NEET rates for women in the corresponding age groups also fell. But in the upper secondary age group, the proportion of women out of school is still remarkable.

In higher education, the jump in enrollment ratio after 2007-2008 is evident (see Figure 3.1). After 2006, the number of universities and the total capacity in higher education increased rapidly. The total enrollment ratio rose from around 20% in 2007-2008 to around 45% in 2018-2019. Among women, it increased from 9.2% in 1997-1988 to 46.4% in 2018-2019. In the past two decades, the number of female enrollments has increased fivefold, exceeding that of male enrollment, 41.9% in 2018-2019.

Successful technical and vocational education (TVET) and apprenticeship systems facilitate the transition from school to work. In Turkey, however, the quality of VET is problematic according to the national strategy papers. Vocational training in Turkey lasts four years in upper secondary and two years in higher education. The vocational education sector in Turkey is considered inferior to the general programs and its graduates have no visible advantage in the labor market. Their quality and efficiency have therefore been called into question for many years. As the vocational training system in Turkey is generally not a valuable option for young people in terms of decent employment, the transition from school to work is delayed and remains problematic. Therefore, even in the vocational education and training system, many high

school graduates are demanding to enroll in higher education for better job prospects.

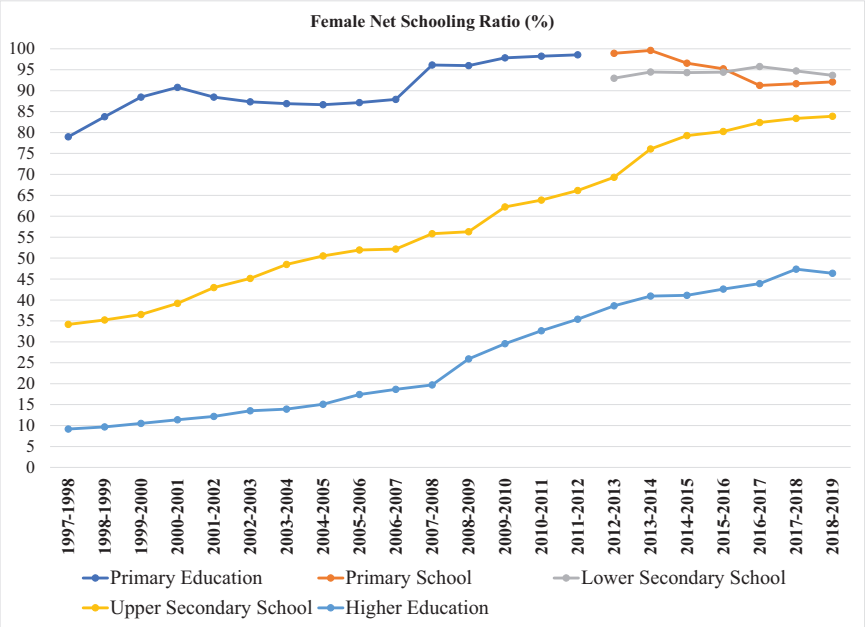
In summary, it can be said that the schooling of women has increased and that the gender-specific schooling gaps have closed at all educational levels in Turkey over the past two decades. However, the discrepancy between the curriculum and the labor market, as well as gender roles, have meant that young women's employment has not improved at the same pace as school education.

As mentioned earlier, alongside education and training, employment is another key component that determines NEET status. Figure 3.2 shows the employment rate of young women and men aged 15 to 24 in Turkey for the period 2000-2018. In 2018, the youth employment rate for women was 14.2% and 33%, respectively, aged 15-19 and 20-24. For male employment it is 33.4% and 61.4% respectively. As can be seen, the male youth employment rate is twice that of women in both age groups. The employment rate of 15 to 19-year-old women remained stable at around 15 years in the selected period, while it rose from 25.3% in 2009 to 33% for 20-24-year-old women.

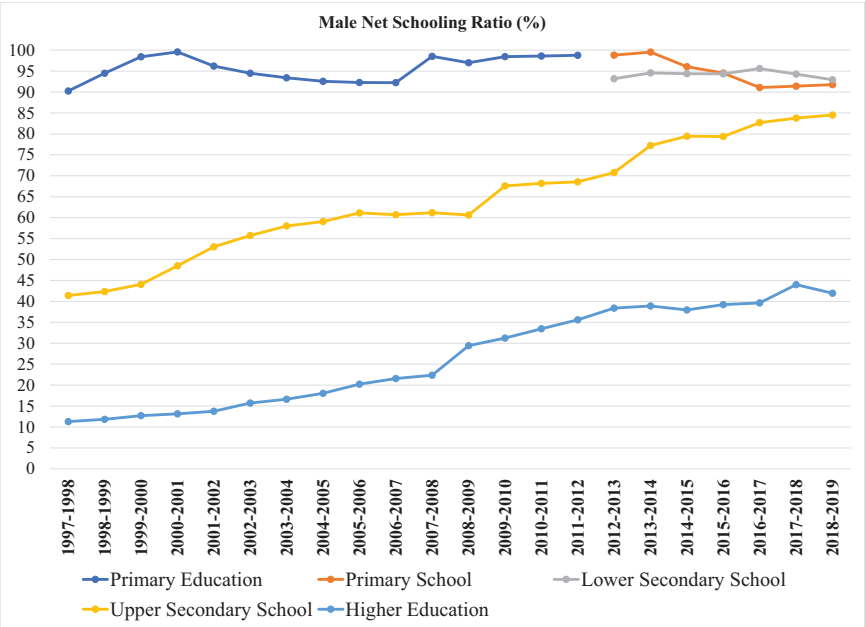
As mentioned earlier, the gender gap has closed in education, but not in the employment of young people. Since 2000, the net enrollment rate for women in upper secondary education has doubled and in higher education it has tripled. As expected, female youth employment aged 15-19 declined due to increased schooling, possibly thanks to the length of compulsory schooling. However, at the ages of 20-24, their employment increase is not high. It seems that the negative factors correlating with education and employment are more pronounced in the latter. The additional employment did not reduce the female NEETs as much as school education.

Figure 3.1: Net Schooling Ratio by Education Level, 1997-1998/2018-2019

(a) Female



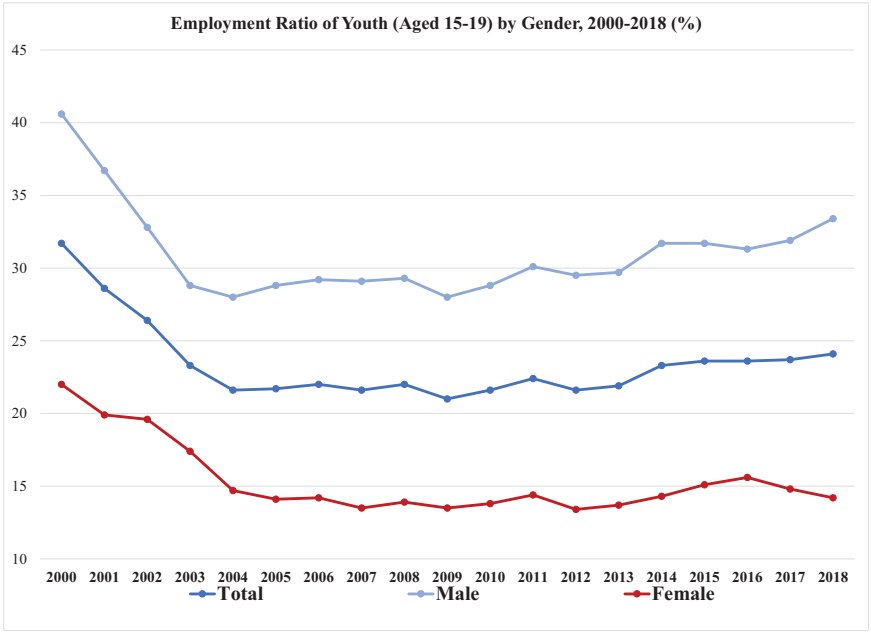
(b) Male



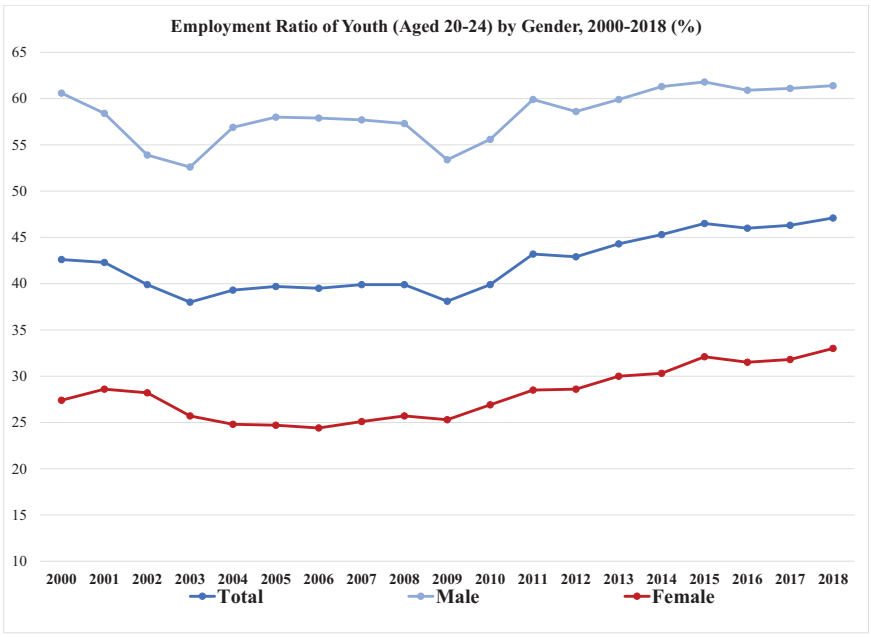
Source: Author's own figure using TurkStat Education Statistics Database

Figure 3.2: Education Ratio of Youth by Age Group, 2000-2018

(a) Age 15-19



(b) Age 20-24



Source: Source: Author's own figure using TurkStat Labor Force Statistics Database

3.3.2 NEET

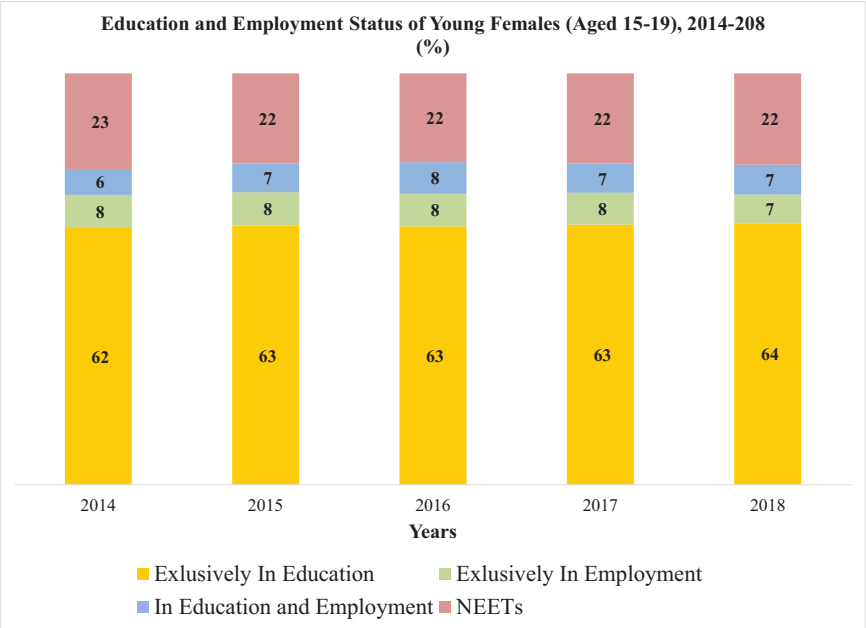
How the NEET rate has developed in Turkey is related to the education and employment of young people. A brief exploration of both sectors thus formed the basis for the NEET analysis. Advances in both have reduced the inactive population aged 15-24 in Turkey. But despite the gradual decline in the NEET rate among adolescents, there is clear evidence that it will rise again due to recent economic stagnation, increasing informal employment of refugees and COVID-19 compulsions.

Figures 3.3 and 3.4 show the distribution of the youth population by education, employment and NEET status since 2014. As of 2018, there are 11.8 million young people between the ages of 15 and 24 in Turkey. 4.8 million of these are full-time students, 2.6 million are in only employment, and 1.5 million are in education and employment. It is more noticeable that 2.9 million young people neither work nor attend education or training. Of these, about a million are men and two million are women. As can be seen, there is a clear sign of gender inequality in inactivity among young people. As of 2018, the NEET rate for women in the 15-19 age group is 22.2%, while it is 13% for men. The gender difference is almost twice. For the age group of 20 to 24 year olds, the corresponding rates are 45.5% and 18.7% for women and men. Here the case worsens and the gap becomes 2.5 times. It is evident that around half of women between the ages of 15-24 are inactive.

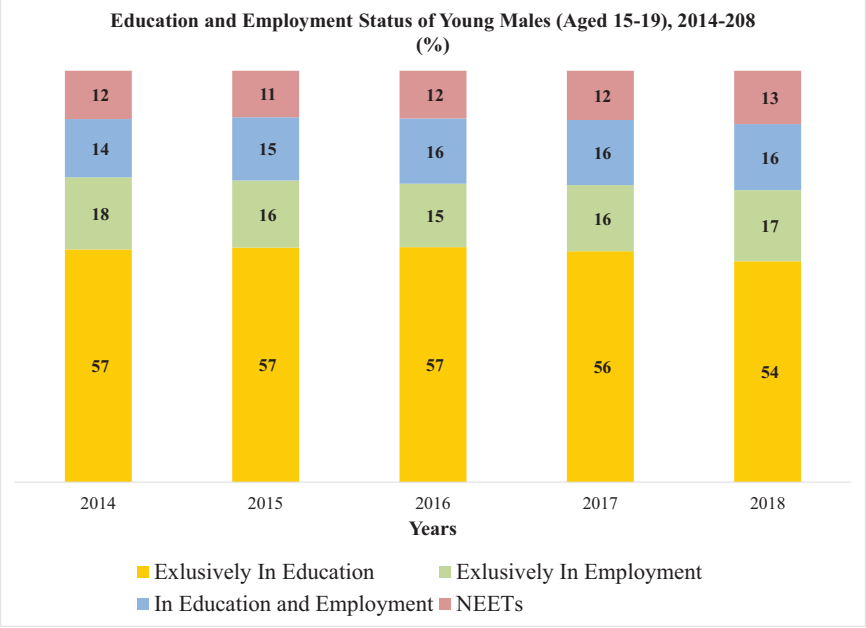
Based on the EUROSTAT data, Figure 3.5 and Figure 3.6 show the NEETs aged 15-24 years in Turkey according to their employment status and work preference in the period 2006-2018 (for the age group of 15-24 year olds see Figure B.1). In 2018, the NEET rate for women aged 20 to 24 was 45.5% (see Figure 3.6). Of these women, 12.5% want to work and 33% do not want to work. The same percentages in 2006 were 9.7 and 54.2, respectively. The proportion of NEETS women willing to work has not increased significantly in the corresponding period. However, the proportion of NEET women who want to work has decreased significantly, 21.2 percentage points. The proportion of unemployed and inactive female NEETs runs parallel to the first breakdown.

Figure 3.3: Education and Employment Status of Youth (Aged 15-19) by Gender, 2014-2018

(a) Female 15-19



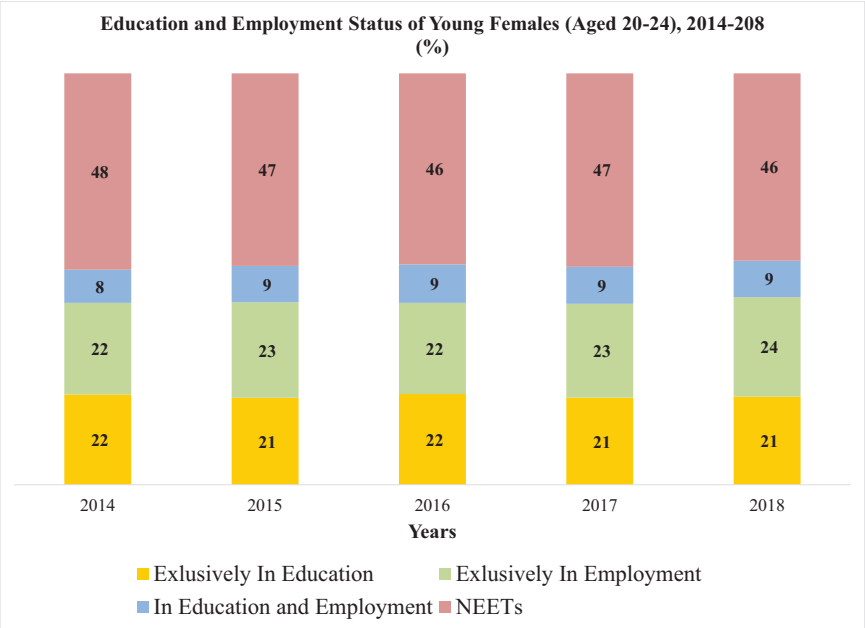
(b) Male 15-19



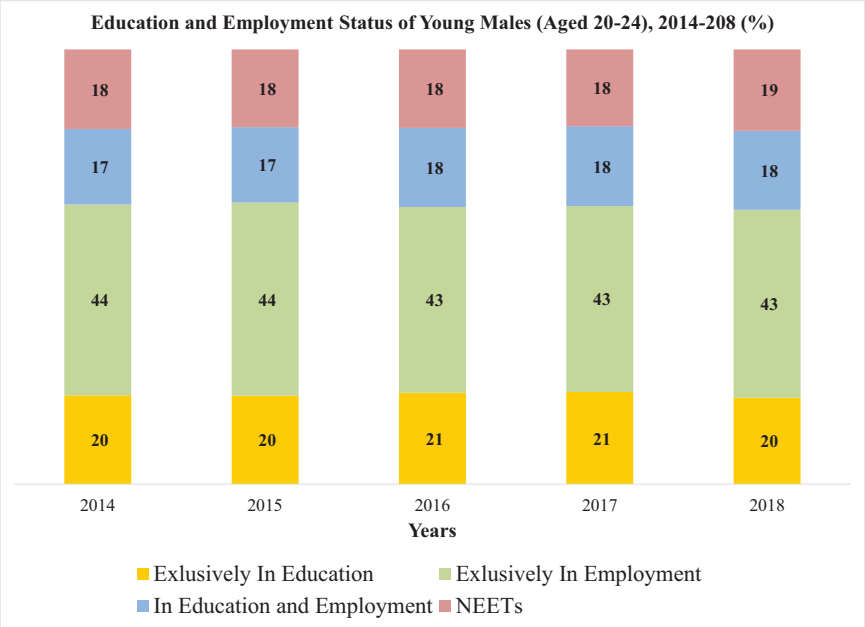
Source: Author's own figure using TurkStat Labor Force Statistics Database

Figure 3.4: Education and Employment Status of Youth (Aged 20-24) by Gender, 2014-2018

(a) Female 20-24



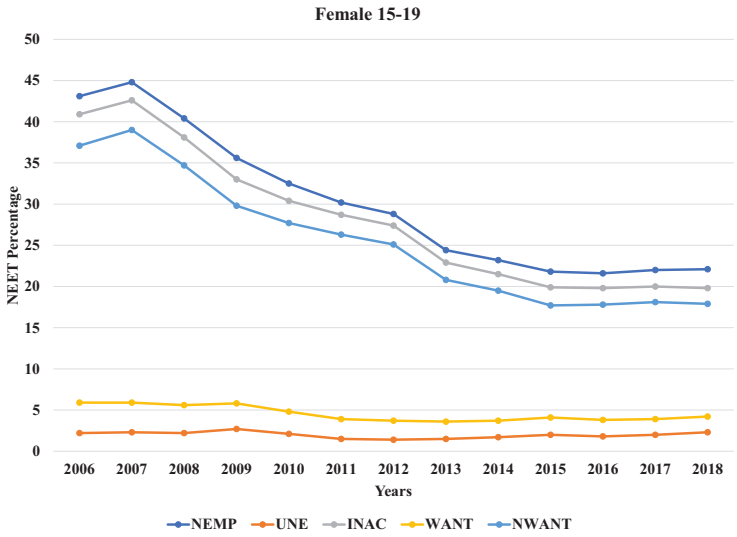
(b) Male 20-24



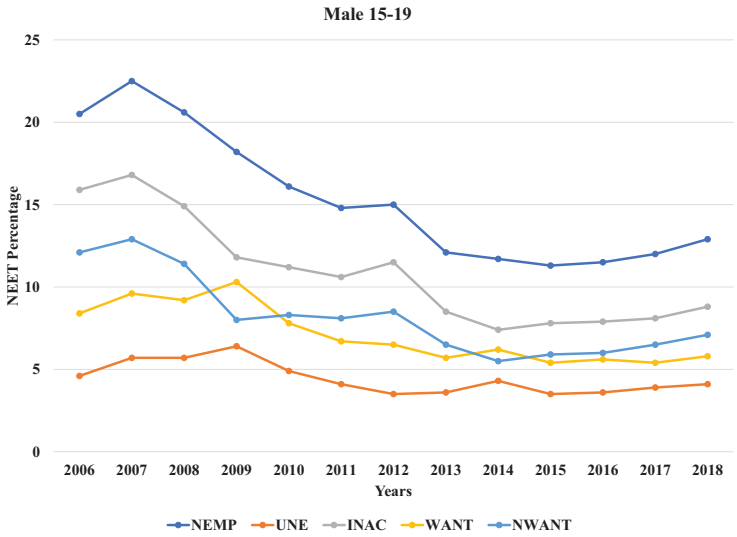
Source: Author's own figure using TurkStat Labor Force Statistics Database

Figure 3.5: NEET at Age 15-19 by Activity Status and Work Preference Over Years

(a) Female 15-19



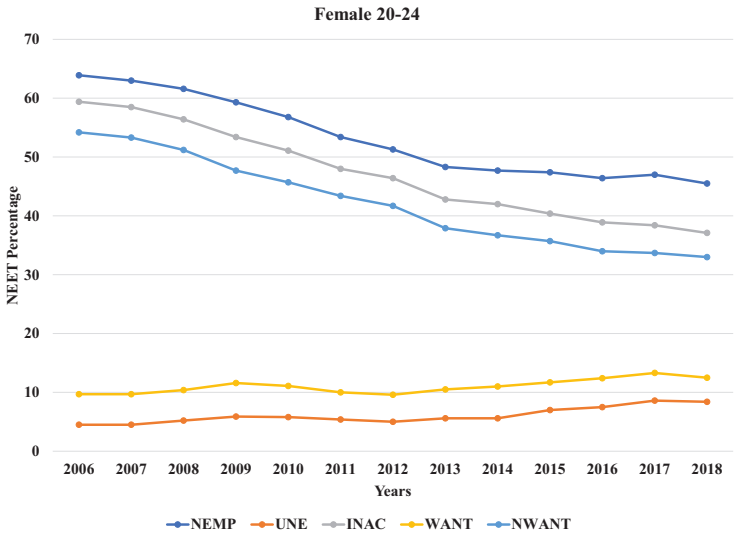
(b) Male 15-19



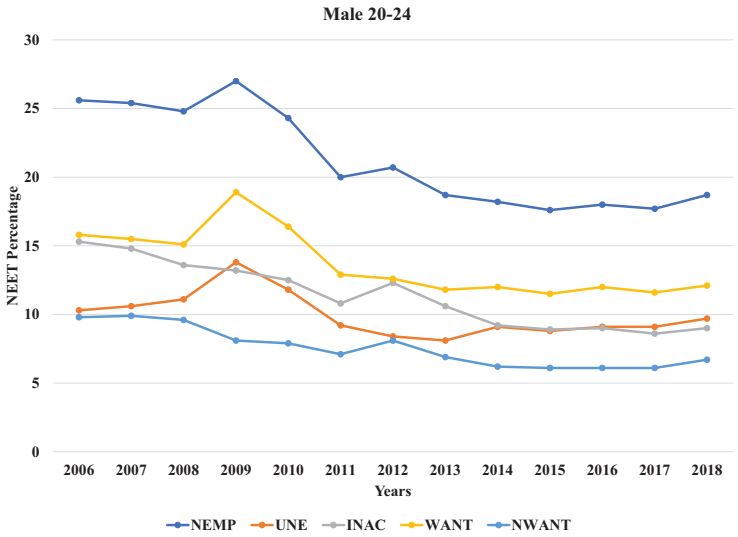
Note: EUROSTAT breakdowns NEET into five categories according to work status; 1) Not Employed Persons (NEMP), 2) Unemployed Persons (UNE), 3) Inactive Persons (INAC), 4) Persons would like to work (WANT), 5 Persons don't want to work (NWANT). Below equations show the sub-parts of NEMP, the most known and widely used; NEET(NEMP)=NEET(UNE)+NEET(INAC) and NEET(NEMP)=NEET(WANT)+NEET(NWANT).
Source: Author's own figure using EUROSTAT database

Figure 3.6: NEET at Age 20-24 by Activity Status and Work Preference Over Years

(a) Female 20-24



(b) Male 20-24



Note: EUROSTAT breakdowns NEET into five categories according to work status; 1) Not Employed Persons (NEMP), 2) Unemployed Persons (UNE), 3) Inactive Persons (INAC), 4) Persons would like to work (WANT), 5 Persons don't want to work (NWANT). Below equations show the sub-parts of NEMP, the most known and widely used; NEET(NEMP)=NEET(UNE)+NEET(INAC) and NEET(NEMP)=NEET(WANT)+NEET(NWANT).
Source: Author's own figure using EUROSTAT database

As mentioned earlier, NEET literature is still emerging in developing countries and Turkey is no exception. However, awareness of the NEET issue in Turkey has increased economically and politically. Youth employment and thus the NEET problem were explicitly emphasized in five-year development plans and annual programs.

There are some spesific NEET studies in Turkey. In a cross-border study by the OECD countries, Carcillo and Königs (2015) argued that NEET rates are systematically higher in young women than in young men. Among the selected countries, the average gender difference in NEET rates is five percentage points, but the difference is much higher in Turkey (30 percentage points), Mexico (27 percentage points), Chile (16 percentage points) and the Czech Republic (10 percentage points). As mentioned earlier, the gender gap is highest in Turkey. In addition, the inactive NEET ratio, not the job-seeking NEETs, is highest in Turkey at 28%. Additionally, Kilic (2014) uses the Household Labor Force Survey and chi-square tests to analyze the associations between NEET status and some socio-demographic factors such as gender, age, education, work experience and employment status. This study showed that all variables have strong associations with NEET status. In another study, using the Household Labor Force Surveys 2004-2013 and the probit estimation method, Susanli et al. (2016) found that gender and level of education are the main factors in someone falling into NEET status. It is also interesting that young people with more working members in the household are less likely to be a NEET person.

Aside from specific NEET studies, there are some studies that highlight gender inequality and other socio-economic disadvantages in access to education and employment in Turkey. In this context, some educational studies have shown that the determinants of schooling differ according to gender (Tansel, 2002); there are ethnic differences in school enrollment (Kırdar, 2009); there is no causal influence of sibling size, but the parabolic effect of the order of birth on school enrollment (Dayioğlu et al., 2009); the most disadvantaged group in terms of schooling are girls who live in the eastern provinces, in rural areas, and in poorer and larger households (Ferreira and Gignoux, 2010); the 1997 reform of compulsory education resulted in an average increase in schooling by one year for women but not for men, narrowing the gender gap (Gulesci et al., 2013); adult education and gender role attitudes in the community have an impact on access to school, along with individual and household variables (Gumus, 2014); cultural bias towards girls' education is a fundamental factor in their low level of education in conservative societies Caner et al. (2016); gender differences in schooling are due to the degree of urbanization of the provinces, and patriarchal

family beliefs are also strong determinants of gender inequality in the educational system of Turkey (Rankin and Aytaç, 2006). On the other hand, some employment studies suggest that social values and behaviors play a crucial role in women's job search decisions (Göksel, 2013); the gross wage gap in Turkey is small but the discriminatory component is high (Cudeville and Gurbuzer, 2010); and there is a large gender pay gap in the private sector, while in public administration the wages of men and women are equal (Tansel, 2005).

3.4. Inequality of Opportunity in NEET Status

The literature on measuring and assessing inequality in social and economic outcomes is growing. And in that sense there are two types of inequality; inequality of opportunity and inequality of conditions (Breen and Jonsson, 2005). As the focus of this essay is on the concept of inequality of opportunity (IOP) in youth inactivity, namely NEET status, a basic introduction to the term will help us determine the required methodology. Five elements of a typical IOP measurement include circumstance, type, tranche, goal, and instrument (Betts and Roemer, 1999). The objective is the chosen condition of equal opportunities. Circumstances relate to characteristics beyond individual control, such as place of birth and parental education. Conditions can include educational level, income, consumption, health status, and labor market status. Also, the type is the set of people with the same circumstances, and the tranche is the set of people with the same level of effort. Ultimately, the instrument is political intervention for equal opportunities. For example, the government's educational policy could be an instrument to level the playing field with regard to the level of education. Despite the growing importance of the concept of IOP, there is less consensus on how to measure it. In this regard, the methodology of IOP can take different forms, using the assumed combinations of 1) ex-ante or ex-post approach, 2) parametric or non-parametric method, 3) direct or indirect measurement and 4) compensation or the reward principle (Ramos and Van de Gaer, 2016).

The inequality of opportunity studies made so far included several sectors such as education, employment, income and health. In the education area, the opportunities studied so far are mainly based on two dimensions: attainment and achievement. The former one includes various outcomes, for instance, the school completion of people older than 25 years old in Indian states (Asadullah and Yalonetzky, 2012); the attendance of daycare or preschool at ages 0-6 in Brazil (Foguel and Veloso, 2014);

the school attendance and completion of primary education cross-nationally (Krishnan et al., 2016); the access to higher education at age 19-22 in Egypt, Tunisia and Jordan (Krafft and Alawode, 2018). The latter covered opportunities, for instance, the educational achievement in PISA 2006-2009 in Latin America (Gamboa and Waltenberg, 2012), the educational access and achievement in PISA 2006-2009 in Latin America (De Carvalho et al., 2012), the probability of graduation and transition to the labor market for the youth in higher education in Italy (Peragine and Serlenga, 2008), the scores of PISA surveys of 57 countries (Ferreira and Gignoux, 2013), the student achievement scores of TIMSS surveys in MENA countries (Salehi-Isfahani et al., 2014), the student achievement scores of PISA 2003-2012 waves in Turkey (Tansel, 2015). In the health sector, the existing literature covers the outcomes like self-assessed health (SAH) for the adults in UK (Rosa Dias, 2009); full immunization and minimum nutrition of the children in India (Singh, 2011); self-assessed health (SAH) for the adults in Columbia (Fajardo-Gonzalez, 2016); self-assessed health(SAH) status for the people older than 55 years old in the UK (Donni et al., 2014); and biomarkers in the health in the UK (Davillas and Jones, 2018). When it comes to the area of income, Bourguignon et al. (2007) use individual earnings to measure IOP. In the employment sector, the inequality of opportunity literature is nascent, probably due to the lack of an agreed opportunity like in education, income, and health. Abras et al. (2013) and Krishnan et al. (2016) studied the outcome of having a job with a defined set of characteristics in the regions of Europe and Central Asia and Middle East and North Africa respectively by using the methodologies of Dissimilarity Index and Human Opportunity Index.

As explained above, adults should be responsible for decisions that affect their results, but children should not. Thus, the children's results correspond directly to the opportunities available to them. In this context, for example, access to some services such as adequate quality education, vaccinations and nutrition, safe drinking water and sanitation can be considered. But what creates opportunity is not a clear issue for adults because they can influence their outcomes to some extent through their preferences and efforts. Therefore, it can be argued that young women (15-29 years old) are partially responsible for the results, and the IOP measurement in NEET status should take into account personal efforts and preferences as well as early life circumstances. On the other hand, defining possible employment opportunities is less straightforward than it is for access to basic services. Employability is a suitable opportunity for exploitation in the labor market, but it is difficult to monitor and measure in surveys. It is therefore difficult to justify a universal good as an opportunity in the labor market (Abras et al., 2013; Krishnan et al., 2016).

As can be seen from the current literature on IOP, the number of studies in education and employment area is increasing. In this regard, research shows that some early life circumstances can affect access to education and work. However, most of them focus on children under the age of 15 or the working-age population over 25 who completed their education in theory. Preferences, efforts and circumstances shape the level of activity of 15- to 29-year-olds in education and employment. Hence, a better understanding of their partial implications will contribute to the literature on inequality, work, demographics, and economics of education.

3.5. Data

3.5.1 Data Source

This study uses data sets from the 2013 Turkey Demographic and Health Survey (TDHS-2013). It collects data from a sample of 11,794 households that are represented not only at the national level but also at the level of the five major regions of the country (western, southern, central, northern and eastern regions). There is a lot of information on socio-economic characteristics for all household members. In addition, 9,746 women aged 15 to 49 from all samples answered a detailed questionnaire on demographic and health issues. This study focuses on a sample of young women, aged 15-29, and 4,213 non-missing observations meet these criteria.

For the purposes of this study, both the member and woman datasets provide a variety of variables that can be used in the IOP analysis. With regard to personal and household characteristics, the member data compiled from household data includes information on gender, age, current place of residence and region, wealth index (calculated with wealth indicators), level of education and current school attendance. On the other hand, the women's data set contains information on marriage, employment, parental education, number of living and deceased siblings and their gender, height and weight, place of birth and childhood, region of birth and childhood, mother tongue and type of marriage of the parents.

3.5.2 Definition of Variables

Table 3.1 shows the variables and their definitions for outcome indicators, early life circumstances, and current conditions in the study. The first category includes outcome indicators, namely NEET status and its sub-components. The second category consists of the variables related to birth and childhood circumstances. The third category contains the variables of current conditions. All of the variables used in the study are briefly explained in Table 3.1.

Outcome Indicators

As already mentioned, there is no international standard definition of NEET. However, the total NEET is the proportion of young people who are not in employment, education or training (NEET) as a percentage of total young people in the corresponding age group. Differences between NEET definitions are due to the inclusion or exclusion of categories of education and employment, such as paid and unpaid jobs and formal and informal education. NEET has various international and national measurement methods. The most commonly used include the ones of OECD and EUROSTAT for comparability. The OECD definition of NEET is broader than the EUROSTAT definition. Regarding the education and training component, the former does not include young people in short-term non-formal education and training activities related to education and status and therefore these people are counted as NEETs. However, the latter includes non-formal education as part of education and training, and young people in this situation are no longer counted as NEETs. As for the employment component, employment only includes paid workers according to OECD guidelines. Rather, the EUROSTAT definition covers all employees, including family workers.

From the TDHS-2013 data, I use two main variables to create the NEET status of young women. First, it is determined whether a woman is attending a formal school or non-formal training during the research year. The second is whether the woman is employed or not. In TDHS-2013, employment include selling small items, selling goods in the market, working on the family farm or business, caring for children, working as a maid, etc. Finally, four situations related to education and employment can be created; 1) Only in Education, 2) Only in Employment, 3) In Education and Employment, 4) Not in Education, Employment, or Training (NEET).

Early Life Circumstances

In the TDHS-2013 data, education of parents, marriage type of parents, sibling size and structure, childhood place of residence and region, mother tongue, and deceased sibling are considered as circumstances that cannot be controlled by women. They relate to both family resources and social capital where women grew up. The educational level of the parents influences the NEET status through social mobility. It is coded into three categories; less than primary education (less than five years), primary education (corresponds to five years) and lower secondary education and more (eight years and more). The parents' mother tongue and the marriage type can affect gender roles. The first is encoded as Turkish and other. The second is coded as a consanguineous marriage or not. Household wealth is another factor used in the analysis. The DHS does not have direct income or wealth information, but some asset indicators are used to create an index of wealth. It is categorized into five categories: the poorest, poorer, middle, richer, and richest. The number of siblings who have died due to lack of access to health opportunities may also be related to their parents' well-being. The place and region of childhood capture the social capital and educational opportunities in which women grow up. The place is coded into two categories as province / district and subdistrict / village, while the region is coded as west, south, center, north, and east.

Current Conditions, Efforts, and Preferences

The NEET status of women between the ages of 15 and 29 depends not only on their circumstances but also on their efforts and preferences. As mentioned earlier, the opportunities in NEET status are not like the ones in access to basic education or health care. Young people have different level of efforts and preferences to attend school and/or work. On the other hand, the circumstances can have direct and indirect effects on the NEET status. In this regard, the educational level, educational attitudes and employment attitudes (EEA), migration and marital status, which are shaped by the circumstances, but also reflect the individual preferences of women, which influence their NEET status.

In TDHS-2013, the educational information is available both in a single year and in the ISCED classification. I have created three levels of education for women; less than upper secondary level, upper secondary level and more than upper secondary level. In addition, women can migrate from childhood in order to obtain better educational and employment opportunities. Hence it is considered an effort or preference.

Marital status can also play a decisive role in NEET status, as many women drop out of education and the labor market after marriage. Finally, women's educational and employment attitudes (EEA) are another variable to consider. Accordingly, a EEA index is created using four categorical questions in TDHS. These measure the attitudes of young women on some propositions such as: 1) family decisions should be made by men, 2) the husband should help with household chores, 3) an educated son is better than a girl, 4) a woman should work, and more women should or should be in politics. These questions have three categories of answers; l) agree, 2) disagree and 3) depend. With these answers, I calculated a EEA index for women using principal component analysis.

Table 3.1: Outcome Indicators, Childhood Circumstances and Current Conditions

Variables	Explanations
Outcome Variables	
In Employment	Worked in Last Week (0=No, 1=Yes)
In Education	Currently attending a school or student elsewhere (0=No, 1=Yes)
Activity Status	1=Only in Education , 2=In Education and Employment, 3=Only in Employment, 4=Neither in Employment nor in Education and Training (NEET)
NEET	0=No, 1=Yes
Early Life Circumstances	
Mother's Education	1=Below Primary Education, 2=Primary Education, 3=Lower Secondary Education or More
Father's Education	1= Below Primary Education, 2=Primary Education, 3=Lower Secondary Education or More
Mother Tongue	0=Turkish, 1=Non Turkish
Sibling Size	Number of siblings
Fraction of Males	Share of males in all siblings
Childhood Place	1=Province or District, 2=Sub-district / Village
Childhood Region	1= West, 2= South, 3) Central ,4= North, 5=East
Parent's Marriage	0=Not Consanguineous , 1= Consanguineous
Deceased Siblings	0=None, 1= At Least One
Household Wealth	1=Richest, 2=Richer, 3=Middle, 4=Poorer, 5=Poorest
Current Conditions, Efforts, and Preferences	
Age	15-19, 20-24, 25-29, and in Single Ages
Education Level	1=Below Upper Secondary Education, 2=Upper Secondary Education, 3=Upper Secondary Education or More
Years of Education	Educational attainment in single years
EEA Index	Educational and Employment Attitude Index captured by opinions on gender roles
Currently Married	0=No , 1=Yes
Migrated	0=No , 1=Yes
Current Place	1=Urban, 2=Rural
Current Region	1=West, 2=South, 3=Central, 4=North, 5=East
Reasons Not to Work	1=In Education, 2=Housewife, 3=Caring for Children or Pregnant, 4=Want to work but unemployed, 5=Partner/Family does not allow to work, 6=Don't want to work, 7=Other

3.5.3 Descriptive Statistics

As with other social and economic outcomes, some young people are at greater risk of becoming a NEET due to their early life circumstances, efforts, and preferences. The circumstances include gender, childhood region and place, education of parents, sibling size and composition, marriage type of parents, mother tongue and wealth in childhood. These are factors beyond the efforts and preferences of the young women. On the other hand, post-childhood conditions are educational level, educational and employment attitudes (EEA), migration status, marital status, and current region and place of residence. The conditions are more complex because they can be both consequences and sources of the NEET status. They therefore need a careful explanation when assessing causality. In addition, early life circumstances can affect conditions as well as NEET status.

Table 3.2 shows the associations between current conditions and education and employment status for women aged 15-24 (See Table B.1 for women aged 20-29 years, and Table B.2 for women aged 15-29 years). According to Pearson's chi-square statistics, all variables have significant correlations with education and employment status. As can be seen from the table, higher education level and the EEA index reduce the NEET risk. On the other hand, migrants and married people are at greater risk. In addition, the NEET rate is significantly higher in the regions of East and South. The North region has the highest employment rate and therefore the NEET rate is low. Regarding place of residence, almost half of women aged 15-24 are NEET in rural areas where access to education is half that of urban areas.

Table 3.3 shows the associations between early life circumstances and education and employment status for women aged 15-24 years (See Table B.3 for women aged 20-29 years, and Table B.4 for women aged 15-29 years). Pearson's chi-square statistics for categorical variables compare differences. All relevant variables have significant relationships with education-employment status, which indicates the heterogeneity of the NEET group. Women with higher parental education and well-being are less likely to be NEETs. Table 3.4 shows the descriptive statistics of the educational attainment, the EEA index, the migration status and the marriage status by women's early life circumstances.

Table 3.2: Education and Employment Status of Women aged 15-24 by Conditions

	Education and Employment Status								
	Edu.		E-E		Emp.		NEET		Total
	%	CI	%	CI	%	CI	%	CI	%
Education Level									
Less than Upper Secondary (n=1,044)	4.0	[2.8,5.6]	0.3	[0.1,0.9]	23.0	[19.7,26.7]	72.7	[68.8,76.3]	100.0
Upper Secondary (n=1,219)	60.2	[56.5,63.8]	8.5	[6.8,10.7]	9.1	[7.2,11.5]	22.2	[19.3,25.2]	100.0
Tertiary Education (n=546)	55.4	[49.6,61.0]	10.7	[8.0,14.2]	17.7	[13.9,22.2]	16.2	[12.6,20.7]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(6) =	3526.8900								
Design-based F(5.60, 1762.97) =	117.9664	Pr =	0.000						
EEA Index									
Low (n=838)	24.2	[20.5,28.4]	5.7	[4.0,8.2]	16.4	[13.3,20.1]	53.6	[49.0,58.2]	100.0
Medium (n=400)	46.1	[40.4,51.9]	6.4	[4.1,9.8]	13.6	[10.1,18.1]	34.0	[28.5,39.9]	100.0
High (n=1,571)	46.2	[42.9,49.6]	6.3	[5.1,7.9]	15.5	[13.4,17.8]	31.9	[29.1,34.9]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(6) =	439.4269								
Design-based F(5.84, 1839.01) =	16.1149	Pr =	0.000						
Migrated									
No (n=1,922)	47.7	[44.6,50.8]	6.4	[5.3,7.7]	14.0	[12.3,16.0]	31.9	[29.3,34.7]	100.0
Yes (n=887)	23.8	[19.8,28.4]	5.8	[4.0,8.2]	18.7	[15.3,22.7]	51.7	[46.7,56.7]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(3) =	507.3492								
Design-based F(2.94, 925.77) =	29.8159	Pr =	0.000						
Currently Married									
No (n=2,033)	53.9	[50.6,57.2]	8.2	[6.9,9.7]	16.2	[14.0,18.7]	21.7	[19.4,24.2]	100.0
Yes (n=776)	3.3	[2.2,4.9]	0.8	[0.4,1.7]	13.5	[10.8,16.8]	82.4	[78.8,85.4]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(3) =	3064.1765								
Design-based F(2.71, 853.86) =	254.4495	Pr =	0.000						
Current Region									
West (n=615)	42.2	[36.8,47.8]	8.0	[6.0,10.6]	18.2	[14.9,22.1]	31.5	[27.0,36.5]	100.0
South (n=346)	41.5	[34.4,49.0]	5.2	[3.4,7.8]	14.6	[10.4,20.1]	38.6	[31.4,46.4]	100.0
Central (n=528)	50.5	[44.8,56.2]	4.5	[3.1,6.5]	10.6	[8.0,14.0]	34.4	[29.2,39.9]	100.0
North (n=380)	36.3	[29.7,43.3]	13.3	[9.8,17.9]	25.4	[19.9,31.8]	25.0	[19.5,31.3]	100.0
East (n=940)	29.4	[24.6,34.6]	3.1	[2.1,4.5]	12.7	[10.0,16.1]	54.8	[50.4,59.1]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(12) =	563.0886								
Design-based F(9.61, 3026.41) =	9.8659	Pr =	0.000						
Current Place of Residence									
Urban (n=2,030)	45.2	[41.8,48.6]	5.9	[4.8,7.2]	13.5	[11.5,15.6]	35.5	[32.5,38.5]	100.0
Rural (n=779)	21.7	[18.3,25.5]	7.1	[5.4,9.4]	23.1	[19.9,26.7]	48.0	[43.3,52.7]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(3) =	365.4876								
Design-based F(2.85, 896.38) =	29.7202	Pr =	0.000						

Source: Author's own calculation using the TDHS-2013.
Note: Edu: Only in Education; E-E: In Education and Employment; Emp: Only in Employment; NEET: Not in Education, Employment, or Training.

Table 3.3: Education and Employment Status of Women aged 15-24 by Circumstances

	Education and Employment Status								
	Edu.		**E-E**		**Emp.**		**NEET**		**Total**
	%	CI	%	CI	%	CI	%	CI	%
Mother's Education									
Below Primary (n=1,174)	22.1	[18.8,25.9]	4.5	[3.1,6.3]	18.3	[15.3,21.7]	55.1	[51.2,58.9]	100.0
Primary (n=1,243)	47.7	[44.1,51.4]	8.0	[6.4,9.9]	13.9	[11.6,16.5]	30.4	[27.5,33.5]	100.0
Lower Sec/More (n=392)	61.8	[54.9,68.3]	5.1	[3.0,8.4]	13.4	[9.9,17.8]	19.8	[15.1,25.4]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(6) =	320.8045								
Design-based F(5.57, 1514.37) =	31.9114	Pr =	0.000						
Father's Education									
Below Primary (n=468)	15.3	[11.3,20.5]	3.3	[1.8,5.8]	20.3	[16.0,25.5]	61.1	[54.7,67.0]	100.0
Primary (n=1,467)	36.5	[33.1,40.0]	7.5	[6.0,9.3]	15.9	[13.8,18.3]	40.1	[36.7,43.7]	100.0
Lower Sec/More (n=874)	57.8	[53.4,62.2]	5.4	[4.0,7.3]	12.5	[10.0,15.6]	24.2	[21.0,27.6]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(6) =	269.3997								
Design-based F(5.78, 1573.24) =	30.5270	Pr =	0.000						
Mother Tongue									
Turkish (n=2,054)	45.8	[42.8,48.8]	7.0	[5.9,8.3]	15.4	[13.6,17.5]	31.7	[29.1,34.4]	100.0
Other (n=755)	23.0	[18.3,28.5]	3.5	[2.0,6.1]	15.6	[12.2,19.8]	57.8	[52.1,63.3]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(3) =	169.6164								
Design-based F(2.66, 722.74) =	29.2819	Pr =	0.000						
Marriage Type of Parents									
Not Consanguineous (n=1,974)	44.1	[40.8,47.5]	6.6	[5.4,7.9]	15.2	[13.2,17.3]	34.2	[31.3,37.1]	100.0
Consanguineous (n=835)	30.3	[26.4,34.6]	5.1	[3.5,7.4]	16.3	[13.3,19.9]	48.2	[43.8,52.6]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(3) =	58.2505								
Design-based F(2.97, 806.71) =	12.7018	Pr =	0.000						
Sibling Size									
1-2 (n=561)	60.8	[55.4,65.9]	8.5	[6.2,11.4]	12.2	[9.5,15.5]	18.6	[15.1,22.6]	100.0
3 (n=580)	50.8	[45.8,55.7]	5.6	[3.8,8.0]	13.1	[10.3,16.5]	30.6	[25.8,35.8]	100.0
4 (n=488)	40.5	[35.8,45.5]	6.3	[4.3,9.3]	16.4	[12.7,21.0]	36.7	[31.7,42.0]	100.0
5 or 6 (n=564)	24.0	[19.6,29.1]	6.7	[4.5,9.9]	17.4	[13.8,21.7]	51.8	[46.3,57.3]	100.0
7 and more (n=616)	18.9	[14.2,24.9]	3.4	[1.9,6.2]	19.5	[14.9,25.2]	58.1	[52.3,63.7]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(12) =	367.7029								
Design-based F(10.05, 2734.18) =	19.2577	Pr =	0.000						
Share of Male Siblings									
0 (n=469)	55.0	[49.4,60.4]	7.3	[5.0,10.5]	14.2	[10.6,18.6]	23.6	[19.5,28.2]	100.0
0-1/3 (n=471)	31.6	[26.1,37.6]	6.1	[3.7,9.7]	17.8	[13.4,23.3]	44.6	[38.8,50.5]	100.0
1/3-1/2 (n=657)	35.8	[31.1,40.8]	4.6	[3.2,6.7]	18.7	[15.2,22.8]	40.9	[36.2,45.7]	100.0
1/2 (n=665)	45.4	[40.6,50.3]	8.1	[5.9,10.9]	13.0	[10.0,16.8]	33.5	[29.3,38.0]	100.0
More 1/2 (n=547)	31.8	[27.2,36.8]	4.6	[3.0,7.1]	14.2	[11.1,18.1]	49.4	[44.3,54.4]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(12) =	128.2132								
Design-based F(10.55, 2868.31) =	7.2016	Pr =	0.000						

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Table 3.3 – continued from previous page

	Education and Employment Status								
	Edu.		**E-E**		**Emp.**		**NEET**		**Total**
	%	CI	%	CI	%	CI	%	CI	%
Deceased Siblings									
None (n=1,910)	46.6	[43.1,50.0]	6.7	[5.5,8.2]	14.6	[12.7,16.6]	32.2	[29.4,35.1]	100.0
At Least One (n=899)	25.4	[21.8,29.3]	5.0	[3.5,7.1]	17.7	[14.6,21.3]	52.0	[47.7,56.3]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(3) =	132.4524								
Design-based F(2.91, 791.42) =	28.5151	Pr =	0.000						
Childhood Place									
Province/District (n=1,830)	48.5	[44.9,52.1]	6.2	[5.1,7.7]	11.8	[10.0,13.9]	33.5	[30.5,36.5]	100.0
Subdistrict/Village (n=979)	20.5	[17.5,23.9]	6.0	[4.6,7.8]	24.3	[21.3,27.5]	49.1	[45.2,53.1]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(3) =	209.9865								
Design-based F(2.93, 797.78) =	55.7060	Pr =	0.000						
Childhood Region									
West (n=596)	48.4	[43.0,53.8]	8.8	[6.7,11.5]	15.5	[12.5,19.1]	27.3	[22.9,32.2]	100.0
South (n=339)	44.7	[37.7,52.0]	5.2	[3.5,7.7]	13.4	[9.6,18.4]	36.7	[30.5,43.3]	100.0
Central (n=512)	48.2	[43.2,53.3]	3.8	[2.5,5.9]	12.1	[9.0,16.1]	35.8	[30.8,41.2]	100.0
North (n=356)	29.1	[23.3,35.7]	10.4	[7.4,14.3]	28.5	[22.0,36.0]	32.0	[24.7,40.3]	100.0
East (n=1,006)	26.9	[22.8,31.6]	4.0	[2.7,6.1]	15.1	[12.2,18.5]	53.9	[49.5,58.3]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(12) =	208.6484								
Design-based F(10.12, 2751.56) =	11.8113	Pr =	0.000						
Wealth Status									
Poorest (n=681)	14.6	[11.6,18.3]	8.0	[5.7,11.1]	21.9	[18.3,26.0]	55.5	[50.4,60.4]	100.0
Poorer (n=677)	32.0	[27.0,37.4]	5.0	[3.4,7.4]	16.9	[13.4,21.1]	46.1	[40.9,51.4]	100.0
Middle (n=563)	43.2	[38.3,48.3]	4.3	[2.8,6.5]	14.7	[11.4,18.7]	37.8	[32.7,43.1]	100.0
Richer (n=494)	51.3	[45.1,57.5]	8.5	[5.8,12.3]	13.3	[9.6,18.0]	26.9	[22.4,31.9]	100.0
Richest (n=394)	60.0	[53.5,66.1]	5.3	[3.4,8.2]	10.8	[7.8,15.0]	23.9	[19.3,29.1]	100.0
Total (n=2,809)	40.3	[37.4,43.1]	6.2	[5.2,7.3]	15.5	[13.8,17.4]	38.1	[35.6,40.7]	100.0
Pearson: Uncorrected chi2(12) =	294.4105								
Design-based F(10.65, 2896.30) =	15.3088	Pr =	0.000						

Source: Author's own calculation using the TDHS-2013.
Note: Edu: Only in Education; E-E: In Education and Employment; Emp: Only in Employment; NEET: Not in Education, Employment, or Training.

Table 3.4: Descriptive Statistics for Women Aged 15-24

	N	Mean				
	Observations	Education	EEA	Migrated	Married	NEET
Mother's Education						
Below Primary	1,174	7.500	-0.159	0.345	0.400	0.551
Primary	1,243	10.074	0.160	0.275	0.221	0.304
Lower Sec/More	392	11.143	0.497	0.332	0.104	0.198
Total	2,809	9.265	0.093	0.311	0.270	0.381
Father's Education						
Below Primary	468	6.354	-0.250	0.339	0.440	0.611
Primary	1,467	9.169	0.032	0.290	0.303	0.401
Lower Sec/More	874	10.764	0.350	0.332	0.139	0.242
Total	2,809	9.265	0.093	0.311	0.270	0.381
Mother Tongue						
Turkish	2,054	10.079	0.224	0.301	0.250	0.317
Non Turkish	755	6.740	-0.313	0.342	0.333	0.578
Total	2,809	9.265	0.093	0.311	0.270	0.381
Marriage Type of Parents						
Not Consanguineous	1,974	9.600	0.162	0.319	0.251	0.342
Consanguineous	835	8.396	-0.085	0.290	0.320	0.482
Total	2,809	9.265	0.093	0.311	0.270	0.381
Sibling Size						
1-2	561	10.809	0.528	0.241	0.108	0.186
3	580	10.241	0.179	0.280	0.207	0.306
4	488	9.739	0.103	0.307	0.289	0.367
5 or 6	564	8.389	-0.218	0.360	0.389	0.518
7 and more	616	6.738	-0.239	0.386	0.406	0.581
Total	2,809	9.265	0.093	0.311	0.270	0.381
Share of Male Siblings						
0	469	10.277	0.376	0.236	0.176	0.236
0-1/3	471	8.683	-0.107	0.336	0.331	0.446
1/3-1/2	657	8.878	-0.007	0.356	0.283	0.409
1/2	665	9.988	0.201	0.289	0.213	0.335
More 1/2	547	8.296	-0.038	0.338	0.369	0.494
Total	2,809	9.265	0.093	0.311	0.270	0.381
Deceased Siblings						
None	1,910	9.790	0.183	0.281	0.207	0.322
At Least One	899	8.028	-0.120	0.383	0.420	0.520
Total	2,809	9.265	0.093	0.311	0.270	0.381
Childhood Place						
Province/District	1,830	9.817	0.207	0.260	0.221	0.335
Subdistrict/Village	979	7.945	-0.179	0.432	0.388	0.491
Total	2,809	9.265	0.093	0.311	0.270	0.381
Childhood Region						
West	596	10.143	0.217	0.234	0.171	0.273
South	339	9.322	0.233	0.321	0.276	0.367
Central	512	10.282	0.231	0.311	0.312	0.358
North	356	9.683	0.111	0.478	0.282	0.320
East	1,006	7.459	-0.199	0.349	0.348	0.539
Total	2,809	9.265	0.093	0.311	0.270	0.381
Wealth Status						
Poorest	681	6.784	-0.401	0.256	0.341	0.555
Poorer	677	8.463	-0.067	0.334	0.318	0.461
Middle	563	9.653	0.158	0.378	0.306	0.378
Richer	494	10.301	0.305	0.332	0.211	0.269
Richest	394	11.102	0.466	0.235	0.164	0.239
Total	2,809	9.265	0.093	0.311	0.270	0.381

3.6. Measurement of Inequality of Opportunity in NEET Status

3.6.1 Parametric Model of the Association between NEET and Early Life Circumstances

As discussed in Section 3.4, there are different methods of analyzing IOP based on outcome, circumstance, and effort. In the case of NEET, the method adopted in this essay combines the ex-ante and ex-post approaches using circumstances and efforts through a parametric equation. The approach requires fitting a model to obtain the predicted values of NEET status before calculating the IOP index. Following Paes de Barros et al. (2008) and using a nonlinear parametric model, I calculate the probability of NEET for all woman sample and sub-population groups, namley five regions and three age categories. Therefore, I am using the following NEET function;

$$NEET = f(C, D, e, u) \tag{3.1}$$

Where C is a vector of individual circumstances, D is a vector of demographic controls, and e is a vector of efforts. The residual tern u captures luck and other random factors that are not measured by the other variables in the NEET function. Firstly, in the first benchmark model (3.2), I estimate the impact of early life circumstances controlling for age (demographic control) as a fixed effect. In model 3.3, I introduce effort and preference variables, years of education, EEA index, migration, and marital status, into the model 3.2 as Roemer (1998) argued that all variables that correlate with the circumstances also need to be treated as circumstances.

$$\begin{aligned} NEET_i^* =& \alpha_0 + \alpha_1 AG_i + \beta_1 MT + \beta_2 ME \\ &+ \beta_3 FE + \beta_4 CM + \beta_5 SS + \beta_6 SC \\ &+ \beta_7 SD + \beta_8 PC + \beta_9 RC + \beta_{10} W + e_i \end{aligned} \tag{3.2}$$

$$\begin{aligned} NEET_i^* =& \alpha_0 + \alpha_1 AG_i + \alpha_2 ED_i + \alpha_3 EEA_i + \alpha_3 MC_i + \alpha_3 MS_i \\ &+ \beta_1 MT + \beta_2 ME + \beta_3 FE + \beta_4 CM + \beta_5 SS + \beta_6 SC \\ &+ \beta_7 SD + \beta_8 PC + \beta_9 RC + \beta_{10} W + \theta_i \end{aligned} \tag{3.3}$$

Where N^* denotes dichotomous NEET status for individual i. Circumstance variables are mother tongue (MT), father's highest education level (FE), mother's highest education level (ME), quintile group of socio-economic wealth status (W), marriage type of parents (CM), sibling size (SS), sibling composition (SC), siblings deceased (SD), place of childhood (PC), region of childhood (RC). On the other hand, effort and preference variables include years of education (ED), education and employment attitude (EEA) (WS), migrated status (MC), marital status (MS). Lastly, age (AG) is used as a demographic control.

Since the NEET status is dichotomous and the model is non-linear, I use the logit model specified in Equation 3.4

$$Pr[N^* = 1|D_i, C_i] = \frac{exp\{d + C_i\beta + D_i\alpha\}}{1 + exp\{d + C_i\beta + D_i\alpha\}} \tag{3.4}$$

All coefficients found by Eq. 3.3 show the direct effect of circumstances on the NEET state when the variables of effort and preference are controlled. However, the early life circumstances can directly or indirectly affect the NEET status. I use the two-step procedure proposed by Trannoy et al. (2010) to see the global effects. First, we need to purge the effect of circumstances on the years of education (Eq. 3.5), EEA (Eq. 3.6), migration status (Eq. 3.7), and marital status (Eq. 3.5). Here, the estimated residuals in these equations indicate other effects such as effort, preference, luck, and unobserved conditions such as environmental factors.

$$\begin{aligned} ED_i^* =& \alpha_0 + \alpha_1 AG_i + \beta_1 MT + \beta_2 ME \\ &+ \beta_3 FE + \beta_4 CM + \beta_5 SS + \beta_6 SC \\ &+ \beta_7 SD + \beta_8 PC + \beta_9 RC + \beta_{10} W + u_i \end{aligned} \tag{3.5}$$

$$\begin{aligned} EEA_i^* =& \alpha_0 + \alpha_1 AG_i + \beta_1 MT + \beta_2 ME \\ &+ \beta_3 FE + \beta_4 CM + \beta_5 SS + \beta_6 SC \\ &+ \beta_7 SD + \beta_8 PC + \beta_9 RC + \beta_{10} W + v_i \end{aligned} \tag{3.6}$$

$$\begin{aligned} MC_i^* =& \alpha_0 + \alpha_1 AG_i + \beta_1 MT + \beta_2 ME \\ &+ \beta_3 FE + \beta_4 CM + \beta_5 SS + \beta_6 SC \\ &+ \beta_7 SD + \beta_8 PC + \beta_9 RC + \beta_{10} W + t_i \end{aligned} \tag{3.7}$$

$$
\begin{aligned}
MS_i^* =& \alpha_0 + \alpha_1 AG_i + \beta_1 MT + \beta_2 ME \\
&+ \beta_3 FE + \beta_4 CM + \beta_5 SS + \beta_6 SC \\
&+ \beta_7 SD + \beta_8 PC + \beta_9 RC + \beta_{10} W + z_i
\end{aligned} \tag{3.8}
$$

Secondly, I estimate the Equation 3.9 by using the predicted residuals $\widehat{u_i}$, $\widehat{v_i}$, $\widehat{t_i}$, and $\widehat{z_i}$ obtained from the Equations of 3.5, 3.6, 3.7, and 3.8 as additional confounders in the original Equation 3.2.

$$
\begin{aligned}
NEET_i^* =& \alpha_0 + \alpha_1 AG_i + \beta_1 MT + \beta_2 ME + \beta_3 FE + \beta_4 CM \\
&+ \beta_5 SS + \beta_6 SC + \beta_7 SD + \beta_8 PC + \beta_9 RC + \beta_{10} EEA \\
&+ \alpha_2 \widehat{u_i} + \alpha_2 \widehat{v_i} + \alpha_2 \widehat{t_i} + \alpha_2 \widehat{z_i} + \epsilon_i
\end{aligned} \tag{3.9}
$$

Then, the logistic model becomes;

$$
Pr[N^* = 1 | C_i^p, \widehat{u_i} + \widehat{v_i} + \widehat{t_i} + \widehat{z_i}, D_i] = \frac{exp\left\{d + C_i^p \beta + \alpha \widehat{u_i} + \alpha \widehat{v_i} + \alpha \widehat{t_i} + \alpha \widehat{z_i} + D_i \alpha\right\}}{1 + exp\left\{d + C_i^p \beta + \alpha \widehat{u_i} + \alpha \widehat{v_i} + \alpha \widehat{t_i} + \alpha \widehat{z_i} + D_i \alpha\right\}} \tag{3.10}
$$

The coefficients of early life circumstances in the Equation 3.9 now show the global effects, which are the sum of direct and indirect effects. On the other hand, coefficients of estimated residuals show the direct effect of effort, preferences, chance and unobserved conditions other than observed conditions. Also, it is possible to compare the direct effect from the Equation 3.3 with the global one from the Equation 3.9, so that we can observe the indirect effect of education, women's situation, migration and marriage.

3.6.2 Dissimilarity Index and Decomposition

After when we have empirically modeled the probability of being NEET as a function of early life circumstances, efforts and preferences with a logistic model, it is time to find an appropriate measure of inequality of opportunity and to measure it. While Theil (Bourguignon et al., 2007), Mean Logarithmic Deviation (Checchi

and Peragine, 2010; Ferreira and Gignoux, 2011), Variance (Ferreira and Gignoux, 2013), and GINI (Lefranc et al., 2008) are mostly used measures for continuous outcomes, Dissimilarity Index is widely adopted for dichotomous outcomes (Paes de Barros et al., 2008, 2009; Singh, 2011, 2012; Yalonetzky, 2012; Abras et al., 2013; Foguel and Veloso, 2014; Jones, 2014; Krafft and Alawode, 2018).

As stated earlier, the estimated probability of NEET state is needed to calculate the inequality of opportunity. The inactivity state is a binary variable equal to one if the woman is NEET and 0 otherwise. Therefore, the index of difference for binary results is given by Paes de Barros et al. (2008, 2009):

$$\widehat{D} = \frac{1}{2\bar{p}} \sum_{i=1}^{n} w_i |\widehat{p_i} - \bar{p}| \tag{3.11}$$

where $\widehat{p_i}$ is the predicted probability of being NEET for individuals $i = 1, ..., n$. The estimated conditional probability is $\bar{p} = \sum_{i=1}^{n} w_i \widehat{p_i}$, where w_i denote sampling weights. The model is based on comparing the distance between the estimated probability of NEET and the average predicted probability of the whole population. Regardless of the sign of this comparison, the goal of this approach is to minimize overall differences. For example, in a hypothetical situation where the conditions cannot explain the outcome variable at all, the predicted probabilities and hence the dissimilarity index will be zero, this is the perfect equality of opportunity situation. In another hypothetical case where the conditions now perfectly explain the result, all predicted probabilities will be minus one or plus one and hence the index will be equal to one. The index can be interpreted as the percentage of opportunities that should be redistributed from high-risk group to low-risk group according to their NEET status. This happens when an equal number of NEETs are found in all state groups. The index ranges from 0 to 1. Zero indicates perfect equality of opportunity. One advantage of the Dissimilarity Index is that it is possible to decompose the relative contribution of the circumstances in inequality of opportunity by using a Shapley decomposition method (Shorrocks, 2013), which is based on the change in inequality that arises when a new one is added to a set of circumstance variables. The contribution of each circumstance is measured by the average change in inequality over all possible sequences of inclusion.

3.7. Results

3.7.1 Associations of Circumstances, Efforts and Preferences with the NEET Status

In this section, firstly, I estimate the associations between the NEET status and the early life circumstances using Eq 3.2 (Model 1 in Table 3.6), this allows an assessment of the global impact of circumstances on NEET status. Secondly, I run Eq 3.3 (Model 2 in Table 3.6), which includes effort and preference variables and circumstances. In the third step, by using Eq 3.5, 3.6,3.7,3.8, I purge education, EEA, migration, and marital status from the observed circumstances to get predicted residuals that covers effort, preferences, luck, and unobserved ones. Lastly, I estimate the Eq. 3.9 (Model 3 in Table 3.6) which includes the circumstances and the predicted residuals from the previous model. All models are repeated for three age groups: 15-24, 20-29 and 15-29.

To predict the residuals from purging models, Table 3.5 shows OLS results of Equations of 3.5 (education), 3.6 (EEA index), 3.7 (migration from childhood place), and 3.8 (marital status). The significance and sign of relationships in each equation and age group is different. Wealth status has positive and strong relationships for all dependent variables except marital status. The relationship of the origin of a sub-district or village to education and the EEA index is negative, but positive about immigration and marriage. Regarding the childhood region, the coefficients show a more complex pattern. Moreover, the increase in the size of siblings decreases the education level and the status of women while increasing the likelihood of migration. A more balanced sibling structure (equal numbers of boys and girls) slightly raises the level of education, but lowers female status for the 15-24 age group. There is a negative relationship between the consanguineous marriages of the parents and education and immigration. Parental education increases women's education, the likelihood of migration, and reduces the risk of marriage. It also has smaller positive effects on the woman's status. The number of siblings who died, which is an indicator of childhood wealth, has a negative correlation with education and a positive correlation with being married. Having a mother tongue of not Turkish reduces the educational level, EEA index and the probability of marriage, but does not show a significant correlation with immigration.

Table 3.5: OLS Results for Purging Efforts and Preferences

	15-24				20-29				15-29			
	Education	**EEA**	**Migration**	**Married**	**Education**	**EEA**	**Migration**	**Married**	**Education**	**EEA**	**Migration**	**Married**
Mother's Education												
Below Primary (Ref.)												
Primary	0.628***	-0.039	0.011	-0.076***	1.059***	0.011	0.055*	-0.069***	0.945***	0.003	0.031	-0.064***
	(0.143)	(0.069)	(0.028)	(0.023)	(0.202)	(0.073)	(0.030)	(0.025)	(0.143)	(0.057)	(0.024)	(0.019)
Lower Sec/More	0.803***	0.010	0.098**	-0.107***	1.822***	0.193*	0.161***	-0.116***	1.253***	0.097	0.116***	-0.091***
	(0.184)	(0.103)	(0.042)	(0.031)	(0.296)	(0.110)	(0.051)	(0.040)	(0.207)	(0.085)	(0.037)	(0.026)
Father's Education												
Below Primary (Ref.)												
Primary	1.082***	0.040	0.041	0.001	0.730***	0.062	-0.011	0.003	1.006***	0.062	-0.002	-0.002
	(0.214)	(0.104)	(0.033)	(0.031)	(0.245)	(0.079)	(0.030)	(0.030)	(0.197)	(0.075)	(0.025)	(0.024)
Lower Sec/More	1.742***	0.115	0.116***	-0.089**	1.942***	0.061	0.085**	-0.109***	1.866***	0.129	0.085***	-0.080***
	(0.240)	(0.111)	(0.038)	(0.036)	(0.292)	(0.099)	(0.041)	(0.036)	(0.224)	(0.087)	(0.031)	(0.029)
Mother Tongue												
Turkish (Ref.)												
Non Turkish	-1.230***	-0.208**	0.026	-0.060**	-2.004***	-0.220***	0.044	-0.051	-1.401***	-0.181**	0.027	-0.061**
	(0.198)	(0.094)	(0.037)	(0.029)	(0.280)	(0.080)	(0.036)	(0.036)	(0.193)	(0.070)	(0.030)	(0.026)
Marriage Type of Parents												
Not Consanguineous (Ref.)												
Consanguineous	-0.261**	-0.077	-0.054**	0.011	-0.248	-0.045	-0.059**	-0.002	-0.229*	-0.061	-0.056***	0.005
	(0.126)	(0.063)	(0.023)	(0.021)	(0.163)	(0.063)	(0.027)	(0.026)	(0.129)	(0.050)	(0.020)	(0.018)
Sibling Size												
1-2 (Ref.)												
3	-0.105	-0.433***	-0.014	0.056*	-0.624**	-0.285***	0.008	0.101**	-0.270	-0.348***	-0.010	0.059**
	(0.180)	(0.096)	(0.034)	(0.033)	(0.264)	(0.108)	(0.044)	(0.042)	(0.194)	(0.078)	(0.030)	(0.029)
4	-0.237	-0.337***	0.046	0.088***	-0.852***	-0.215**	0.073*	0.181***	-0.506***	-0.269***	0.049	0.116***
	(0.184)	(0.091)	(0.037)	(0.031)	(0.245)	(0.098)	(0.041)	(0.036)	(0.186)	(0.079)	(0.030)	(0.025)
5 or 6	-0.448**	-0.607***	0.061	0.151***	-0.840***	-0.442***	0.065	0.203***	-0.498**	-0.486***	0.055	0.151***
	(0.215)	(0.110)	(0.040)	(0.038)	(0.281)	(0.127)	(0.049)	(0.040)	(0.226)	(0.095)	(0.035)	(0.029)

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Table 3.5 – continued from previous page

	15-24				20-29				15-29			
	Education	**EEA**	**Migration**	**Married**	**Education**	**EEA**	**Migration**	**Married**	**Education**	**EEA**	**Migration**	**Married**
7 and more	-0.880**	-0.475***	0.099**	0.134***	-1.345***	-0.388***	0.146***	0.199***	-1.058***	-0.378***	0.110***	0.152***
	(0.339)	(0.131)	(0.049)	(0.046)	(0.347)	(0.144)	(0.053)	(0.044)	(0.292)	(0.105)	(0.042)	(0.034)
Share of Male Siblings												
0 (Ref.)												
0-1/3	0.162	-0.078	-0.019	-0.059	0.086	-0.048	-0.015	-0.040	0.207	-0.058	-0.029	-0.045
	(0.193)	(0.110)	(0.037)	(0.039)	(0.263)	(0.103)	(0.043)	(0.045)	(0.194)	(0.086)	(0.032)	(0.033)
1/3-1/2	0.100	0.050	0.047	-0.060*	0.109	0.046	0.044	-0.015	0.146	0.030	0.025	-0.031
	(0.175)	(0.097)	(0.032)	(0.036)	(0.245)	(0.094)	(0.039)	(0.041)	(0.186)	(0.077)	(0.027)	(0.030)
1/2	0.337***	-0.124*	0.000	-0.037	-0.292	-0.084	-0.008	-0.013	0.057	-0.082	-0.024	-0.027
	(0.125)	(0.069)	(0.027)	(0.025)	(0.206)	(0.082)	(0.035)	(0.036)	(0.149)	(0.059)	(0.024)	(0.023)
More 1/2	-0.225	0.022	0.021	-0.003	-0.170	0.121	0.042	0.024	-0.156	0.053	0.013	-0.002
	(0.190)	(0.095)	(0.030)	(0.033)	(0.254)	(0.100)	(0.042)	(0.041)	(0.194)	(0.077)	(0.030)	(0.029)
Deceased Siblings												
None (Ref.)												
At Least One	-0.333**	-0.071	0.018	0.058***	-0.554***	-0.095	0.009	0.037**	-0.430***	-0.047	0.025	0.039**
	(0.130)	(0.074)	(0.023)	(0.020)	(0.135)	(0.063)	(0.024)	(0.018)	(0.105)	(0.056)	(0.019)	(0.016)
Childhood Place												
Province/District (Ref.)												
Subdistrict/Village	-0.538***	-0.112	0.182***	0.072***	-0.880***	-0.085	0.194***	0.089***	-0.804***	-0.134**	0.198***	0.085***
	(0.146)	(0.070)	(0.027)	(0.024)	(0.180)	(0.059)	(0.029)	(0.023)	(0.144)	(0.054)	(0.024)	(0.018)
Childhood Region												
West (Ref.)												
South	0.252	0.329***	0.048	-0.000	0.399	0.304***	0.062	-0.022	0.400*	0.309***	0.070**	-0.007
	(0.201)	(0.081)	(0.035)	(0.029)	(0.301)	(0.089)	(0.044)	(0.037)	(0.226)	(0.067)	(0.033)	(0.026)
Central	0.299**	0.117	0.035	0.079***	-0.032	0.111	0.047	0.088***	0.110	0.132**	0.044*	0.071***
	(0.132)	(0.072)	(0.027)	(0.024)	(0.184)	(0.077)	(0.034)	(0.031)	(0.135)	(0.062)	(0.025)	(0.021)
North	0.182	0.107	0.145***	-0.022	0.432*	0.161	0.223***	-0.011	0.423**	0.125	0.176***	-0.010
	(0.178)	(0.097)	(0.037)	(0.028)	(0.226)	(0.100)	(0.042)	(0.033)	(0.181)	(0.080)	(0.033)	(0.024)
East	0.005	0.176*	0.057	0.014	-0.132	0.180*	0.048	-0.000	-0.026	0.136*	0.061*	0.005

Continued on next page

Table 3.5 – continued from previous page

	15-24				20-29				15-29			
	Education	**EEA**	**Migration**	**Married**	**Education**	**EEA**	**Migration**	**Married**	**Education**	**EEA**	**Migration**	**Married**
	(0.202)	(0.099)	(0.041)	(0.033)	(0.264)	(0.099)	(0.047)	(0.036)	(0.190)	(0.082)	(0.036)	(0.027)
Wealth Status												
Poorest (Ref.)												
Poorer	0.781***	0.214**	0.140***	0.028	0.816***	0.237**	0.113***	-0.012	0.566***	0.228***	0.130***	0.016
	(0.210)	(0.083)	(0.031)	(0.031)	(0.236)	(0.095)	(0.034)	(0.033)	(0.192)	(0.070)	(0.026)	(0.024)
Middle	1.204***	0.372***	0.213***	0.067**	1.485***	0.293***	0.168***	-0.009	1.059***	0.339***	0.196***	0.026
	(0.213)	(0.101)	(0.036)	(0.034)	(0.258)	(0.109)	(0.038)	(0.034)	(0.211)	(0.084)	(0.030)	(0.026)
Richer	1.474***	0.447***	0.190***	0.011	2.217***	0.543***	0.190***	0.007	1.588***	0.492***	0.205***	0.023
	(0.211)	(0.103)	(0.041)	(0.036)	(0.274)	(0.097)	(0.041)	(0.040)	(0.213)	(0.080)	(0.035)	(0.030)
Richest	1.613***	0.487***	0.091**	0.034	3.129***	0.634***	0.120**	0.033	2.325***	0.579***	0.131***	0.033
	(0.232)	(0.112)	(0.043)	(0.036)	(0.298)	(0.113)	(0.047)	(0.041)	(0.245)	(0.088)	(0.038)	(0.031)
Constant	6.253***	0.213	-0.278***	-0.004	8.008***	-0.057	0.026	0.239***	6.163***	0.053	-0.265***	-0.018
	(0.311)	(0.160)	(0.047)	(0.043)	(0.399)	(0.164)	(0.063)	(0.058)	(0.312)	(0.131)	(0.042)	(0.038)
Observations	2809	2809	2809	2809	2727	2727	2727	2727	4213	4213	4213	4213
Pseudo R^2												

Note: Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Age variable is modeled as fixed-effect.

Table 3.6 shows the regression results of three models for the age groups of 15-24, 20-29 and 15-29 (See the results of the sub-samples of urban in Table B.14, rural in Table B.15, and regions in Table B.13). First, the coefficients in Model 1 report the global impact of conditions on education, women's status, immigration and marital status, without control of efforts, luck and choices. Second, the coefficients in Model 2 show the direct relationships that hold control for education, women's status, immigration, and marital status. Some coefficients become insignificant due to the transmission channel. If impacts fall from Model 1 to Model 2, this indicates that only part of the effect of circumstances is direct: effort and preference factors capture some of their impact on NEET status. Finally, the probability ratios of Model 3 show the overall effect (direct and indirect) of childhood conditions on NEET status. It is noteworthy that the odds ratios of Model 1 and Model 3 are almost the same. It supports that conditions associated with early life circumstances are also circumstances.

Circumstances and Demographics

As seen from Table 3.6, at the all age groups, education of mother coefficients are insignificant in Model 2 and significant in Model 1 and Model 3. It means that the effect of mother's education on NEET status is indirect through education, EEA index, migration and marital status. So, its direct effect is negligible. On the other hand, the education of the father has a relatively small influence on the NEET status and the coefficient of lower secondary education / higher is more significant.

A larger sibling size increases the risk of NEET. Most of the associations, however, relate to the indirect channel. In relation to the proportion of male siblings, the case in which girls and boys are equal has the greatest influence on the NEET status in all age groups and models, but not significantly (See Table 3.6). It shows that fewer or more male siblings reduce women's NEET risk due to possible mechanisms of gender roles and resource allocation. With fewer male siblings, the parents might have devoted more resources to educating women. In addition, women have to work in the household because the household income is too low. With more male siblings, women can be valued more by their parents and gender roles could be less influential, which increases educational and work opportunities. Of course, both arguments require further evidence of causality with further research.

As explained in the previous sections, the presence of at least one deceased sibling is considered a proxy variable for child well-being. The wealth index is another well-being variable. Increased wellbeing reduces the risk of NEET, but to different

degrees in the age groups and the models. The presence of deceased siblings is more influential in the 20 to 24 age group. In addition, in models 3, the richer category has a lower risk of NEET than the richest category, where women can be more selective about jobs.

Childhood in the sub-district/village reduces the risk of NEET in the 20-29 age group, possibly through employment of selling small things, selling goods in the market place, working in the family farm or business, taking care of children and working as a maid, etc. For all women, the childhood in the region of Center increases the risk due to possible cultural influence.

Mother tongue and type of marital status can be decisive for the cultural norms and gender roles of women. A mother tongue other than Turkish directly or indirectly increases the NEET risk in all three age groups and models. In the 15- to 24-year-old age group, for example, the NEET risk doubles overall if one does not have a Turkish mother tongue. Hence, it is safe to say that the mother tongue has a lasting impact on NEET status. Moreover, if marriage type of parents is consanguineous, women have a higher risk of NEET in Model 1 at the age groups of 15-24 and 15-29. Both variable show that traditional family norms may have strengthened gender roles against participation in education and employment.

Efforts and Preferences

Model 3 yields new insights into the impact of the four residuals in terms of the reduced equations (Eq. 3.5, Eq. 3.6, Eq. 3.7, Eq. 3.8). It shows the important effects of women's educational attainment and perspective on women's status on being NEET, whatever the circumstances. Descending trajectories have an impact on being NEET, controlling for early life circumstances. Therefore, efforts and luck for higher education as well as preferences for a higher EEA index decrease the probability of being NEET at age 15-24. However, the significance of the two residuals terms could also be explained by a reverse impact of woman NEET status on educational attainment or EEA index. Overall, it is worth mentioning some implications regarding the effects of circumstances, efforts, luck, and preferences on NEET risk.

Table 3.6: Log-odds Ratios for the Associations of NEET Status by Age Groups of Women

	15-24			20-29			15-29		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Mother's Education									
Less than Primary (Ref.)									
Primary	0.733**	0.881	0.716**	0.816*	1.018	0.843	0.805**	0.995	0.817*
	(0.097)	(0.123)	(0.099)	(0.100)	(0.129)	(0.104)	(0.083)	(0.110)	(0.088)
Lower Sec/More	0.630**	0.905	0.674	0.618**	0.884	0.605**	0.659**	0.930	0.695**
	(0.145)	(0.233)	(0.172)	(0.128)	(0.196)	(0.134)	(0.114)	(0.173)	(0.127)
Father'S Education									
Less than Primary (Ref.)									
Primary	1.006	1.081	0.915	1.149	1.279	1.207	1.162	1.332**	1.184
	(0.161)	(0.182)	(0.156)	(0.167)	(0.200)	(0.190)	(0.144)	(0.177)	(0.156)
Lower Sec/More	0.654**	0.963	0.611**	0.919	1.414*	0.929	0.865	1.301	0.884
	(0.126)	(0.200)	(0.131)	(0.160)	(0.278)	(0.175)	(0.126)	(0.216)	(0.141)
Mother Tongue									
Turkish (Ref.)									
Other	1.718***	1.847***	2.037***	1.490**	1.443**	1.677***	1.743***	1.807***	2.013***
	(0.293)	(0.359)	(0.396)	(0.244)	(0.249)	(0.279)	(0.246)	(0.263)	(0.291)
Marriage Type of Parents									
Not Consanguineous (Ref.)									
Consanguineous	1.276*	1.248	1.242	1.068	1.036	1.025	1.196*	1.165	1.161
	(0.162)	(0.169)	(0.169)	(0.138)	(0.132)	(0.131)	(0.124)	(0.126)	(0.126)
Sibling Size									
1-2 (Ref.)									
3	2.060***	1.626*	1.959**	1.757***	1.457	1.848**	1.862***	1.548**	1.794***
	(0.514)	(0.433)	(0.520)	(0.360)	(0.347)	(0.439)	(0.344)	(0.309)	(0.359)
4	1.683**	1.203	1.627**	1.877***	1.348	1.853***	1.876***	1.388*	1.762***
	(0.366)	(0.284)	(0.383)	(0.395)	(0.315)	(0.427)	(0.314)	(0.254)	(0.321)
5 or 6	2.619***	1.543	2.582***	1.895***	1.291	1.929***	2.227***	1.518**	2.141***
	(0.627)	(0.438)	(0.721)	(0.376)	(0.278)	(0.411)	(0.406)	(0.295)	(0.419)
7 and more	2.095***	1.275	2.175**	2.118***	1.426	2.276***	2.127***	1.413	2.145***
	(0.549)	(0.386)	(0.654)	(0.517)	(0.379)	(0.596)	(0.443)	(0.319)	(0.477)
Share of Male Siblings									
0 (Ref.)									
0-1/3	0.874	0.976	0.872	1.014	1.120	1.100	0.917	1.008	0.963
	(0.189)	(0.241)	(0.216)	(0.209)	(0.239)	(0.235)	(0.149)	(0.176)	(0.167)
1/3-1/2	0.776	0.908	0.882	1.016	1.091	1.118	0.906	0.996	1.012
	(0.164)	(0.208)	(0.202)	(0.204)	(0.232)	(0.239)	(0.159)	(0.176)	(0.180)
1/2	1.219	1.344	1.350	1.267	1.287	1.420*	1.146	1.182	1.231
	(0.252)	(0.301)	(0.303)	(0.199)	(0.239)	(0.264)	(0.160)	(0.190)	(0.198)
More 1/2	1.046	1.033	1.088	1.306	1.309	1.420	1.142	1.163	1.233
	(0.211)	(0.229)	(0.241)	(0.279)	(0.294)	(0.320)	(0.191)	(0.201)	(0.214)
Deceased Siblings									
None (Ref.)									
At Least One	1.035	0.863	1.025	1.227*	1.107	1.236*	1.134	1.020	1.150
	(0.135)	(0.127)	(0.148)	(0.145)	(0.139)	(0.153)	(0.119)	(0.114)	(0.127)
Childhood Place									
Province/District (Ref.)									
Sub-district/Village	1.120	0.877	1.033	0.869	0.671***	0.768**	0.989	0.753***	0.875
	(0.144)	(0.112)	(0.131)	(0.100)	(0.081)	(0.090)	(0.100)	(0.080)	(0.091)
Childhood Region									
West (Ref.)									
South	0.848	0.896	0.804	1.063	1.201	1.105	0.976	1.089	0.991

Continued on next page

Table 3.6 – continued from previous page

	15-24			20-29			15-29		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
	(0.155)	(0.167)	(0.151)	(0.189)	(0.211)	(0.194)	(0.158)	(0.167)	(0.153)
Central	1.301	1.119	1.227	1.699***	1.562***	1.801***	1.530***	1.406**	1.553***
	(0.233)	(0.220)	(0.243)	(0.263)	(0.250)	(0.289)	(0.210)	(0.195)	(0.217)
North	0.694*	0.719	0.638*	0.947	1.063	0.933	0.828	0.908	0.814
	(0.151)	(0.164)	(0.146)	(0.178)	(0.217)	(0.190)	(0.145)	(0.171)	(0.154)
East	1.119	1.152	1.085	1.632***	1.814***	1.766***	1.438**	1.567***	1.520***
	(0.227)	(0.227)	(0.213)	(0.251)	(0.274)	(0.265)	(0.228)	(0.235)	(0.228)
Wealth Status									
Poorest (Ref.)									
Poorer	0.828	0.865	0.814	1.181	1.394*	1.239	0.966	1.044	0.971
	(0.149)	(0.165)	(0.156)	(0.207)	(0.256)	(0.229)	(0.146)	(0.173)	(0.162)
Middle	0.723*	0.717	0.619**	1.166	1.466*	1.139	0.851	0.958	0.786
	(0.142)	(0.158)	(0.132)	(0.225)	(0.298)	(0.234)	(0.139)	(0.171)	(0.141)
Richer	0.462***	0.521***	0.384***	0.917	1.176	0.836	0.654**	0.780	0.577***
	(0.106)	(0.123)	(0.091)	(0.200)	(0.250)	(0.177)	(0.122)	(0.144)	(0.107)
Richest	0.584**	0.670	0.513**	0.687*	0.869	0.612**	0.551***	0.699*	0.498***
	(0.142)	(0.178)	(0.136)	(0.152)	(0.208)	(0.145)	(0.111)	(0.148)	(0.106)
Education		0.889***			0.903***			0.890***	
		(0.031)			(0.021)			(0.019)	
EEA		0.783***			0.981			0.893**	
		(0.041)			(0.053)			(0.041)	
Migrated		0.900			0.798**			0.845	
		(0.160)			(0.090)			(0.094)	
Married		8.375***			5.259***			5.782***	
		(1.622)			(0.723)			(0.756)	
Education Res 1524			0.889***						
			(0.031)						
EEA Res 1524			0.783***						
			(0.041)						
Migrated Res 1524			0.900						
			(0.160)						
Married Res 1524			8.375***						
			(1.622)						
Education Res 2029						0.903***			
						(0.021)			
EEA Res 2029						0.981			
						(0.053)			
Migrated Res 2029						0.798**			
						(0.090)			
Married Res 2029						5.259***			
						(0.723)			
Education Res 1529									0.890***
									(0.019)
EEA Res 1529									0.893**
									(0.041)
Migrated Res 1529									0.845
									(0.094)
Married Res 1529									5.782***
									(0.756)
Observations	2809	2809	2809	2727	2727	2727	4213	4213	4213

Note: Exponentiated coefficients; Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Age variable is modeled as fixed-effect.

3.7.2 Inequality of Opportunity in NEET Status

I use the predicted probabilities from the estimation of the logistic regression models, given by Eq. 3.5, Eq. 3.6, Eq. 3.7, Eq. 3.5, and Eq. 3.10 to calculate the dissimilarity index. All the comments in this section use the Model 3 specification. Model 1 and Model 2 also serve as a comparison to understand how the direct and indirect paths of circumstances work. The Shapley-value decomposition of the dissimilarity index shows the relative contribution of early-life circumstances to the dissimilarity index.

Table 3.7 shows the scores, the measurement of IOP, and the relative contribution of efforts and preferences, circumstances, and age for the age groups of 15-24, 20-29 and 15-29 according to three models (see also Table 3.6 for OLS results from three models used to predict dissimilarity index and its decomposition by three age groups). The dissimilarity index is 36%, 17%, and 29% for three age groups, respectively. It shows the proportion of total opportunities, associated with not being NEET, that would have to be redistributed from active to inactive women in order enforce equal opportunities. Lower index score at the age group of 20-29 compared to the 15-24 is more related that NEET issue is common regardless of age. But, given the index score, efforts and preferences, and circumstances become more decisive for the NEET status in the 20-29 age group. In the 15-24 age group, the relative contribution of specific circumstances varies: parental education (7.29 %), sibling composition (7.39 %), wealth (5.91 %), childhood location (4.88 %), and cultural factors (5.42 %). Once I clean years of education, EEA index index, migration, and marital status from the influence of circumstances; the decomposition of the index shows an increase in the contributions of parental education (9.86 %), sibling composition (10 %), wealth (7.77 %), childhood location (6.14 %), and cultural factors (6.4 %). In the 20-29 age group, the relative importance of wealth and childhood location approaches to the one of parental education and sibling composition. On the other hand, among the efforts and preferences, marriage is by far the most influential factor of IOP for all age groups. Education is the second most dominant factor. But, EEA index index and migration are not so potent, especially when I purge them from the circumstances.

Table 3.9 shows the dissimilarity index and its decomposition for the subsamples of five regions for only the 15-29 age group because of sample size concerns (See also Table B.13 for OLS results of three models used for predicting dissimilarity index and its decomposition by five regions). Apart from age, the most influential cir-

cumstances are sibling composition (11.28 %) in the West, parental education (14.71 %) in the South, sibling composition (11.2 %) in the Central, wealth status (8.88 %) in the North, and all circumstances are equally important in the East. Among the regions, the age factor is most influential in the North (47.59 %) and the Central (42.43 %). The influence of cultural factors is lowest in the North (1.76 %), and highest in the East (7.75 %). Regarding childhood location (place of residence and region), its effect is highest in the West (8.37 %) and lowest in the North (0.75 %), probably because of net migration routes from childhood regions and place of residence. The total of direct and indirect effects of circumstances is considerably low in the North (25.24 %), and it varies in a narrow corridor in the other four regions: from 33.24 % to 39.29 %. On the other hand, the contribution of efforts and preferences ranges from 24.34 % in the Central to 29.65 % in the West.

Table 3.9 shows the dissimilarity index and its decomposition in the urban and rural sub-samples for three age groups (See also Table B.14 and Table B.14 for OLS results of three models used for predicting dissimilarity index and its decomposition by urban and rural). The age factor effect is similar for both sub-samples at the age of 15-24. But, its contribution in rural is relatively less, especially in the age group of 20-29 when inactivity is more common. Regarding the age group of 15-29, while most influential circumstances are parental education and sibling composition in the urban, childhood location, cultural factors, and sibling composition constitutes a substantial part of the inequality in the rural. Concerning efforts and preferences, more importantly, the contribution of effort and preference variables is less in rural, especially in the age group of 20-29. That is, inequality arises mostly from the circumstances (78.51 %). Out of this, 30.64 % is related to marriage in the urban while this share is only 9.79 % in the rural. Migration and EEA index index purged from circumstances has little correlation, but education is still a dominant factor for inequality, especially in the urban. Overall, the inactivity inequality (being NEET) among young women is more related to their efforts and preferences (29.48 %) in the urban (14.82%) than the rural at the age group of 15-29. The figures are striking in the 20-29 age group; 43.5 % in the urban and 14.12 % in the rural respectively.

Table 3.7: IOP in NEET Status by Age Groups

	15-24			20-29			15-29		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Dissimilarity Index	0.28	0.36	0.36	0.12	0.17	0.17	0.23	0.29	0.29
(se)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Effort and Preferences		50.21	30.96		56.57	41.20		52.38	27.00
Education		8.69	6.16		17.12	10.21		10.43	6.39
EEA Index		4.65	2.96		3.38	1.3		3.08	1.69
Migration		4.83	1.28		0.45	0.42		4.01	0.52
Marital Status		32.04	20.56		35.62	29.27		34.86	18.4
Circumstances	60.85	30.89	40.17	85.31	37.69	49.33	57.23	28.23	38.51
Parental Education	14.95	7.29	9.86	18.97	7.97	11.11	14.36	6.81	9.55
Sibling Composition	15.27	7.39	10	20.94	9.08	12.47	14.74	7.06	9.93
Wealth	11.78	5.91	7.77	16.79	7.6	9.9	10.63	5.08	7.16
Childhood Location	9.39	4.88	6.14	17.76	8.25	9.91	9.7	5.1	6.62
Cultural Factors	9.45	5.42	6.4	10.86	4.79	5.94	7.81	4.18	5.25
Age	39.15	18.89	28.88	14.69	5.57	9.47	42.77	19.38	34.5
Total	100	100	100	100	100	100	100	100	100

Note: **(1)** Parent's education is mother's education and father's education; sibling composition is sibling size and fraction of male siblings; wealth is wealth status index and number of deceased siblings; childhood location is childhood place and childhood region; and cultural factors are parent's marriage type and mother tongue.
(2) Standard error of dissimilarity index is bootstrapped with 100 replications.
(3) Model 1 is reduced form OLS including only circumstance variables; Model 2 includes effort and preference variables besides Model 2; Model 3 includes circumstances, and residuals of effort and preference variables purged from circumstances.

Table 3.8: IOP in NEET Status by Current Regions

	West			South			Central			North			East		
	M1	**M2**	**M3**	**M1**	**M2**	**M3**	**M1**	**M2**	**M3**	**M1**	**M2**	**M3**	**M1**	**M2**	**M3**
Dissimilarity Index	0.26	0.32	0.32	0.26	0.31	0.31	0.28	0.33	0.33	0.30	0.35	0.35	0.17	0.20	0.20
(se)	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.02	0.03	0.02
Effort and Preferences		55.23	29.65		49.26	25.01		54.4	24.34		46.59	27.17		51.93	27.17
Education		8.74	7.26		9.4	5.95		9.55	5.23		4.32	7.91		17	9.2
EEA Index		3.2	2.04		2.15	0.89		2.89	1.78		2.36	3.11		2.65	1.47
Migration		5.69	0.22		3.41	0.56		4.54	0.83		6.49	0.29		2.93	0.4
Marital Status		37.6	20.13		34.3	17.61		37.42	16.5		33.42	15.86		29.35	15.91
Circumstances	56.2	25.93	37.21	55.31	28.86	39.29	48.35	22.53	33.24	37.36	21.65	25.24	52.29	27.32	36.72
Parental Education	10.7	5.09	7.09	21.01	10.13	14.71	11.26	5.18	8.15	9.49	4.96	6.34	12.08	6.36	8.6
Sibling Composition	17.29	7.59	11.28	12.81	7.03	9.6	16.37	7.48	11.2	11.33	6.78	7.51	9.83	5.19	7.27
Wealth	11.37	5.27	7.52	9.48	5.03	6.74	10.91	4.91	7.75	12.65	7.31	8.88	11.79	5.83	8.14
Childhood Location	12.25	5.62	8.37	4.34	2.47	3	5.25	2.82	3.39	1.13	1.08	0.75	7.29	4.1	4.96
Cultural Factors	4.59	2.36	2.95	7.65	4.2	5.24	4.56	2.14	2.75	2.76	1.52	1.76	11.3	5.84	7.75
Age	43.8	18.84	33.13	44.69	21.87	35.68	51.65	22.99	42.43	62.64	31.74	47.59	47.71	20.69	36.24
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Note: **(1)** Parent's education is mother's education and father's education; sibling composition is sibling size and fraction of male siblings; wealth is wealth index and deceased siblings; childhood location is childhood place and childhood region; and cultural factors are parent's marriage type and mother tongue.
(2) Standard error of dissimilarity index is bootstrapped with 100 replications.
(3) Model 1 is reduced form OLS including only circumstance variables; Model 2 includes effort and preference variables besides Model 2; Model 3 includes circumstances, and residuals of effort and preference variables purged from circumstances.

Table 3.9: IOP in NEET Status by Current Place of Residence

	Urban			Rural		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
			Age Cohort of 15-24			
Dissimilarity Index	0.30	0.40	0.40	0.24	0.27	0.27
(se)	0.02	0.02	0.02	0.03	0.03	0.03
Efforts and Preferences		52.66	34.05		38.03	19.63
Education		8.13	6.9		9.52	5.58
EEA Index		4.85	3.2		2.91	2.3
Migration		4.83	0.89		5.32	1.72
Marital Status		34.85	23.06		20.28	10.03
Circumstances	58.21	27.94	37.26	67.4	43.29	51.62
Parental Education	15.21	7.09	9.84	10.9	6.68	8.12
Sibling Composition	15.97	7.36	10.21	14.36	8.63	10.75
Wealth	10.62	5.25	6.91	10.07	6.39	7.98
Childhood Place	8.35	4.06	5.18	18.01	12.04	14.05
Cultural Factors	8.06	4.18	5.12	14.06	9.55	10.72
Age	41.8	19.4	28.71	32.59	18.68	28.74
Total	100	100	100	100	100	100
			Age Cohort of 20-29			
Dissimilarity Index	0.13	0.19	0.19	0.14	0.15	0.15
(se)	0.02	0.02	0.02	0.03	0.04	0.03
Efforts and Preferences		59.36	43.55		22.82	14.12
Education		17.63	11.3		8.17	2.24
EEA Index		3.31	1.41		2.11	1.19
Migration		0.42	0.2		0.86	0.9
Marital Status		38	30.64		11.68	9.79
Circumstances	82.36	34.14	45.47	90.64	70.53	78.51
Parental Education	18.78	7.34	10.77	13.33	9.69	11.07
Sibling Composition	22.59	9.14	12.61	19.46	15.2	17.17
Wealth	17.31	7.16	9.43	11.19	9.79	10.3
Childhood Place	15.08	6.82	8.23	27.03	21.51	23.45
Cultural Factors	8.6	3.68	4.43	19.63	14.34	16.52
Age	17.64	6.29	10.77	9.35	6.64	7.37
Total	100	100	100	100	100	100

Continued on next page

Table 3.9 – *Continued from previous page*

	Urban			Rural		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
			Age Cohort of 15-29			
Dissimilarity Index	0.25	0.32	0.32	0.20	0.23	0.23
(se)	0.02	0.02	0.02	0.03	0.02	0.03
Efforts and Preferences		54.27	29.48		35.69	14.82
Education		10.21	7.3		9.93	4.24
Woman Status Index		3.2	1.92		1.94	1.23
Migration		3.79	0.22		4.67	1.02
Marital Status		37.07	20.04		19.15	8.33
Circumstances	55.6	26.18	36.27	67.97	45.13	56.02
Parental Education	14.37	6.52	9.3	10.63	6.64	8.5
Sibling Composition	14.79	6.81	9.7	14.05	8.88	11.62
Wealth	10.8	5.04	7.08	10.09	7.21	8.47
Childhood Place	9.16	4.55	6.11	19.42	13.1	16
Cultural Factors	6.48	3.26	4.08	13.78	9.3	11.43
Age	44.4	19.56	34.25	32.02	19.16	29.15
Total	100	100	100	100	100	100

Note: (1) Parent's education is mother's education and father's education; sibling composition is sibling size and fraction of male siblings; wealth is wealth index and deceased siblings; childhood location is childhood place and childhood region; and cultural factors are parent's marriage type and mother tongue.
(2) Standard error of dissimilarity index is bootstrapped with 100 replications.
(3) Model 1 is reduced form OLS including only circumstance variables; Model 2 includes effort and preference variables besides Model 2; Model 3 includes circumstances, and residuals of effort and preference variables purged from circumstances.

3.8. Discussion and Conclusion

This essay is motivated by the question of how early life circumstances, preferences and level of exertion have influenced the NEET status of young women and what partial effects these factors have on inequality of opportunity. Answers to these questions in the case of Turkey, where the NEET rate is considerably high compared to countries in the same developing league. The transition to adulthood in human life is the time when most inequalities in education and employment appear. With demographic trends gradually decreasing the young population in Turkey, it has never been more important to reduce the number of NEETs, especially for young women.

I am studying these effects using the TDHS-2013 dataset. The analysis sample includes young women aged 15-29 years. It measures IOP levels and decompose the relative contribution of efforts, preferences and circumstances within the IOP according to the age groups, regions and places of residence. Descriptive statistics show that in Turkey, the gender gap in schooling has largely been closed in Turkey, with women outperforming men in enrolling in higher education, which is a trend in many developed countries. In Turkey, however, the labor force participation of young women is still low, resulting in a high NEET ratio. In addition,

The research questions were introduced in the introductory part of this paper. Insights gives some answers to these questions.

1. Is there a strong relationship between circumstances and the NEET status of aged by women?

   The relationships between educational and employment status and circumstances are significant. That is, female NEETs are heterogeneous due to early life circumstances and current conditions.

2. How the IOP change by current conditions?

   IOP in the NEET status change by age cohorts, regions, and place of residence.

Empirical results show that impact of family circumstances, particularly parental education and sibling size, are evident in NEET status. While higher parental education lowers the risk of NEET in the all sub-samples, it is more complex when it comes to sibling composition. Various combinations of sibling size and male ratio shape the magnitude of risk. For example, the optimal share of males in urban is between 1/3 and 1/2. Also, four siblings are ideal for lower NEET risk. Family resources shared or supported by siblings might be explain this nonlinearity of relationship between the sibling composition and the NEET status. Some parents may invest more in boys causing lower schooling of daughters. Also, if more brothers work, sisters may not choose to work, and a higher proportion of men in family may reinforce gender roles. Regarding wealth status, its relative effect on the IOP among sub-samples is relatively equal. On the other hand, cultural factors are highly related to the IOP in NEET status in the East and South and in the rural through the reinforced gender roles related to women's education and employment.

Childhood place and region, more specifically community, can have long-term

effects on education and employment. For example, the Northern region has the lowest NEET ratio (25.0 %) and the Eastern region the highest (54.8 %). Of course, education and employment opportunities in these regions can be decisive. However, we can also observe that women who spent their childhood in the North had a lower risk of NEET at the age of 15-24 (See Table 3.6). In fact, in the regression analysis by region, women of Northern descent have less NEET risk in the Center, but not a significant disadvantage in other regions B.13. Differently, women of Eastern descent are at higher risk of NEET in the Central region. In addition, efforts and preferences for working status may be related to the reasons for not working under different conditions and circumstances detailed in the B.5 and B.6 Tables. Furthermore, early living circumstances have both direct and indirect effects on the NEET status. The effect of the latter is dominant in the 20-29 age group, in the regions of West and Center, and in the urban. That is, the circumstances in larger cities and urban both directly and indirectly affect NEET status through the efforts and choices.

It is worth mentioning featured evidence and some policy measures. First, the opportunity cost of low wages and education of poor quality might be too high for young women to delay marriage, childbearing, descent job search, and other preferences. The return of education and quality of skills might matter more than the quantity of education for the NEET status. Also, the wage level in Turkey, mostly minimum wage, might be lower than the reservation wage and opportunity cost of young women, especially in urban. Second, some women might feel rational in their preferences and efforts determining their NEET status in the short term, but not in the future. Therefore, finding policies to nudge them to participate in education and employment and focusing on behavioral economics might be more relevant than some traditional measures like active labor market policies and standard economics. Third, the quality and efficiency of policies concerning educational attainment and job opportunities are not only important for women of our time but also for their girls, even their granddaughter. In Turkey, many girls have a mother not employed and poorly educated, and hence, they might suffer in education and employment in the future as well. That is, the NEET status can perpetuate disadvantages in the next generation, and it lowers inter-generational (social) mobility. Fourth, of course, job opportunities and women's status in a current region or province might affect a woman's employment and education. But, childhood region and province might also be decisive because of community and social capital effects apart from the family effects. That is, women raising in a place where more women work and go to schools might have more positive social capital concerning employment and further education in the future. So, efforts

and preferences might change in the time of youth and adulthood accordingly.

This study is only a initial step for the evaluation of the high female NEET ratio in Turkey. For researchers and policy makers, it is worth focusing on some areas in detail; the opportunity cost of work, behavioral science, social mobility and social capital. First, the young women in Turkey can deliberately choose to be NEET because of the low wages in the labor market, the childbearing cost, the social benefits and domestic work. Also, the return of education and the quality of skills may be more relevant to the NEET status of women than the quantity of education, namely schooling years. Therefore, the impact of reservation wage, public vs private jobs and quality of education on the school-to-work transition for the female youth in Turkey needs to be elaborated with additional research. Second, the young women may think that the choice of being NEET is rational. Even, it might be true in the short run when to compare the opportunity cost of work. However, once considered the long run price of being NEET, nudging them to participate in the labor force by using the behavioral science tools might more effective than the classical active labor market polices. Third, family decomposition might have close relationship with the NEET status. In this regard, the joint effect of sibling size and decomposition on the NEET needs to be evaluated in causal models. Fourth, NEET status may not be the result of either personal preferences or general macroeconomic conditions. Indeed, the community factors, like job opportunities and EEA index, in the current or childhood region might be decisive. Therefore, further research can elaborate those community level factors with an applicable dataset.

To sum up, there is a consensus formalized by the SDG to reduce the number of NEETs and inactive youth worldwide. In this regard, all relevant stakeholders should accept that youth inactivity arises not only from circumstances but also from preferences and efforts. Seeking descent job, social benefits provided by governments, reservation wage of women, prioritization of marriage and childbearing and other mechanisms may cause women to deliberately choose to be NEET. These choices may be rational to some extent, at least in the short term. In this regard, improved quality and equity in both education system and labor market can allow more women to move into employment. On the other hand, governments should take all the necessary steps to reduce the risk factors of NEET status, related to the early life circumstances. Given the SDG's goal of lowering the NEET rate, developing countries should implement more evidence-based policies, especially for young women. Understanding the reasons behind the inactivity issue will help design targeted policies.

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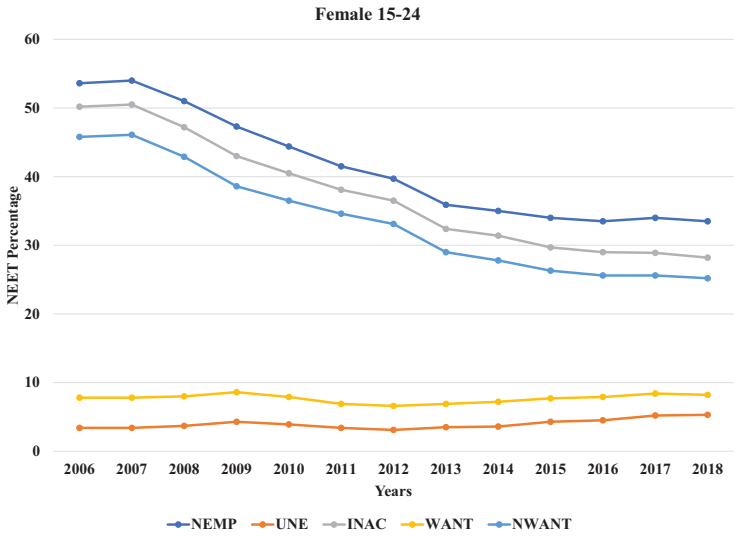
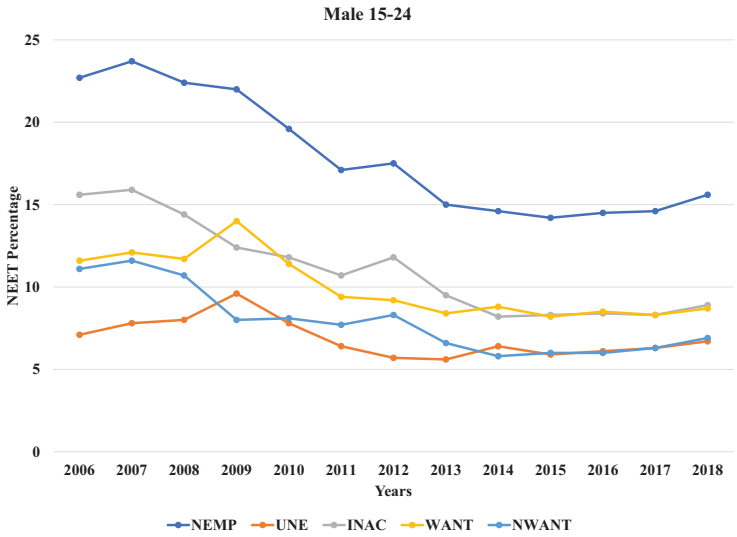
B. APPENDIX

Figure B.1: Female NEET at Age 15-24 by Years

(a) Female 15-24



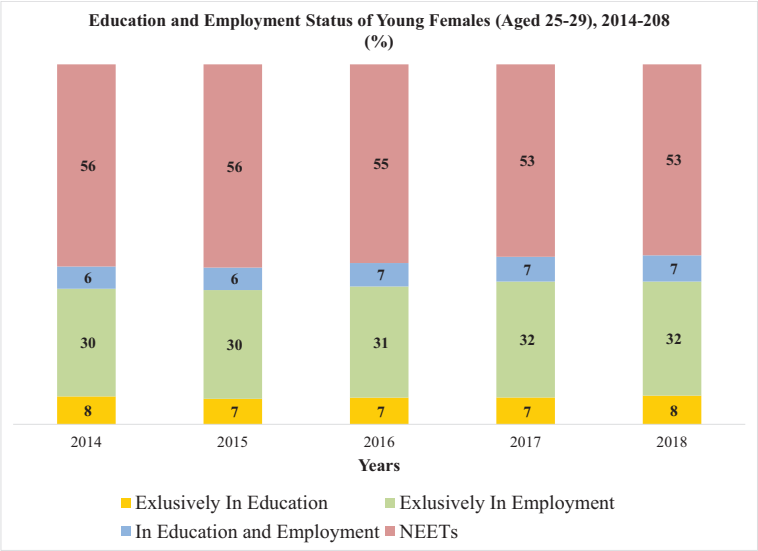
(b) Male 15-24



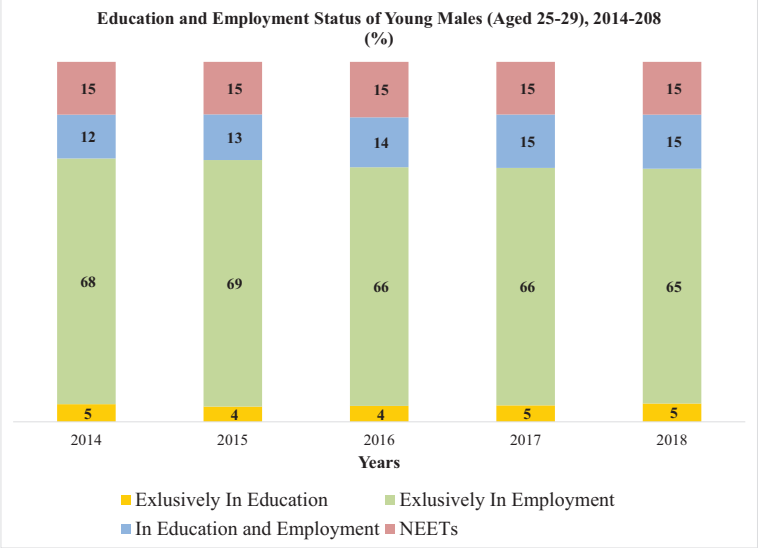
Note: EUROSTAT breakdowns NEET into five categories according to work status; 1) Not Employed Persons (NEMP), 2) Unemployed Persons (UNE), 3) Inactive Persons (INAC), 4) Persons would like to work (WANT), 5 Persons don't want to work (NWANT). Below equations show the sub-parts of NEMP, the most known and widely used; NEET(NEMP)=NEET(UNE)+NEET(INAC) and NEET(NEMP)=NEET(WANT)+NEET(NWANT).
Source: Author's own figure using EUROSTAT database

Figure B.2: Education and Employment Status of Youth (Aged 25-29) by Gender, 2014-2018

(a) Female 25-29



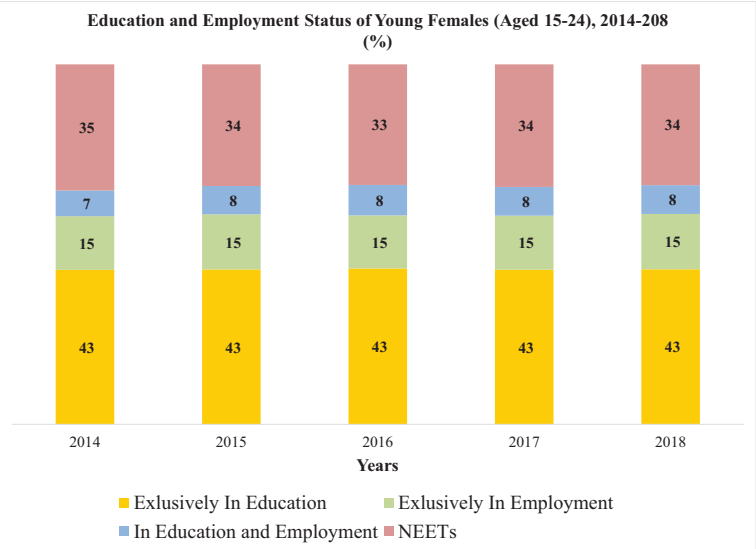
(b) Male 25-29



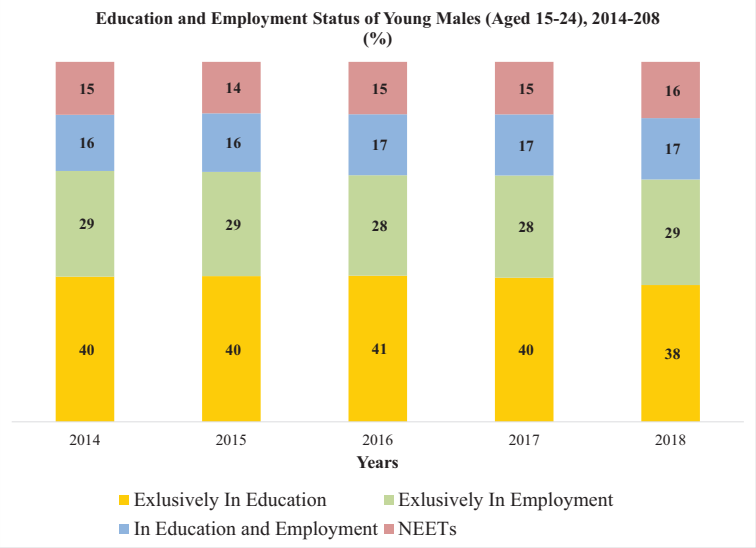
Source: Author's own figure using TurkStat Labor Force Statistics Database

Figure B.3: Education and Employment Status of Youth (Aged 15-24) by Gender, 2014-2018

(a) Female 15-24



(b) Male 15-24



Source: Author's own figure using TurkStat Labor Force Statistics Database

Table B.1: Education and Employment Status of Women aged 20-29 by Conditions

	Education and Employment Status								
	Edu.		**E-E**		**Emp.**		**NEET**		**Total**
	%	CI	%	CI	%	CI	%	CI	%
Education Level									
Less than Upper Secondary (n=1,400)	0.5	[0.2,1.1]	0.0		21.6	[18.5,24.9]	77.9	[74.5,81.0]	100.0
Upper Secondary (n=602)	5.4	[3.7,7.8]	2.6	[1.3,5.2]	24.4	[20.2,29.2]	67.5	[62.5,72.1]	100.0
Tertiary Education (n=725)	28.6	[24.5,33.1]	5.8	[4.1,8.3]	37.4	[33.4,41.7]	28.1	[24.5,32.1]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(6) =	2476.8737								
Design-based F(5.58, 1768.08) =	77.9502	Pr =	0.000						
EEA Index									
Low (n=841)	5.4	[3.9,7.5]	1.4	[0.7,2.8]	21.4	[17.8,25.6]	71.7	[67.4,75.7]	100.0
Medium (n=380)	8.8	[5.8,13.0]	1.6	[0.6,4.1]	26.9	[21.9,32.6]	62.7	[56.6,68.3]	100.0
High (n=1,506)	11.6	[9.6,13.9]	2.8	[1.9,4.1]	29.2	[26.1,32.4]	56.5	[53.1,59.8]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(6) =	194.9344								
Design-based F(5.69, 1803.32) =	6.9412	Pr =	0.000						
Migrated									
No (n=1,354)	10.1	[8.1,12.6]	2.4	[1.6,3.6]	26.3	[23.6,29.2]	61.1	[57.9,64.2]	100.0
Yes (n=1,373)	8.7	[6.9,11.0]	2.1	[1.2,3.5]	26.9	[24.0,30.1]	62.3	[58.4,66.1]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(3) =	7.0503								
Design-based F(2.94, 933.41) =	0.4605	Pr =	0.706						
Currently Married									
No (n=959)	24.6	[21.0,28.5]	5.9	[4.2,8.3]	35.4	[31.8,39.3]	34.1	[30.3,38.1]	100.0
Yes (n=1,768)	1.3	[0.9,2.0]	0.3	[0.1,0.7]	21.9	[19.5,24.6]	76.5	[73.7,79.0]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(3) =	2242.2128								
Design-based F(2.92, 926.86) =	185.1273	Pr =	0.000						
Current Region									
West (n=606)	7.4	[5.4,10.1]	3.2	[1.9,5.5]	34.1	[29.4,39.1]	55.3	[49.7,60.7]	100.0
South (n=349)	9.0	[5.9,13.4]	2.3	[1.1,4.7]	25.4	[19.3,32.6]	63.4	[56.1,70.1]	100.0
Central (n=536)	14.5	[10.0,20.5]	1.5	[0.8,2.9]	20.8	[16.9,25.3]	63.3	[56.4,69.6]	100.0
North (n=374)	8.7	[6.0,12.4]	4.8	[2.6,8.7]	38.5	[31.3,46.1]	48.1	[40.5,55.9]	100.0
East (n=862)	8.6	[6.1,12.1]	0.5	[0.2,1.1]	16.7	[14.0,19.9]	74.2	[70.2,77.8]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(12) =	435.7113								
Design-based F(9.65, 3059.21) =	7.2060	Pr =	0.000						
Current Place									
Urban (n=2,040)	10.8	[9.0,12.9]	2.5	[1.7,3.6]	25.9	[23.4,28.6]	60.8	[57.5,64.1]	100.0
Rural (n=687)	3.5	[2.2,5.5]	1.1	[0.5,2.4]	29.8	[25.5,34.6]	65.5	[60.6,70.2]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(3) =	103.1422								
Design-based F(2.86, 907.70) =	8.4820	Pr =	0.000						

Source: Author's own calculation using the TDHS-2013.
Note: Edu: Only in Education; E-E: In Education and Employment; Emp: Only in Employment; NEET: Not in Education, Employment, or Training.

Table B.2: Education and Employment Status of Women aged 15-29 by Conditions

	Education and Employment Status								
	Edu.		E-E		Emp.		NEET		Total
	%	CI	%	CI	%	CI	%	CI	%
Education Level									
Less than Upper Secondary (n=1,838)	2.1	[1.5,3.0]	0.2	[0.1,0.5]	22.1	[19.5,24.9]	75.6	[72.7,78.3]	100.0
Upper Secondary (n=1,519)	47.8	[44.3,51.2]	6.8	[5.4,8.5]	13.0	[11.0,15.3]	32.4	[29.3,35.7]	100.0
Tertiary Education (n=856)	36.6	[32.1,41.4]	6.5	[4.8,8.7]	32.7	[28.9,36.7]	24.2	[20.8,27.9]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(6) =	2962.9703								
Design-based F(5.41, 1720.56) =	149.9276	Pr =	0.000						
EEA Index									
Low (n=1,278)	15.6	[13.2,18.4]	3.6	[2.5,5.1]	19.5	[16.8,22.6]	61.2	[57.3,65.0]	100.0
Medium (n=598)	30.4	[26.1,35.1]	4.1	[2.7,6.4]	19.6	[16.0,23.7]	45.9	[40.9,51.0]	100.0
High (n=2,337)	31.5	[29.0,34.2]	4.2	[3.4,5.3]	21.8	[19.7,24.1]	42.5	[39.8,45.2]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(6) =	306.5798								
Design-based F(5.72, 1819.54) =	16.3543	Pr =	0.000						
Migrated									
No (n=2,578)	35.3	[32.6,38.1]	4.7	[3.9,5.6]	18.1	[16.4,19.9]	41.9	[39.4,44.5]	100.0
Yes (n=1,635)	13.6	[11.3,16.4]	3.0	[2.1,4.3]	25.2	[22.5,28.1]	58.2	[54.4,61.8]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(3) =	569.2549								
Design-based F(2.86, 909.46) =	52.8876	Pr =	0.000						
Currently Married									
No (n=2,315)	48.1	[45.0,51.1]	7.1	[6.0,8.4]	20.6	[18.4,23.0]	24.2	[22.0,26.6]	100.0
Yes (n=1,898)	1.5	[1.0,2.1]	0.3	[0.1,0.6]	21.2	[18.8,23.7]	77.1	[74.5,79.5]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(3) =	3430.8762								
Design-based F(2.74, 872.35) =	447.1252	Pr =	0.000						
Current Region									
West (n=945)	27.5	[23.7,31.6]	5.2	[3.9,6.8]	25.8	[22.5,29.3]	41.6	[37.2,46.0]	100.0
South (n=527)	27.6	[22.5,33.3]	3.4	[2.2,5.2]	20.0	[15.3,25.7]	49.1	[42.6,55.7]	100.0
Central (n=810)	32.8	[28.3,37.7]	2.8	[1.9,4.1]	15.8	[13.5,18.5]	48.6	[43.4,53.8]	100.0
North (n=572)	25.1	[20.8,30.0]	8.9	[6.4,12.3]	30.6	[25.1,36.7]	35.3	[29.3,41.8]	100.0
East (n=1,359)	20.8	[17.0,25.4]	2.1	[1.4,3.1]	14.7	[12.4,17.2]	62.4	[58.2,66.4]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(12) =	401.4805								
Design-based F(9.41, 2993.62) =	9.7240	Pr =	0.000						
Current Place									
Urban (n=3,108)	29.7	[27.1,32.3]	3.8	[3.1,4.6]	19.7	[17.9,21.7]	46.8	[44.1,49.6]	100.0
Rural (n=1,105)	15.4	[13.0,18.1]	5.0	[3.8,6.6]	25.6	[22.6,28.9]	54.0	[50.0,57.9]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(3) =	153.6619								
Design-based F(2.85, 905.11) =	18.8546	Pr =	0.000						

Source: Author's own calculation using the TDHS-2013.
Note: Edu: Only in Education; E-E: In Education and Employment; Emp: Only in Employment; NEET: Not in Education, Employment, or Training.

Table B.3: Education and Employment Status of Women aged 20-29 by Circumstances

	Education and Employment Status								
	Edu.		E-E		Emp.		NEET		Total
	%	CI	%	CI	%	CI	%	CI	%
Mother's Education									
Less than Primary (n=1,371)	4.8	[3.5,6.5]	1.1	[0.5,2.5]	20.8	[18.1,23.9]	73.3	[69.8,76.5]	100.0
Primary (n=1,045)	11.6	[9.3,14.3]	3.0	[2.0,4.4]	29.3	[26.1,32.7]	56.2	[52.5,59.8]	100.0
Lower Sec/More (n=311)	18.8	[13.9,25.0]	3.9	[1.9,7.6]	38.3	[32.4,44.5]	39.1	[33.3,45.2]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(6) =	617.4112								
Design-based F(5.66, 1793.52) =	19.2280	Pr =	0.000						
Father's Education									
Less than Primary (n=597)	3.2	[2.0,5.0]	0.3	[0.1,1.0]	22.6	[18.5,27.3]	73.9	[69.3,78.0]	100.0
Primary (n=1,367)	7.5	[5.7,9.8]	2.3	[1.4,3.7]	26.3	[23.3,29.5]	63.9	[60.2,67.4]	100.0
Lower Sec/More (n=763)	17.1	[13.8,21.0]	3.4	[2.2,5.4]	30.0	[26.1,34.2]	49.4	[44.9,54.0]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(6) =	449.6899								
Design-based F(5.28, 1673.31) =	16.1855	Pr =	0.000						
Mother Tongue									
Turkish (n=2,007)	10.5	[8.7,12.6]	2.6	[1.9,3.6]	30.1	[27.6,32.7]	56.8	[53.8,59.8]	100.0
Other (n=720)	5.9	[3.9,8.7]	1.1	[0.2,4.3]	15.2	[11.9,19.3]	77.8	[73.1,81.9]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(3) =	306.9448								
Design-based F(2.59, 820.52) =	14.2792	Pr =	0.000						
Marriage Type of Parents									
Not Consanguineous (n=1,933)	11.0	[9.1,13.2]	2.1	[1.4,3.1]	27.8	[25.2,30.6]	59.0	[55.6,62.3]	100.0
Consanguineous (n=794)	5.2	[3.7,7.2]	2.5	[1.4,4.5]	23.4	[19.7,27.6]	68.9	[64.8,72.8]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(3) =	109.7615								
Design-based F(2.92, 925.37) =	7.5285	Pr =	0.000						
Total Siblings									
1-2 (n=431)	17.6	[13.6,22.5]	4.0	[2.4,6.7]	39.1	[33.8,44.6]	39.3	[34.1,44.7]	100.0
3 (n=521)	11.4	[8.4,15.4]	2.0	[1.1,3.7]	29.9	[25.5,34.7]	56.7	[50.9,62.4]	100.0
4 (n=492)	8.3	[6.1,11.3]	2.6	[1.4,4.6]	25.5	[20.8,30.8]	63.6	[57.9,69.0]	100.0
5 or 6 (n=602)	5.7	[4.0,8.1]	1.6	[0.8,3.2]	23.5	[19.6,28.0]	69.2	[64.4,73.6]	100.0
7 and more (n=681)	4.8	[2.8,8.2]	1.3	[0.4,4.4]	16.8	[13.3,21.1]	77.1	[72.4,81.2]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(12) =	687.3864								
Design-based F(9.99, 3165.77) =	11.0013	Pr =	0.000						
Share of Male Siblings									
0 (n=387)	13.1	[9.6,17.6]	2.9	[1.5,5.6]	38.1	[32.3,44.3]	45.8	[40.0,51.7]	100.0
0-1/3 (n=491)	6.5	[3.9,10.7]	3.2	[1.5,6.8]	23.4	[19.1,28.3]	66.9	[60.9,72.4]	100.0
1/3-1/2 (n=666)	7.9	[5.7,10.7]	1.2	[0.5,2.6]	26.4	[22.5,30.8]	64.5	[59.7,69.1]	100.0
1/2 (n=600)	11.2	[8.4,14.9]	2.9	[1.6,5.0]	29.3	[24.8,34.2]	56.6	[51.8,61.3]	100.0
More 1/2 (n=583)	8.9	[6.2,12.4]	1.4	[0.7,2.8]	18.1	[14.4,22.6]	71.6	[65.9,76.6]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0

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Table B.3 – continued from previous page

	Education and Work Status								
	Edu.		**E-E**		**Emp.**		**NEET**		**Total**
	%	CI	%	CI	%	CI	%	CI	%
Pearson: Uncorrected chi2(12) =	318.1935								
Design-based F(10.70, 3393.38) =	5.2729	Pr =	0.000						
Deceased Siblings									
None (n=1,596)	11.3	[9.3,13.6]	2.8	[1.9,4.2]	30.3	[27.6,33.1]	55.6	[52.4,58.8]	100.0
At Least One (n=1,131)	6.6	[4.9,8.9]	1.3	[0.7,2.3]	21.1	[18.0,24.5]	71.0	[66.9,74.8]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(3) =	229.3768								
Design-based F(2.96, 938.19) =	14.6292	Pr =	0.000						
Childhood Place									
Province/District (n=1,708)	12.0	[10.0,14.3]	2.7	[1.8,3.9]	26.4	[23.7,29.2]	59.0	[55.7,62.2]	100.0
Subdistrict/Village (n=1,019)	4.3	[2.9,6.3]	1.3	[0.7,2.4]	27.2	[23.8,30.9]	67.2	[63.2,71.0]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(3) =	165.8213								
Design-based F(2.95, 936.35) =	12.4392	Pr =	0.000						
Childhood Region									
West (n=537)	10.5	[7.8,14.2]	3.8	[2.3,6.2]	37.5	[32.4,42.8]	48.2	[43.1,53.3]	100.0
South (n=352)	10.5	[7.4,14.7]	1.9	[0.9,4.1]	27.6	[22.1,34.0]	60.0	[53.4,66.3]	100.0
Central (n=527)	11.7	[8.3,16.2]	1.5	[0.7,2.8]	22.9	[19.0,27.5]	63.9	[58.3,69.1]	100.0
North (n=374)	5.4	[3.4,8.5]	2.9	[1.6,5.2]	36.7	[30.3,43.6]	55.1	[48.1,61.8]	100.0
East (n=937)	7.4	[5.4,10.2]	1.2	[0.4,3.5]	14.7	[12.0,17.8]	76.7	[72.8,80.2]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(12) =	568.9804								
Design-based F(10.09, 3199.97) =	9.5328	Pr =	0.000						
Wealth Status									
Poorest (n=592)	2.6	[1.6,4.2]	1.4	[0.6,3.6]	25.8	[21.5,30.6]	70.2	[65.2,74.8]	100.0
Poorer (n=623)	6.0	[3.6,9.7]	1.4	[0.6,3.0]	22.0	[18.1,26.4]	70.7	[65.8,75.2]	100.0
Middle (n=577)	8.9	[6.0,12.9]	1.6	[0.8,3.1]	22.8	[18.6,27.7]	66.7	[61.3,71.7]	100.0
Richer (n=514)	12.7	[9.4,16.9]	3.8	[2.1,6.9]	25.6	[20.8,31.1]	57.8	[51.3,64.2]	100.0
Richest (n=421)	15.7	[12.1,20.1]	2.7	[1.4,5.4]	37.2	[32.4,42.4]	44.4	[39.4,49.4]	100.0
Total (n=2,727)	9.4	[7.9,11.2]	2.2	[1.6,3.1]	26.6	[24.4,29.0]	61.7	[58.9,64.5]	100.0
Pearson: Uncorrected chi2(12) =	488.1370								
Design-based F(10.56, 3348.12) =	7.6945	Pr =	0.000						

Source: Author's own calculation using the TDHS-2013.
Note: Edu: Only in Education; E-E: In Education and Employment; Emp: Only in Employment; NEET: Not in Education, Employment, or Training.

Table B.4: Education and Employment Status of Women aged 15-29 by Circumstances

	Education and Employment Status								
	Edu.		**E-E**		**Emp.**		**NEET**		**Total**
	%	CI	%	CI	%	CI	%	CI	%
Mother's Education									
Less than Primary (n=1,910)	13.9	[11.6,16.6]	2.7	[1.9,3.9]	19.7	[17.3,22.2]	63.7	[60.3,67.0]	100.0
Primary (n=1,760)	33.1	[30.1,36.1]	5.4	[4.4,6.7]	20.7	[18.4,23.2]	40.8	[37.9,43.7]	100.0
Lower Sec/More (n=543)	44.9	[39.1,50.7]	3.6	[2.1,5.9]	24.5	[20.6,28.8]	27.1	[22.7,32.0]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(6) =	870.2242								
Design-based F(5.55, 1765.81) =	39.2245	Pr =	0.000						
Father's Education									
Less than Primary (n=781)	9.2	[6.7,12.4]	1.9	[1.0,3.4]	21.8	[18.3,25.8]	67.1	[62.2,71.7]	100.0
Primary (n=2,171)	24.3	[22.0,26.9]	4.9	[3.9,6.1]	20.6	[18.4,23.0]	50.2	[47.2,53.2]	100.0
Lower Sec/More (n=1,261)	40.7	[36.9,44.6]	3.7	[2.8,5.1]	20.8	[18.1,23.7]	34.8	[31.4,38.4]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(6) =	651.1548								
Design-based F(5.72, 1820.31) =	32.2639	Pr =	0.000						
Mother Tongue									
Turkish (n=3,116)	30.2	[27.9,32.5]	4.5	[3.8,5.4]	22.6	[20.7,24.5]	42.7	[40.4,45.1]	100.0
Other (n=1,097)	16.0	[12.4,20.4]	2.4	[1.3,4.2]	15.1	[12.3,18.5]	66.5	[61.4,71.2]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(3) =	375.7155								
Design-based F(2.67, 849.96) =	27.6938	Pr =	0.000						
Marriage Type of Parents									
Not Consanguineous (n=2,983)	29.2	[26.7,31.7]	4.2	[3.5,5.1]	21.7	[19.8,23.7]	44.9	[42.3,47.6]	100.0
Consanguineous (n=1,230)	20.8	[17.8,24.1]	3.5	[2.4,5.0]	18.7	[15.9,21.7]	57.0	[53.2,60.8]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(3) =	112.7000								
Design-based F(2.94, 934.79) =	11.2160	Pr =	0.000						
Total Siblings									
1-2 (n=772)	43.7	[39.3,48.2]	6.0	[4.4,8.0]	24.4	[21.1,27.9]	26.0	[22.5,29.7]	100.0
3 (n=853)	33.9	[30.0,37.9]	3.6	[2.5,5.2]	20.8	[17.8,24.3]	41.7	[37.5,46.0]	100.0
4 (n=750)	26.0	[22.9,29.3]	3.9	[2.6,5.9]	20.6	[17.2,24.5]	49.5	[44.8,54.2]	100.0
5 or 6 (n=881)	16.4	[13.4,19.9]	4.4	[3.0,6.5]	19.9	[16.9,23.4]	59.2	[54.7,63.6]	100.0
7 and more (n=957)	12.1	[8.8,16.5]	2.1	[1.1,3.9]	18.2	[14.6,22.4]	67.6	[62.5,72.3]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(12) =	939.4131								
Design-based F(9.91, 3152.52) =	22.2259	Pr =	0.000						
Share of Male Siblings									
0 (n=665)	38.7	[34.4,43.3]	5.0	[3.4,7.2]	24.2	[20.4,28.4]	32.1	[28.1,36.4]	100.0
0-1/3 (n=728)	20.0	[16.5,24.0]	3.8	[2.3,6.2]	20.8	[16.9,25.3]	55.5	[50.3,60.5]	100.0
1/3-1/2 (n=1,010)	23.2	[19.9,26.8]	3.1	[2.1,4.5]	21.6	[18.5,25.1]	52.1	[47.8,56.5]	100.0
1/2 (n=960)	31.2	[27.4,35.3]	5.4	[4.0,7.3]	21.1	[18.1,24.4]	42.3	[38.6,46.0]	100.0
More 1/2 (n=850)	21.2	[17.8,25.1]	2.9	[1.9,4.5]	16.6	[13.6,20.2]	59.3	[54.5,63.9]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0

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Table B.4 – continued from previous page

	Education and Employment Status								
	Edu.		**E-E**		**Emp.**		**NEET**		**Total**
	%	CI	%	CI	%	CI	%	CI	%
Pearson: Uncorrected chi2(12) =	377.7126								
Design-based F(10.59, 3369.21) =	9.4894	Pr =	0.000						
Deceased Siblings									
None (n=2,704)	32.9	[30.1,35.7]	4.6	[3.8,5.6]	21.4	[19.4,23.5]	41.1	[38.6,43.7]	100.0
At Least One (n=1,509)	15.2	[13.0,17.7]	2.9	[2.0,4.2]	19.8	[17.3,22.5]	62.1	[58.4,65.7]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(3) =	445.5316								
Design-based F(2.93, 931.24) =	42.6614	Pr =	0.000						
Childhood Place									
Province/District (n=2,704)	32.9	[30.2,35.8]	4.1	[3.4,5.1]	18.9	[17.1,21.0]	44.0	[41.3,46.7]	100.0
Subdistrict/Village (n=1,509)	13.2	[11.2,15.5]	3.8	[2.9,4.9]	25.2	[22.6,27.9]	57.9	[54.5,61.2]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(3) =	400.4270								
Design-based F(2.91, 926.66) =	48.9880	Pr =	0.000						
Childhood Region									
West (n=869)	33.5	[29.4,37.9]	6.0	[4.6,7.9]	25.2	[21.7,29.2]	35.2	[31.3,39.2]	100.0
South (n=528)	28.1	[23.4,33.4]	3.2	[2.1,4.8]	21.2	[16.8,26.3]	47.5	[42.0,53.0]	100.0
Central (n=801)	30.7	[27.0,34.6]	2.3	[1.5,3.6]	17.9	[15.2,21.0]	49.1	[44.7,53.5]	100.0
North (n=555)	18.3	[14.7,22.4]	6.3	[4.4,8.9]	32.2	[26.7,38.3]	43.2	[37.0,49.6]	100.0
East (n=1,460)	18.7	[15.4,22.7]	2.7	[1.8,4.1]	14.7	[12.3,17.4]	63.9	[59.8,67.8]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(12) =	574.6455								
Design-based F(10.13, 3220.15) =	14.6698	Pr =	0.000						
Wealth index									
Poorest (n=952)	10.4	[8.3,13.0]	5.6	[4.0,7.9]	23.1	[19.9,26.7]	60.8	[56.6,64.9]	100.0
Poorer (n=981)	22.3	[18.7,26.4]	3.6	[2.4,5.3]	18.0	[14.9,21.5]	56.1	[51.7,60.5]	100.0
Middle (n=870)	28.3	[24.7,32.3]	2.8	[1.8,4.2]	18.6	[15.4,22.2]	50.4	[46.1,54.6]	100.0
Richer (n=773)	33.1	[28.3,38.2]	5.2	[3.6,7.7]	19.3	[15.6,23.7]	42.4	[37.3,47.5]	100.0
Richest (n=637)	37.5	[32.8,42.5]	3.2	[2.1,5.0]	26.2	[22.5,30.2]	33.1	[28.8,37.7]	100.0
Total (n=4,213)	26.9	[24.8,29.1]	4.0	[3.4,4.8]	20.8	[19.2,22.5]	48.2	[45.9,50.6]	100.0
Pearson: Uncorrected chi2(12) =	523.9798								
Design-based F(10.62, 3375.78) =	12.1500	Pr =	0.000						

Source: Author's own calculation using the TDHS-2013.
Note: Edu: Only in Education; E-E: In Education and Employment; Emp: Only in Employment; NEET: Not in Education, Employment, or Training.

Table B.5: Reasons not to Work by Conditions among Women NEETs aged 15-29

	Reason not to Work												
	Housewife		**Child/Pregnant**		**Unemployed**		**Not Allowed**		**Don't want/need**		**Other**		**Total**
	%	CI	%	CI	%	CI	%	CI	%	CI	%	CI	%
Age Group													
15-19 years (n=383)	11.2	[8.3,15.0]	9.1	[5.9,13.8]	9.6	[6.4,14.2]	34.7	[29.3,40.6]	16.7	[13.4,20.7]	18.6	[14.0,24.3]	100.0
20-24 years (n=749)	16.5	[13.4,20.2]	28.9	[24.2,34.0]	13.1	[10.3,16.5]	21.7	[18.2,25.7]	9.6	[7.2,12.7]	10.2	[7.9,13.1]	100.0
25-29 years (n=965)	20.4	[17.1,24.2]	40.1	[35.9,44.3]	7.6	[5.8,9.7]	17.8	[15.2,20.8]	8.8	[6.7,11.3]	5.3	[4.0,7.1]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(10) =	690.7553												
Design-based F(8.78, 2720.67) =	14.0207	Pr =	0.000										
Education Level													
Below Upper Secondary (n=1,410)	22.6	[20.2,25.2]	29.5	[26.5,32.7]	3.9	[2.8,5.4]	27.1	[24.4,30.0]	8.6	[7.0,10.6]	8.3	[6.7,10.2]	100.0
Upper Secondary (n=491)	11.5	[8.9,14.8]	37.4	[31.0,44.3]	14.5	[10.9,19.0]	15.9	[12.4,20.2]	10.9	[8.0,14.7]	9.8	[6.7,14.0]	100.0
Tertiary Education (n=196)	2.2	[1.0,4.8]	25.7	[18.9,33.8]	34.3	[27.7,41.7]	5.2	[2.3,11.2]	19.3	[13.5,26.7]	13.3	[8.8,19.8]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(10) =	1159.2815												
Design-based F(8.86, 2746.46) =	22.3289	Pr =	0.000										
EEA Index													
Low (n=791)	23.7	[20.8,26.9]	24.6	[20.7,28.9]	5.4	[3.9,7.5]	27.4	[23.7,31.4]	10.1	[7.7,13.1]	8.9	[6.5,11.9]	100.0
Medium (n=284)	13.0	[9.3,17.9]	38.8	[31.5,46.7]	11.4	[7.5,16.9]	19.8	[15.0,25.7]	8.7	[5.6,13.4]	8.2	[5.0,13.3]	100.0
High (n=1,022)	14.5	[12.1,17.2]	33.7	[30.2,37.4]	12.5	[10.4,15.0]	18.6	[15.9,21.8]	11.0	[8.8,13.6]	9.7	[7.8,12.0]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(10) =	282.3437												
Design-based F(9.29, 2881.43) =	6.0884	Pr =	0.000										
Migrated													
No (n=1,151)	15.5	[13.5,17.6]	24.6	[21.4,28.0]	12.4	[10.3,14.9]	23.9	[20.9,27.1]	12.9	[10.7,15.6]	10.7	[8.5,13.4]	100.0
Yes (n=946)	20.0	[17.1,23.1]	38.6	[34.7,42.6]	6.9	[5.2,9.2]	19.7	[16.8,23.0]	7.4	[5.6,9.8]	7.5	[5.7,9.7]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(5) =	271.0789												
Design-based F(4.73, 1466.84) =	11.5345	Pr =	0.000										
Currently Married													
No (n=623)	8.7	[6.6,11.4]	0.8	[0.3,2.3]	27.1	[23.2,31.4]	22.2	[18.2,26.7]	17.9	[14.4,22.0]	23.4	[19.3,28.1]	100.0

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Table B.5 – continued from previous page

	Reason not to Work												
	Housewife		**Child/Pregnant**		**Unemployed**		**Not Allowed**		**Don't want/need**		**Other**		**Total**
	%	CI	%	CI	%	CI	%	CI	%	CI	%	CI	%
Yes (n=1,474)	20.9	[18.6,23.5]	42.6	[39.2,46.0]	3.3	[2.3,4.9]	21.8	[19.3,24.6]	7.5	[5.9,9.5]	3.8	[2.8,5.2]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(5) =	2429.8037												
Design-based F(4.72, 1462.21) =	97.7296	Pr =	0.000										
Region													
West (n=377)	14.6	[11.2,18.9]	35.9	[30.2,42.0]	11.0	[8.3,14.4]	18.4	[15.1,22.3]	9.5	[6.6,13.5]	10.6	[7.7,14.3]	100.0
South (n=257)	14.6	[11.3,18.7]	40.1	[34.5,45.9]	9.3	[5.7,14.6]	19.8	[13.3,28.3]	7.5	[4.5,12.2]	8.8	[5.8,13.1]	100.0
Central (n=404)	17.4	[13.5,22.1]	35.8	[27.8,44.7]	8.8	[6.0,12.8]	18.7	[15.0,23.1]	11.1	[7.6,15.9]	8.2	[5.1,12.7]	100.0
North (n=200)	9.5	[5.2,16.9]	39.1	[32.8,45.8]	22.4	[16.3,29.9]	11.0	[6.9,17.0]	8.8	[5.0,14.9]	9.2	[5.3,15.5]	100.0
East (n=859)	23.6	[20.7,26.7]	17.6	[15.0,20.6]	7.4	[5.4,10.1]	30.6	[26.3,35.3]	12.2	[9.6,15.4]	8.5	[6.8,10.7]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(20) =	456.7388												
Design-based F(14.63, 4534.99) =	5.0279	Pr =	0.000										
Type of place of residence													
Urban (n=1,471)	15.7	[13.7,18.0]	34.1	[30.6,37.7]	10.2	[8.5,12.2]	20.4	[18.1,22.9]	11.0	[9.0,13.3]	8.6	[7.0,10.5]	100.0
Rural (n=626)	24.3	[20.6,28.4]	20.4	[16.9,24.5]	8.5	[6.4,11.1]	27.3	[22.0,33.3]	8.1	[5.8,11.1]	11.4	[8.8,14.7]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(5) =	171.0316												
Design-based F(4.61, 1428.65) =	8.2691	Pr =	0.000										

Source: Author's own calculation using the TDHS-2013.

Table B.6: Reasons not to Work by Circumstances among Women NEETs aged 15-29

	Reason not to Work												
	Housewife		**Child/Pregnant**		**Unemployed**		**Not Allowed**		**Don't want/need**		**Other**		**Total**
	%	CI	%	CI	%	CI	%	CI	%	CI	%	CI	%
Mother's Education													
Less than Primary (n=1,236)	21.6	[19.2,24.1]	29.4	[26.0,33.1]	5.8	[4.5,7.4]	27.8	[24.7,31.1]	8.3	[6.6,10.3]	7.2	[5.6,9.2]	100.0
Primary (n=722)	13.5	[10.7,16.9]	34.7	[30.7,39.0]	14.1	[11.4,17.3]	16.1	[13.5,19.2]	11.5	[9.0,14.6]	10.1	[7.7,13.1]	100.0
Lower Sec/More (n=139)	9.5	[5.2,16.7]	26.6	[18.9,36.1]	17.6	[11.6,25.9]	9.1	[4.6,17.2]	19.0	[12.8,27.4]	18.3	[11.5,27.8]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(10) =	526.2725												
Design-based F(8.98, 2782.93) =	10.2586	Pr =	0.000										
Father's Education													
Less than Primary (n=537)	21.8	[18.1,26.1]	29.3	[24.2,35.0]	5.5	[3.3,8.8]	29.1	[23.9,34.9]	5.8	[4.0,8.3]	8.5	[6.1,11.8]	100.0
Primary (n=1,120)	17.6	[14.9,20.8]	33.8	[30.1,37.7]	9.3	[7.5,11.6]	21.7	[19.2,24.4]	8.9	[7.0,11.1]	8.7	[6.7,11.2]	100.0
Lower Sec/More (n=440)	13.0	[9.9,16.9]	26.7	[21.5,32.6]	15.6	[11.8,20.4]	15.0	[11.2,19.8]	18.6	[14.7,23.3]	11.1	[8.2,14.9]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(10) =	371.3024												
Design-based F(9.12, 2827.78) =	7.2415	Pr =	0.000										
Mother Tongue													
Turkish (n=1,335)	14.0	[11.9,16.4]	35.6	[32.0,39.4]	11.4	[9.4,13.6]	18.0	[15.8,20.6]	11.5	[9.4,14.0]	9.5	[7.6,11.8]	100.0
Other (n=762)	25.2	[22.2,28.4]	21.6	[17.5,26.4]	6.6	[5.0,8.7]	30.2	[25.4,35.5]	7.8	[6.2,9.9]	8.6	[6.5,11.3]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(5) =	363.3950												
Design-based F(4.33, 1342.24) =	14.4768	Pr =	0.000										
Marriage Type of Parents													
Not Consanguineous (n=1,380)	17.0	[14.7,19.6]	33.0	[29.4,36.8]	10.7	[8.9,12.8]	19.4	[17.0,22.0]	10.4	[8.5,12.8]	9.5	[7.7,11.7]	100.0
Consanguineous (n=717)	18.8	[16.2,21.8]	27.3	[23.3,31.6]	8.0	[5.7,11.1]	27.3	[23.2,31.9]	10.1	[7.8,13.0]	8.5	[6.4,11.2]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(5) =	77.1967												
Design-based F(4.73, 1467.37) =	3.0785	Pr =	0.010										
Total Siblings													
1-2 (n=203)	6.1	[3.6,10.2]	31.2	[23.8,39.7]	23.2	[17.1,30.7]	13.6	[9.3,19.4]	14.3	[9.3,21.4]	11.6	[7.2,18.1]	100.0
3 (n=342)	12.6	[9.1,17.1]	34.3	[28.0,41.2]	12.8	[9.7,16.6]	15.0	[11.1,20.0]	12.5	[9.0,17.1]	12.8	[8.7,18.6]	100.0

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Table B.6 – continued from previous page

	Reason not to Work												
	Housewife		**Child/Pregnant**		**Unemployed**		**Not Allowed**		**Don't want/need**		**Other**		**Total**
	%	CI	%	CI	%	CI	%	CI	%	CI	%	CI	%
4 (n=361)	18.3	[13.8,23.7]	34.5	[28.9,40.5]	9.7	[6.6,14.1]	18.9	[14.6,24.0]	10.8	[7.7,14.8]	8.0	[5.1,12.2]	100.0
5 or 6 (n=534)	19.3	[15.4,23.9]	31.3	[26.2,36.9]	6.1	[4.1,9.0]	25.9	[21.4,30.9]	10.5	[7.8,14.1]	6.9	[4.7,10.0]	100.0
7 and more (n=657)	23.7	[20.1,27.8]	26.8	[22.4,31.7]	5.5	[4.1,7.5]	28.6	[23.8,33.8]	6.9	[4.7,9.9]	8.5	[6.3,11.3]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(20) =	560.5027												
Design-based F(16.99, 5266.55) =	5.6806	Pr =	0.000										
Share of Male Siblings													
0 (n=218)	11.5	[7.2,17.8]	34.5	[26.8,43.2]	15.3	[10.4,21.9]	13.8	[9.2,20.0]	12.4	[8.3,18.1]	12.6	[8.3,18.6]	100.0
0-1/3 (n=393)	19.4	[15.5,24.1]	29.7	[24.4,35.5]	9.6	[6.1,14.8]	21.8	[17.3,27.1]	10.1	[6.8,14.6]	9.4	[6.3,13.8]	100.0
1/3-1/2 (n=551)	16.6	[13.2,20.7]	30.8	[25.6,36.5]	9.0	[6.6,12.0]	26.5	[21.8,31.7]	9.1	[6.5,12.6]	8.1	[5.5,11.9]	100.0
1/2 (n=432)	16.5	[12.9,20.8]	31.1	[25.3,37.5]	11.4	[8.1,15.7]	21.5	[17.7,25.9]	9.7	[6.8,13.8]	9.8	[6.6,14.4]	100.0
More 1/2 (n=503)	21.1	[17.0,25.8]	31.0	[26.1,36.4]	7.0	[4.9,9.8]	21.5	[17.6,26.0]	11.5	[8.7,14.9]	8.0	[5.6,11.3]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(20) =	147.1419												
Design-based F(16.52, 5120.58) =	1.4463	Pr =	0.108										
Deceased Siblings													
None (n=1,150)	14.8	[12.9,16.9]	28.6	[25.4,32.0]	12.8	[10.7,15.3]	20.2	[17.5,23.2]	12.7	[10.5,15.3]	10.9	[8.7,13.6]	100.0
At Least One (n=947)	21.2	[17.9,24.9]	34.4	[30.3,38.8]	6.0	[4.5,7.9]	24.2	[20.7,28.0]	7.3	[5.3,9.8]	7.0	[5.3,9.1]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(5) =	231.8889												
Design-based F(4.85, 1502.91) =	9.3267	Pr =	0.000										
Childhood Place													
Province/District (n=1,225)	14.7	[12.8,16.8]	31.2	[27.7,35.1]	11.9	[9.8,14.5]	19.9	[17.3,22.7]	12.5	[10.3,15.0]	9.8	[7.9,12.1]	100.0
Subdistrict/Village (n=872)	22.5	[19.4,26.1]	30.9	[26.9,35.3]	6.2	[4.7,8.1]	25.5	[21.7,29.7]	6.7	[4.9,9.1]	8.2	[6.4,10.4]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(5) =	193.0633												
Design-based F(4.65, 1441.72) =	8.6545	Pr =	0.000										
Childhood Region													
West (n=312)	11.3	[8.0,15.6]	31.9	[25.7,38.8]	16.3	[12.6,20.8]	15.8	[11.5,21.4]	9.9	[6.7,14.5]	14.8	[10.9,19.8]	100.0
South (n=250)	15.2	[11.0,20.6]	39.6	[34.4,45.0]	8.4	[5.5,12.8]	20.7	[15.4,27.4]	7.1	[4.5,11.1]	9.0	[5.9,13.6]	100.0
Central (n=391)	18.4	[14.3,23.3]	36.4	[29.0,44.5]	9.0	[6.2,12.9]	16.5	[12.9,21.0]	12.0	[8.4,16.8]	7.7	[4.9,11.8]	100.0
North (n=209)	8.2	[4.0,16.0]	42.9	[34.3,52.0]	12.8	[8.9,18.1]	15.7	[9.5,24.7]	13.7	[8.1,22.1]	6.8	[3.5,12.6]	100.0

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Table B.6 – continued from previous page

	Reason not to Work												
	Housewife		**Child/Pregnant**		**Unemployed**		**Not Allowed**		**Don't want/need**		**Other**		**Total**
	%	CI	%	CI	%	CI	%	CI	%	CI	%	CI	%
East (n=935)	23.6	[20.8,26.7]	22.7	[19.2,26.5]	6.2	[4.5,8.5]	30.3	[26.5,34.4]	10.1	[7.9,12.7]	7.1	[5.6,9.0]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(20) =	576.5495												
Design-based F(15.75, 4882.41) =	5.8235	Pr =	0.000										
Wealth Status													
Poorest (n=596)	24.2	[20.7,28.0]	20.3	[16.4,24.8]	5.5	[3.7,8.0]	31.5	[26.2,37.3]	6.9	[4.8,9.8]	11.7	[9.0,15.2]	100.0
Poorer (n=570)	17.7	[14.2,21.9]	28.2	[23.8,33.1]	8.6	[6.2,11.6]	26.1	[22.2,30.5]	10.2	[7.6,13.4]	9.2	[6.8,12.4]	100.0
Middle (n=423)	16.6	[13.1,20.7]	37.5	[32.1,43.2]	10.0	[7.4,13.5]	18.9	[14.8,23.8]	9.9	[7.1,13.6]	7.2	[4.6,11.0]	100.0
Richer (n=313)	17.1	[12.8,22.5]	40.5	[34.0,47.4]	9.5	[6.7,13.5]	17.3	[12.8,22.9]	9.2	[6.0,13.8]	6.4	[3.8,10.6]	100.0
Richest (n=195)	9.4	[5.4,16.0]	29.9	[22.8,38.0]	19.0	[13.1,26.6]	10.8	[6.8,16.6]	18.5	[13.0,25.7]	12.4	[8.6,17.5]	100.0
Total (n=2,097)	17.6	[15.8,19.5]	31.1	[28.3,34.1]	9.8	[8.4,11.5]	21.9	[19.8,24.2]	10.3	[8.7,12.2]	9.2	[7.8,10.8]	100.0
Pearson: Uncorrected chi2(20) =	571.1774												
Design-based F(16.29, 5049.10) =	5.7134	Pr =	0.000										

Source: Author's own calculation using the TDHS-2013.

Table B.7: Descriptive Statistics for Women aged 15-29 and in Urban

	N	Mean				
	Observations	Education	EEA	Migrated	Married	NEET
Mother's Education						
Less than Primary	1,258	7.083	-0.081	0.449	0.598	0.634
Primary	1,356	10.237	0.254	0.355	0.397	0.408
Lower Sec/More	494	11.779	0.568	0.411	0.262	0.261
Total	3,108	9.301	0.180	0.401	0.450	0.468
Father's Education						
Less than Primary	502	5.873	-0.233	0.459	0.627	0.672
Primary	1,527	9.054	0.146	0.372	0.492	0.499
Lower Sec/More	1,079	11.158	0.411	0.416	0.312	0.334
Total	3,108	9.301	0.180	0.401	0.450	0.468
Mother Tongue						
Turkish	2,451	10.063	0.287	0.388	0.441	0.426
Other	657	6.272	-0.242	0.450	0.485	0.638
Total	3,108	9.301	0.180	0.401	0.450	0.468
Marriage Type of Parents						
Not Consanguineous	2,260	9.621	0.243	0.408	0.431	0.440
Consanguineous	848	8.385	0.001	0.380	0.505	0.551
Total	3,108	9.301	0.180	0.401	0.450	0.468
Sibling Size						
1-2	652	11.151	0.566	0.321	0.258	0.248
3	678	10.359	0.270	0.366	0.395	0.425
4	589	9.461	0.184	0.395	0.513	0.497
5 or 6	594	8.438	-0.117	0.429	0.562	0.587
7 and more	595	6.236	-0.148	0.528	0.599	0.666
Total	3,108	9.301	0.180	0.401	0.450	0.468
Share of Male Siblings						
0	536	10.601	0.415	0.325	0.334	0.304
0-1/3	542	8.509	-0.038	0.442	0.536	0.560
1/3-1/2	693	9.005	0.111	0.439	0.471	0.502
1/2	747	9.901	0.271	0.370	0.388	0.407
More 1/2	590	8.250	0.096	0.435	0.549	0.593
Total	3,108	9.301	0.180	0.401	0.450	0.468
Deceased Siblings						
None	2,070	10.003	0.270	0.362	0.376	0.397
At Least One	1,038	7.818	-0.009	0.482	0.608	0.618
Total	3,108	9.301	0.180	0.401	0.450	0.468
Childhood Place						
Province/District	2,525	9.801	0.234	0.320	0.390	0.431
Subdistrict/Village	583	7.000	-0.067	0.770	0.728	0.642
Total	3,108	9.301	0.180	0.401	0.450	0.468
Childhood Region						
West	720	10.203	0.239	0.293	0.338	0.351
South	389	9.299	0.283	0.436	0.464	0.462
Central	618	10.134	0.346	0.416	0.512	0.493
North	415	9.783	0.310	0.606	0.528	0.464
East	966	7.222	-0.127	0.460	0.523	0.611
Total	3,108	9.301	0.180	0.401	0.450	0.468
Wealth Status						
Poorest	293	5.707	-0.362	0.395	0.526	0.668
Poorer	715	7.392	-0.072	0.395	0.479	0.563
Middle	761	8.909	0.097	0.435	0.475	0.503
Richer	726	10.073	0.300	0.421	0.438	0.431
Richest	613	11.544	0.509	0.351	0.393	0.335
Total	3,108	9.301	0.180	0.401	0.450	0.468

Source: Author's own calculation using the TDHS-2013.
Note: The variables of Education, EEA, Migrated and Married show preferences and effort of women.

Table B.8: Descriptive Statistics for Women aged 15-29 and in Rural

	N	Mean				
	Observations	Education	WSI	Migrated	Married	NEET
Mother's Education						
Below Primary	652	6.070	-0.447	0.326	0.544	0.646
Primary	404	9.082	-0.214	0.333	0.380	0.410
Lower Sec/More	49	10.429	0.214	0.458	0.398	0.416
Total	1,105	7.490	-0.320	0.336	0.471	0.540
Father's Education						
Below Primary	279	5.155	-0.423	0.362	0.595	0.668
Primary	644	7.789	-0.371	0.301	0.446	0.510
Lower Sec/More	182	9.723	-0.009	0.415	0.385	0.464
Total	1,105	7.490	-0.320	0.336	0.471	0.540
Mother Tongue						
Turkish	665	8.832	-0.199	0.346	0.459	0.436
Non Turkish	440	5.086	-0.537	0.316	0.494	0.727
Total	1,105	7.490	-0.320	0.336	0.471	0.540
Marriage Type of Parents						
Not Consanguineous	723	7.923	-0.301	0.357	0.491	0.495
Consanguineous	382	6.594	-0.362	0.291	0.431	0.635
Total	1,105	7.490	-0.320	0.336	0.471	0.540
Sibling Size						
1-2	120	9.731	0.110	0.266	0.351	0.344
3	175	9.365	-0.212	0.335	0.408	0.375
4	161	8.257	-0.256	0.344	0.419	0.484
5 or 6	287	7.075	-0.409	0.377	0.523	0.608
7 and more	362	5.316	-0.540	0.331	0.548	0.701
Total	1,105	7.490	-0.320	0.336	0.471	0.540
Share of Male Siblings						
0	129	9.618	0.060	0.349	0.404	0.418
0-1/3	186	7.223	-0.336	0.298	0.475	0.534
1/3-1/2	317	6.923	-0.521	0.371	0.519	0.585
1/2	213	7.983	-0.204	0.271	0.415	0.505
More 1/2	260	6.720	-0.383	0.366	0.497	0.590
Total	1,105	7.490	-0.320	0.336	0.471	0.540
Deceased Siblings						
None	634	8.310	-0.248	0.307	0.389	0.478
At Least One	471	6.305	-0.426	0.377	0.590	0.630
Total	1,105	7.490	-0.320	0.336	0.471	0.540
Childhood Place						
Province/District	179	8.430	-0.195	0.580	0.584	0.630
Subdistrict/Village	926	7.308	-0.345	0.288	0.449	0.523
Total	1,105	7.490	-0.320	0.336	0.471	0.540
Childhood Region						
West	149	9.561	-0.026	0.348	0.459	0.355
South	139	8.178	-0.068	0.304	0.498	0.532
Central	183	8.588	-0.366	0.290	0.516	0.481
North	140	8.653	-0.329	0.495	0.441	0.363
East	494	5.495	-0.502	0.305	0.460	0.712
Total	1,105	7.490	-0.320	0.336	0.471	0.540
Wealth index						
Poorest	659	6.266	-0.493	0.289	0.484	0.579
Poorer	266	8.476	-0.198	0.391	0.494	0.557
Middle	109	9.576	-0.113	0.429	0.406	0.507
Richer	47	9.737	0.272	0.412	0.474	0.242
Richest	24	12.182	0.397	0.332	0.260	0.187
Total	1,105	7.490	-0.320	0.336	0.471	0.540

Source: Author's own calculation using the TDHS-2013.
Note: The variables of Education, EEA, Migrated and Married show preferences and effort of women.

Table B.9: Descriptive Statistics for Women Aged 15-29 and in Regions Other than East

	N	Mean				
	Observations	Education	EEA	Migrated	Married	NEET
Mother's Education						
Below Primary	944	7.230	-0.104	0.484	0.634	0.604
Primary	1,447	10.127	0.211	0.352	0.394	0.395
Lower Sec/More	463	11.713	0.574	0.408	0.260	0.268
Total	2,854	9.471	0.173	0.404	0.448	0.440
Father's Education						
Below Primary	332	6.322	-0.202	0.520	0.666	0.627
Primary	1,546	9.092	0.096	0.370	0.488	0.471
Lower Sec/More	976	11.132	0.421	0.418	0.311	0.329
Total	2,854	9.471	0.173	0.404	0.448	0.440
Mother Tongue						
Turkish	2,548	9.919	0.233	0.384	0.441	0.417
Other	306	6.276	-0.257	0.545	0.495	0.605
Total	2,854	9.471	0.173	0.404	0.448	0.440
Marriage Type of Parents						
Not Consanguineous	2,218	9.745	0.228	0.404	0.432	0.418
Consanguineous	636	8.502	-0.019	0.405	0.504	0.520
Total	2,854	9.471	0.173	0.404	0.448	0.440
Total Siblings						
1-2	720	11.034	0.521	0.311	0.269	0.255
3	747	10.173	0.195	0.361	0.394	0.416
4	561	9.245	0.159	0.406	0.517	0.497
5 or 6	473	8.402	-0.118	0.467	0.600	0.564
7 and more	353	6.384	-0.229	0.607	0.649	0.646
Total	2,854	9.471	0.173	0.404	0.448	0.440
Share of Male Siblings						
0	585	10.533	0.390	0.327	0.342	0.311
0-1/3	446	8.521	-0.088	0.446	0.544	0.536
1/3-1/2	616	9.192	0.088	0.446	0.477	0.475
1/2	700	10.006	0.278	0.368	0.383	0.386
More 1/2	507	8.552	0.081	0.462	0.552	0.551
Total	2,854	9.471	0.173	0.404	0.448	0.440
Deceased Siblings						
None	1,985	10.090	0.257	0.365	0.370	0.376
At Least One	869	8.028	-0.022	0.496	0.628	0.590
Total	2,854	9.471	0.173	0.404	0.448	0.440
Childhood Place						
Province/District	1,934	10.086	0.287	0.343	0.388	0.410
Subdistrict/Village	920	7.871	-0.124	0.563	0.603	0.519
Total	2,854	9.471	0.173	0.404	0.448	0.440
Childhood Region						
West	833	10.139	0.209	0.288	0.344	0.348
South	495	9.084	0.224	0.378	0.449	0.470
Central	785	9.837	0.229	0.389	0.511	0.492
North	549	9.407	0.107	0.568	0.500	0.434
East	192	6.115	-0.156	0.813	0.657	0.656
Total	2,854	9.471	0.173	0.404	0.448	0.440
Wealth Status						
Poorest	376	7.329	-0.440	0.346	0.516	0.490
Poorer	633	7.954	-0.033	0.434	0.491	0.522
Middle	678	8.997	0.103	0.451	0.464	0.486
Richer	631	10.075	0.314	0.424	0.442	0.420
Richest	536	11.528	0.534	0.335	0.370	0.323
Total	2,854	9.471	0.173	0.404	0.448	0.440

Source: Author's own calculation using the TDHS-2013.
Note: The variables of Education, EEA, Migrated and Married show preferences and effort of women.

Table B.10: Descriptive Statistics for Women aged 15-29 and in East Region

	N	Mean				
	Observations	Education	EEA	Migrated	Married	NEET
Mother's Education						
Below Primary	966	6.208	-0.282	0.317	0.510	0.686
Primary	313	9.316	-0.131	0.350	0.395	0.506
Lower Sec/More	80	11.453	0.244	0.474	0.379	0.301
Total	1,359	7.198	-0.218	0.334	0.477	0.624
Father's Education						
Below Primary	449	4.941	-0.381	0.333	0.563	0.720
Primary	625	7.490	-0.223	0.301	0.460	0.629
Lower Sec/More	285	10.295	0.061	0.404	0.371	0.455
Total	1,359	7.198	-0.218	0.334	0.477	0.624
Mother Tongue						
Turkish	568	9.463	0.024	0.360	0.468	0.502
Non Turkish	791	5.668	-0.382	0.316	0.483	0.706
Total	1,359	7.198	-0.218	0.334	0.477	0.624
Marriage Type of Parents						
Not Consanguineous	765	7.292	-0.242	0.376	0.490	0.600
Consanguineous	594	7.082	-0.188	0.282	0.460	0.654
Total	1,359	7.198	-0.218	0.334	0.477	0.624
Total Siblings						
1-2	52	9.700	0.260	0.374	0.284	0.367
3	106	10.515	0.159	0.354	0.437	0.426
4	189	9.364	-0.101	0.296	0.407	0.487
5 or 6	408	7.609	-0.306	0.328	0.471	0.640
7 and more	604	5.578	-0.291	0.342	0.524	0.705
Total	1,359	7.198	-0.218	0.334	0.477	0.624
Share of Male Siblings						
0	80	9.570	0.049	0.351	0.365	0.432
0-1/3	282	7.667	-0.117	0.340	0.480	0.595
1/3-1/2	394	6.787	-0.354	0.364	0.497	0.644
1/2	260	7.612	-0.203	0.289	0.439	0.601
More 1/2	343	6.430	-0.226	0.323	0.504	0.687
Total	1,359	7.198	-0.218	0.334	0.477	0.624
Deceased Siblings						
None	719	8.033	-0.156	0.299	0.413	0.568
At Least One	640	6.246	-0.289	0.373	0.549	0.688
Total	1,359	7.198	-0.218	0.334	0.477	0.624
Childhood Place						
Province/District	770	8.328	-0.080	0.288	0.443	0.561
Subdistrict/Village	589	5.522	-0.423	0.403	0.527	0.717
Total	1,359	7.198	-0.218	0.334	0.477	0.624
Childhood Region						
West	36	9.756	0.259	0.834	0.684	0.542
South	33	9.219	0.138	0.930	0.799	0.548
Central	16	12.933	0.347	0.840	0.650	0.410
North	6	11.229	0.159	0.906	0.542	0.282
East	1,268	6.949	-0.255	0.288	0.457	0.634
Total	1,359	7.198	-0.218	0.334	0.477	0.624
Wealth index						
Poorest	576	5.036	-0.457	0.305	0.482	0.707
Poorer	348	6.849	-0.268	0.294	0.460	0.660
Middle	192	8.865	-0.061	0.349	0.489	0.594
Richer	142	9.939	0.181	0.395	0.414	0.452
Richest	101	11.856	0.263	0.485	0.561	0.399
Total	1,359	7.198	-0.218	0.334	0.477	0.624

Source: Author's own calculation using the TDHS-2013.
Note: The variables of Education, EEA, Migrated and Married show preferences and effort of women.

Table B.11: Descriptive Statistics for Women aged 20-29

	N	Mean				
	Observations	Education	EEA	Migrated	Married	NEET
Mother's Education						
Below Primary	1,371	6.284	-0.172	0.499	0.755	0.733
Primary	1,045	10.226	0.203	0.482	0.607	0.562
Lower Sec/More	311	12.829	0.610	0.568	0.435	0.391
Total	2,727	8.772	0.086	0.501	0.652	0.617
Father's Education						
Below Primary	597	5.206	-0.290	0.508	0.753	0.739
Primary	1,367	8.558	0.072	0.468	0.698	0.639
Lower Sec/More	763	11.633	0.374	0.556	0.499	0.494
Total	2,727	8.772	0.086	0.501	0.652	0.617
Mother Tongue						
Turkish	2,007	9.940	0.218	0.495	0.640	0.568
Non Turkish	720	4.910	-0.348	0.523	0.690	0.778
Total	2,727	8.772	0.086	0.501	0.652	0.617
Marriage Type of Parents						
Not Consanguineous	1,933	9.247	0.144	0.517	0.639	0.590
Consanguineous	794	7.501	-0.067	0.460	0.685	0.689
Total	2,727	8.772	0.086	0.501	0.652	0.617
Sibling Size						
1-2	431	11.698	0.503	0.442	0.445	0.393
3	521	10.453	0.268	0.496	0.604	0.567
4	492	9.157	0.154	0.494	0.704	0.636
5 or 6	602	7.838	-0.142	0.496	0.747	0.692
7 and more	681	5.282	-0.285	0.566	0.746	0.771
Total	2,727	8.772	0.086	0.501	0.652	0.617
Share of Male Siblings						
0	387	10.987	0.369	0.462	0.555	0.458
0-1/3	491	7.865	-0.096	0.497	0.696	0.669
1/3-1/2	666	8.259	-0.019	0.535	0.683	0.645
1/2	600	9.527	0.175	0.470	0.582	0.566
More 1/2	583	7.633	0.050	0.530	0.728	0.716
Total	2,727	8.772	0.086	0.501	0.652	0.617
Deceased Siblings						
None	1,596	9.869	0.216	0.490	0.592	0.556
At Least One	1,131	7.103	-0.111	0.518	0.743	0.710
Total	2,727	8.772	0.086	0.501	0.652	0.617
Childhood Place						
Province/District	1,708	9.822	0.213	0.448	0.598	0.590
Subdistrict/Village	1,019	6.642	-0.171	0.610	0.760	0.672
Total	2,727	8.772	0.086	0.501	0.652	0.617
Childhood Region						
West	537	10.448	0.221	0.421	0.558	0.482
South	352	8.907	0.198	0.500	0.644	0.600
Central	527	9.914	0.216	0.498	0.703	0.639
North	374	9.363	0.156	0.706	0.666	0.551
East	937	5.946	-0.221	0.520	0.707	0.767
Total	2,727	8.772	0.086	0.501	0.652	0.617
Wealth Status						
Poorest	592	5.135	-0.440	0.439	0.718	0.702
Poorer	623	6.905	-0.113	0.514	0.694	0.707
Middle	577	8.644	0.005	0.540	0.655	0.667
Richer	514	10.225	0.330	0.530	0.634	0.578
Richest	421	12.208	0.541	0.466	0.569	0.444
Total	2,727	8.772	0.086	0.501	0.652	0.617

Source: Author's own calculation using the TDHS-2013.
Note: The variables of Education, EEA, Migrated and Married show preferences and effort of women.

Table B.12: Descriptive Statistics for Women aged 15-29

	N	Mean				
	Observations	Education	EEA	Migrated	Married	NEET
Mother's Education						
Less than Primary	1,910	6.822	-0.175	0.417	0.584	0.637
Primary	1,760	10.033	0.172	0.351	0.394	0.408
Lower Sec/More	543	11.689	0.544	0.414	0.271	0.271
Total	4,213	8.950	0.083	0.388	0.454	0.482
Father's Education						
Less than Primary	781	5.674	-0.286	0.432	0.618	0.671
Primary	2,171	8.777	0.033	0.357	0.482	0.502
Lower Sec/More	1,261	11.003	0.366	0.416	0.320	0.348
Total	4,213	8.950	0.083	0.388	0.454	0.482
Mother Tongue						
Turkish	3,116	9.864	0.208	0.382	0.444	0.427
Other	1,097	5.917	-0.331	0.410	0.488	0.665
Total	4,213	8.950	0.083	0.388	0.454	0.482
Marriage Type of Parents						
Not Consanguineous	2,983	9.317	0.146	0.399	0.442	0.449
Consanguineous	1,230	7.969	-0.083	0.359	0.488	0.570
Total	4,213	8.950	0.083	0.388	0.454	0.482
Sibling Size						
1-2	772	10.980	0.511	0.314	0.269	0.260
3	853	10.198	0.192	0.361	0.397	0.417
4	750	9.266	0.113	0.387	0.498	0.495
5 or 6	881	8.110	-0.188	0.416	0.552	0.592
7 and more	957	5.971	-0.260	0.471	0.585	0.676
Total	4,213	8.950	0.083	0.388	0.454	0.482
Share of Male Siblings						
0	665	10.456	0.362	0.329	0.344	0.321
0-1/3	728	8.255	-0.097	0.413	0.524	0.555
1/3-1/2	1,010	8.524	-0.035	0.423	0.482	0.521
1/2	960	9.596	0.196	0.354	0.392	0.423
More 1/2	850	7.901	-0.013	0.419	0.537	0.593
Total	4,213	8.950	0.083	0.388	0.454	0.482
Deceased Siblings						
None	2,704	9.710	0.180	0.353	0.378	0.411
At Least One	1,509	7.464	-0.106	0.457	0.603	0.621
Total	4,213	8.950	0.083	0.388	0.454	0.482
Childhood Place						
Province/District	2,704	9.739	0.215	0.332	0.399	0.440
Subdistrict/Village	1,509	7.163	-0.214	0.515	0.580	0.579
Total	4,213	8.950	0.083	0.388	0.454	0.482
Childhood Region						
West	869	10.131	0.210	0.299	0.351	0.352
South	528	9.092	0.218	0.412	0.471	0.475
Central	801	9.885	0.231	0.396	0.513	0.491
North	555	9.424	0.107	0.571	0.500	0.432
East	1,460	6.745	-0.230	0.417	0.506	0.639
Total	4,213	8.950	0.083	0.388	0.454	0.482
Wealth Status						
Poorest	952	6.081	-0.450	0.324	0.498	0.608
Poorer	981	7.639	-0.100	0.394	0.482	0.561
Middle	870	8.975	0.076	0.434	0.468	0.504
Richer	773	10.060	0.299	0.421	0.439	0.424
Richest	637	11.562	0.506	0.350	0.389	0.331
Total	4,213	8.950	0.083	0.388	0.454	0.482

Source: Author's own calculation using the TDHS-2013.
Note: The variables of Education, EEA, Migrated and Married show preferences and effort of women.

Table B.13: Log-odds Ratios for the Associations of NEET Status of Women Aged 15-29 by Regions

	West			South			Central			North			East		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Mother's Education															
Below Primary (Ref.)															
Primary	0.957	1.192	0.960	0.573**	0.889	0.620	0.627	0.977	0.658	0.991	0.999	0.922	0.890	0.927	0.879
	(0.204)	(0.272)	(0.209)	(0.153)	(0.270)	(0.185)	(0.187)	(0.293)	(0.205)	(0.225)	(0.238)	(0.208)	(0.152)	(0.171)	(0.160)
Lower Sec/More	0.947	1.220	0.966	0.236**	0.396	0.255**	0.592	1.119	0.637	0.952	1.233	1.042	0.489*	0.582	0.481**
	(0.316)	(0.443)	(0.344)	(0.135)	(0.243)	(0.158)	(0.222)	(0.421)	(0.245)	(0.351)	(0.435)	(0.366)	(0.177)	(0.218)	(0.175)
Father's Education															
Below Primary (Ref.)															
Primary	1.103	1.221	1.116	0.678	0.770	0.589	1.269	1.281	1.120	1.779	1.834	1.921	1.257	1.495**	1.330
	(0.288)	(0.327)	(0.295)	(0.221)	(0.268)	(0.202)	(0.576)	(0.609)	(0.529)	(0.775)	(0.743)	(0.784)	(0.222)	(0.272)	(0.254)
Lower Sec/More	0.906	1.302	0.954	0.462	0.829	0.445*	0.848	1.152	0.802	1.169	1.809	1.378	0.889	1.450*	0.945
	(0.282)	(0.469)	(0.329)	(0.220)	(0.390)	(0.210)	(0.375)	(0.520)	(0.358)	(0.632)	(0.976)	(0.700)	(0.196)	(0.298)	(0.214)
Mother Tongue															
Turkish (Ref.)															
Other	1.345	1.360	1.444	1.756*	2.049**	1.970**	0.784	0.755	0.840	0.677	0.966	0.700	1.901***	1.766**	2.246***
	(0.376)	(0.396)	(0.437)	(0.543)	(0.690)	(0.614)	(0.484)	(0.432)	(0.490)	(0.543)	(0.669)	(0.489)	(0.398)	(0.387)	(0.465)
Marriage Type of Parents															
Not Consanguineous (Ref.)															
Consanguineous	1.037	0.966	1.064	1.079	1.061	1.095	1.429	1.187	1.345	1.206	1.418	1.377	1.294	1.416*	1.272
	(0.218)	(0.212)	(0.236)	(0.295)	(0.288)	(0.295)	(0.311)	(0.280)	(0.316)	(0.367)	(0.465)	(0.447)	(0.247)	(0.275)	(0.245)
Sibling Size															
1-2 (Ref.)															
3	2.357***	1.740	2.411**	2.002	1.979	2.397*	1.653	1.371	1.639	1.991	2.175*	2.095	1.348	0.986	1.161
	(0.722)	(0.589)	(0.819)	(0.939)	(1.013)	(1.219)	(0.824)	(0.685)	(0.810)	(0.886)	(0.997)	(0.955)	(0.639)	(0.501)	(0.602)
4	1.818**	1.110	1.689	2.191*	2.028	2.465**	2.745***	2.114*	2.788**	1.301	1.242	1.360	1.485	1.000	1.242
	(0.541)	(0.367)	(0.543)	(0.993)	(0.897)	(1.069)	(1.030)	(0.886)	(1.107)	(0.484)	(0.500)	(0.532)	(0.714)	(0.519)	(0.661)
5 or 6	2.053*	1.267	1.989	2.255	1.867	2.583*	3.075***	2.024	2.962**	1.688	1.349	1.637	1.929	1.309	1.794
	(0.845)	(0.549)	(0.875)	(1.129)	(0.974)	(1.313)	(1.156)	(0.889)	(1.251)	(0.726)	(0.568)	(0.688)	(0.919)	(0.671)	(0.936)
7 and more	2.360*	1.436	2.630**	2.040	1.711	2.558	1.755	1.605	1.849	1.291	0.668	1.129	1.639	1.057	1.559
	(1.056)	(0.663)	(1.168)	(1.198)	(0.999)	(1.473)	(1.051)	(0.989)	(1.130)	(0.624)	(0.338)	(0.536)	(0.862)	(0.601)	(0.898)

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Table B.13 – continued from previous page

	West			South			Central			North			East		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Share of Male Siblings															
0 (Ref.)															
0-1/3	1.292	1.745	1.577	1.047	0.745	0.941	0.678	0.787	0.704	1.078	1.116	1.064	1.142	1.110	1.182
	(0.456)	(0.676)	(0.604)	(0.481)	(0.421)	(0.528)	(0.241)	(0.285)	(0.252)	(0.438)	(0.508)	(0.483)	(0.346)	(0.350)	(0.375)
1/3-1/2	0.743	1.087	0.813	1.004	0.785	0.861	1.507	1.526	1.576	0.523*	0.319***	0.450**	1.243	1.150	1.362
	(0.252)	(0.375)	(0.281)	(0.519)	(0.462)	(0.509)	(0.590)	(0.527)	(0.544)	(0.189)	(0.130)	(0.174)	(0.403)	(0.387)	(0.460)
1/2	1.070	1.225	1.151	2.126*	1.730	2.202*	1.036	1.106	1.067	1.426	1.098	1.334	1.362	1.299	1.492
	(0.231)	(0.340)	(0.321)	(0.810)	(0.719)	(0.881)	(0.320)	(0.378)	(0.361)	(0.467)	(0.453)	(0.536)	(0.424)	(0.409)	(0.474)
More 1/2	0.991	1.079	1.060	1.119	0.922	1.040	1.563	1.817	1.672	0.879	0.702	0.844	1.625*	1.452	1.791**
	(0.344)	(0.366)	(0.360)	(0.496)	(0.532)	(0.597)	(0.616)	(0.693)	(0.620)	(0.289)	(0.266)	(0.311)	(0.453)	(0.404)	(0.500)
Deceased Sibling															
None (Ref.)															
At Least One	1.515*	1.319	1.596**	1.334	1.246	1.431	0.962	0.844	0.975	1.200	1.163	1.232	0.953	0.879	0.957
	(0.324)	(0.294)	(0.353)	(0.326)	(0.332)	(0.379)	(0.274)	(0.274)	(0.308)	(0.289)	(0.302)	(0.329)	(0.140)	(0.144)	(0.155)
Childhood Place															
Province/District (Ref.)															
Sub-district/Village	0.997	0.658*	0.900	0.955	0.735	0.888	0.759	0.570*	0.636	0.595*	0.483**	0.558*	1.235	1.109	1.207
	(0.204)	(0.140)	(0.185)	(0.246)	(0.224)	(0.263)	(0.225)	(0.167)	(0.188)	(0.161)	(0.160)	(0.164)	(0.200)	(0.219)	(0.240)
Childhood Region															
West (Ref.)															
South	1.411	1.045	1.451	0.956	1.034	0.889	0.680	1.024	0.679	1.000	1.000	1.000	0.915	0.720	0.934
	(1.013)	(0.646)	(0.874)	(0.350)	(0.444)	(0.345)	(0.419)	(0.568)	(0.374)	(.)	(.)	(.)	(0.449)	(0.291)	(0.371)
Central	1.524	1.021	1.509	1.746	1.402	1.621	1.516	1.964	1.581	1.349	1.391	1.231	0.667	0.909	0.593
	(0.495)	(0.369)	(0.544)	(1.888)	(1.543)	(1.758)	(0.656)	(0.862)	(0.645)	(0.901)	(0.850)	(0.757)	(0.539)	(0.635)	(0.421)
North	1.606	1.320	1.695				0.193**	0.400	0.174**	1.774	1.759	1.666	0.369	0.252	0.216
	(0.584)	(0.573)	(0.715)				(0.132)	(0.272)	(0.116)	(0.692)	(0.629)	(0.587)	(0.475)	(0.505)	(0.433)
East	1.519	1.333	1.659	1.048	0.726	0.816	3.012*	3.628**	4.079**	1.097	1.127	1.055	0.986	1.080	0.977
	(0.550)	(0.476)	(0.568)	(0.644)	(0.422)	(0.510)	(1.921)	(2.214)	(2.502)	(0.942)	(0.822)	(0.766)	(0.353)	(0.477)	(0.404)
Wealth Status															
Poorest (Ref.)															
Poorer	1.027	1.367	1.126	1.328	1.422	1.372	0.927	1.002	0.852	2.255**	2.856**	2.678*	0.937	1.159	1.062

Continued on next page

Table B.13 – continued from previous page

	West			South			Central			North			East		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	(0.394)	(0.608)	(0.498)	(0.478)	(0.526)	(0.507)	(0.435)	(0.471)	(0.385)	(0.853)	(1.480)	(1.376)	(0.244)	(0.272)	(0.259)
Middle	1.178	1.529	1.247	1.030	0.994	0.979	0.583	0.914	0.566	1.718	2.548*	2.071	0.794	0.965	0.757
	(0.481)	(0.715)	(0.581)	(0.374)	(0.376)	(0.359)	(0.306)	(0.503)	(0.308)	(0.746)	(1.306)	(1.093)	(0.200)	(0.297)	(0.228)
Richer	0.814	1.220	0.843	1.519	1.224	1.404	0.418*	0.698	0.379*	1.494	2.204	1.750	0.439***	0.652	0.384***
	(0.321)	(0.549)	(0.376)	(0.684)	(0.508)	(0.580)	(0.209)	(0.367)	(0.195)	(0.629)	(1.080)	(0.880)	(0.132)	(0.173)	(0.102)
Richest	0.747	1.171	0.780	0.983	0.943	0.930	0.286**	0.536	0.266**	0.704	0.956	0.742	0.361**	0.538*	0.316***
	(0.307)	(0.550)	(0.363)	(0.478)	(0.605)	(0.576)	(0.142)	(0.305)	(0.148)	(0.352)	(0.560)	(0.431)	(0.141)	(0.195)	(0.123)
Education		0.887***			0.899*			0.844***			0.896			0.869***	
		(0.036)			(0.047)			(0.044)			(0.067)			(0.033)	
EEA		0.847			0.977			0.905			0.872			0.925	
		(0.087)			(0.121)			(0.107)			(0.090)			(0.054)	
Migrated		0.985			0.908			0.911			1.002			0.879	
		(0.203)			(0.293)			(0.209)			(0.330)			(0.201)	
Married		6.615***			6.972***			5.577***			4.742***			5.624***	
		(1.717)			(2.507)			(1.409)			(1.661)			(1.491)	
Education Res West			0.887***												
			(0.036)												
EEA Res West			0.847												
			(0.087)												
Migrated Res West			0.985												
			(0.203)												
Married Res West			6.615***												
			(1.717)												
Education Res South						0.899*									
						(0.047)									
EEA Res South						0.977									
						(0.121)									
Migrated Res South						0.908									
						(0.293)									
Married Res South						6.972***									
						(2.507)									

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Table B.13 – continued from previous page

	West			South			Central			North			East		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Education Res Central									0.844***						
									(0.044)						
EEA Res Central									0.905						
									(0.107)						
Migrated Res Central									0.911						
									(0.209)						
Married Res Central									5.577***						
									(1.409)						
Education Res North												0.896			
												(0.067)			
EEA Res North												0.872			
												(0.090)			
Migrated Res North												1.002			
												(0.330)			
Married Res North												4.742***			
												(1.661)			
Education Res East															0.869***
															(0.033)
EEA Res East															0.925
															(0.054)
Migrated Res East															0.879
															(0.201)
Married Res East															5.624***
															(1.491)
Observations	945	945	945	527	527	527	810	810	810	525	525	525	1359	1359	1359
Pseudo R^2															

Note: Exponentiated coefficients; Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Age variable is modeled as fixed-effect.

Table B.14: Log-odds Ratios for the Associations of NEET Status for Urban Sample

	15-24			20-29			15-29		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Mother's Education									
Less than Primary (Ref.)									
Primary	0.671**	0.826	0.635***	0.836	1.110	0.880	0.776**	1.001	0.785*
	(0.104)	(0.139)	(0.105)	(0.120)	(0.169)	(0.130)	(0.092)	(0.133)	(0.101)
Lower Sec/More	0.597**	0.901	0.627	0.627**	0.984	0.623*	0.626**	0.954	0.661*
	(0.156)	(0.269)	(0.186)	(0.145)	(0.247)	(0.156)	(0.122)	(0.206)	(0.141)
Father's Education									
Less than Primary (Ref.)									
Primary	0.915	0.939	0.794	1.097	1.305	1.159	1.126	1.356	1.165
	(0.192)	(0.220)	(0.186)	(0.202)	(0.271)	(0.241)	(0.186)	(0.250)	(0.212)
Lower Sec/More	0.572**	0.870	0.515**	0.843	1.433	0.817	0.812	1.333	0.829
	(0.141)	(0.238)	(0.144)	(0.175)	(0.350)	(0.192)	(0.148)	(0.286)	(0.170)
Mother Tongue									
Turkish (Ref.)									
Other	1.505**	1.649**	1.798**	1.359	1.344	1.537**	1.564***	1.675***	1.830***
	(0.300)	(0.392)	(0.427)	(0.259)	(0.267)	(0.292)	(0.261)	(0.289)	(0.310)
Marriage Type of Parents									
Not Consanguineous (Ref.)									
Consanguineous	1.216	1.101	1.176	1.054	0.956	1.012	1.149	1.053	1.110
	(0.193)	(0.191)	(0.207)	(0.160)	(0.147)	(0.157)	(0.145)	(0.141)	(0.150)
Sibling Size									
1-2 (Ref.)									
3	2.669***	1.798*	2.435***	1.941***	1.504	2.050**	2.120***	1.633**	2.015***
	(0.844)	(0.615)	(0.828)	(0.461)	(0.427)	(0.581)	(0.471)	(0.399)	(0.495)
4	2.084***	1.316	1.948**	1.917***	1.274	1.860**	1.940***	1.312	1.766**
	(0.553)	(0.388)	(0.572)	(0.450)	(0.347)	(0.501)	(0.374)	(0.291)	(0.388)
5 or 6	3.262***	1.660	3.209***	2.047***	1.233	2.095***	2.430***	1.484	2.309***
	(0.983)	(0.637)	(1.208)	(0.480)	(0.310)	(0.527)	(0.544)	(0.365)	(0.568)
7 and more	2.585***	1.387	2.730**	1.967**	1.191	2.129**	2.210***	1.327	2.241***
	(0.854)	(0.547)	(1.079)	(0.566)	(0.376)	(0.660)	(0.575)	(0.383)	(0.633)
Share of Male Siblings									
0 (Ref.)									
0-1/3	0.884	1.041	0.946	1.296	1.504	1.529*	1.049	1.215	1.187
	(0.226)	(0.329)	(0.299)	(0.307)	(0.375)	(0.381)	(0.196)	(0.252)	(0.245)
1/3-1/2	0.725	0.941	0.850	1.072	1.233	1.248	0.916	1.102	1.077
	(0.194)	(0.281)	(0.252)	(0.253)	(0.312)	(0.317)	(0.195)	(0.239)	(0.235)
1/2	1.308	1.426	1.509	1.377*	1.411	1.646**	1.209	1.261	1.349
	(0.338)	(0.413)	(0.437)	(0.251)	(0.320)	(0.375)	(0.199)	(0.251)	(0.268)
More 1/2	1.064	1.063	1.141	1.508	1.551	1.742**	1.245	1.317	1.418
	(0.266)	(0.303)	(0.325)	(0.388)	(0.423)	(0.476)	(0.251)	(0.278)	(0.301)
Deceased Sibling									
None (Ref.)									
At Least One	0.979	0.833	0.931	1.286*	1.187	1.276*	1.141	1.043	1.150
	(0.163)	(0.164)	(0.180)	(0.177)	(0.177)	(0.188)	(0.143)	(0.141)	(0.154)
Childhood Place									
Province/District (Ref.)									
Sub-district/Village	1.275	0.711*	1.153	0.966	0.638***	0.828	1.130	0.689**	0.974
	(0.234)	(0.146)	(0.227)	(0.149)	(0.105)	(0.129)	(0.160)	(0.104)	(0.142)
Childhood Region									
West (Ref.)									
South	0.809	0.866	0.748	0.929	1.084	0.953	0.884	1.001	0.888
	(0.171)	(0.184)	(0.162)	(0.190)	(0.221)	(0.195)	(0.170)	(0.181)	(0.162)
Central	1.234	1.106	1.165	1.681***	1.595***	1.819***	1.469**	1.371**	1.503**
	(0.248)	(0.262)	(0.276)	(0.280)	(0.281)	(0.322)	(0.225)	(0.218)	(0.241)
North	0.795	0.860	0.728	1.028	1.185	0.993	0.910	1.032	0.884
	(0.206)	(0.234)	(0.199)	(0.226)	(0.289)	(0.243)	(0.184)	(0.227)	(0.197)

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Table B.14 – continued from previous page

	15-24			20-29			15-29		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
East	0.931 (0.214)	0.903 (0.207)	0.832 (0.190)	1.431** (0.247)	1.597*** (0.275)	1.553** (0.268)	1.219 (0.218)	1.295 (0.221)	1.254 (0.215)
Wealth Status Poorest (Ref.)									
Poorer	0.699 (0.200)	0.751 (0.229)	0.638 (0.200)	0.945 (0.253)	1.167 (0.330)	0.964 (0.274)	0.735 (0.170)	0.824 (0.210)	0.697 (0.179)
Middle	0.618* (0.167)	0.618 (0.183)	0.483** (0.145)	0.922 (0.245)	1.222 (0.349)	0.850 (0.246)	0.634** (0.145)	0.735 (0.181)	0.538** (0.136)
Richer	0.433*** (0.130)	0.503** (0.163)	0.337*** (0.115)	0.773 (0.220)	1.082 (0.310)	0.677 (0.193)	0.518*** (0.126)	0.652* (0.161)	0.426*** (0.107)
Richest	0.545* (0.172)	0.605 (0.209)	0.432** (0.155)	0.576* (0.174)	0.768 (0.247)	0.489** (0.157)	0.436*** (0.117)	0.560** (0.159)	0.361*** (0.105)
Education		0.881*** (0.037)			0.882*** (0.024)			0.873*** (0.023)	
EEA		0.735*** (0.052)			0.954 (0.064)			0.853** (0.052)	
Migrated		0.878 (0.200)			0.787* (0.106)			0.813 (0.110)	
Married		11.491*** (2.776)			6.329*** (0.987)			7.108*** (1.087)	
Education Res 1524			0.881*** (0.037)						
EEA Res 1524			0.735*** (0.052)						
Migrated Res 1524			0.878 (0.200)						
Married Res 1524			11.491*** (2.776)						
Education Res 2029						0.882*** (0.024)			
EEA Res 2029						0.954 (0.064)			
Migrated Res 2029						0.787* (0.106)			
Married Res 2029						6.329*** (0.987)			
Education Res 1529									0.873*** (0.023)
EEA Res 1529									0.853** (0.052)
Migrated Res 1529									0.813 (0.110)
Married Res 1529									7.108*** (1.087)
Observations	2030	2030	2030	2040	2040	2040	3108	3108	3108

Note: Exponentiated coefficients; Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Age variable is modeled as fixed-effect.

Table B.15: Log-odds Ratios for the Associations of NEET Status for Rural Sample

	15-24			20-29			15-29		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Mother's Education									
Less than Primary (Ref.)									
Primary	0.965	1.048	0.975	0.673	0.703	0.671	0.896	0.968	0.902
	(0.237)	(0.275)	(0.253)	(0.173)	(0.194)	(0.179)	(0.187)	(0.218)	(0.198)
Lower Sec/More	0.716	0.773	0.775	0.658	0.723	0.675	1.018	1.099	1.081
	(0.373)	(0.503)	(0.506)	(0.362)	(0.446)	(0.413)	(0.434)	(0.519)	(0.510)
Father's Education									
Less than Primary (Ref.)									
Primary	1.179	1.382*	1.202	1.279	1.260	1.285	1.193	1.267	1.200
	(0.244)	(0.256)	(0.250)	(0.312)	(0.300)	(0.313)	(0.203)	(0.207)	(0.204)
Lower Sec/More	0.987	1.288	0.982	1.607	1.849*	1.679	1.175	1.461	1.219
	(0.257)	(0.357)	(0.285)	(0.576)	(0.681)	(0.607)	(0.277)	(0.359)	(0.295)
Mother Tongue									
Turkish (Ref.)									
Other	2.258*	1.963*	2.466**	2.235*	2.031*	2.269**	2.168**	1.897**	2.286**
	(0.925)	(0.765)	(1.008)	(0.913)	(0.813)	(0.932)	(0.701)	(0.586)	(0.730)
Marriage Type of Parents									
Not Consanguineous (Ref.)									
Consanguineous	1.354	1.466*	1.335	0.906	1.062	0.943	1.206	1.327*	1.216
	(0.255)	(0.306)	(0.274)	(0.194)	(0.238)	(0.206)	(0.194)	(0.225)	(0.202)
Sibling Size									
1-2 (Ref.)									
3	0.989	0.988	1.013	1.305	1.255	1.404	1.143	1.092	1.174
	(0.355)	(0.379)	(0.384)	(0.540)	(0.548)	(0.605)	(0.319)	(0.314)	(0.338)
4	0.906	0.780	0.950	1.456	1.338	1.526	1.534	1.374	1.586
	(0.357)	(0.309)	(0.385)	(0.720)	(0.708)	(0.802)	(0.500)	(0.452)	(0.531)
5 or 6	1.748	1.359	1.736	1.579	1.422	1.649	1.815**	1.567	1.861**
	(0.636)	(0.549)	(0.704)	(0.667)	(0.642)	(0.738)	(0.496)	(0.456)	(0.548)
7 and more	1.225	0.982	1.255	2.757*	2.437	2.889*	1.897*	1.615	1.968*
	(0.566)	(0.475)	(0.600)	(1.423)	(1.330)	(1.570)	(0.665)	(0.586)	(0.720)
Share of Male Siblings									
0 (Ref.)									
0-1/3	0.791	0.868	0.754	0.329***	0.344***	0.318***	0.547*	0.568*	0.528*
	(0.330)	(0.358)	(0.311)	(0.127)	(0.136)	(0.127)	(0.188)	(0.193)	(0.181)
1/3-1/2	0.689	0.702	0.723	0.592	0.576	0.577	0.707	0.673	0.707
	(0.237)	(0.249)	(0.258)	(0.198)	(0.199)	(0.200)	(0.191)	(0.189)	(0.198)
1/2	0.856	0.965	0.911	0.856	0.873	0.862	0.820	0.832	0.841
	(0.314)	(0.363)	(0.342)	(0.249)	(0.264)	(0.259)	(0.223)	(0.236)	(0.237)
More 1/2	0.838	0.863	0.876	0.632	0.638	0.619	0.777	0.770	0.784
	(0.293)	(0.310)	(0.312)	(0.210)	(0.219)	(0.213)	(0.209)	(0.218)	(0.222)
Deceased Sibling									
None (Ref.)									
At Least One	1.130	0.945	1.154	0.922	0.838	0.936	0.963	0.852	0.967
	(0.218)	(0.201)	(0.249)	(0.182)	(0.165)	(0.190)	(0.160)	(0.151)	(0.171)
Childhood Place									
Province/District (Ref.)									
Sub-district/Village	0.531***	0.673	0.566**	0.640	0.712	0.655	0.581**	0.659*	0.599**
	(0.127)	(0.162)	(0.135)	(0.178)	(0.197)	(0.183)	(0.134)	(0.152)	(0.136)
Childhood Region									
West (Ref.)									
South	1.243	1.313	1.266	2.410**	2.749**	2.596**	1.832*	2.097**	1.929**
	(0.485)	(0.539)	(0.515)	(0.990)	(1.109)	(1.039)	(0.605)	(0.684)	(0.629)
Central	1.886	1.615	1.829	2.126*	1.951	2.156*	2.221**	2.046**	2.215**
	(0.753)	(0.673)	(0.765)	(0.927)	(0.881)	(0.976)	(0.731)	(0.686)	(0.746)
North	0.711	0.763	0.707	1.016	1.096	1.031	0.937	1.007	0.946
	(0.287)	(0.319)	(0.300)	(0.431)	(0.459)	(0.429)	(0.338)	(0.362)	(0.343)

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Table B.15 – continued from previous page

	15-24			20-29			15-29		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
East	2.569** (1.192)	3.037** (1.369)	2.789** (1.260)	2.946** (1.346)	3.607*** (1.576)	3.181*** (1.379)	3.072*** (1.150)	3.725*** (1.291)	3.348*** (1.155)
Wealth Status Poorest (Ref.)									
Poorer	1.307 (0.321)	1.451 (0.342)	1.344 (0.313)	1.793** (0.471)	1.892** (0.491)	1.809** (0.472)	1.512* (0.327)	1.654** (0.348)	1.545** (0.327)
Middle	1.127 (0.489)	1.413 (0.645)	1.204 (0.550)	1.954 (0.838)	2.440** (1.059)	2.123* (0.917)	1.434 (0.523)	1.850* (0.678)	1.535 (0.569)
Richer	0.153*** (0.102)	0.188** (0.122)	0.130*** (0.084)	0.288** (0.139)	0.285** (0.146)	0.260*** (0.132)	0.277*** (0.123)	0.296** (0.139)	0.247*** (0.116)
Richest	0.308 (0.223)	0.619 (0.425)	0.424 (0.294)	0.319 (0.222)	0.458 (0.343)	0.315 (0.229)	0.264** (0.148)	0.494 (0.269)	0.311** (0.168)
Education		0.904* (0.048)			0.992 (0.041)			0.933* (0.036)	
EEA		0.884 (0.065)			0.953 (0.087)			0.946 (0.061)	
Migrated		1.226 (0.344)			0.977 (0.206)			1.097 (0.223)	
Married		3.353*** (1.122)			2.692*** (0.765)			3.027*** (0.779)	
Education Res 1524			0.904* (0.048)						
EEA Res 1524			0.884 (0.065)						
Migrated Res 1524			1.226 (0.344)						
Married Res 1524			3.353*** (1.122)						
Education Res 2029						0.992 (0.041)			
EEA Res 2029						0.953 (0.087)			
Migrated Res 2029						0.977 (0.206)			
Married Res 2029						2.692*** (0.765)			
Education Res 1529									0.933* (0.036)
EEA Res 1529									0.946 (0.061)
Migrated Res 1529									1.097 (0.223)
Married Res 1529									3.027*** (0.779)
Observations	779	779	779	687	687	687	1105	1105	1105

Note: Exponentiated coefficients; Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Age variable is modeled as fixed-effect.

4. ESSAY 3: REPRODUCTION OF EDUCATIONAL INEQUALITY THROUGH MOBILITY: MOTHERS AND DAUGHTERS IN TURKEY

4.1. Introduction

The extent to which socio-economic outcomes persist from parent generation to children is often interpreted as a measure of a society's success in providing equal opportunities. Lower intergenerational mobility suggests that family background plays an important role in children's later success. In this regard, educational mobility has a growing interest in demographic literature. The education of mothers and their daughters in particular plays a decisive role in demographic change. After various studies, Behrman and Rosenzweig (2002) point out that there is a significantly positive and robust relationship between the level of education of the mothers and the educational success of the children. Indeed, two main factors could determine the extent of educational mobility; the equity of educational policies and the potential impact of family resources on children's educational outcomes. The former is likely a result of the length of compulsory education, the allocation of the education budget to different socio-demographic groups, and transition policies across educational levels. The latter is primarily related to the changing effects of parents' education, occupation and income on their children's educational attainment over time. Due to the demographic transition concept, the demographic literature has largely focused on the latter.

Regarding the relationship between demographics and educational mobility, there is agreement that the second demographic transition (SDT) increases social class differences for children in terms of family resources. For example, children of educated new-generation mothers benefit more than their older counterparts because their mothers are more mature and work in well-paying jobs (Cherlin, 2008; Haveman et al., 2004; McLanahan, 2004; Hernandez, 1993). Due to changing family patterns such as retreating from marriage, increasing divorce and cohabitation rates, falling fertility and increasing migration, families are becoming more unequal in terms of social class,

which consequently affects mobility (McLanahan, 2004; Smock and Schwartz, 2020).

Assessing trends in educational mobility over time requires the selection of an appropriate methodology and data source. In this context, many studies have used traditional educational mobility techniques that analyze the relationship between the education of two or more generations at the individual level. At this point, the researchers took a retrospective approach by collecting data on a sample of adults and comparing their status with that of their parents. For an international comparison of educational mobility between countries, Hertz et al. (2007) provided a comparative study of intergenerational educational correlations for a large number of countries in which Turkey has relatively low educational mobility. Other studies, including Turkey, found similar levels of mobility (Bakiş, 2017; Tansel, 2015; Aydemir and Yazici, 2019; Akarçay-Gürbüz and Polat, 2017). However, caution should be exercised in interpreting these studies. For example, a decrease in the intergenerational correlation between the education of parents and children may be caused by a decrease in fertility in people whose children are most likely to have the same education as their parents (Lawrence and Breen, 2016). However, in a retrospective sample, the respondents' parents are not representative of the previous generation (Duncan, 1966).

However, the traditional models do not take into account demographic processes and impacts at the population level across generations. On the other hand, the study of changes in a heterogeneous population, such as educational mobility, requires consideration of age structure, different fertility, mating, family structure, different mortality rates and migration (Mare, 1995). Therefore, one cannot understand or contextualize social mobility or inequality without including family processes (Mare and Maralani, 2006; Maralani, 2013).

Turkey is an excellent example of studying intergenerational educational mobility due to its centralized education system, regional development differences and cultural differences in women's status. Over the past two decades, Turkey has increased the level of education of the younger generations with laws extending compulsory education to eight years in 1997 and twelve years in 2012 and increasing enrollment in higher education especially since 2006. The extent of educational convergence among women from different social classes may be due to educational policy and family processes. Hence, the motivation for this essay is how women's international educational mobility has changed over time.

The aim of this study is to analyze the trend in educational mobility between

mothers and daughters in Turkey. I use both the conventional methodology (retrospective approach) and the population renewal model (prospective approach). In this essay I specifically address four research questions:

1. How has educational mobility between women and their parents on an individual level changed over time in Turkey?
2. What is the contribution of each level of education to mobility over time?
3. How do changes in the educational distribution of mothers affect the educational distribution of daughters in Turkey?
4. How strong is the influence of assortative mating and different fertility on the educational mobility of women in Turkey?

The contribution of this study to research to date is as follows. First, I analyze educational mobility over time using another dataset (TDSH) to compare the results with other studies. Second, the decomposing intergenerational educational correlation coefficient can be used to observe which educational categories have contributed to the persistence of educational mobility over time. Third, I apply a multiple imputation model to use the prospective approach with a full data set. Fourth, as far as I know, it is the first study to examine educational mobility that takes into account demographic processes such as assortative mating and fertility in Turkey.

The rest of the paper works as follows. Section 2 briefly introduces the literature on conventional educational mobility and provides estimates of the educational mobility of women in the age cohorts 25-30 to 45-49. Section 3 analyzes demographic educational mobility in Turkey. Section 4 presents the overall results and the conclusion.

4.2. Conventional Education Mobility with a Retrospective Approach

4.2.1 Conceptual Literature

According to Solon (2004), there should be an optimal level of intergenerational mobility. Children of wealthy families receive more investment in human capital, and when the intergenerational correlation is zero, it suggests that investment is

not coming back. Assessing optimality therefore requires understanding the mechanisms behind mobility. Of course, if persistent immobility is linked to human capital investment in children due to disparate socio-economic opportunities, public administration should intervene in the tools to maintain equal opportunities. Since education is a good indicator of life in terms of health, income and wealth, extensive studies have been carried out on the intergenerational transmission of education. It would be useful to refer to a few selected studies of the growing literature which have developed on two main strands. The first focused on the intergenerational regression coefficient and the correlation coefficient, and the second focused on isolating the causal effect of the educational level of the parents on that of the children. Black and Devereux (2010) has an excellent review of this literature.

With respect to the former strand, Hertz et al. (2007) estimated trends in the intergenerational persistence of the level of education for a sample of 42 nations over 50 years and found large regional differences. Torul and Oztunali (2017) examined the empirical evolution of educational mobility in Europe at the country level and country groups: Mediterranean, Post-Socialists, Northern Europe and the rest of Europe. Referring to country-specific studies, Zeng and Xie (2014) examined the direct effects of grandparents on the educational attainment of grandchildren in rural China. Aydemir and Yazici (2019) examined the empirical relationship between economic development and intergenerational educational mobility by exploiting the developmental differences in Turkey. Huang (2013) investigated whether the intergenerational transmission of educational qualifications in the USA varies according to household resources. Majumder (2010) found strong intergenerational ties in educational mobility among the castes and tribes in India. Daouli et al. (2010) examined the role of intergenerational mobility for the educational attainment of women in Greece and found that the educational attainment of daughters depends on the education of the parents, especially the mother. Azam and Bhatt (2015) showed the development of the cross-generational transfer of educational qualifications in India over time between different castes and states for the cohorts 1940-1985. Azam (2016) measured educational transmission between fathers (mothers) and daughters in India for daughters born in India in 19621-1991. Bakiş (2017) compared educational mobility in Turkey and European countries and found that mobility in Turkey has improved over time. Nimubona and Vencatachellum (2007) showed that the educational mobility of whites in South Africa is higher than that of blacks. It is also higher for black women and poor people.

On the latter strand, studies analyzed causal effects parental education on chıldren's

educational attainment by using instrumental variables such as educational reforms, minimum school leaving age, the month of birth, and historical enrollment ratios (Black et al., 2005; Oreopoulos et al., 2006; Chevalier et al., 2013; Chevalier, 2004; Akarçay-Gürbüz and Polat, 2017).

In the latter area, studies analyzed the causal effects of parental education on the educational level of children by using instrumental variables such as educational reforms, minimum school leaving age, month of birth and historical school enrollment rates (Black et al., 2005; Oreopoulos et al., 2006; Chevalier et al., 2013; Chevalier, 2004; Akarçay-Gürbüz and Polat, 2017).

4.2.2 Data

Measuring conventional educational mobility requires information about the educational level of parents and their children. Both retrospective and prospective data sets can be used to analyze conventional educational mobility. However, researchers have typically relied on the former because of the prevalence. In a typical retrospective data set, the respondents indicate the level of education of their parents. Despite the availability of some suitable surveys in Turkey that meet the above criteria, I choose the 2013 Turkey Demographic and Health Survey (TDHS-2013), which is superior to other datasets as it provides a lot of information on demographic and socio-economic characteristics of the Women, a central theme of this essay. In addition to the general household questionnaire, a separate women's questionnaire in TDHS-2013 collects more specific information on women aged 15-49. These women, namely daughters in the analysis of conventional educational mobility, recall information of their parents' education.

I limit the sample of women over the age of 25 because they are more likely to leave the formal education system. In addition to the level of education, I take into account some demographic and socio-economic variables such as mother tongue, the parents' mode of marriage, place and region of childhood, migration status, sibling size and proportion of male siblings and deceased siblings. Among the sub-examples of these variables, I produce indices of educational mobility. Additionally, the 2013 TDHS is an example of a two-level stratified sampling where the sample weights are based on sample probabilities that are calculated separately for each sample level and cluster. Therefore, all parameters and the corresponding standard error and confidence intervals take into account the sample design of TDHS-2013.

Table C.1 shows the educational distribution of daughters, mothers and fathers according to the 5-year age group of the daughters. The level of education of both the first and second generations increases over time. The proportion of daughters without schooling falls from 16.1% for 45-49 to 7.6% for 25-29 The proportion of daughters with a high school diploma or older rose from 19.3 percent between the ages of 45 and 49 to 45.1 percent between the ages of 25 and 29 (see C.1). There are similar trends in the distribution of education between mothers and fathers.

4.2.3 Markovian Education Transition Matrices

The Markovian educational transition matrices show the education distribution of parent's and children's education. Table 4.1 shows the education matrices between daughters and their parents. Education level has been classified into six levels; no education, primary incomplete, primary education, lower secondary education, high school, and graduate education. Three types of mobility indicators are calculated by using Markov transition matrices. They are Prais-Shorrocks mobility index, upward/downward mobility index, and opportunities mobility indicator (Checchi et al., 1999; Bauer and Riphahn, 2007; Heineck and Riphahn, 2009; Daouli et al., 2010; Checchi et al., 2013; Tansel, 2015).

Table 4.1: Education Transition Matrix of Parents and Their Daughters

Mother's Education	**Daughter's Education**												
	NE		**PI**		**PC**		**SC**		**HS**		**GE**		**Total**
	Row %	CI	Row %	CI	Row %	CI	Row %	CI	Row %	CI	Row %	CI	Row %
NE (n=3,581)	18.1	[16.3,20.2]	6.4	[5.6,7.4]	54.6	[52.3,56.9]	7.9	[6.9,9.1]	9.2	[8.0,10.6]	3.7	[2.8,4.8]	100.0
PI (n=552)	5.2	[3.3,8.2]	3.2	[1.9,5.4]	56.6	[51.4,61.7]	12.2	[9.3,15.8]	15.5	[11.9,19.8]	7.2	[5.0,10.3]	100.0
PC (n=1,943)	1.0	[0.6,1.7]	0.9	[0.5,1.7]	38.3	[35.3,41.4]	13.3	[11.7,15.1]	27.1	[24.8,29.6]	19.3	[16.8,22.2]	100.0
SC (n=141)	0.0		0.0		6.1	[2.7,13.0]	7.8	[4.4,13.3]	40.9	[32.1,50.4]	45.2	[35.2,55.7]	100.0
HS (n=168)	0.0		0.0		4.3	[1.8,10.0]	2.1	[0.5,7.8]	31.2	[23.1,40.5]	62.5	[53.9,70.3]	100.0
GE (n=68)	0.0		0.0		0.0		4.2	[1.1,14.8]	11.4	[5.3,22.7]	84.4	[72.6,91.7]	100.0
Total (n=6,453)	9.7	[8.6,11.0]	3.8	[3.3,4.3]	45.3	[43.3,47.4]	9.9	[9.1,10.8]	17.6	[16.3,18.9]	13.7	[12.0,15.6]	100.0
Father's Education	**Daughter's Education**												
	NE		**PI**		**PC**		**SC**		**HS**		**GE**		**Total**
	Row %	CI	Row %	CI	Row %	CI	Row %	CI	Row %	CI	Row %	CI	Row %
NE (n=1,557)	27.3	[24.0,30.9]	7.0	[5.5,8.8]	53.2	[49.5,56.9]	5.5	[4.2,7.1]	5.3	[4.0,7.2]	1.7	[0.9,2.9]	100.0
PI (n=466)	11.6	[9.2,14.6]	9.2	[6.3,13.2]	56.5	[50.8,62.0]	10.5	[7.4,14.9]	9.2	[6.6,12.8]	3.0	[1.6,5.6]	100.0
PC (n=3,265)	5.7	[4.7,6.8]	2.9	[2.3,3.7]	52.6	[50.2,55.0]	11.6	[10.4,13.0]	17.6	[16.0,19.3]	9.6	[8.1,11.4]	100.0
SC (n=453)	1.7	[0.7,4.0]	1.1	[0.3,3.5]	18.1	[14.3,22.7]	15.8	[12.2,20.2]	37.5	[32.7,42.5]	25.8	[20.8,31.5]	100.0
High school (n=467)	0.5	[0.2,1.3]	0.4	[0.2,1.1]	15.7	[11.8,20.5]	8.4	[5.9,11.8]	33.8	[28.9,39.2]	41.2	[35.9,46.8]	100.0
GE (n=245)	0.5	[0.1,3.5]	0.7	[0.1,5.2]	4.5	[2.2,8.9]	1.5	[0.7,3.4]	24.1	[17.8,31.7]	68.7	[60.5,75.8]	100.0
Total (n=6,453)	9.7	[8.6,11.0]	3.8	[3.3,4.3]	45.3	[43.3,47.4]	9.9	[9.1,10.8]	17.6	[16.3,18.9]	13.7	[12.0,15.6]	100.0

Note: 1) Calculation of confidence intervals considers the two-stage probability sampling and the corresponding sample weights of the TDHs-2013
2) Significance level of 0.05 is chosen for confidence intervals
3) Educational attainment have six categories: NE=No Education, PI=Primary Incomplete, PC=Primary Complete, SC=Secondary Complete, HS=High School, GE=Graduate Education
Source: Author's calculation based on the TDHS-2013 data.

With the transition matrices, it is possible to calculate the mobility indexes using the following equations, where c is child, f, m is father or mother, t is the educational level of father or mother, j is the educational level of the child, and Pr is the probability of a given educational attainment (Checchi et al., 2013);

A downward education mobility index;

$$\sum_{j<t} Pr(c = j|f, m = t) \tag{4.1}$$

An upward education mobility index;

$$\sum_{j>t} Pr(c = j|f, m = t) \tag{4.2}$$

An immobility education index;

$$\sum_{j=t} Pr(c = j|f, m = t) \tag{4.3}$$

Table 4.2 shows these mobility indices by age group for both the daughter-mother and daughter-father pairs. As can be seen from the first part, the downward mobility of the daughters-mothers is to be expected to be relatively low. Most of them are better educated than their mothers. Upward mobility has increased steadily across the age cohorts of women (daughters). In the case of father-daughter couples, there is a persistence of downward mobility of around 10 percent across the age groups. While the proportion of immobility has decreased, upward mobility has increased over time. Of course, these indices measure absolute mobility. In terms of relative mobility, the daughters may be more educated, but their rank in the second generation may not be significantly different from that of their fathers in the first generation, which measures relative mobility. Cross-generational education coefficients give a better idea of relative mobility.

Table 4.2: Education Mobility by Age Groups of Daughters

Age Groups	Education Mobility of Daughters by Mothers						
	Downward		Immobile		Upward		Total
	Row %	CI	Row %	CI	Row %	CI	Row %
45-49 (n=1,000)	1.1	[0.5,2.2]	29.1	[25.8,32.6]	69.8	[66.2,73.2]	100.0
40-44 (n=1,179)	2.0	[1.3,3.3]	27.8	[24.8,31.0]	70.2	[66.9,73.3]	100.0
35-39 (n=1,385)	1.6	[1.0,2.6]	24.8	[22.3,27.4]	73.6	[70.9,76.2]	100.0
30-34 (n=1,477)	2.0	[1.3,3.2]	25.0	[22.4,27.8]	73.0	[70.1,75.7]	100.0
25-29 (n=1,412)	1.8	[1.1,3.0]	19.9	[17.2,22.8]	78.3	[75.3,81.1]	100.0
Total (n=6,453)	1.7	[1.3,2.3]	24.9	[23.6,26.3]	73.4	[71.9,74.7]	100.0

Age Groups	Education Mobility of Daughters by Fathers						
	Downward		Immobile		Upward		Total
	Row %	CI	Row %	CI	Row %	CI	Row %
45-49 (n=1,000)	10.6	[8.6,13.0]	42.4	[38.6,46.2]	47.1	[43.4,50.8]	100.0
40-44 (n=1,179)	10.9	[8.8,13.5]	42.5	[39.3,45.8]	46.5	[43.3,49.8]	100.0
35-39 (n=1,385)	8.7	[7.1,10.6]	43.9	[40.7,47.1]	47.4	[44.2,50.6]	100.0
30-34 (n=1,477)	10.8	[9.2,12.7]	40.8	[37.6,44.0]	48.4	[45.0,51.7]	100.0
25-29 (n=1,412)	10.0	[8.4,11.9]	34.7	[31.9,37.6]	55.3	[52.0,58.5]	100.0
Total (n=6,453)	10.2	[9.4,11.0]	40.6	[38.9,42.3]	49.2	[47.5,50.9]	100.0

Note: 1) Calculation of confidence intervals considers the two-stage probability sampling design and the corresponding sample weights of the TDHs-2013
2) Significance level of 0.05 is chosen for confidence intervals

4.2.4 Intergenerational Educational Coefficients

Human capital accumulation is a function of expenditures made on children, the educational level of the parents, and socio-demographic factors of the family. Suppose that children and parents represent two consecutive generations, a functional form would show human capital accumulation in Eq. 4.4, where $h(t)$ and $h(t+1)$ denote the human capital accumulation of the first generation (parents) and the second generation (children) respectively. $e(t+1)$ are the educational expenditures made for the second generation and $d(t+1)$ are the demographic factors of children and families such as gender, place of residence etc. Eq. 4.5 is the extended version of the Eq. 4.4, whereby i allows the heterogeneity of children or families by demographic factors.

$$h(t+1) = f[h(t), e(t+1), d(t+1)] \tag{4.4}$$

$$h(t+1, i) = f[h(t, i), e(t, i), d(t, i)] \tag{4.5}$$

Some of the literature on educational persistence across generations evaluates the regression coefficients between the education of parents and children (Shavit and Blossfeld, 1993; Hertz et al., 2007; Checchi et al., 2013; Tansel, 2015). Inspired by the functional models of intergenerational education mobility in Eq. 4.4 and Eq.4.4, the intergenerational education coefficient is calculated with a parametric approach using a reduced form of regression model such as;

$$D_{jt,i} = \alpha_{t,i} + \beta P_{jt,i} + v_{jt,i} \tag{4.6}$$

$D_{jt,i}$ denotes the years of education of daughter j, who belongs to the cohort of t by demographic factor i, $P_{jt,i}$ denotes the years of education of the parents of daughter, $\alpha_{t,i}$ denotes the cohort-specific constant, and $\beta_{jt,i}$ is the intergenerational education coefficient (IEC) and measures the educational persistence of cohort j. Provided that the number of years of education variables is measured in logarithmic terms, then the coefficient indicates elasticity. In order to exclude the variation in the level of education across generations, it might be useful to estimate the correlation coefficient with standardized years of education.

$$\rho_t = \beta_t \frac{\sigma P_t}{\sigma D_t} \tag{4.7}$$

where ρ_t denotes the intergenerational education correlation coefficient (IECC) between the education of daughters and parents, and σP_t and σD_t denote the standard deviation of years of schooling for parents and daughters, respectively. Checchi et al. (2008) argues that β is a relative measure of intergenerational mobility while the correlation coefficient is an absolute measure. ρ and β might behave differently depending on the context (Hertz et al., 2007). The correlation coefficient can be particularly useful as a measure of intergenerational mobility for international comparison and development over time (Aydemir and Yazici, 2019). This argument could also apply to sub-demographic groups.

Evidence from previous research on educational mobility in Turkey shows conflicting results. According to Torul and Oztunali (2017), the probability that a randomly selected child will achieve at least the same level of education as its better-educated parent is 94 percent for the cohorts born between 1940 and 1944 in Turkey. For the cohorts born in the period 1981-1985, this probability is 50 percent. This result shows that the persistence of educational mobility has decreased over time. Tansel (2015) measured the educational mobility of the population aged 18-65+ with a 2017 survey according to 5-year age groups. The sample therefore represents the cohorts of people who were born between 1999-1942 or earlier. The study showed that the IEC shows a declining trend over time, suggesting improved educational mobility in Turkey. However, looking at the IECC, the evolutionary pattern becomes more ambiguous, but still shows a high level of immobility. Bakiş (2017) calculated the IECs and IECCs for the ten-year age cohorts in Turkey. The study found that the educational mobility gap between Turkey and EU countries has closed in the youngest cohort. In addition, the IECC has steadily decreased from the 1935-1945 cohort to the 1975-1985 cohort. Akarçay-Gürbüz and Polat (2017) used censuses from 1990 and 2000 to include a population that was born in the years 1930-1966. Using an IV model (namely historical state enrollment quotas as an instrument), they wanted to estimate the unbiased influence of parental education on the likelihood of completing a post-compulsory education level, i.e. the cross-generational transmission of education. The study showed that mobility increased over time. Immobility, however, remains higher among the couples of daughters and mothers.

Table 4.3 shows intergenerational education coefficients (IEC) and intergenerational education correlation coefficients (IECC) for the five age groups 25-29 to 45-49. Specifically, there are three models that I have used. Model 1 regresses the education of the daughters on the education of the mothers and the fathers separately. Model 2 performs the same equation by controlling the childhood region and place of residence. Model 3 uses both education levels of parents in the same regression by controlling childhood region and place of residence. Three models show that there is an explicit persistence in intergenerational transmission of education across the cohorts. In the first model, the IEC between mothers and daughters initially decreased slightly and then increased again. The IEC between fathers and daughters is relatively lower, but has also increased in younger cohorts. Model 2 and Model 3 take into account the childhood region and place of residence to minimize bias from unobserved variables. Despite the lower ratio, the decline in educational mobility from the oldest to the youngest cohort is still persistent.

Table 4.3: Intergenerational Education Mobility and Intergenerational Correlation Coefficient

Age	Mother's Education						Father's Education					
	IEC		IECC				IEC		IECC			
	Beta	SE	Beta	SE	N	R-sq	Beta	SE	Beta	SE	N	R-sq
Model 1												
25-29	0.747	0.029	0.561	0.022	1413	0.351	0.568	0.036	0.425	0.027	1412	0.194
30-34	0.704	0.029	0.512	0.021	1478	0.307	0.550	0.039	0.403	0.028	1478	0.163
35-39	0.671	0.035	0.486	0.025	1385	0.255	0.525	0.041	0.404	0.031	1385	0.163
40-44	0.613	0.039	0.413	0.026	1179	0.200	0.481	0.043	0.375	0.033	1179	0.146
45-49	0.720	0.058	0.448	0.036	1000	0.220	0.533	0.052	0.395	0.038	1000	0.154
Model 2												
25-29	0.584	0.031	0.438	0.023	1413	0.438	0.403	0.035	0.302	0.026	1412	0.357
30-34	0.526	0.031	0.383	0.023	1478	0.410	0.359	0.040	0.263	0.029	1476	0.334
35-39	0.488	0.038	0.353	0.028	1385	0.355	0.360	0.042	0.276	0.032	1383	0.319
40-44	0.427	0.045	0.288	0.031	1179	0.354	0.300	0.043	0.234	0.034	1178	0.325
45-49	0.460	0.062	0.286	0.039	1000	0.362	0.334	0.049	0.247	0.036	1000	0.345
Model 3												
25-29	0.495	0.036	0.372	0.027			0.186	0.036	0.139	0.027	1412	0.453
30-34	0.458	0.035	0.334	0.026			0.177	0.037	0.129	0.027	1476	0.422
35-39	0.399	0.044	0.289	0.032			0.235	0.044	0.180	0.033	1383	0.381
40-44	0.344	0.058	0.232	0.039			0.170	0.049	0.133	0.038	1178	0.367
45-49	0.358	0.073	0.222	0.045			0.216	0.054	0.160	0.040	1000	0.381

Note: 1) IEC stands for Intergenerational Education Coefficient, IECC stands for Intergenerational Education Correlation Coefficient (Standardization of IEC).
2) Model 1 regresses daughter's education on mother's education and father's education separately. Model 2 regresses daughter's education on mother's education and father's education separately, for controlling childhood region and place. Model 3 regresses daughter's education on mother's education and father's education together, for controlling childhood region and place.
3) Standard errors are based on the sampling weights of two-stage probability sampling design of TDHS-2013

Table 4.4 shows the difference in the intergenerational education coefficients between the sub-demographic groups and their corresponding levels of significance separated by mother and father education. (See also Table C.2 shows the intergenerational education coefficients (IEC) and the intergenerational education correlation coefficients (IECC) for different sub-samples). As can be seen, some of the subpopulations show significant differences in the beta coefficients (educational mobility) compared to the reference category, which indicates a lower educational mobility. For example, with respect to mother-to-daughter mobility, the beta coefficient of the Turkish mother tongue, reference category, is 0.649. And the difference of the non-Turkish mother tongue coefficient is 0.135, statistically significantly. Therefore, daughters with a Turkish mother have a higher mother-to-daughter educational mobility than their counterparts with a non-Turkish mother tongue. On the other hand, mother tongue don't makes no difference, statistically insignificant, in the case of father-to-daughter mobility. On the other hand, there is no difference of educational mobility according to the type pf parent's marriage. With respect to birth and childhood region, only the east region has less mobility than the west region.

4.2.5 Decomposition of Intergenerational Education Correlation Coefficients

While many studies have used the IEC to measure educational persistence across generations, it could have two shortcomings. First, it does not take into account the educational differences between generations. This means that the educational level of all population groups could rise due to political changes such as an extension of compulsory schooling or exogenous investments in education. Second, mobility can vary between subpopulation groups, as shown in Table C.2. Therefore, Checchi et al. (2013) suggests a method for decomposing the correlation coefficient of education. In the following equation, the years of education levels for daughters (d) and mothers (m) are 0 (no education), 2.5 years (incomplete primary education), 5 years (primary education), 8 years (lower secondary education), 11 years (high school) and 15 years (graduate);

$$\hat{\rho} = \sum_{d,m}(d - E(d))(m - E(m))Pr(d/m)Pr(m) = \sum_{d,m} r_{d,m} \tag{4.8}$$

Table 4.4: Differences of Intergenerational Education Mobility among Sub-Population Groups

			Mother's Education		Father's Education	
Circumstances		**Category**	**Beta**	**(se)**	**Beta**	**(se)**
Mother Tongue	Ref	Turkish	0.649***	(0.016)	0.504***	(0.022)
	Dif.	Other	0.135*	(0.056)	-0.00200	(0.058)
Parent's Marriage	Ref	Consanguineous	0.738***	(0.018)	0.586***	(0.022)
	Dif.	Non-Consanguineous	0.0137	(0.043)	-0.0366	(0.044)
Birth Place	Ref	Province	0.590***	(0.021)	0.455***	(0.035)
	Dif.	District	0.0992*	(0.047)	-0.00131	(0.053)
	Dif.	Sub-district/Village	-0.0605	(0.042)	-0.0432	(0.048)
Childhood Place	Ref	Province	0.613***	(0.022)	0.482***	(0.033)
	Dif.	District	0.0802	(0.045)	-0.0302	(0.054)
	Dif.	Sub-district/Village	-0.107**	(0.040)	-0.0839	(0.045)
Birth Region	Ref	West	0.605***	(0.026)	0.513***	(0.043)
	Dif.	South	0.108*	(0.049)	0.00489	(0.067)
	Dif.	Central	0.0536	(0.044)	-0.0500	(0.066)
	Dif.	North	0.0771	(0.064)	-0.0302	(0.065)
	Dif.	East	0.239***	(0.059)	0.0481	(0.055)
Childhood Region	Ref	West	0.617***	(0.026)	0.524***	(0.041)
	Dif.	South	0.103*	(0.049)	-0.0103	(0.064)
	Dif.	Central	0.0397	(0.040)	-0.0469	(0.064)
	Dif.	North	0.0292	(0.056)	-0.0701	(0.065)
	Dif.	East	0.248***	(0.058)	0.0122	(0.057)
Migration Status	Ref	Migrated	0.676***	(0.027)	0.556***	(0.033)
	Dif.	Non-migrated	0.106**	(0.034)	0.0450	(0.039)
Sibling Size	Ref	1-2	0.661***	(0.034)	0.376***	(0.050)
	Dif.	3	-0.106	(0.055)	0.0488	(0.072)
	Dif.	4	-0.127*	(0.064)	0.140*	(0.067)
	Dif.	5-6	-0.172**	(0.054)	0.0392	(0.062)
	Dif.	7 or more	-0.251***	(0.074)	-0.0432	(0.073)
Share of Males	Ref.	0	0.633***	(0.036)	0.505***	(0.050)
	Dif.	0-1/3	-0.0370	(0.068)	0.0286	(0.062)
	Dif.	1/3-1/2	0.0704	(0.050)	0.0346	(0.062)
	Dif.	1/2	0.137**	(0.049)	0.0459	(0.066)
	Dif.	1/2 More	0.0793	(0.056)	0.0320	(0.070)
Deceased Siblings	Ref	None	0.691***	(0.020)	0.530***	(0.031)
	Dif.	At Least One	-0.0204	(0.034)	-0.0297	(0.046)

Note: Sample includes women aged 25-49. Beta values show educational mobility of mothers-to-daughters and fathers-to-daughters. Standard errors are based on the sampling weights of two-stage probability sampling design of TDHs-2013. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.5 shows the elements of $r_{d,m}$ for the 25-29, 30-39, and 40-49 cohorts only. The last line reports the correlation coefficient, (IECC) - $\hat{\rho}$, which is the sum of the absolute value contributions of each combination of daughters' and mothers' education and their relative contributions to the correlation coefficients. Line 7 presents the total contribution to $\hat{\rho}$ of the group of daughters with mothers without education, which shows that this group accounts for a large part of the total correlation over time. It reaches from 43.52% in the younger cohort (25-39) to 28.45% in the oldest cohort (40-49). Line 14 shows that the contribution of daughters with mothers with incomplete primary education to the correlation coefficient is limited. Also, Line 21 shows that the contribution of mothers with primary education decreased from 30.49% in the oldest cohort (40-49) to 8.93% in the youngest cohort (25-29). Lines 35 and 42 show that, respectively, the contribution of mothers with high school and graduate education is stable across the cohorts. Their total contribution in the youngest cohort (25-29) and the oldest cohort is 35.95% and 34.62%, respectively.

Table 4.5 highlights that the intergenerational transmission of education between mothers and daughters is highly polarized. Given the relationship between educational level and socio-economic conditions, children who grow up in the most disadvantaged families are more likely to remain disadvantaged (lines 1-6), while children from better-off families are more likely to retain their relative advantage (lines 29- 34 and 36-41). In other words, the non-education and higher education categories have a significant impact on the deterioration in intergenerational educational mobility.

Table 4.5: Decomposition of the IECCs by the Cohorts of Daughters

			25-29		30-39		40-49	
Line	**DE**	**ME**	**r**	**pct**	**r**	**pct**	**r**	**pct**
1	NE	NE	0.13	21.63	0.10	19.12	0.14	29.86
2	PI	NE	0.05	8.37	0.03	5.01	0.02	4.37
3	P	NE	0.13	21.27	0.13	23.48	0.06	12.40
4	LS	NE	0.01	0.93	-0.01	-1.01	-0.01	-2.11
5	HS	NE	-0.03	-4.62	-0.03	-6.30	-0.04	-8.13
6	G	NE	-0.02	-4.04	-0.02	-4.45	-0.04	-7.94
7			**0.26**	**43.52**	**0.19**	**35.86**	**0.13**	**28.45**
8	NE	PI	0.00	0.67	0.00	0.10	0.00	-0.39
9	PI	PI	0.00	0.10	0.00	0.05	0.00	-0.20
10	P	PI	0.01	0.94	0.00	0.69	0.00	-0.66
11	LS	PI	0.00	0.07	0.00	-0.05	0.00	0.19
12	HS	PI	0.00	-0.52	0.00	-0.31	0.00	0.53
13	G	PI	0.00	-0.47	0.00	-0.26	0.00	0.72
14			**0.00**	**0.80**	**0.00**	**0.21**	**0.00**	**0.19**
15	NE	P	0.00	-0.05	0.00	-0.92	-0.01	-1.40
16	PI	P	0.00	-0.21	0.00	-0.50	0.00	-0.52
17	P	P	-0.03	-4.70	-0.05	-8.82	-0.03	-7.64
18	LS	P	0.00	-0.49	0.00	0.81	0.02	4.19
19	HS	P	0.03	5.52	0.05	9.00	0.08	18.13
20	G	P	0.05	8.87	0.09	16.00	0.08	17.73
21			**0.05**	**8.93**	**0.08**	**15.58**	**0.14**	**30.49**
22	NE	LS	0.00	0.00	0.00	0.00	0.00	0.00
23	PI	LS	0.00	0.00	0.00	0.00	0.00	0.00
24	P	LS	0.00	-0.39	0.00	-0.34	0.00	-0.03
25	LS	LS	0.00	-0.10	0.00	0.08	0.00	0.27
26	HS	LS	0.02	3.06	0.01	2.42	0.01	2.01
27	G	LS	0.05	8.23	0.03	5.90	0.02	4.00
28			**0.06**	**10.80**	**0.04**	**8.06**	**0.03**	**6.25**
29	NE	HS	0.00	0.00	0.00	0.00	0.00	0.00
30	PI	HS	0.00	0.00	0.00	0.00	0.00	0.00
31	P	HS	0.00	-0.64	0.00	-0.44	0.00	0.00
32	LS	HS	0.00	-0.02	0.00	0.10	0.00	0.00
33	HS	HS	0.01	2.20	0.03	5.05	0.02	4.91
34	G	HS	0.10	17.56	0.10	17.64	0.06	12.97
35			**0.11**	**19.10**	**0.12**	**22.36**	**0.08**	**17.88**
36	NE	G	0.00	0.00	0.00	0.00	0.00	0.00
37	PI	G	0.00	0.00	0.00	0.00	0.00	0.00
38	P	G	0.00	0.00	0.00	0.00	0.00	0.00
39	LS	G	0.00	0.00	0.00	0.09	0.00	0.51
40	HS	G	0.01	0.93	0.00	0.43	0.01	2.90
41	G	G	0.09	15.92	0.09	17.42	0.06	13.33
42			**0.10**	**16.85**	**0.10**	**17.94**	**0.08**	**16.74**
43	**Correlation Coefficient**		**0.59**	**100.00**	**0.54**	**100.00**	**0.46**	**100.00**

Note: 1) NE stands for 'no education', PI for 'primary incomplete', P for 'primary', LS for 'lower secondary', HS for 'high school', G for 'graduate', ME for 'mother education', and DE for 'daughter education'. 2) IECC is Intergenerational Education Correlation Coefficient

4.3. Demographic Educational Mobility with a Prospective Approach

4.3.1 Conceptual Literature and Methodology

Based on the retrospective data, one can create a mobility table by focusing on adult individuals, a representative sample of their generation. These individuals report their parents' education, but the mothers and fathers are not representative of any cohort or population at any given time because they differ in the timing and level of childbearing Duncan (1966). The retrospective data also over-represent the first generation, which has more offspring, and do not include any childless members. Hence, retrospective and prospective estimates of social mobility agree when family size is not related to the intergenerational transmission of socio-economic characteristics (Song and Mare, 2015).

Demographic behavior and social mobility interact across and within generations. Across generations, household demographic context and socio-economic status collectively influence demographic outcomes and socio-economic changes in adulthood. Within generations, demographic behaviors such as marriage and childbearing affect educational opportunities, and conversely, socio-economic status affects demographic outcomes such as marriage, births, and mortality. At the macro level, socio-economic differences in demographic behavior and demographic differences in socio-economic outcomes work together to shape long-term trends in population composition (Mare, 1995, 1997; Mare and Maralani, 2006; Maralani, 2013). Accordingly, family status (lifestyles) are just as important as predicting traditional outcome measures such as education and income (life chances) (Weeden and Grusky, 2005). Therefore, in addition to the direct transfer of socio-economic rewards, status and social positions, social mobility is an aggregated result of different fertility and survival rates, migration and marriage patterns.

In a simple demographic model of educational mobility, demographic processes such as assortative mating, fertility, and sibling size should be taken into account (Mare, 1995; Mare and Maralani, 2006). These three demographic processes have mediating effects on the transmission of education, since the education of the parents and the size of the siblings shape the resources in a family and thus the inequality of opportunities for children (Blake, 1989; Mare and Schwartz, 2006; Haveman and Wolfe, 1994; McLanahan, 2004; Goldin and Katz, 2009; Black and Devereux, 2010).

Some studies examined demographic educational mobility. Mare and Maralani (2006) used assortative mating and fertility channels for the Indonesian sample and found that an increase in the education of women has a positive effect on that of their children. This gain is partially offset at the population level by the higher fertility of parents with a lower level of education and reinforced by the marriage of better-educated couples. Kye (2011) examined the effects of educational mobility and different demographic rates on the changing educational distribution of women in South Korea. They found that the influence of different demographic rates is negligible due to the high mobility. Kye and Mare (2012) examined the intergenerational effects of changes in women's education on daughter education in South Korea. They found that while assortative mating increases intergenerational effects, differences in fertility dampen them. Maralani (2013) examined differences in the process of educational reproduction for black and white Americans by looking at the effects of racial and educational differences in marriage, assortative mating, and fertility in the parent generation on the distribution of schooling in the next generation. Breen and Ermisch (2017) calculated conditional probabilities of having a child and a child with a university degree in Great Britain and showed that these two effects on educational mobility cancel each other out. Song and Mare (2017) used a two-sex demographic model of social mobility and the multigenerational perspective in the US with the demographic processes of assortative mating and fertility. The lower fertility of those with a high level of education offsets the families' initial educational advantages. Song and Mare (2019) took a cross-generational approach and showed that changes in the mutual exposure of generations of grandparents and grandchildren contribute to an increasing association between the educational qualifications of grandparents and grandchildren in the United States. Breen et al. (2019) calculated conditional and unconditional estimates of the level of education for a large number of European countries through the demographic processes of marriage, childbearing, and spousal education. They also showed that the gap between conditional and unconditional estimates suggests that the more common retrospective approach tends to overestimate the extent of educational reproduction (see a brief review of the literature on demographic mobility, Table C.3).

In this context, I prefer to use a one-sex recursive population renewal model introduced by Mare and Maralani (2006) to estimate the expected number of daughters in the next generation associated with a change in mother's education. There are two main demographic processes to be considered in the model; assortative mating and fertility.

$$D_j = \sum_{i=1}^{4}\sum_{k=1}^{4} r_{jk/i} W_i \tag{4.9}$$

Let D_j the number of persons in the offspring generation the level of education j. W_i be the number of women in the mother generation with education level i, and $r_{jk/i}$ be the number of children who attain education level jj, whose fathers have education level k per woman with educational level k. How marriage, fertility, and intergenerational transmission affect $r_{jk/i}$ as follows:

$$r_{jk/i} = p^H_{k/i} f_{ik} d_{ik} p^D_{j/ik} \tag{4.10}$$

(where i: education of mothers, k: education of fathers, j: education of daughters, i = 1, . . . , 4, k = 1, . . . , 4, and j = 1, . . . , 4). Here we classify the education of women, husbands and daughters into four categories. Hence, each category represents less than middle school graduates (0-7), less than high school graduates (8-11), high school graduates (12), and some tertiary education (13+). $p^D_{j/ik}$ denotes the probability that a daughter with a mother at education level i and a father at education level k will attain education level j. The term $r_{jk/i}$ is the expected number of children born to women in education category i who are married to men of education category k, and $p^H_{k/i}$, is the probability that a woman of education category i will be married to a man in education category k.

4.3.2 Data

I prefer to use TDHS-2013, which interviewed all heads of household and women aged 15-49, whether married or not. So there are records of members and women. Both contain information on the broad socioeconomic circumstances of women in Turkey. The TDHS-2013 is a two-stage probability sample. This sample design is taken into account when assessing the sampling variability of intergenerational effects. For the analysis of demographic educational mobility, I construct two samples: (i) a marriage and fertility sample, and (ii) a sample of intergenerational transmission of education.

4.3.3 Marriage and Fertility Sample

The marriage and fertility sample includes 2,288 ever married women aged 40 to 49 and their husbands. There are two reasons for the age restriction. The lower limit, the age of 40, concerns the completion of fertility in order to observe all children prospectively. The upper limit, age 49, is related to the sample design of TDHS and poses two problems. First, it shrinks the sample size. Second, most of the children born to women in the sample have not yet completed their education. The imputation method used in the next section specifically addresses this problem. On the contrary, the upper age limit reduces the bias caused by differences in adult mortality. Lastly, since the proportion of divorced and remarried women in the sample is low, the consideration of biological fathers is not in the foreground in this analysis.

The intergenerational sample includes all the ever-born daughters of the women sample aged 40-49. Since we need their educational information, they should be at least 19 years old to graduate from high school and attend a college education. However, daughters' educational information may be missing for two reasons. First, the children of women aged 40 to 49 may not live in the household because of marriage, education, and work. Therefore we cannot know their level of education. Second, some children have not completed their education because they are under the age of 19. Hence, we need to impute their school information using auxiliary variables, which are discussed in detail in the following section.

The mother sample (first generation women) includes 2,288 ever married female respondents (mothers) aged 40-49 years. The educational information of their husbands (fathers) is also available. Thus, it is possible to model the impact of women's educational attainment on the educational attainment of the men they married and the number of children ever born.

An increase in the mother's educational attainment typically increases the educational attainment of the man she is marrying, which further increases the benefits to the couple's children. Table 4.6 shows that Turkish couples show strong signs of positive assortative mating. A significant percentage of women married to husbands with the same (homogamy) or higher (hypergamy) educational attainment. For example, more than 91.7 percent of women married men with the same education or higher (See also Table 4.7).

Table 4.8 shows that both increasing education level of woman and husband

decreases children ever born. Mother with less than lower secondary education has 3.3 children ever born (CEB) on average, while ones with higher education has 1.7 children ever born. Also, the CEB of parents with the lowest education (less than lower secondary education) is 3.6, and the CEB of parents with the highest education is 1.7. So, we can say that there is a differential fertility behavior by education level.

Table 4.6: Assortative Mating of Parents - Row Percentage

Mother Education	Father Education								
	ED-1		ED-2		ED-3		ED-4		Total
	Row %	CI	Row %	CI	Row %	CI	Row %	CI	Row %
ED-1 (n=1,771)	68.7	[65.8,71.6]	14.0	[12.1,16.3]	11.9	[10.2,13.9]	5.3	[4.1,6.8]	100.0
ED-2 (n=147)	37.3	[28.5,47.0]	19.3	[12.3,29.0]	27.8	[19.6,37.9]	15.6	[9.2,25.1]	100.0
ED-3 (n=212)	17.8	[12.4,24.9]	15.3	[10.4,21.9]	32.9	[24.5,42.5]	34.0	[26.1,42.9]	100.0
ED-4 (n=158)	2.0	[0.5,6.9]	6.0	[2.3,14.8]	18.4	[11.6,27.9]	73.6	[63.3,81.9]	100.0
Total (n=2,288)	55.7	[52.2,59.0]	13.9	[12.1,15.9]	15.8	[13.7,18.1]	14.6	[12.2,17.4]	100.0

Table 4.7: Assortative Mating of Parents - Column Percentage

Mother Education	Father Education									
	ED-1		ED-2		ED-3		ED-4		Total	
	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI
ED-1 (n=1,771)	91.6	[89.6,93.2]	75.0	[68.9,80.2]	55.9	[49.1,62.5]	26.8	[20.3,34.4]	74.2	[70.9,77.2]
ED-2 (n=147)	4.7	[3.5,6.3]	9.8	[6.2,14.9]	12.3	[8.7,17.2]	7.5	[4.4,12.3]	7.0	[5.8,8.4]
ED-3 (n=212)	3.4	[2.4,4.8]	11.7	[7.9,17.0]	22.2	[16.6,29.0]	24.8	[19.6,30.9]	10.7	[9.1,12.6]
ED-4 (n=158)	0.3	[0.1,1.0]	3.5	[1.4,8.8]	9.5	[6.0,14.7]	40.9	[35.0,47.2]	8.1	[6.5,10.1]
Total (n=2,288)	100.0		100.0		100.0		100.0		100.0	

Note: Education attainment is categorized into four levels; ED-1=Less than lower-secondary education, ED-2= Completed lower secondary education or incomplete high school, ED-3= Completed high school, and ED-4=Some tertiary education
Significance level of 0.05 is chosen for confidence intervals (CI)

Table 4.8: Average Number of Children by Mother and Father Education

	Part 1 - Average Children Ever Born									
	Father Education									
	ED-1		ED-2		ED-3		ED-4		Total	
Mother Education	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
ED-1 (n=1,771)	3.6	[3.4,3.7]	2.9	[2.7,3.1]	2.9	[2.7,3.2]	2.4	[2.2,2.7]	3.3	[3.2,3.5]
ED-2 (n=147)	2.4	[2.0,2.7]	2.7	[1.8,3.6]	2.1	[1.7,2.6]	2.4	[2.1,2.7]	2.4	[2.1,2.6]
ED-3 (n=212)	2.1	[1.8,2.3]	1.9	[1.5,2.4]	1.7	[1.5,2.0]	1.9	[1.7,2.2]	1.9	[1.7,2.1]
ED-4 (n=158)	2.4	[1.8,3.0]	1.7	[1.1,2.3]	1.6	[1.2,2.0]	1.7	[1.5,1.9]	1.7	[1.6,1.9]
Total (n=2,288)	3.5	[3.3,3.6]	2.7	[2.6,2.9]	2.5	[2.3,2.6]	2.0	[1.9,2.2]	3.0	[2.9,3.1]

	Part 2 - Average Number of Living Children									
	Father Education									
	ED-1		ED-2		ED-3		ED-4		Total	
Mother Education	Mean	CI	Mean	CI	Mean	CI	Mean	CI	Mean	CI
ED-1 (n=1,771)	3.3	[3.2,3.4]	2.8	[2.6,3.0]	2.8	[2.6,3.0]	2.3	[2.1,2.6]	3.1	[3.0,3.2]
ED-2 (n=147)	2.2	[1.9,2.5]	2.6	[1.8,3.4]	2.1	[1.7,2.5]	2.2	[1.9,2.5]	2.2	[2.0,2.5]
ED-3 (n=212)	2.0	[1.8,2.2]	1.9	[1.5,2.3]	1.7	[1.5,2.0]	1.9	[1.6,2.2]	1.9	[1.7,2.0]
ED-4 (n=158)	2.4	[1.8,3.0]	1.6	[1.0,2.2]	1.5	[1.2,1.9]	1.7	[1.5,1.9]	1.7	[1.5,1.8]
Total (n=2,288)	3.2	[3.1,3.3]	2.6	[2.5,2.8]	2.4	[2.2,2.5]	2.0	[1.8,2.1]	2.8	[2.7,2.9]

Note: 1) Education attainment is categorized into four levels; ED-1=Less than lower-secondary education, ED-2= Completed lower secondary education or incomplete high school, ED-3= Completed high school, and ED-4=Some tertiary education
2) Significance level of 0.05 is chosen for confidence intervals

4.3.4 Transmission Sample

As mentioned in the previous section, TDHS2013 is not a panel study allowing to observe the education information of two generations in the same dataset. So, the cross-sectional design of TDHS2013 has some disadvantages to meet the standards of using a prospective approach in estimating the demographic education mobility. First, the sample of mothers (women in the first generation) should mostly complete their fertility hence be older than 40. But, the data has only the fertility information of women aged 15-49. So, eligible cases aged 40-49 decrease the sample size. Second, another restriction relates to the age of the second generation, daughters. They should be 19 or more, and also residing in the household to know whether they have completed high school or attended some graduate education. However, some children do not live with their families, and some are even younger than 19 years-old. So, their education level is missing in the dataset. However, It is possible to construct a complete dataset by making several assumptions and use a multiple imputation model. For instance, Zeng and Xie (2014) used the predictive mean matching method as imputation model.

As mentioned in the previous section, TDHS-2013 is not a panel study that allows observing the educational information of two generations in the same data set. The cross-sectional design of TDHS2013 thus has some disadvantages in order to meet the standards of a prospective approach in estimating demographic educational mobility. First, the sample of mothers (women in the first generation) should largely complete their fertility, i.e. be older than 40 years. However, the data only includes fertility information for women aged 15-49 years. So eligible cases between the ages of 40 and 49 reduce the sample size. Second, another limitation concerns the age of the second generation, the daughters. They should be 19 or older and also live in the household to know if they graduated from high school or attended some college education. However, some children do not live with their families, some are even younger than 19 years. Their level of education is therefore missing in the data set. However, it is possible to build a complete data set by using a multiple imputation model. For example, Zeng and Xie (2014) used the predictive mean matching method as an imputation model.

Children of women aged 40-49 in TDHS-2013 belong to three categories in Table 4.9; (i) impute 1, (ii) impute 2 and (iii) observed. The first contain children who do not live in the household, so we cannot observe their level of education at all. The second includes children living in the household who are younger than 19 years of

age. So they're too young to know if they would graduate from high school and get a college education. The third includes children older than 19 and living in the household, we know their level of education. Using the information of these children in the last group and the auxiliary variables mentioned in Table 4.9, I impute the educational information of the children in the first two groups with the multiple imputation model (20 imputations selected). Finally, it is possible to use imputed dataset in the analysis of the demographic educational mobility of daughters.

In summary, there are three groups in the imputation analysis. Table 4.9 shows the descriptive statistics on auxiliary variables that are either correlated with one or more missing variables or associated with missingness and are used in multiple imputation analysis. Some of them, which are not particularly interested in the demographic mobility model, are added to the imputation model in order to increase the estimation power in line with (Johnson and Young, 2011).

As seen from Table 4.9, naturally three groups are not balanced with respect to the demographic and socio-economic variables covered. As a result of early female marriage in Turkey, the children in the category of Impute 1 (not residing in the household) are more likely to belong to the groups of females, rural place of residence, south and central regions, less educated parents, more poverty, low birth order, and larger sibling size. The category of observation is vice versa. On the other hand, Impute 2 is relatively more balanced compared to the total. Moreover, the mean age of children by defined categories is 23.93 in Impute 1, 12.88 in Impute 2, and 22.42 in Observed. The ages of children in the observed category spread from 19 (born in 1994) to 34 (born in 1979). However, a large share (94 percent) of them was born in 1986 or later. It indicates that they have been faced with the reform which extended compulsory education from 5 years to 8 years in 1997. On the other hand, most of them were born in 1994 or before. So, they have not been faced with the reform extending compulsory education from 8 years to 12 years in 2012. , most of the children are eligible to benefit from the educational expansion in higher education.

As can be seen from Table 4.9, of course, three groups are not balanced in terms of the demographic and socio-economic variables recorded. As a result of early female marriage in Turkey, the children in the Impute 1 category (not living in the household) tend to associate with women, rural residence, southern and central regions, less educated parents, more poverty, low birth order and larger sibling size. The Observed category is vice versa. On the other hand, Impute 2 is relatively more balanced compared to the whole sample. In addition, the mean age of the children according to

defined categories is 23.93 in Impute 1, 12.88 in Impute 2 and 22.42 in Observed. The ages of the children in the observed category range from 19 (born in 1994) to 34 (born in 1979). However, a large proportion (94 percent) of them were born in 1986 or later. It shows that they were faced with the reform that in 1997, which extended compulsory schooling from 5 to 8 years. On the other hand, most of them were born in 1994 or earlier, so they were not faced with the reform of compulsory schooling from 8 to 12 years in 2012. After all, most of them are exposed to the expansion of higher education.

Table 4.9: Descriptive Statistics for the Variables Used in the Imputation Model

	Categories of Children by Their Status in the Imputation Analysis							
	Impute 1		Impute 2		Observed		Total	
	Col %	CI	Col %	CI	Col %	CI	Col %	CI
	Part 1: Imputed Variable - Children's Education Level							
Education Level								
ED-1	m		m		9.1	[7.4,11.2]	m	
ED-2	m		m		29.8	[26.6,33.1]	m	
ED-3	m		m		16.1	[14.1,18.4]	m	
ED-4	m		m		45.0	[41.4,48.6]	m	
Total (n=6,920)					100.0			
	Part 2: Auxiliary Variables							
Gender								
Males (n=3,505)	40.1	[37.2,43.1]	50.7	[48.6,52.7]	63.5	[60.8,66.1]	51.6	[50.1,53.1]
Females (n=3,415)	59.9	[56.9,62.8]	49.3	[47.3,51.4]	36.5	[33.9,39.2]	48.4	[46.9,49.9]
Total (n=6,920)	100.0		100.0		100.0		100.0	
Place								
Urban (n=4,451)	64.3	[60.4,67.9]	74.4	[71.3,77.4]	79.0	[76.1,81.6]	73.2	[70.7,75.5]
Rural (n=2,469)	35.7	[32.1,39.6]	25.6	[22.6,28.7]	21.0	[18.4,23.9]	26.8	[24.5,29.3]
Total (n=6,920)	100.0		100.0		100.0		100.0	
Mother Tongue								
Turkish (n=4,923)	78.4	[74.1,82.1]	71.0	[66.7,75.0]	77.3	[73.1,81.0]	74.5	[70.8,78.0]
Non Turkish (n=1,997)	21.6	[17.9,25.9]	29.0	[25.0,33.3]	22.7	[19.0,26.9]	25.5	[22.0,29.2]
Total (n=6,920)	100.0		100.0		100.0		100.0	
Region								
West (n=1,448)	34.9	[30.9,39.1]	37.3	[33.8,40.9]	43.0	[38.9,47.2]	38.2	[35.4,41.2]
South (n=1,045)	17.1	[14.1,20.5]	13.9	[12.2,15.9]	11.9	[10.1,13.9]	14.2	[12.7,15.8]
Central (n=1,219)	22.3	[19.3,25.6]	16.5	[14.3,19.0]	18.8	[16.0,22.1]	18.6	[16.7,20.6]
North (n=968)	7.2	[5.9,8.6]	7.7	[5.9,9.9]	7.1	[5.8,8.7]	7.4	[6.3,8.7]
East (n=2,240)	18.5	[16.0,21.3]	24.6	[21.2,28.3]	19.2	[16.1,22.6]	21.6	[19.0,24.5]
Total (n=6,920)	100.0		100.0		100.0		100.0	
Wealth								
Poorest (n=1,946)	26.9	[22.9,31.4]	21.6	[18.3,25.4]	14.4	[12.0,17.3]	21.0	[18.2,24.0]
Poorer (n=1,588)	23.9	[20.7,27.5]	20.0	[17.4,23.0]	20.9	[17.8,24.4]	21.2	[18.8,23.9]
Middle (n=1,348)	20.2	[17.1,23.7]	18.1	[15.6,21.0]	21.7	[18.7,25.0]	19.6	[17.5,22.0]
Richer (n=1,075)	16.4	[13.8,19.4]	19.5	[16.9,22.3]	22.3	[19.2,25.7]	19.5	[17.3,21.9]
Richest (n=963)	12.5	[10.2,15.3]	20.7	[18.0,23.6]	20.7	[17.4,24.5]	18.7	[16.4,21.2]
Total (n=6,920)	100.0		100.0		100.0		100.0	
Mother's Child Place								
Province (n=1,581)	24.2	[21.0,27.9]	29.0	[25.7,32.6]	27.6	[24.1,31.5]	27.5	[24.9,30.2]
District (n=1,123)	17.2	[14.3,20.4]	17.5	[14.8,20.5]	17.5	[14.7,20.6]	17.4	[15.2,19.8]
Village (n=4,216)	58.6	[54.6,62.5]	53.5	[49.6,57.3]	54.9	[50.3,59.5]	55.1	[51.8,58.4]
Total (n=6,920)	100.0		100.0		100.0		100.0	
Father's Child Place								
Province (n=1,367)	20.3	[17.3,23.6]	25.4	[22.5,28.6]	23.8	[20.5,27.4]	23.7	[21.4,26.2]
District (n=1,149)	16.0	[13.0,19.6]	19.3	[16.5,22.5]	20.3	[17.2,23.7]	18.8	[16.3,21.4]
Village (n=4,404)	63.7	[59.6,67.6]	55.2	[51.3,59.2]	56.0	[51.4,60.4]	57.5	[54.1,60.9]
Total (n=6,920)	100.0		100.0		100.0		100.0	
Mother Ever Worked								
No (n=2,894)	38.4	[34.6,42.4]	41.3	[38.2,44.5]	43.1	[39.3,47.0]	41.1	[38.3,43.9]
Yes (n=4,026)	61.6	[57.6,65.4]	58.7	[55.5,61.8]	56.9	[53.0,60.7]	58.9	[56.1,61.7]
Total (n=6,920)	100.0		100.0		100.0		100.0	
Mother's Education								
1 (n=5,890)	90.6	[88.2,92.5]	77.4	[74.0,80.5]	84.0	[80.9,86.7]	82.5	[79.9,84.8]

Continued on next page

Table 4.9 – continued from previous page

	Categories of Children by Their Status in the Imputation Analysis							
	Impute 1		**Impute 2**		**Observed**		**Total**	
	Col %	**CI**	**Col %**	**CI**	**Col %**	**CI**	**Col %**	**CI**
2 (n=341)	3.7	[2.6,5.3]	6.0	[4.6,7.8]	6.5	[5.0,8.5]	5.6	[4.5,6.9]
3 (n=413)	4.0	[2.9,5.4]	8.5	[6.9,10.4]	7.3	[5.6,9.5]	7.0	[5.9,8.4]
4 (n=276)	1.7	[1.0,2.8]	8.1	[6.3,10.3]	2.2	[1.5,3.3]	4.9	[3.9,6.2]
Total (n=6,920)	100.0		100.0		100.0		100.0	
Father's Education								
1 (n=4,573)	68.8	[64.9,72.4]	60.4	[56.2,64.4]	64.1	[60.0,68.0]	63.5	[60.1,66.7]
2 (n=865)	11.8	[9.5,14.4]	13.5	[11.3,16.2]	13.1	[10.7,15.8]	13.0	[11.2,15.0]
3 (n=840)	13.1	[10.6,16.0]	13.0	[11.1,15.2]	14.2	[11.7,17.1]	13.4	[11.5,15.4]
4 (n=642)	6.4	[4.8,8.5]	13.1	[10.6,16.1]	8.6	[6.8,11.0]	10.2	[8.5,12.2]
Total (n=6,920)	100.0		100.0		100.0		100.0	
	Mean	**CI**	**Mean**	**CI**	**Mean**	**CI**	**Mean**	**CI**
Siblings								
Birth Order	1.91	[1.83,1.99]	3.30	[3.14,3.46]	1.97	[1.90,2.04]	2.59	[2.50,2.69]
Sibling Size	3.93	[3.75,4.10]	3.93	[3.72,4.14]	3.66	[3.47,3.87]	3.85	[3.68,4.02]
Share of Males	0.488	[0.467,0.509]	0.506	[0.489,0.523]	0.556	[0.533,0.578]	0.515	[0.500,0.530]
Age	23.93	[23.66,24.20]	12.88	[12.69,13.07]	22.42	[22.23,22.61]	18.24	[17.98,18.50]
Num. of Obs.	1,786		3,342		1,792		6,920	

Note: 1) Educational attainment of mothers and fathers is categorized into four levels; 1=Less than lower-secondary education, 2= Completed lower secondary education or incomplete high school, 3= Completed high school, and 4=Some tertiary education.
2) Impute 1 denotes the category of children not residing in the household; Impute 2 denotes the children residing in the household but younger than 19; Observed denotes the children residing in the household and older than 19 years-old.
3) Significance level of 0.05 is chosen for confidence intervals.
4) m stands for missingness.

After examining the descriptive statistics, it can be said with certainty that the selected auxiliary variables correlate with the children's education (Ferreira and Gignoux, 2010) and are associated with the missingness of educational information. In the first step, using a multiple imputation model with 20 imputations, I choose an ordered logit model where the dependent variable is education level of all children and the covariates are auxiliary variables shown in Table 4.9. In the second step, I calculate the assumed share of daughters according to educational level. Table 4.10 shows the level of education of the daughters in addition to one of the mothers or fathers. The proportion of mothers and fathers who have not completed lower secondary education is 83% and 63%, respectively. no qualifications from lower secondary level. However, the educational qualification has increased significantly from the first to the second generation. The compulsory education law and the expansion of higher education have contributed to this progress.

Table 4.10: Transmission Sample

		Proportion	CI	
Daughter's Education				
	ED-1	0.088	0.062	0.113
	ED-2	0.257	0.231	0.283
	ED-3	0.161	0.134	0.188
	ED-4	0.494	0.451	0.538
Mother's Education				
	ED-1	0.830	0.804	0.856
	ED-2	0.052	0.039	0.066
	ED-3	0.068	0.053	0.083
	ED-4	0.049	0.036	0.062
Father's Education				
	ED-1	0.636	0.601	0.672
	ED-2	0.133	0.110	0.156
	ED-3	0.137	0.116	0.159
	ED-4	0.093	0.075	0.112
Observations	3,415			

Note: 1) Education attainment is categorized into four levels; ED-1=Less than lower-secondary education, ED-2= Completed lower secondary education or incomplete high school, ED-3= Completed high school, and ED-4=Some tertiary education
2) Proportion of daughter's education and its confidence interval were imputed by multiple imputation model

4.3.5 Parameter Estimates

The simulation of a change in women's education on the education of daughters requires some parameters that measure the relationship between demographic processes and educational mobility. In this context, one should estimate three models separately, which are offered by Mare and Maralani (2006). First, the assortative mating model, the ordered logit specification, captures the marriage probability of women and men according to their level of education. The parameters are in the first column of Table 4.11. It shows that more educated women are significantly and likely to marry more educated men, widening the educational gap between favored and disadvantaged children in Turkey. Second, the Poisson model estimates the number of living children (fertility) according to their level of education. The parameters are given in the second column of Table 4.11. The education level of couples correlates significantly negatively with the number of living children. Thus, better educated parents reproduce

less, which reduces the proportion of the more educated second generation at the population level. It also increases sibling size, thereby lowering educational resources at the family level. Third, the transmission model, ordered logit specification, estimates the daughters education using the variables of education of mother and father, and sibling size. As expected, parental education increases the likelihood of a better education, while the size of siblings harms it (see third column of 4.11.

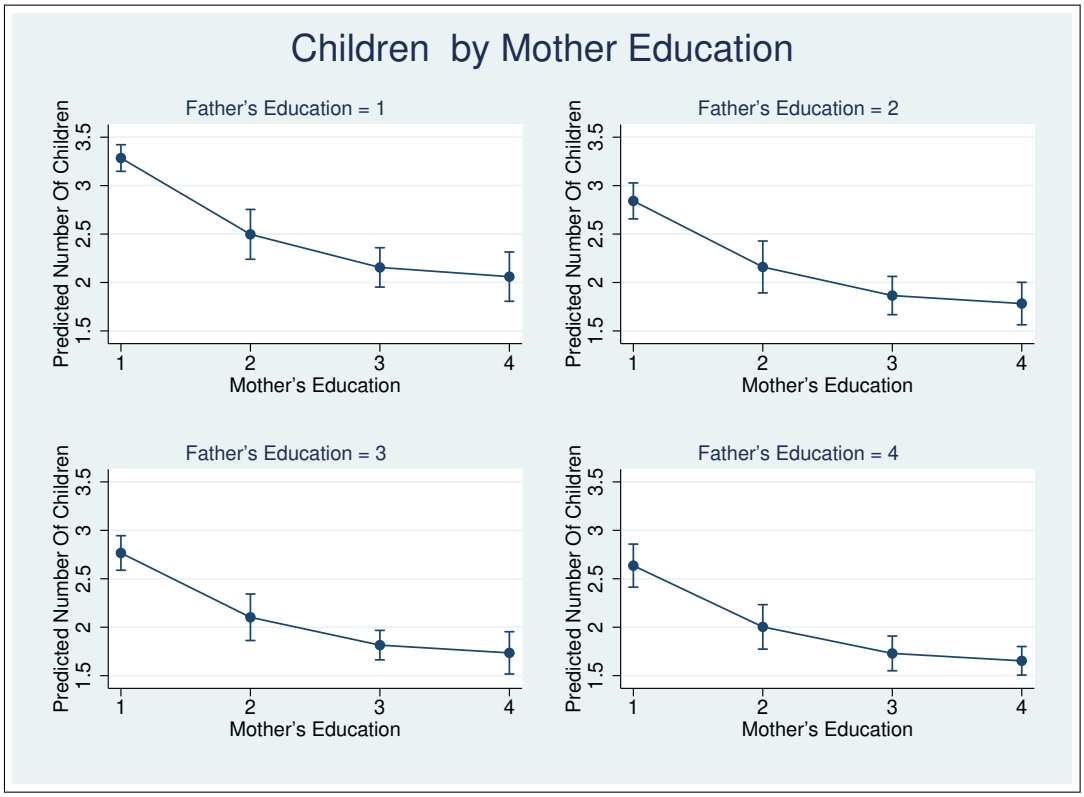
With the parameters in Table 4.11 and the base values, I predict the marriage probabilities of women Figure 4.2 and the number of children living Figure 4.1 according to educational level. These predicted marriage probabilities, number of living children, and educational transmission probabilities are used to calculate the simulated number of children by educational level using the population renewal model shown in Eequations of 4.10 and 4.9. Figure 4.3 shows the actual and the predicted probability of the daughters' educational qualification. It shows that the model predicts robust estimates.

Table 4.11: Parameter Estimates for Models of Intergenerational Transmission, Fertility, and Marriage

	Father's Education (Ordered Logit)		**Fertility** (Poisson)		**Daughter's Education** (Ordered Logit)	
	β	Std.Er.	β	Std.Er.	β	Std. Er.
Mother's Education						
Ed-1 **Ref.**	-					
Ed-2	1.297***	0.201	-0.273***	0.055	0.443	0.345
Ed-3	2.284***	0.178	-0.443***	0.047	1.861***	0.471
Ed-4	3.974***	0.244	-0.490***	0.059	1.284	0.769
Father's Education						
Ed-1 **Ref.**			-			
Ed-2			-0.179***	0.038	0.493***	0.233
Ed-3			-0.214***	0.037	0.856***	0.232
Ed-4			-0.255***	0.048	1.692***	0.464
Sibling size					-0.315***	0.038
Cuts						
Cut1	0.783***	0.069			-3.601***	0.232
Cut2	1.582***	0.076			-1.577***	0.189
Cut3	2.935***	0.112			-0.739***	0.185
Observations	2,288		2,288		3,415	

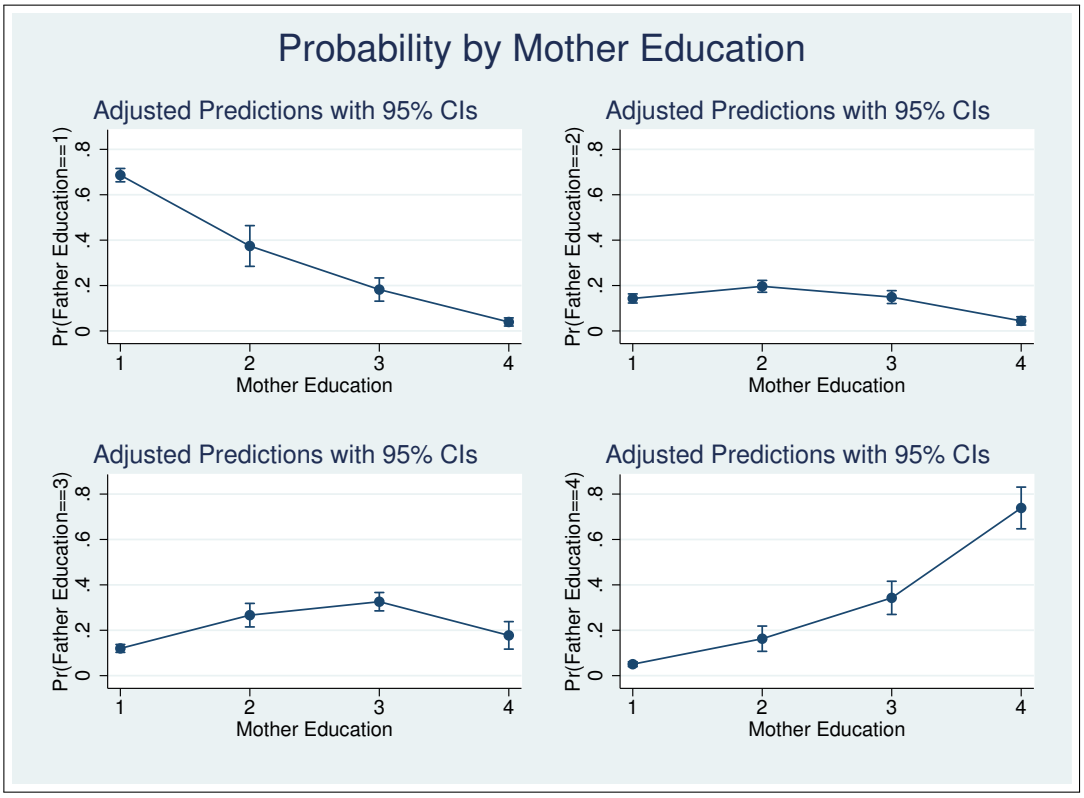
Note: 1) Education attainment is categorized into four levels; ED-1=Less than lower-secondary education, ED-2= Completed lower secondary education or incomplete high school, ED-3= Completed high school, and ED-4=Some tertiary education
2) Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 4.1: Predicted Number of Children by Education Levels of Mother and Father



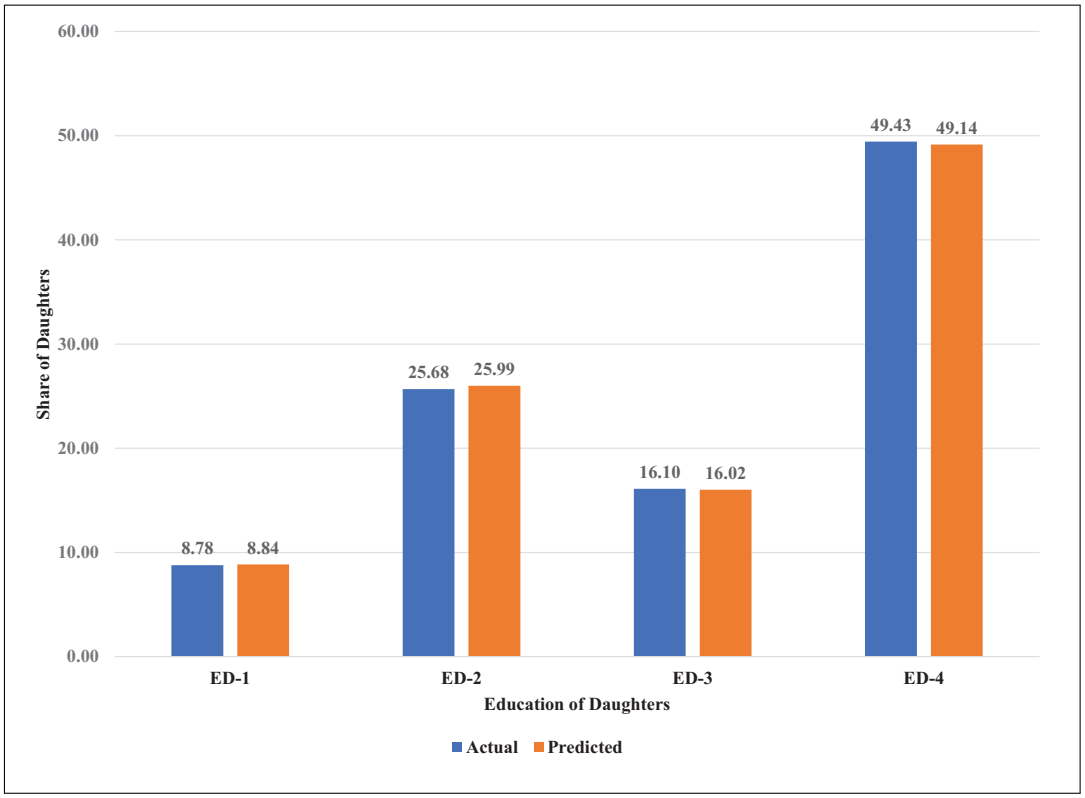
Note: Education attainment is categorized into four levels; ED-1=Less than lower-secondary education, ED-2= Completed lower secondary education or incomplete high school, ED-3= Completed high school, and ED-4=Some tertiary education

Figure 4.2: Predicted Marriage Probability by Education of Woman and Husband



Note: Education attainment is categorized into four levels; ED-1=Less than lower-secondary education, ED-2= Completed lower secondary education or incomplete high school, ED-3= Completed high school, and ED-4=Some tertiary education

Figure 4.3: Actual and Predicted Education Probability of Offspring



Note: Education attainment is categorized into four levels; ED-1=Less than lower-secondary education, ED-2= Completed lower secondary education or incomplete high school, ED-3= Completed high school, and ED-4=Some tertiary education

4.3.6 Simulation

In this section, I use estimated parameters to predict dependent variables of models for different scenarios. The base scenario builds on the actual data. The others assign some women from a certain educational category to the next. Thus, the education distribution of the daughters can change in three different ways. First, improving the level of education of the mothers directly promotes the education of the daughters. Second, more educated women are likely to marry more educated men, which should have an indirect effect on daughter's education. Third, more educated couples tend to have fewer children, which could mitigate the positive effects of improving women's education at the population level. However, fewer siblings would reduce this moderation effect due to the negative correlation between sibling size and level of education.

At this point I evaluate the intergenerational effect of changes in the educational distribution of women in 4 different scenarios: 1) Transfer only (T), 2) Transfer + Fertility (TF), 3) Transfer + Marriage (TM) and 4) Transfer + Fertility + Marriage (TFM). I distribute 5 percent of the women in the total sample in four different ways from the lower education categories to the higher education categories and examine how the education level of the daughters changes after these simulations. In the (1) T-only model, a change in the educational distribution of women does not lead to a change in marital and fertility behavior. In other words, women who experience an improvement in education still marry the same type of husbands and has the same same number of children. In this model, improvements in the educational level of women only have a direct effect on the educational distribution of the daughters. In the (2) TF and (3) TM models, either fertility or marital behavior adapt to changes in the distribution of women's education. In the (4) TFM model, both marital and fertility behavior change according to the improvement in women's education. For example, for the simulation I use the following weighting if we increase education from 5 percent of women in ED-1 to ED-4 (Kye and Mare, 2012).

$$p_{k/4}^{H-NM} = W4 \times p_{k/4}^{H} + 0.05 \times p_{k/1}^{H} \tag{4.11}$$

$$f_{4k}d_{4k}^{NF} = W4 \times f_{4k}d_{4k} + 0.05 \times f_{1k}d_{1k} \tag{4.12}$$

I use the estimated parameters in Table 4.11 and the selected subset of transmission, marriage, and fertility processes to predict the educational distribution of husbands and the number of children born in each educational category in the subsequent generation. I calculate a fraction of the simulated education distribution of the daughters for the baseline distribution. They show the relative importance of demographic processes in educational mobility. Table 4.12 shows the relationship between the simulation / actual educational distribution of the daughters in different scenarios.

Using the parameters in Table 2.11, I calculated the expected share of daughters according to educational level for a given simulation. The ratio of these proportions to the predicted baseline distribution represents the effect of the corresponding simulation. Indicators greater than 1 in the table show that the proportion of daughters has increased with the given simulation of the mothers' educational change. The size of this effect depends largely on the reproductive process under consideration, which is

Table 4.12: Intergenerational effects, ratios of the simulated proportions to the baseline predicted proportions of daughter's educational attainments

	Ratio of Simulation to Base			
	ED-1	**ED-2**	**ED-3**	**ED-4**
Simulation Model				
Transmission Only				
ED-1 to ED-2	0.963	0.977	0.994	1.021
ED-2 to ED-3	0.989	0.983	0.979	1.018
ED-3 to ED-4	0.999	0.999	1.000	1.001
ED-1 to ED-4	0.946	0.954	0.969	1.044
Transmission and Fertility				
ED-1 to ED-2	0.969	0.981	0.994	1.018
ED-2 to ED-3	0.994	0.988	0.983	1.013
ED-3 to ED-4	0.999	0.999	1.000	1.001
ED-1 to ED-4	0.963	0.969	0.981	1.029
Transmission and Marriage				
ED-1 to ED-2	0.959	0.972	0.988	1.026
ED-2 to ED-3	0.988	0.982	0.976	1.019
ED-3 to ED-4	0.999	0.999	0.999	1.001
ED-1 to ED-4	0.943	0.947	0.956	1.052
Transmission, Marriage and Fertility				
ED-1 to ED-2	0.966	0.976	0.989	1.022
ED-2 to ED-3	0.994	0.987	0.981	1.014
ED-3 to ED-4	0.999	0.999	0.999	1.001
ED-1 to ED-4	0.961	0.964	0.970	1.036

Note: Education attainment is categorized into four levels; ED-1=Less than lower-secondary education, ED-2= Completed lower secondary education or incomplete high school, ED-3= Completed high school, and ED-4=Some tertiary education

composed of channels of assortative mating, fertility and sibling size.

The first row in the Transmission Only simulation shows the estimated effects of moving women, who are 5 percent of the sample, from ED-1 to ED-2. The corresponding ratio for ED-1 is 0.963, which means that the proportion of daughters with less than lower secondary education falls by 3.7 percent compared to the expected initial distribution. The proportion of daughters with some graduate education also increased by 2.1 percent. The change of women from ED-1 to ED-4 has resulted in a significant change in the educational distribution of the daughters. The ED-1 decreased 5.4 percent and the ED-4 increased 4.4 percent. On the other hand, the movements from ED-2 to ED-3 and ED-3-ED-4 have a smaller impact. Since the assortative mating and fertility channels were not taken into account in the pure transmission simulation, the effects only relate to the transmission channel in this simulation.

The ratio of the TF model is lower compared to the T model. The first three simulations have relatively no influence on the distribution. By switching women from ED-1 to ED-4, the ED-1 percentage decreased 3.7 percent and the ED-4 increased 2.9 percent. It shows that the gains from the increase in maternal education largely disappear due to differences in fertility. In the simulation of TM model, changing the education of women from ED-1 to ED-4 increases the proportion of daughters with some tertiary education by 5.2 percent and reduces the proportion of daughters with education less than lower secondary by 5.7 percent. When we include all the channels, the ratios lay down between the results of TF and TM models. Fertility and assortative mating effects cancel each other out significantly, but the contribution of the second is higher.

The results suggest the following conclusions. First, there are positive intergenerational effects. The magnitude of these effects is most evident in the simulations of women switching from ED-1 to ED4. Also, the redistribution of women from ED-1 to ED-2 results in more changes than the movement from ED-2 to ED-3. On the other hand, the effect of change from from ED-3 to ED-4 is relatively insignificant in all transitions. In the simulations from ED-1 to ED-2 and ED-2 to ED-2 to ED-3, the contribution of processes to intergenerational transmission education increases.

4.4. Discussion and Conclusion

This study examines the intergenerational educational mobility between mothers and daughters in Turkey. The previous studies showed that while educational mobility in Turkey has improved over time, the strong positive relationship between daughters and mothers has not changed significantly. In addition, international research in cross-generational education has usually concentrated on conventional mobility methods based on retrospective data. However, some authors have argued that this data type doesn't really represent the first generation. It therefore makes more sense to use the prospective data to explore effects of demographic processes in mobility. In this context, I use both approaches with the 2013 TDHS data to assess the intergenerational transmission of education from mother to daughter in Turkey.

The research questions were introduced in the introductory part of this paper. Insights gives some answers to these questions.

1. How has educational mobility between women and their parents on an individual level changed over time in Turkey?

   Various models showed that there is an explicit persistence in intergenerational transmission of education from mothers to daughters across the cohorts.

2. What is the contribution of each level of education to mobility over time?

   Mothers with no education and with higher education explain most of the differences in the educational distribution of their daughters. That is, children who grow up in the most disadvantaged families are more likely to remain disadvantaged, while children from better-off families are more likely to retain their relative advantage.

3. How do changes in the educational distribution of mothers affect the educational distribution of daughters in Turkey?

   The simulated change in the educational distribution of mothers only has a limited impact on that of their daughters. This is because the educational attainment of the younger cohorts, who have been more exposed to recent educational reforms, has increased.

4. How strong is the influence of assortative mating and different fertility on the educational mobility of women in Turkey?

Fertility and assortative mating effects cancel each other out significantly, but the contribution of the second is higher.

Educational mobility has not changed noticeably over time and this is in line with previous studies. It also shows significant differences between subgroups of the population. The contribution of mothers without education and with graduate education is substantial on the persistent immobility over time. Most favored and disadvantaged daughters still resemble their mothers, and the education system has not sufficiently reduced this pattern over time. In contrast to conventional educational mobility, the results of demographic educational mobility take into account not only the transmission channel but also the effects of assortative mating and fertility. Therefore. I analyzed the relative contribution of fertility and assortative mating in Turkey to the educational mobility of daughters. By imputing educational information of children who do not live in the household or who are younger than 19 years old, I construct a prospective data set containing mothers aged 40-49 years and their daughters. Then I simulate the effects by moving the five percent of women from one level of education to the next. The results suggest the following conclusions. First, different fertility and assortative pairing have mediating effects on educational mobility in Turkey, as in the cases of Indonesia Mare and Maralani (2006) and South Korea Kye and Mare (2012). While the assortative mating increases the intergenerational effects, the differential fertility reduces these effects in Turkey. However, the effect of latter is larger.

In previous studies on demographic educational mobility, a prospective data set was used in which the second generation consists of people of different ages. This brings two important results. First, the children might have faced different educational investments and reforms. Second, differential fertility and assortative mating patterns might vary by age of children. Therefore, age of children should be taken into account to reduce the bias sourced by timing of events such as marriage, childbearing and educational policies. Of course, it is possible to control these timing effects. However, this makes the population renewal model more complex, and some of previous studies have generally not adopted this option. Another option might be to create a hypothetical, second-generation sample that is believed to be facing the same educational system as their siblings. I choose the second option. Here I assume that children who do not live in the household or who are younger than 19 years old are confronted with the same educational system as their observed siblings. Since the average age of the daughters in the Observed group is 22.5 years (as of 2013), it is assumed that the most recent educational reforms in the K-12 and the university expansion have had a more positive

effect on the daughters. Therefore, educational mobility in this younger generation is higher than conventional educational mobility for the older cohorts aged 25-49.

This study contributes to the literature in a number of ways. First, another dataset was used to study the development of conventional educational mobility in Turkey. Second, the decomposition of the correlation coefficient showed the relative contribution of different educational levels of parents to educational mobility across generations. Third, educational mobility was analyzed according to different demographic and socio-economic subpopulations. Fourth, it replicated the methodology of educational demographic mobility in Turkey, a nation that recently increased school education. Fifth, using TDHS-2013, which is originally retrospective, I created a prospective dataset and hypothetical sample of daughters.

Key policy implications of this research are as follows. The results of both conventional and demographic educational mobility suggest that educational policy makers should prioritize the children of less educated parents in order to improve educational mobility. It suggests that the education system should take these gaps into account when formulating policies. In this regard, it makes more sense to expand university participation if seating is provided for the most disadvantaged children. However, these children have generally not even been able to obtain the high school diploma required for higher education. Therefore, improving educational mobility requires an approach that takes into account the cumulative educational attainment of children with different early life circumstances, especially those who lack parental support due to lower human and social capital.

In conclusion, the approach proposed in this study is only a first step to assess the contribution of recent educational reforms and demographic processes to educational mobility between mothers and daughters in Turkey. Further research might answer some additional questions. First, it would be better to cover multiple TDHS streams to observe trends in the effects of transmission, assortative marriage, and differential fertility over time. Second, although not yet that high, the age at marriage and the age at the first birth are tending to rise in Turkey. Divorce rates are also increasing. Therefore, these demographic processes should also be included in the next studies in a more complex environment. Finally, with a prospective dataset covering the educational and skill levels of parents and children, it would be better to replicate the population renewal model.

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C. APPENDIX

Table C.1: Highest Educational Degree Completed of Daughters, Mothers and Fathers by the Cohorts of Daughters

	Age in 5-year groups											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI
Daughter's Education												
No education (n=804)	7.6	[5.8,9.8]	8.0	[6.3,10.0]	7.3	[5.8,9.1]	12.6	[10.4,15.2]	16.1	[13.5,19.0]	9.7	[8.6,11.0]
Primary incomplete (n=279)	4.1	[3.3,5.3]	3.9	[2.8,5.3]	2.7	[1.9,3.9]	3.4	[2.4,4.9]	5.0	[3.7,6.7]	3.8	[3.3,4.3]
Primary complete (n=2,980)	28.5	[25.3,32.0]	41.1	[37.8,44.5]	54.1	[50.1,58.0]	54.2	[50.3,58.0]	53.9	[49.9,57.9]	45.3	[43.3,47.4]
Secondary complete (n=618)	14.6	[12.7,16.7]	11.4	[9.6,13.6]	7.5	[6.0,9.4]	8.4	[6.7,10.5]	5.8	[4.3,7.7]	9.9	[9.1,10.8]
High school (n=995)	25.4	[22.1,29.1]	18.4	[15.8,21.4]	16.3	[13.9,19.1]	13.3	[10.8,16.3]	11.2	[9.0,13.8]	17.6	[16.3,18.9]
Graduate education (n=777)	19.7	[16.8,23.1]	17.2	[14.3,20.5]	12.1	[9.5,15.2]	8.1	[6.0,10.8]	8.1	[5.6,11.5]	13.7	[12.0,15.6]
Total (n=6,453)	100.0		100.0		100.0		100.0		100.0		100.0	
Mother's Education												
No education (n=3,581)	38.9	[35.4,42.5]	44.6	[41.4,47.8]	48.8	[45.3,52.4]	56.7	[53.3,60.1]	63.8	[59.2,68.1]	49.2	[47.2,51.2]
Primary incomplete (n=552)	7.0	[5.5,8.8]	7.4	[6.0,9.1]	10.3	[8.3,12.7]	10.3	[8.4,12.5]	10.1	[7.9,12.8]	8.8	[8.0,9.8]
Primary complete (n=1,943)	40.8	[37.3,44.5]	38.3	[35.3,41.3]	34.9	[31.6,38.3]	29.6	[26.4,33.0]	23.4	[19.8,27.4]	34.4	[32.7,36.1]
Secondary complete (n=141)	6.1	[4.6,7.9]	2.8	[1.8,4.2]	2.3	[1.5,3.7]	0.9	[0.4,2.0]	0.8	[0.3,2.0]	2.8	[2.2,3.5]
High school (n=168)	4.9	[3.5,6.7]	4.9	[3.7,6.5]	2.7	[1.7,4.2]	1.4	[0.7,2.6]	1.3	[0.6,3.1]	3.2	[2.7,3.9]
Graduate education (n=68)	2.3	[1.4,3.9]	2.1	[1.3,3.4]	1.1	[0.5,2.4]	1.2	[0.6,2.4]	0.6	[0.2,1.8]	1.5	[1.1,2.2]
Total (n=6,453)	100.0		100.0		100.0		100.0		100.0		100.0	
Father's Education												

Continued on next page

Table C.1 – *Continued from previous page*

	Age in 5-year groups											
	25-29		**30-34**		**35-39**		**40-44**		**45-49**		**Total**	
	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI	Col %	CI
No education (n=1,557)	14.3	[12.3,16.7]	15.9	[13.8,18.3]	19.9	[17.4,22.6]	28.6	[25.7,31.7]	33.9	[30.1,37.9]	21.3	[19.8,22.9]
Primary incomplete (n=466)	5.4	[4.2,6.9]	5.4	[4.2,6.9]	8.3	[6.7,10.3]	6.2	[4.9,8.0]	7.4	[5.7,9.6]	6.5	[5.9,7.2]
Primary complete (n=3,265)	50.4	[47.1,53.6]	54.6	[51.4,57.8]	54.3	[50.9,57.7]	51.4	[47.7,55.0]	49.2	[44.9,53.4]	52.2	[50.3,54.1]
Secondary complete (n=453)	11.6	[9.6,14.0]	9.7	[7.8,12.0]	6.4	[4.9,8.2]	6.3	[4.6,8.5]	4.2	[2.7,6.4]	8.0	[7.2,8.9]
High school (n=467)	12.5	[10.4,14.9]	9.5	[7.7,11.5]	7.1	[5.5,9.1]	4.7	[3.2,6.9]	3.1	[1.9,5.1]	7.8	[6.8,9.0]
Graduate education (n=245)	5.8	[4.3,7.9]	4.9	[3.6,6.6]	4.0	[2.8,5.7]	2.8	[1.8,4.3]	2.2	[1.1,4.1]	4.1	[3.3,5.2]
Total (n=6,453)	100.0		100.0		100.0		100.0		100.0		100.0	

Note: 1) Education attainment is categorized into four levels; ED-1=Less than lower-secondary education, ED-2= Completed lower secondary education or incomplete high school, ED-3= Completed high school, and ED-4=Some tertiary education
2) Significance level of 0.05 is chosen for confidence intervals

Table C.2: Intergenerational Education Mobility and Intergenerational Correlation Coefficient

	Parent's Education			
	Mother	**Father**	**Average**	**Highest**
Mother Tongue				
Turkish				
Beta	0.655***	0.506***	0.797***	0.672***
Standardized Beta	0.519***	0.390***	0.533***	0.514***
SE	(0.016)	(0.022)	(0.019)	(0.019)
R-sq	0.269	0.152	0.284	0.264
N	5128	5128	5128	5128
Non Turkish				
Beta	0.794***	0.503***	0.816***	0.546***
Standardized Beta	0.471***	0.404***	0.496***	0.440***
SE	(0.055)	(0.053)	(0.059)	(0.052)
R-sq	0.222	0.163	0.246	0.193
N	1325	1325	1325	1325
Parent's Marriage				
Not Consanguineous				
Beta	0.746***	0.589***	0.886***	0.741***
Standardized Beta	0.567***	0.442***	0.581***	0.558***
SE	(0.018)	(0.022)	(0.021)	(0.020)
R-sq	0.321	0.196	0.338	0.311
N	4897	4897	4897	4897
Consanguineous				
Beta	0.757***	0.551***	0.903***	0.656***
Standardized Beta	0.473***	0.400***	0.514***	0.471***
SE	(0.040)	(0.041)	(0.044)	(0.033)
R-sq	0.223	0.160	0.264	0.222
N	1556	1556	1556	1556
Birth Place				
Province				
Beta	0.599***	0.458***	0.716***	0.656***
Standardized Beta	0.531***	0.384***	0.533***	0.536***
SE	(0.021)	(0.036)	(0.028)	(0.025)
R-sq	0.282	0.147	0.284	0.287
N	1795	1795	1795	1795
District				
Beta	0.695***	0.455***	0.802***	0.614***
Standardized Beta	0.475***	0.335***	0.479***	0.440***
SE	(0.043)	(0.039)	(0.043)	(0.034)
R-sq	0.226	0.112	0.229	0.194
N	1509	1509	1509	1509
Sub-district/Village				
Beta	0.529***	0.412***	0.671***	0.460***
Standardized Beta	0.361***	0.339***	0.420***	0.374***
SE	(0.036)	(0.031)	(0.040)	(0.031)
R-sq	0.131	0.115	0.176	0.140
N	3149	3149	3149	3149
Childhood Place				
Province				

Continued on next page

Table C.2 – continued from previous page

	Parental Education			
	Mother	**Father**	**Average**	**Highest**
Beta	0.622***	0.485***	0.750***	0.668***
Standardized Beta	0.527***	0.394***	0.536***	0.531***
SE	(0.022)	(0.034)	(0.029)	(0.024)
R-sq	0.278	0.156	0.288	0.282
N	2082	2082	2082	2082
District				
Beta	0.699***	0.452***	0.793***	0.608***
Standardized Beta	0.479***	0.336***	0.479***	0.440***
SE	(0.042)	(0.042)	(0.044)	(0.039)
R-sq	0.230	0.113	0.229	0.194
N	1447	1447	1447	1447
Sub-district/Village				
Beta	0.506***	0.398***	0.644***	0.453***
Standardized Beta	0.369***	0.341***	0.425***	0.388***
SE	(0.035)	(0.030)	(0.040)	(0.032)
R-sq	0.136	0.116	0.181	0.151
N	2920	2920	2920	2920
Birth Region				
West				
Beta	0.613***	0.516***	0.740***	0.678***
Standardized Beta	0.524***	0.406***	0.532***	0.529***
SE	(0.027)	(0.044)	(0.033)	(0.032)
R-sq	0.274	0.165	0.283	0.280
N	1182	1182	1182	1182
South				
Beta	0.719***	0.519***	0.830***	0.622***
Standardized Beta	0.520***	0.396***	0.530***	0.472***
SE	(0.041)	(0.049)	(0.048)	(0.039)
R-sq	0.271	0.157	0.281	0.222
N	828	828	828	828
Central				
Beta	0.664***	0.464***	0.779***	0.682***
Standardized Beta	0.518***	0.361***	0.517***	0.517***
SE	(0.033)	(0.049)	(0.041)	(0.039)
R-sq	0.268	0.130	0.267	0.267
N	1419	1419	1419	1419
North				
Beta	0.684***	0.482***	0.867***	0.664***
Standardized Beta	0.482***	0.358***	0.512***	0.489***
SE	(0.053)	(0.046)	(0.051)	(0.040)
R-sq	0.232	0.128	0.263	0.239
N	1121	1121	1121	1121
East				
Beta	0.851***	0.561***	0.953***	0.635***
Standardized Beta	0.472***	0.424***	0.527***	0.486***
SE	(0.053)	(0.036)	(0.056)	(0.040)
R-sq	0.223	0.180	0.277	0.237
N	1903	1903	1903	1903
Childhood Region				
West				
Beta	0.626***	0.528***	0.754***	0.673***

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Table C.2 – continued from previous page

	Parental Education			
	Mother	**Father**	**Average**	**Highest**
Standardized Beta	0.527***	0.415***	0.539***	0.525***
SE	(0.027)	(0.041)	(0.033)	(0.029)
R-sq	0.278	0.172	0.290	0.275
N	1296	1296	1296	1296
South				
Beta	0.727***	0.516***	0.845***	0.645***
Standardized Beta	0.527***	0.391***	0.536***	0.486***
SE	(0.041)	(0.049)	(0.050)	(0.039)
R-sq	0.278	0.153	0.287	0.236
N	876	876	876	876
Central				
Beta	0.662***	0.479***	0.786***	0.699***
Standardized Beta	0.517***	0.369***	0.520***	0.526***
SE	(0.030)	(0.049)	(0.039)	(0.041)
R-sq	0.268	0.136	0.271	0.276
N	1394	1394	1394	1394
North				
Beta	0.650***	0.454***	0.807***	0.629***
Standardized Beta	0.478***	0.351***	0.502***	0.488***
SE	(0.047)	(0.050)	(0.047)	(0.041)
R-sq	0.229	0.123	0.252	0.238
N	1087	1087	1087	1087
East				
Beta	0.867***	0.536***	0.956***	0.610***
Standardized Beta	0.436***	0.404***	0.500***	0.463***
SE	(0.052)	(0.040)	(0.060)	(0.045)
R-sq	0.190	0.163	0.250	0.215
N	1800	1800	1800	1800
Migrated from Childhood Place				
Not Migrated				
Beta	0.681***	0.558***	0.831***	0.667***
Standardized Beta	0.520***	0.429***	0.550***	0.512***
SE	(0.027)	(0.033)	(0.031)	(0.028)
R-sq	0.270	0.184	0.302	0.262
N	2573	2573	2573	2573
Migrated				
Beta	0.792***	0.604***	0.930***	0.765***
Standardized Beta	0.572***	0.442***	0.585***	0.561***
SE	(0.021)	(0.025)	(0.024)	(0.022)
R-sq	0.327	0.195	0.342	0.315
N	3880	3880	3880	3880
Sibling Size				
1-2				
Beta	0.677***	0.378***	0.716***	0.713***
Standardized Beta	0.626***	0.341***	0.563***	0.594***
SE	(0.034)	(0.051)	(0.045)	(0.038)
R-sq	0.391	0.116	0.317	0.353
N	705	705	705	705
3				
Beta	0.561***	0.427***	0.699***	0.633***
Standardized Beta	0.416***	0.325***	0.441***	0.461***

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Table C.2 – continued from previous page

	Parental Education			
	Mother	**Father**	**Average**	**Highest**
SE	(0.045)	(0.055)	(0.059)	(0.051)
R-sq	0.173	0.106	0.194	0.212
N	1007	1007	1007	1007
4				
Beta	0.536***	0.517***	0.765***	0.608***
Standardized Beta	0.383***	0.383***	0.462***	0.436***
SE	(0.051)	(0.045)	(0.055)	(0.045)
R-sq	0.147	0.147	0.213	0.190
N	1125	1125	1125	1125
5-6				
Beta	0.491***	0.416***	0.646***	0.484***
Standardized Beta	0.336***	0.326***	0.396***	0.372***
SE	(0.039)	(0.036)	(0.048)	(0.037)
R-sq	0.113	0.106	0.157	0.138
N	1780	1780	1780	1780
7 or more				
Beta	0.410***	0.333***	0.581***	0.355***
Standardized Beta	0.191***	0.261***	0.292***	0.276***
SE	(0.068)	(0.053)	(0.078)	(0.051)
R-sq	0.037	0.068	0.085	0.076
N	1836	1836	1836	1836
Share of Males				
0				
Beta	0.647***	0.510***	0.747***	0.719***
Standardized Beta	0.572***	0.414***	0.561***	0.570***
SE	(0.036)	(0.051)	(0.043)	(0.036)
R-sq	0.327	0.171	0.314	0.325
N	704	704	704	704
0-1/3				
Beta	0.597***	0.534***	0.817***	0.618***
Standardized Beta	0.375***	0.386***	0.458***	0.437***
SE	(0.052)	(0.047)	(0.057)	(0.046)
R-sq	0.141	0.149	0.210	0.191
N	1304	1304	1304	1304
1/3-1/2				
Beta	0.708***	0.541***	0.850***	0.650***
Standardized Beta	0.471***	0.402***	0.510***	0.480***
SE	(0.038)	(0.038)	(0.042)	(0.033)
R-sq	0.222	0.161	0.260	0.230
N	1790	1790	1790	1790
1/2				
Beta	0.781***	0.553***	0.898***	0.774***
Standardized Beta	0.627***	0.429***	0.613***	0.600***
SE	(0.029)	(0.042)	(0.040)	(0.033)
R-sq	0.393	0.184	0.376	0.359
N	1241	1241	1241	1241
More 1/2				
Beta	0.716***	0.537***	0.854***	0.609***
Standardized Beta	0.471***	0.410***	0.515***	0.459***
SE	(0.044)	(0.042)	(0.049)	(0.041)
R-sq	0.222	0.168	0.266	0.210

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Table C.2 – continued from previous page

	Parental Education			
	Mother	**Father**	**Average**	**Highest**
N	1414	1414	1414	1414
Deceased Siblings				
None				
Beta	0.701***	0.533***	0.830***	0.723***
Standardized Beta	0.555***	0.403***	0.556***	0.538***
SE	(0.020)	(0.032)	(0.026)	(0.022)
R-sq	0.308	0.162	0.309	0.290
N	2938	2938	2938	2938
At Least One				
Beta	0.674***	0.501***	0.828***	0.603***
Standardized Beta	0.441***	0.376***	0.486***	0.454***
SE	(0.030)	(0.030)	(0.032)	(0.028)
R-sq	0.194	0.141	0.236	0.206
N	3515	3515	3515	3515

Note: 1) Beta=IEC stands for Intergenerational Education Coefficient, Standardized Beta=IECC stands for Intergenerational Education Correlation Coefficient (Standardization of IEC).
2) There are four education categories concerning parents: i) Mother, ii)Father, iii) Average education of mother and father, iv) Highest education of mother and father
3) Standard errors are based on the sampling weights of two-stage probability sampling design of TDHS-2013

Table C.3: Selected Studies on the Demographic Model of Education Mobility

Authors	Demographic Processes	Methodology	Country/Data Type
Mare and Maralani (2006)	Fertility and assortative Mating	One-sex joint demographic and mobility model for women	Indonesia/Prospective
Mare (2011)			
Kye (2011)	Fertility and mortality	Multi-group population projection	South Korea
Kye and Mare (2012)	Fertility and assortative Mating	One-sex recursive 'population renewal model' for women	South Korea/Prospective
Maralani (2013)	Differential fertility, assortative mating, delayed fertility and marriage, nonmarital fertility	Population renewal model, joint estimate of fertility and transmission	USA/Prospective
Hillmert (2013)	Marriage, cohabitation, spouse's education, time of birth, number of children, and gender of children	Estimation of partial processes with multistage procedure	(West) Germany/ Prospective
Song and Mare (2015)	Fertility	One-sex joint demographic and mobility model for men	USA/Prospective and retrospective
Lawrence and Breen (2016)	Assortative mating and fertility	Marginal structural model	USA/Prospective
Song and Mare (2017)	Assortative mating and marital fertility	Two sex demographic model of social mobility for males and females	USA/Prospective
Breen and Ermisch (2017)	Ever married, spouse's education, and having child	Conditional and unconditional probabilities of processes	Great Britain/Prospective
Song and Mare (2019)	Fertility and mortality	Multi-generational exposure and kinship model	USA/prospective (grandparent) and retrospective (grandchild)
Breen et al. (2019)	Ever married, having child given marriage, and spouse's education	Comparing conditional and unconditional probabilities	European countries/ Prospective

5. CONCLUSION

This chapter discusses the policy implications derived from this dissertation, outlines the shortcomings of the essays, and mentions a few ideas for future research.

5.1. Findings and Policy Implications

The educational development of women includes, among other things, the use of an efficient allocation of resources, more equal opportunities, greater intergenerational mobility and a better transition into adulthood. In this regard, comprehend the interaction between demographic transition and educational inequality is key to effective policy. There is therefore a need to better understand the interaction between demographic transition and educational inequality, especially for women. To contribute to this agenda, this dissertation consists of three essays focusing on cohorts of adult women, young women in transition to adulthood, and intergenerational mobility from mother to daughter.

The first essay examines the effects of demographic change and inequality of opportunity on the educational progress of women born in 1964-1988 in Turkey and compares the successive cohorts using decomposition methods. The results show that equality of opportunity has not improved significantly from the oldest to the youngest cohort, and may even have decreased. In other words, educational convergence among women from different socio-economic groups has not increased significantly. A changing relative proportion of women in the cohorts also has opposing effects on educational progress.

The policy implications drawn based on this essay are as follows. First, education policy should take into account the composition of the population in order to better cater to disadvantaged children. Because these groups tend to drop out before high school and university, they may not benefit from public investment in tertiary ed-

ucation. Second, if highly subsidized higher education suppresses spending in lower education, the quality of which is still problematic, the marginal utility of additional investment would be lower. That is, even if disadvantaged groups were to attend university, their relatively inadequate skills and poor teaching quality of the institutions rarely allow them to benefit from the fruits. Last but not least, equal opportunities does not mean improving the access of disadvantaged people to poor quality education, but rather creating equal opportunities for everyone with access to high quality education.

The second essay analyzes the situation of female NEETs in Turkey by comparing them with their non-NEET counterparts in terms of birth and childhood circumstances and post-childhood conditions using an inequality of opportunity (IOP) based approach. This study provides suggestive evidence about the relationship between NEET status and early life circumstances.

The policy implications drawn on the basis of this essay are as follows. First, all relevant actors should bear in mind that young people's inactivity is due not only to circumstances but also to preferences and efforts. The search for a permanent job, state-provided benefits, wage reservations by women, prioritization of marriage and the desire to have children and other mechanisms can lead women to be consciously NEET. Second, improved quality and equal opportunities in both the education system and the labor market can enable more women to become active in education or employment. Third, governments should take all necessary steps to reduce the risk factors of NEET status in relation to early life. Fourth, in view of the goal of the SDGs to lower the NEET rate, developing countries should implement more evidence-based measures, especially for young women. Finally, international surveys should provide more information in order to understand the reasons for the problem of inactivity and to develop targeted measures.

The third essay analyzes both conventional and, with regard to the conventional educational mobility of daughters aged 25-49 in Turkey, I observe the development from the 25-29 to the 45-49 year old cohorts. There are some notable results in this regard. At the individual level, increasing school enrollment rates seem to improve the absolute mobility of the daughters compared to their mothers, but not the relative mobility. At the population level, differences in fertility have a relatively minor impact on mobility in Turkey. It was likely higher for previous generations who did not benefit from recent educational reforms. On the other hand, the influence of the assortative mating is relatively higher.

The policy implications drawn on the basis of this essay are as follows. First, findings on both conventional and demographic educational mobility suggest that educational policy makers should prioritize children of less educated parents in order to improve educational mobility. In this context, it makes more sense to expand university participation when seating is provided for the most disadvantaged children. However, these children have generally not even been able to obtain the university degree required for higher education. Therefore, improving educational mobility requires an approach that takes into account the accumulated educational attainment of children with different early living conditions, especially children who lack parental support due to lower human and social capital. Second, demographic processes are becoming more diversified, so mobility studies should take them into account in order to monitor changes in population levels.

5.2. Limitations and Scope for Further Research

This dissertation is based on the Demographic and Health Survey, which is carried out in over 90 countries. It is therefore internationally comparable over time and between countries. As this dissertation attempts to understand the relationship between educational inequality and demographics of women in Turkey, researchers may be willing to apply the methods of this dissertation in other countries. In addition, our findings and policy implications also apply to a number of developing countries, particularly those at the beginning of educational expansion. Gender roles, factors of inequality, lack of mobility and divergent paths in transition to adulthood are also similar to those in many other developing countries.

Although this dissertation is based on rigorous empirical analysis and provides solid evidence, some limitations remain. All three articles in this dissertation are based on survey data collected using recall methods. Recall data is associated with recall bias induced by inaccurate memory of events by the respondent. However, since our sample includes respondents between the ages of 25 and 49, it is assumed that there is less recall bias.

The first essay builds on the cohorts of women over 25 who complete their school life largely theoretically. The article has some limitations in this context. First, in Turkey, especially among young cohorts, access to formal schooling through open educational platforms is more widespread. Therefore, improved opportunities in open

educational platforms could be a source of progress in both years of education and their distribution, both over the average years of education and in terms of their distribution. On the other hand, it is known that formal schooling is better for the quality of education and the acquisition of social skills. However, the DHS respondents did not state whether they received open training or not. This could lead to a bias in the educational benefit for women. Likewise, the same level of education in different countries does not mean the same level of quality. Therefore, measuring the level of education as completed years of education in this type of study can always be associated with certain risks. The second limitation concerns the death rates of women by age when the different age cohorts are compared in the same survey. This risk is acceptable, however, as the number of survivors per 100,000 live births according to the TURKSAT 2013 mortality table has fallen slightly from 98,158 at the age of 25 to 96,524 at the age of 49. The analysis imposed by the age limit of the DHS sample is also well suited to reduce the mortality bias.

This essay pays particular attention to comparing adult cohorts of women in order to examine the factors influencing their educational inequality, which have been less affected by recent educational reforms. In this context, educational attainment is measured in terms of completed schooling, which may not fully reflect academic, cognitive and social skills. Therefore, further research should shed more light on how educational inequality has changed in terms of quality and what circumstances and demographic changes, possibly through alternative surveys, are becoming more effective.

A possible limitation of the second essay may be related to the collection of educational and occupational information of the respondents in the women's questionnaire. Institutions such as OECD, EUROSTAT and TURKSAT calculate the NEET ratio with the help of Labor Force Surveys (LFS), which provide more detailed information about the educational level and employment status of the respondents than demographic and health surveys, which mainly collect data on population and health issues. Therefore, there may be slight differences in the NEET rates calculated by these institutions and this study, especially between the ages of 25-29 years. However, this limitation is not intended to reduce the reliability of the results. Moreover, IOP estimation may suffer from bias due to unobserved circumstances associated with those observed. However, additional variables do not lower the dissimilarity index, only increase it. Although the coefficients of the variables and their relative contribution to the IOP may vary due to the bias, this is not a major problem due to the

relatively large number of circumstance variables. Lastly, it would be better to include some neighborhood-level variables in the analysis to capture the community impact on NEET status. Unfortunately, this information is not available in TDHS-2013.

This paper draws on a number of key concepts at the interface between demography and economics, such as transition to adulthood, inactivity of young people, inequality of opportunity (IOP), circumstances, preferences and efforts, and NEETs aged 15-29 years. In addition to circumstances, several other variables play an important role in analyzing NEET status. Therefore, our model contains some variables that measure individual preferences, decisions and effort. These are educational attainment, educational and employment attitudes (EEA), migration status and marital status. As a preference variable, marital status is complicated. That said, we know that marital status increases the risk for young women of being NEET due to two possible mechanisms. The first mechanism relates to preference. That said, some young women may intentionally delay marriage because they have more time to get more education and find a job. The second mechanism relates to discrimination which may place a limitation on this article. That is, employers can discriminate against married women, which can be seen as a lack of opportunity. Therefore, NEET's IOP analysis can be performed separately for married and single women. Another important topic is NEET's cost-benefit analysis for young women. In this context, young women are deliberately not allowed to go to school after compulsory schooling or on the labor market due to possible poor quality of education and low wages compared to their opportunity costs. Hence, it would also be interesting to examine the mechanisms behind the preferences and efforts that lead young women to be NEETs if one wishes to control the circumstances.

There are also a few points to consider in the last essay. First, concerns about the quality of education, open education, and differences in mortality rates by age are valid discussions for this essay as for the first. Second, analyzing demographic educational mobility between mothers and daughters requires a prospective data set in which respondents remember both their own and their children's educational level. However, DHS is a retrospective dataset in which respondents remember the level of education of themselves and their parents. This is what conventional mobility studies use. However, due to childlessness and different mortality patterns, the information on the first generation (parents) in retrospective data sets may not represent the true population of that time, which could lead to a bias in the mobility values. The prospective use of the DHS dataset requires the imputation of educational information for the daughters (sec-

ond generation) who either have not finished school or do not live in the household. Therefore, there may be a bias due to the imputation.

This essay is only a first step to assess the contribution of recent educational reforms and demographic processes to educational mobility between mothers and daughters in Turkey. Further research could answer a few additional questions. First, it would be better to cover multiple TDHS streams to observe trends in the effects of transmission, assortative marriage, and differential fertility over time. Second, although not yet that high, the age at marriage and the age at the first birth are tending to rise in Turkey. Divorce rates are also increasing. Therefore, these demographic processes should also be included in the next studies in a more complex environment. Finally, with a prospective dataset covering the educational and skill levels of parents and children, it would be better to replicate the population renewal model.