

REGIONAL DIFFERENCES IN THE EFFECTS OF
TURKEY’S 1997 COMPULSORY SCHOOLING POLICY

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TURKEY'S 1997 COMPULSORY SCHOOLING POLICY

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DECLARATION OF ORIGINALITY

I, Alp Ocal, certify that

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ABSTRACT

Regional Differences in the Effects of Turkey's 1997 Compulsory Schooling Policy

In this thesis, we examined how the increased compulsory education from five to eight years, as a result of the 1997 Compulsory Schooling Reform, affected educational outcomes of women and men and rural and urban residents across five regions of Turkey, whether it contributed to the narrowing of the existing gender gap and urban/rural gap and how specific regional characteristics affected the implementation of the reform. We used regression discontinuity design to find the causal impact of the reform on educational outcomes of women and men and rural and urban residents. We utilized Turkish Household Labor Force Surveys dataset in our analyses. We observed the narrowing of the gender gap and the urban/rural gap in middle school completion in all regions except Region 5 (Eastern Anatolia and Southeastern Anatolia) where strong traditional norms are prevalent. In addition, insufficient number of boarding schools and transportation problems especially in rural areas may contribute to the finding regarding Region 5. The gender gap in some regions and the urban/rural gap in all regions in high school completion further widened. Sheepskin effects, which are more important for men and urban residents in Turkey, may be the cause of this result. The policy decreased the gender gap in college completion in all regions except Region 5. Higher ability and motivation level of women treated by the policy might be a possible explanation for the narrowing of the gender gap in college completion.

ÖZET

Türkiye'nin 1997 Zorunlu Eğitim Politikasının Etkilerindeki Bölgesel Farklılıklar

Bu tezde, 1997 Zorunlu Eğitim Reformu sonucu beş yıldan sekiz yıla çıkarılan zorunlu eğitimin Türkiye'nin beş bölgesindeki kadınlar ve erkekler ile kırsal ve kent sakinlerinin eğitim durumlarını nasıl etkilediğini, var olan cinsiyet farkı ve kent/kırsal farkının azalmasına katkı sağlayıp sağlamadığını ve belirli bölgesel özelliklerin reformun uygulanmasını nasıl etkilediğini inceledik. Reformun kadınlar ve erkekler ile kırsal ve kent sakinlerinin eğitim durumları üzerindeki nedensel etkilerini bulmak için regression discontinuity tasarımını kullandık. Analizlerimizde, Türk Hanehalkı İşgücü Anketleri veri setinden yararlandık. Ortaokul bitirmede, cinsiyet farkı ile kent/kırsal farkının güçlü geleneksel normların yaygın olduğu 5. Bölge (Doğu Anadolu ve Güneydoğu Anadolu) dışındaki tüm bölgelerde azaldığını gözlemledik. Ayrıca, özellikle kırsal bölgelerdeki yeterli olmayan yatılı okul sayısı ve ulaşım problemleri 5. Bölge ile ilgili vardığımız sonuca katkıda bulunmuş olabilir. Lise bitirmede, cinsiyet farkının bazı bölgelerde ve kent/kırsal farkının tüm bölgelerde arttığını gördük. Bunun nedeni, Türkiye'de diploma etkisinin erkekler ve kent sakinleri için daha önemli olması olabilir. Politika'nın üniversite bitirmede cinsiyet farkını 5. Bölge dışındaki tüm bölgelerde azalttığını gözlemledik. Politikadan etkilenen kadınların yüksek beceri ve motivasyon sahibi olmaları üniversite bitirmedeki cinsiyet farkının azalmasının muhtemel bir açıklaması olabilir.

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CHAPTER 1

INTRODUCTION

Inequalities in access to education by gender and place of residence are prevalent in many underdeveloped and developing countries. In addition, specific regional characteristics also contribute to the existence of those disparities. As women and rural residents face various obstacles in reaching education, they stay in a disadvantaged position also in social and working lives.

The common traditional and cultural norms and patriarchal society structure act as a barrier in accessing education and in participating labor market for women especially in conservative regions of Turkey. The conventional conservative thoughts inhibit parents from sending their daughters to school, especially those living in distant rural regions. This brings about an increase in psychic costs of schooling for girls from their parents' view. The negative effects of patriarchal structure come in sight also in the working life of women. Ilkkaracan (2012) argued that the thought of “the male-breadwinner/female-homemaker” family structure has an adverse impact on participation rates of women into the labor force in such a way that many women need consent of their husbands or fathers in order to be able to work. Moreover, because of the prevalent conventional thought that considers housework and childcare as women's prime duties, women feel obliged themselves to allocate their time between domestic responsibilities and joining in working life. Dayıoğlu and Kırdar (2010) state that the absence of affordable childcare is also an obstacle for the labor force participation of women. According to the Women's Labor and Employment Initiative Platform (KEIG) Report (2013), an increase in public childcare services and fair distribution of domestic responsibilities among men and

women may result in gender equality and an increase in the labor force participation of women.

Every year, the United Nations Development Programme (UNDP) calculates and reports some indices which demonstrate countries' development status in Human Development Report. These indices are Human Development Index (HDI), Multidimensional Poverty Index (MPI), Gender Development Index (GDI), Gender Inequality Index (GII), and Inequality-Adjusted Human Development Index (IHDI). The GII measures inequalities that women encounter, using information on education status, shares in parliament, health conditions and labor force participation rates. According to the Human Development Report (2019), GII rank of Turkey is 66 among 162 countries. Mean years of schooling is 6.9 years for women and 8.4 years for men. On the other hand, expected years of schooling are 15.9 and 16.9 years for women and men respectively. Therefore, our education levels are far from reaching the targeted levels. Moreover, the gender gap is also persistent in labor market outcomes as the labor force participation rates are 33.5% for women and 72.6% for men according to the 2019 Human Development Report. Therefore, the compulsory schooling reform, which adds three more years to the compulsory schooling from the beginning of the 1997-1998 school year, can be thought as an important step to close those gaps as social and traditional norms in conservative regions generate barriers in educational attainment especially for women in rural areas.

For our analyses, we divide Turkey into five regions based on their demographic and socioeconomic characteristics in accordance with the Turkish Household Labor Force Survey Dataset Structure. The details of the categorization are presented in Table 1, where Marmara and Aegean regions are considered as Region 1, Region 2 stands for Central Anatolia, Region 3 stands for Mediterranean,

Region 4 corresponds to Black Sea, and Eastern and Southeastern regions are called as Region 5. The aim of our study is to demonstrate regional variation of the effect of the 1997 Compulsory Schooling Reform on educational outcomes. We are investigating whether the compulsory schooling policy equalizes gender gap and urban/rural gap in all regions of Turkey, whether it could be implemented in the same manner across all regions and how specific characteristics of regions affect the implementation of the reform. For gender gap analyses, we use 2004-2018 Turkish Household Labor Force Survey (THLFS) which is nationally representative and conducted yearly by Turkish Statistical Institute. Since the urban/rural breakdown is available until 2013, we use 2004-2013 THLFS data for our urban/rural gap analyses.

Table 1. Regional Classification of Turkey

26 NUTS2 Regions	12 NUTS1 Regions	Geographical Regions
1) TR10 İstanbul	TR1 İstanbul	1) Marmara and Aegean
2) TR21 Edirne, Tekirdağ, Kırklareli	TR2 Western Marmara	
3) TR22 Balıkesir, Çanakkale		
4) TR31 İzmir	TR3 Aegean	
5) TR32 Denizli, Aydın, Muğla		
6) TR33 Manisa, Afyonkarahisar, Kütahya, Uşak		
7) TR41 Bursa, Eskişehir, Bilecik	TR4 Eastern Marmara	
8) TR42 Kocaeli, Sakarya, Düzce, Bolu, Yalova		
9) TR51 Ankara	TR5 Western Anatolia	2) Central Anatolia
10) TR52 Konya, Karaman	TR6 Mediterranean	3) Mediterranean
11) TR61 Antalya, Isparta, Burdur		
12) TR62 Adana, Mersin		
13) TR63 Hatay, Kahramanmaraş, Osmaniye	TR7 Middle Anatolia	2) Central Anatolia
14) TR71 Nevşehir, Aksaray, Niğde, Kırıkkale, Kırşehir		
15) TR72 Kayseri, Sivas, Yozgat	TR8 Western Black Sea	4) Black Sea
16) TR81 Zonguldak, Karabük, Bartın		
17) TR82 Kastamonu, Çankırı, Sinop		
18) TR83 Samsun, Tokat, Çorum, Amasya	TR9 Eastern Black Sea	
19) TR90 Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane	TRA Northeastern Anatolia	5) Eastern Anatolia and Southeastern Anatolia
20) TRA1 Erzurum, Erzincan, Bayburt		
21) TRA2 Kars, Ağrı, Iğdır, Ardahan	TRB Middle Eastern Anatolia	
22) TRB1 Malatya, Elazığ, Bingöl, Tunceli		
23) TRB2 Van, Muş, Bitlis, Hakkari	TRC Southeastern Anatolia	
24) TRC1 Gaziantep, Adıyaman, Kilis		
25) TRC2 Diyarbakır, Şanlıurfa		
26) TRC3 Siirt, Mardin, Batman, Şırnak		

Note: Turkish Household Labor Force Survey Dataset Structure is used.

The compulsory schooling reform is started to be implemented from the beginning of the 1997-1998 school year for the children who have not finished grade five yet at the end of the 1996-1997 school year. Therefore, the policy comprises people who are born in 1987 or afterwards and people born before 1987 could drop out after completing five years of primary schooling. By taking advantage of this discontinuity, we used regression discontinuity (RD) framework, where we compared individuals treated by the policy with individuals who are not treated, around the discontinuity, in order to find the causal effect of the policy on educational outcomes of women and men, and of rural and urban residents. The treatment assignment is made according to the year of birth of the individuals. We used sharp regression discontinuity in order to estimate reduced form policy effect and benefitted from two different approaches which are called the global approach and the global-to-local approach in our analyses. The logic of the RD design is based on the fact that individuals just above and just below the cutoff point must be comparable on average, with the exception of exposure to the policy and all predetermined characteristics must be continuous around the threshold. We made identification controls and found no violation of this assumption. Another important assumption for our identification strategy is that the policy must be independent of schooling outcomes. We see that this assumption holds since the implementation of the reform was related to political factors.

Even though the policy covers people born in or after 1987, a considerable amount of people, born in 1987, started school one year earlier and therefore stayed out of the policy. In addition, there is also a non-negligible number of individuals, born in 1986, that started school one year later and covered by the reform in this way. This situation results in fuzziness in the treatment status of the 1986 and 1987

birth cohorts in the neighborhood of the discontinuity. Inasmuch as fuzziness leads to the underestimation of the policy effect, we remove these two birth cohorts in some of our analyses.

The compulsory schooling policy has a significant positive impact on middle school completion rates of women and men, and of rural and urban residents, where the effects are much more stronger for women and rural residents compared to men and urban residents. Therefore, the policy narrows gender gap and urban/rural gap in middle school completion. The only exception is Region 5, where the gender gap and the urban/rural gap further widen in the short-run. The existence of conservative society structure, strong social and cultural norms, imperfect compliance and late implementation of the policy in rural areas may be the main reasons contributing to the emergence of such a result.

The policy is important also owing to its conspicuous spillover effects. Although grades beyond eight are not obligatory, we observe significant rise in completion of post-compulsory education. The policy increases high school completion of men and women and urban residents. We did not find such a strong evidence of a policy effect for the rural residents across all regions. The urban/rural gap in high school completion widens in all regions and we also observe an increase in the gender gap in some regions. A possible explanation for these findings may be that since agricultural work and self-employment are dominant in rural areas and labor force participation rates of women are remarkably low compared to that of men in Turkey, sheepskin effects are much more important for men and for urban residents.

For our gender gap analyses, we investigate also the policy effect on college graduation, and find suggestive evidence that the policy increases the college

graduation rates of women in almost all of the regions. The estimated coefficients for men are not statistically significant at conventional levels for most of the models. The policy narrows the gender gap in college completion in all regions except Region 5. As we know that even the middle school completion rates are so low for women without compulsory schooling reform, the stronger policy effect for women in college graduation might be on account of the higher ability and motivation level of women treated by the policy.

In Section 2, we present the literature review, followed by an explanation of the 1997 Compulsory Schooling Policy in Section 3. Data and descriptive statistics are presented in Section 4. Section 5 discusses the identification methodology and estimation. Results are shown in Section 6. Section 7 concludes.

CHAPTER 2

LITERATURE REVIEW

In spite of many policies, school attainment levels are still low in Turkey. The gender gap and urban/rural gap in education continue to be an issue and the situation is much worse especially in conservative regions.

In some earlier studies, the compulsory schooling policy is used as a source of exogenous variation in schooling to find the causal effect of schooling on post-educational outcomes like wage rates or labor force participation of women.

Güleşçi and Meyersson (2013) benefit from the 1997 reform to find the causal effect of education on women empowerment by using regression discontinuity framework as their identification method and their data comes from 2003 and 2008 Turkish Demographic and Health Surveys (TDHS). They find that the increase in educational attainment as a consequence of the policy corresponds to one additional year for women and they find significant effects of education on empowerment of women. However, they add that female labor force participation rates are still low despite the progress in schooling levels due to the strong socially conservative structure prevailing in Turkey. Aydemir and Kırdar (2017) investigate the effect of schooling on wage rates using the 1997 reform as the instrument to solve the endogeneity of schooling variable. They use fuzzy regression discontinuity design and their sample comes from the 2002-2013 THLFS data. They find that the effect is much stronger for females than males because of the fact that females treated by the policy are from a less marginal group compared to males. Dinçer, Kaushal and Grossman (2014) study the impact of schooling on empowerment and fertility of women and health condition of their children using the 1997 policy as the instrument

and conclude that an increase in years of schooling brings about a decline in the number of pregnancies and the number of children but there is no statistically significant evidence on a change in women's attitudes towards gender equality as a result of increased education. Kırdar, Dayıoğlu and Koç (2018) analyze the effect of compulsory schooling policy on marriage and childbearing of teenage women by using the 2008 and 2013 Turkish Demographic and Health Survey data. Their study is an example of a “reduced form” estimation where they investigate the effect of the policy on the outcome variable. By utilizing sharp regression discontinuity estimation, they conclude that increased education cause retardation of marriage and childbearing of teenage women. Another study that utilized the schooling reform as an instrument to reveal the causal impact of education on domestic violence pertain to Erten and Keskin (2018). They find that the policy increased education by one and a half years and the effects are much stronger for women living in rural areas. Moreover, increased education has a significant positive impact on labor force participation and income level of rural women. Their findings also show that the policy results in an increase in the psychological violence. According to them, the unexpected rise in income level of rural women as a consequence of the positive impact of increased schooling level by the policy on labor market outcomes might incent men towards utilizing psychological violence so as to be the decision authority in the household again.

Our study adds a regional dimension to the previous work of Kırdar, Dayıoğlu and Koç (2015) where they investigate the effect of the compulsory schooling reform on educational outcomes and try to show whether the policy is sufficient to equalize the gender gap and the urban/rural gap in school attainment levels. Their analyses serve as an example of a “first stage” estimation since they

study the effect of the policy directly on schooling outcomes. As their outcome variable is binary, they prefer using logistic regression in their analyses and their data comes from 2003 and 2008 TDHS. They state that the policy would be more beneficial for girls and rural residents as they are more disadvantaged compared to boys and urban residents in the context of Turkey and as the price elasticity of schooling demand is higher for girls and rural residents. In their study, they explain the reasons why there is a low education demand for girls and rural residents in Turkey. Firstly, sheepskin effects are much more important for boys due to their high labor force participation rates compared to girls in Turkey. Moreover, owing to the prevalence of patriarchal society structure and traditional and social norms, psychic costs of attending school are higher for girls from their parents' view. Discount rate of education is also higher for girls compared to boys. They add that prevalence of agricultural work in rural regions make sheepskin effects less important for rural residents. In addition, the opportunity cost of schooling as well as psychic costs are higher for rural areas. According to Kırđar (2009), monetary costs are also higher due to the limitations in school availability and difficulties in accessing education because of severe geographic conditions. For Kırđar et al. (2015), the higher discount rate and difficulties in the enforcement of the policy also contribute to lower education demand in rural areas. They report that the decrease in sheepskin effects due to the change in the diploma system as a result of the policy, make attending secondary education more attractive especially for men and urban residents and this may explain the reason of high spillover effects of the compulsory schooling reform. Their findings show that the compulsory schooling policy leads to an increase in middle school and high school completion rates for both men and women in urban and rural areas. The urban/rural gap in schooling outcomes has decreased for both

men and women aged 17. On the other hand, the gender gap in post-compulsory education has risen in urban regions. This is especially because of the strong sheepskin effects for men especially in urban areas. In addition to this, the rates of school completion before the policy are also higher for men in urban areas.

Fang, Eggleston, Rizzo, Rozelle and Zeckhauser (2012) use 1986 compulsory schooling reform in China to estimate the causal effect of schooling on earnings. On July 1, 1986 the first nine years of schooling become compulsory in China. However, provinces start to implement the law at different dates since not all of them are ready to use it at the time the law is passed. They used instrumental variable estimation since the schooling variable is endogenous and correlated with other unobserved factors that also affect earnings. They find that the policy increased schooling years more for women than men and more in rural areas than in urban areas. On the other hand, they find that returns to education are higher for men than for women.

As we mentioned before, in developing countries, regional and gender inequalities in schooling attainment are still prevalent. There are many studies that take into account gender disparities in education in developing and less developed countries. Mensch and Lloyd (1998) investigate gender imbalances in educational attainment of teenagers in Kenya. According to them, girls suffer from discrimination from their teachers who favor boys rather than girls and encourage boys more for future education instead of girls because of the traditional thoughts about gender roles. Grant and Behrman (2010) analyze gender gap in schooling in less developed countries for 1990-1996 and 2000-2006 periods. They consider 38 countries from six underdeveloped regions (Southeast Asia, South Asia, West Asia/North Africa, West/Central Africa, South/East Africa and Latin America). For them, even though there are existing gender inequalities in educational attainment

that favor boys, there is a progress in educational attainment for girls in developing countries as well. Moreover, in conservative regions where there are strong social norms and when the labor markets are also gender biased, women consider education as the only chance to earn respect in the society. They add that socioeconomic differences in schooling are more severe than gender differences. Qureshi (2012) deals with gender inequalities in education and returns to schooling in Pakistan and finds that mother's education has a positive impact on daughter's school enrollment and hence, conditional cash programs targeting mothers may contribute to the gender equality in educational attainment. Moreover, as women in the labor force are generally less educated compared to men and therefore have higher rate of returns than men, policies targeting the reduction in the gender gap at all schooling levels is crucial. Smits and Huisman (2013) investigate factors affecting educational attainment and gender discrepancies in schooling in six Arab countries (Tunisia, Algeria, Morocco, Yemen, Syria and Egypt). According to them, there is a progress in school attainment especially in four of these six countries recently. The only exceptions are Yemen and to some extent Morocco. However, the school dropout rates are still very high after age 11 and gender inequalities are more prevalent in rural areas. Conservative nature in societies and transportation and school infrastructure limitations are the main obstacles in reaching education for girls living in rural areas. They also find that unlike Western countries, household characteristics (like household income, parental education and sibling number) explain only a small fraction of the variation in educational attainment especially for younger girls in rural regions. Moreover, as Qureshi (2012), Smits and Huisman (2013) emphasize that policies targeting mothers are crucial in the sense that mothers play a key role in transferring traditional roles and in many cases, they attribute an inferior status to

their daughters in conservative regions. Rankin and Aytaç (2006) examine the gender gap in schooling in Turkey and the main reasons affecting this inequality. They find that factors affecting primary school attainment are not equal to the factors that affect post-primary education. Urbanization is an important factor that increase the likelihood of post-primary school attendance. Mother's education level is more important in primary school attendance, whereas in post-primary school attainment, education levels of both parents are important factors. According to them, a large family size, lack of help in childcare from other family members and being one of the elder children of the family have an adverse impact on post-primary school attendance for girls and contribute to the increase in the gender gap. They added also that patriarchal society structure and traditional gender role attitudes inhibit girls in attending post-primary education. Duman (2010) dwells on the factors that affect schooling decisions of girls in Turkey and puts emphasis on the inequality within females rather than gender inequality in education. By employing censored ordered probit estimation method, he concludes that mother's education level and household income have a positive impact on education level of girls. On the other hand, living in rural areas and family size adversely affect girls' schooling decisions. Moreover, girls who take care of their younger siblings are also negatively affected. Through regional analyses, he finds that living in Central Anatolia, Black Sea, Eastern Anatolia and Southeastern Anatolia regions have a negative impact on school participation of girls. The only exception is Mediterranean region which has a positive impact. For regional analyses, he considers the Marmara region as the reference group. Besides many studies regarding the gender inequality in schooling for developing countries, there are also some studies related to the developed countries. For example, Maljojoki (1983) investigates regional differences in

secondary school participation in Finland and finds that girls living in less-developed areas face with more difficulties in accessing education and attending working life.

Tansel (2002) investigates the factors affecting children's school attainment in Turkey by dividing these factors into three parts as individual, household and locational characteristics. She employs ordered probit models for primary, lower secondary and upper secondary school degrees and finds that an increase in education level of parents and in family income, industrialization and urbanization accompanied by progress in school infrastructure will bring about an increase in school participation and the effects will be stronger for girls rather than boys.

According to Gümüş and Chudgar (2016), the high fraction of discrepancies in educational attainment in Turkey are originated from inequality among men and women and considerable regional differences. They explain the determinants of school attendance through an analysis of regional inequalities. They use logistic regression model and their data comes from 2008 TDHS and five regions (the North, South, East, West and Central) are used in their research. They state that being female, being older child, having mother supporting traditional gender roles and incapable of speaking Turkish, deriving from poorer and larger families, living in the East and having uneducated parents negatively affect school attendance of children in Turkey. According to them, the reasons of low school enrollment are different across different regions. The relatively low levels of education in urban areas of the West and the South may be associated with migration from less developed places to the urban parts of these two regions. On the other hand, severe geographical conditions, lack of school infrastructure and prevalent agricultural work may contribute to low levels of schooling in rural areas of the North and the Central. Nonetheless, the lowest enrollment rates are observed in the East for both rural and

urban areas. As a consequence of their regional analysis, they state that being female decreases chances of attending school in all regions (especially in the East) except the North. According to them, as women have higher employment rates in agricultural sector, they feel themselves more independent compared to women in other regions and this may reinforce the school attendance of their daughters in the North. They add that strong social and traditional norms serve as barriers for the school participation of girls in the East, where the lowest participation rates are observed for the girls. Children whose mothers speak Turkish have a higher probability in school participation but the coefficients are statistically significant only for the South and the East as the number of mothers who cannot speak Turkish is negligible in the other three regions. They add that the impact of the household poverty is strongest in the North and lowest in the East. For them, as many people have low income in the East region, household poverty may not have a strong effect in that region. Moreover, owing to the severe geographical conditions and limitations in school infrastructure, school participation is more difficult especially in rural areas of the North. In addition to this, as the agricultural sector is based on manpower in that region, children from low income households may tend to work in the agricultural sector and drop out of school. Their findings show that the most disadvantaged children whose mothers support traditional gender roles are observed in the Central where having a mother accepting traditional gender roles decreases the chances of school participation by 58% in this region.

Gedik, Şahin and Suer (2002) stress the reasons for regional differences in Turkey by comparing economic and socio-demographic factors. They conduct their analyses first by comparing seven regions separately, then, by dividing Turkey into three parts: West, Center and East. The Western region consists of Marmara, Aegean

and Mediterranean; the Central part consists of Central Anatolia and Black Sea; and the Eastern Turkey covers Eastern and Southeastern Anatolia. Their third comparison is between two regions: the East (comprises Eastern and Southeastern Anatolia) and the West (comprises the other five geographical regions). They state that socio-demographic factors are the main reasons for regional disparity in Turkey (rather than economic factors) and find that, among socio-demographic factors, literacy rate of girls and average family size are the most essential variables in interpreting regional discrepancies. Total fertility rate and schooling rate of girls also have strong impacts. The coefficients of economic variables are not statistically significant in their analyses, however.

Besides gender disparities, regional differences in schooling outcomes are still prominent in a considerable number of developing countries. McNabb (2018) studies regional and gender discrepancies in primary school participation in Benin for the 2005-2006 school year using a logistic regression estimation and finds that family income, parental education and following Christianity have a positive impact on school attainment, and that regions where the government implements policies that aim to increase family income and decrease the cost of education experience progress in primary school participation. Chankseliani (2013) investigates the difficulties in attending university in rural areas in Georgia and stresses that students in urban areas have a better chance to access high quality universities and procure a larger fraction of government education grants than those in rural areas. Tomul (2007) makes a regional comparison in his study on the inequality in school participation in Turkey for 1990 and 2000. He states that the average years of schooling are low and that the gender gap in educational attainment is high in the Eastern and Southeastern regions. The opposite is true in the western parts and the

Mediterranean region. Gündüz-Hoşgör and Smits (2007) investigate how the impact of modernization differs across five regions (the West, East, North, South and Central) for women in rural Turkey. They compare the status of rural women in those regions and reveal differences between urban and rural women by making within-region comparisons. They find that rural women in the East are the most disadvantaged group, as their primary education completion rate is 15%. By contrast, this rate is 64% for rural women in the West. In addition, families have more children and less income in the East than in the West. However, women in rural areas are much more independent, as most of them work in the agricultural sector. According to the State Planning Organization (SPO) and World Bank Report (2009), because the leading sector for women's employment is the agricultural sector, urbanization leads to a decline in agricultural employment, and many women who are unpaid family workers in rural areas become discouraged workers in urban areas. Gündüz-Hoşgör and Smits (2007) add that the prevalence of patriarchal society, a high number of women adopting traditional gender roles, rarity of women with civil marriage and who can speak Turkish contribute to the underdevelopment in the East. They have also important findings about the North: Rural women's literacy rate is ahead of that in the South and Center. The lowest fraction of families with low income in rural areas is observed in the North. For urban areas, the North takes second place after the West in this regard. The state that out-migration of most of the men due to the geographical factors to work in non-agricultural sectors and the high rate of rural women working in the agricultural sector is a possible explanation of this result. In addition, women in the North feel more independent, as they engage in agricultural work and their husbands are away from home.

CHAPTER 3

1997 COMPULSORY SCHOOLING POLICY

On August 18, 1997, with the passing of the Basic Education Law No. 4306, the compulsory education increased from five to eight years in Turkey. The law combined five years of compulsory primary schooling and three years of non-compulsory lower secondary schooling under the eight years of mandatory primary education. The policy had significant importance since gender gap and urban/rural gap in education system were prevalent across all regions in Turkey and especially for females who run across various obstacles in reaching voluntary education due to the pervasive strong social norms especially in conservative regions.

The law was started to be implemented in 1997-1998 school year and students who have not finished grade five in 1996-1997 school year are affected by the policy. In other words, students who started first grade in 1993-1994 school year or afterwards are covered by the reform. Most of the children in Turkey start school in September of the year they turn 6 years old. Therefore, the policy covered children who were born in 1987 or afterwards. However, a non-negligible number of children in Turkey start school one year earlier or later, hence, children who are born in 1986 but started school one year later are affected by the reform and children who are born in 1987 but started school one year earlier are not bounded by the reform. This situation creates fuzziness in the treatment status of 1986 and 1987 birth cohorts just around the threshold. Therefore, in some of our analyses, we exclude these two birth cohorts to avoid fuzziness which results in the underestimation of the policy effect.

An important assumption in our identification strategy is that the timing of the 1997 Compulsory Schooling Policy must be independent of schooling outcomes.

This assumption holds since the enactment of the law is originated from political reasons. According to Erten and Keskin (2018), the debate, regarding the voluntary attendance to the religious schools for lower secondary schooling, between the secular government of that time and the Islamic movement, was the reason of the 1997 policy.

According to the Turkish Ministry of National Education (MONE) statistics, for 1996-1997 school year, net enrollment ratio was 89.4 percentage points for primary schooling and 52.8 percentage points for lower secondary schooling. The gender gap was evident since these ratios were much lower for females: Net enrollment ratios for primary schooling were 91.8 and 86.9 percentage points for males and females respectively. The gap was much wider in lower secondary schooling where the ratios were 60.6 percentage points for males and 44.6 percentage points for females. Sex ratio, which is calculated by dividing the gross schooling ratio of females to that of males, was 93.8 for primary schooling and 69.3 for lower secondary schooling. This ratio also indicates that the gender gap was much higher in lower secondary schooling (MONE, 2010).

The urban/rural gap was also prevalent as the enrollment ratios for males were 79.4 and 67.1 percentage points for urban and rural residents respectively. Females are much more negatively affected as these ratios were 64.5 percentage points for urban female residents and 38.3 percentage points for their rural counterparts according to the 1998 Demographic and Health Survey (Kırdar et al., 2015).

According to the Turkish Statistical Institute (TUIK) data, there were 9.1 million students enrolled in primary education in the beginning of the 1997-1998 school year. This number became 10.5 million in 2000-2001 school year. In addition

to the overall effect, the policy had significant spillover effects where net enrollment ratio for secondary education rose from 37.9 to 44 percentage points after the three-year implementation of the policy.

Moreover, spillover effects are stronger in urban areas where net high school enrollment ratio increased by 27 percentage points from 2000-2001 to 2003-2004 school year. The fact that obtaining a high school diploma brings about sheepskin effects, which are more important for men than women (due to low labor force participation rates of women in Turkey) and for urban than rural areas (because of the dominance of self-employment and agricultural sector in rural areas), explains the reason of the increased secondary education ratios in urban areas (Kirdar et al., 2015).

In order to protect schooling quality against increased number of students as a result of the compulsory schooling reform, the government implemented various policies. The number of teachers and classrooms increased, and for students, especially living in rural areas, bussing schemes are provided and boarding schools are constructed (Kirdar et al., 2015). The share of MONE in the total government investment budget was 14.7 percentage points in 1997. Its share became 37.3 percentage points in 1998. However, in 1999 the share became 29 percentage points and started to decline thereafter. Even though, we could observe modest increases in the share for some years, it never reached to its 1998 level. As of 2019, only 8.7 percentage points of the public budget investment belongs to MONE (MONE, 2019).

CHAPTER 4

DATA AND DESCRIPTIVE STATISTICS

4.1 Data

In our analyses, we use 2004-2018 Turkish Household Labor Force Survey (THLFS) which is nationally representative and conducted yearly by Turkish Statistical Institute. The THLFS provides a large sample size (5,556,659 observations) and detailed information on schooling attainment and employment outcomes for men and women at the year of birth level. However, the urban/rural breakdown is not available after 2013 and therefore, we use 2004-2013 THLFS for our analyses regarding urban/rural division.

The policy is implemented in 1997-1998 school year for the first time and affected children born in 1987 or afterwards. Hence, students who started to grade one in 1993-1994 school year or later are affected by the policy, whereas, students who finished grade five in 1996-1997 school year could drop out after finishing grade five. However, students who are born in 1986 but started school one year later are bounded by the policy and students who are born in 1987 but started school one year earlier are not covered by the reform. This situation creates fuzziness for these two birth cohorts and leads to the underestimation of the compulsory schooling policy effect on educational outcomes. Therefore, in some of our analyses we drop these two birth cohorts to prevent fuzziness.

To avoid censoring in educational outcomes, we set up our analyses on the assumption that middle school, high school and college graduation standings are stable after ages 17, 20 and 24 respectively. Therefore, in our gender analyses, in line with the age restriction, the widest bandwidth contains 1972-2001 birth cohorts for

middle school completion where we use 15 years before and after the threshold. The widest bandwidths for high school and college completion are 1975-1998 (12-year intervals on either side of the threshold) and 1979-1994 (8-year intervals on either side of the threshold) respectively. For middle school completion, we use narrower time intervals which are 1975-1998, 1978-1995, 1981-1992 and 1984-1989. Narrower time intervals used in the examination of the policy effect on high school completion are 1977-1996, 1979-1994, 1981-1992 and 1983-1990. For college completion, as individuals with age 24 or older are included in line with the age restriction, the narrower bandwidths used are 1980-1993, 1981-1992, 1982-1991 and 1983-1990.

To investigate urban/rural differences, the widest possible bandwidths used are 1977-1996 (10-year intervals on either side of the threshold) for middle school completion standing and 1980-1993 (7-year intervals on either side of the threshold) for high school completion standing. In order to examine the effect of policy on middle school completion, we use other three narrower time intervals which are 1979-1994, 1981-1992 and 1983-1990. For high school completion standing, the narrower bandwidths are 1981-1992, 1982-1991 and 1983-1990. However, for urban and rural residences analyses, since the data is available until 2013, we cannot conduct the effect of the policy on college completion. Owing to the age restriction, the birth cohorts affected by the reform are only 1987, 1988 and 1989 with 2004-2013 THLFS data.

4.2 Descriptive statistics

Table 2 indicates gender and location of residence shares across five regions of Turkey. We have 5,556,659 observations for gender comparison and 3,640,230 observations for urban/rural comparison because urban/rural distinction is available until 2013 in our data. In all regions approximately 52% of the population are females and 48% are males. Urban areas are much wider in Region 1 with 76% followed by Region 2 with 75.6% and Region 3 with 70.7%. In Region 4 and Region 5, urban and rural areas are more in equality. Because of the topography in Turkey, in Black Sea region and Eastern part of Turkey, rural areas are much wider compared to other regions.

Table 2. Share of Gender and Location of Residence Samples in Five Geographical Regions

	Gender Sample					Location of Residence Sample				
	Female		Male		Total Obs	Rural		Urban		Total Obs
	Share	Obs	Share	Obs		Share	Obs	Share	Obs	
Region 1	0.515	1,139,380	0.485	1,072,797	2,212,177	0.240	362,992	0.760	1,152,193	1,515,185
Region 2	0.521	485,704	0.479	446,989	932,693	0.244	144,599	0.756	449,224	593,823
Region 3	0.521	321,826	0.479	295,991	617,817	0.293	118,204	0.707	285,430	403,634
Region 4	0.524	378,964	0.476	344,934	723,898	0.446	207,311	0.554	257,178	464,489
Region 5	0.522	558,549	0.478	511,525	1,070,074	0.418	276,972	0.582	386,127	663,099
Total		2,884,423		2,672,236	5,556,659		1,110,078		2,530,152	3,640,230

Note: Gender sample is based on 2004-2018 THLFS data while location of residence sample is based on 2004-2013 THLFS data since urban/rural breakdown is not available after 2013.

In Table 3, further regional comparison for gender sample and urban and rural residences sample are demonstrated. In 2004-2018 THLS data we have 2,884,423 observations for females and 2,672,236 observations for males. 39.5% of females and 40.1% of males are living in Region 1. The lowest rates are observable in Region 3, where 11.2% of females and 11.1% of males are living. For urban and rural residences, we have 2,530,152 observations for urban residents and 1,110,078 observations for their rural counterparts. 45.5% of urban residents are located in

Region 1, which is followed by Region 2 with 17.8% and Region 5 with 15.3%. Region 1 comprises 32.7% of rural residents, Region 5 covers 25% and Region 4 includes 18.7%. The high rate of rural residents in Region 1 may be a consequence of internal migration from the eastern parts of Turkey to the western regions.

Table 3. Gender and Location of Residence Comparison Across Regions

	Gender Sample				Location of Residence Sample			
	Female		Male		Rural		Urban	
	Mean	Obs	Mean	Obs	Mean	Obs	Mean	Obs
Region 1	0.395	1,139,380	0.401	1,072,797	0.327	362,992	0.455	1,152,193
Region 2	0.168	485,704	0.167	446,989	0.130	144,599	0.178	449,224
Region 3	0.112	321,826	0.111	295,991	0.106	118,204	0.113	285,430
Region 4	0.131	378,964	0.129	344,934	0.187	207,311	0.102	257,178
Region 5	0.194	558,549	0.191	511,525	0.250	276,972	0.153	386,127
Total		2,884,423		2,672,236		1,110,078		2,530,152

Note: Gender sample is based on 2004-2018 THLFS data while location of residence sample is based on 2004-2013 THLFS data since urban/rural breakdown is not available after 2013.

Table 4 presents summary statistics for females and males in our THLFS sample for regions 1, 2 and 3 and Table 5 presents those statistics for regions 4 and 5. Females are older in all regions except Region 5. Higher marriage rates are observable for females in all regions. In Turkey, women generally tend to be married at earlier ages than men, which contributes to higher marriage rates for females, and is also in line with the basic findings of Aydemir, Kırdar and Torun (2019).

In all regions, we can see a gender gap in educational and employment outcomes. Highest employment rates are found in Region 4 for females with 38%. Women are more likely to be a part of agricultural employment in this region which may contribute to that employment rate. Nevertheless, employment rate is more than 60% for males in all regions, which is much higher than that of females. For educational outcomes, the lowest school attainment rates are observed in Region 5 for both males and females. 61% of females living in Region 5 have less than middle

school degree. This rate is 34% for males living in Region 5. 41% of females, living in Region 1, have less than middle school degree, 25% of them completed high school, 18% have middle school degree and 16% completed college. Only 7% of females, living in Region 5, have college degree. Their rates for grade eight and grade eleven completion are 17% and 15% respectively. On the other hand, 28% of males, living in Region 5 completed middle school, 26% completed high school and 12% of them have college degree. The reason why we observe the lowest rates in Region 5 for females may be a consequence of patriarchal society structure and strong cultural and social norms which are prevalent in conservative regions and adversely affect females more than males.

THLFS data includes information on highest completed schooling degree but not on highest completed schooling year. Therefore, for our analyses related to completed years of education, we refer to Turkish Demographic and Health Survey (TDHS) which is nationally representative and conducted by Hacettepe University's Institute of Population Studies. By using their data on highest completed schooling year, we calculate mean years of education for each of the highest completed degree of schooling in our THLFS data.

Females in Region 1 have on average 8.37 years of schooling. Women in Region 2 go to school for 8.51 years, in Region 3 for 7.76 years, in Region 4 for 8.12 years and for 5.56 years in Region 5. Mean years of schooling for males are 9.15 years, 9.45 years, 8.84 years, 9.24 years, and 8.15 years from Region 1 to Region 5 respectively. The reason why we observe relatively low rates for educational outcomes in Region 1 and Region 3 may arise as a consequence of high rate of internal migration to those regions.

Our observations about the existing gender gap in schooling outcomes across all regions are in line with previous studies like Gümüş and Chudgar (2016), Kırdar et al. (2015) and Tomul (2007).

Table 4. Summary Statistics of Women and Men for Regions 1, 2 and 3

	Region 1					Region 2					Region 3				
	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max	Obs.
1) Women															
Less than Middle School	0.41	0.49	0	1	480,266	0.38	0.48	0	1	209,124	0.45	0.50	0	1	141,215
Middle School	0.18	0.39	0	1	480,266	0.21	0.41	0	1	209,124	0.19	0.39	0	1	141,215
High School	0.25	0.43	0	1	480,266	0.25	0.44	0	1	209,124	0.24	0.42	0	1	141,215
College	0.16	0.36	0	1	480,266	0.16	0.36	0	1	209,124	0.12	0.33	0	1	141,215
Years of Schooling	8.37	4.01	0	15	480,266	8.51	3.9	0	15	209,124	7.76	4.13	0	15	141,215
Age	27.9	6.30	17	38	480,266	27.5	6.43	17	38	209,124	27.7	6.46	17	38	141,215
Employed	0.33	0.47	0	1	480,266	0.27	0.44	0	1	209,124	0.29	0.45	0	1	141,215
Ever married	0.67	0.47	0	1	480,266	0.68	0.47	0	1	209,124	0.66	0.47	0	1	141,215
2) Men															
Less than Middle School	0.28	0.45	0	1	458,498	0.23	0.42	0	1	193,494	0.29	0.45	0	1	126,060
Middle School	0.24	0.43	0	1	458,498	0.27	0.44	0	1	193,494	0.27	0.44	0	1	126,060
High School	0.32	0.47	0	1	458,498	0.33	0.47	0	1	193,494	0.30	0.46	0	1	126,060
College	0.16	0.37	0	1	458,498	0.18	0.38	0	1	193,494	0.14	0.35	0	1	126,060
Years of Schooling	9.15	3.59	0	15	458,498	9.45	3.52	0	15	193,494	8.84	3.67	0	15	126,060
Age	27.8	6.35	17	38	458,498	27.5	6.45	17	38	193,494	27.4	6.56	17	38	126,060
Employed	0.76	0.43	0	1	458,498	0.74	0.44	0	1	193,494	0.71	0.45	0	1	126,060
Ever married	0.51	0.50	0	1	458,498	0.54	0.50	0	1	193,494	0.50	0.50	0	1	126,060

Note: Data comes from 2004-2018 HLFS and the sample is restricted to individuals with ages 17-38.

Table 5. Summary Statistics of Women and Men for Regions 4 and 5

	Region 4					Region 5				
	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max	Obs.
1) Women										
Less than Middle School	0.42	0.49	0	1	143,658	0.61	0.49	0	1	289,890
Middle School	0.21	0.41	0	1	143,658	0.17	0.38	0	1	289,890
High School	0.24	0.43	0	1	143,658	0.15	0.35	0	1	289,890
College	0.12	0.33	0	1	143,658	0.07	0.26	0	1	289,890
Years of Schooling	8.12	3.81	0	15	143,658	5.56	4.97	0	15	289,890
Age	27.49	6.45	17	38	143,658	26.41	6.42	17	38	289,890
Employed	0.38	0.49	0	1	143,658	0.19	0.39	0	1	289,890
Ever married	0.65	0.48	0	1	143,658	0.60	0.49	0	1	289,890
2) Men										
Less than Middle School	0.25	0.43	0	1	130,232	0.34	0.47	0	1	253,759
Middle School	0.26	0.44	0	1	130,232	0.28	0.45	0	1	253,759
High School	0.34	0.47	0	1	130,232	0.26	0.44	0	1	253,759
College	0.15	0.36	0	1	130,232	0.12	0.32	0	1	253,759
Years of Schooling	9.24	3.50	0	15	130,232	8.15	3.89	0	15	253,759
Age	27.48	6.51	17	38	130,232	26.56	6.5	17	38	253,759
Employed	0.71	0.45	0	1	130,232	0.63	0.48	0	1	253,759
Ever married	0.51	0.50	0	1	130,232	0.49	0.50	0	1	253,759

Note: Data comes from 2004-2018 HLFS and the sample is restricted to individuals with ages 17-38.

Summary statistics about urban and rural residences in our THLFS sample are shown in Table 6 for regions 1, 2 and 3 and in Table 7 for regions 4 and 5. Employment rates are higher in rural areas where agricultural work and self-employment are prevalent. Especially in Region 4, where rural areas constitute almost the half of the region, 62% of residents living in rural areas are employed. Because of the high population rates in urban areas which are also triggered by high rate of migration, we observe lower employment rates for urban residents. According to the SPO and World Bank Report (2009), due to the fact that the leading sector for women employment is the agricultural sector, urbanization leads to a decline in agricultural employment and many women who are unpaid family workers in rural areas become discouraged workers in urban areas.

There is an urban/rural gap in schooling outcomes for all regions in Turkey. 67% of residents, living in rural areas in Region 5, have less than middle school attainment. This rate is approximately 50% for other regions. 36% of urban residents, living in Region 1, have less than middle school degree. On the other hand, this rate is 48% for urban residents living in Region 5. Rural residents in Region 1 have on average 7.34 years of schooling compared to their urban counterparts who have 8.66 years. In Region 5, mean years of schooling is 5.15 years for rural residents and 7 years for urban residents. The low education rates in rural areas may be caused by strong traditional norms which have an adverse impact especially on females. In conservative regions, implementation of the policy is more difficult and it takes time for people to comply with the reform. Late implementation due to the limitations in transportation and school infrastructure also contributes to low levels of education in rural areas. Moreover, since psychic and monetary costs are higher in rural areas, and cost of non-compliance to the policy is lower due to difficulties in enforcement of the

policy, educational attainment could be lower in rural areas, as argued by Kırđar et al. (2015). According to Gümüş and Chudgar (2016), low parental education and poverty in household negatively affect school attainment of children in rural areas.

We observe that, among rural residents, the second highest mean years of schooling pertains to those who are living in Region 4. In Turkey, because of the patriarchal society structure, especially in conservative regions, the prevalent thought is that women should stay at home, look after their kids and deal with domestic responsibilities. Furthermore, Gümüş and Chudgar (2016) argued that, there is a strong relationship between mother's attitude toward her son and daughter on their responsibilities and school attainment of children. According to them, since women, living in rural areas of Black Sea region, generally work in agricultural sector, are more independent compared to women living in rural areas of other regions, and, this higher independence may contribute to change mothers' gender role attitude towards their daughters and may alleviate social barriers preventing females from attending school.

Table 6. Summary Statistics of Rural and Urban Residents for Regions 1, 2 and 3

	Region 1					Region 2					Region 3				
	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max	Obs.
1) Rural															
Less than Middle School	0.51	0.50	0	1	133,366	0.50	0.50	0	1	54,676	0.55	0.50	0	1	48,194
Middle School	0.22	0.41	0	1	133,366	0.26	0.44	0	1	54,676	0.20	0.40	0	1	48,194
High School	0.20	0.40	0	1	133,366	0.19	0.39	0	1	54,676	0.19	0.39	0	1	48,194
College	0.07	0.25	0	1	133,366	0.05	0.22	0	1	54,676	0.05	0.23	0	1	48,194
Years of Schooling	7.34	3.35	0	15	133,366	7.10	3.32	0	15	54,676	6.95	3.41	0	15	48,194
Age	27.6	6.41	17	38	133,366	27.1	6.58	17	38	54,676	27.6	6.52	17	38	48,194
Employed	0.57	0.49	0	1	133,366	0.52	0.50	0	1	54,676	0.53	0.50	0	1	48,194
Ever married	0.63	0.48	0	1	133,366	0.65	0.48	0	1	54,676	0.60	0.49	0	1	48,194
2) Urban															
Less than Middle School	0.36	0.48	0	1	537,417	0.32	0.46	0	1	211,313	0.39	0.49	0	1	135,493
Middle School	0.19	0.39	0	1	537,417	0.20	0.40	0	1	211,313	0.20	0.40	0	1	135,493
High School	0.30	0.46	0	1	537,417	0.32	0.47	0	1	211,313	0.29	0.45	0	1	135,493
College	0.15	0.35	0	1	537,417	0.17	0.37	0	1	211,313	0.13	0.33	0	1	135,493
Years of Schooling	8.66	3.82	0	15	537,417	9.04	3.73	0	15	211,313	8.21	4.01	0	15	135,493
Age	27.7	6.24	17	38	537,417	27.5	6.35	17	38	211,313	27.40	6.41	17	38	135,493
Employed	0.51	0.50	0	1	537,417	0.46	0.50	0	1	211,313	0.45	0.50	0	1	135,493
Ever married	0.60	0.49	0	1	537,417	0.62	0.49	0	1	211,313	0.59	0.49	0	1	135,493

Note: Data comes from 2004-2013 HLFS since urban/rural breakdown is not available after 2013. The sample is restricted to individuals with ages 17-38.

Table 7. Summary Statistics of Rural and Urban Residents for Regions 4 and 5

	Region 4					Region 5				
	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max	Obs.
1) Rural										
Less than Middle School	0.49	0.50	0	1	74,801	0.67	0.47	0	1	137,158
Middle School	0.23	0.42	0	1	74,801	0.18	0.38	0	1	137,158
High School	0.22	0.41	0	1	74,801	0.12	0.33	0	1	137,158
College	0.06	0.24	0	1	74,801	0.03	0.18	0	1	137,158
Years of Schooling	7.33	3.46	0	15	74,801	5.15	3.96	0	15	137,158
Age	27.14	6.48	17	38	74,801	26.23	6.46	17	38	137,158
Employed	0.62	0.48	0	1	74,801	0.42	0.49	0	1	137,158
Ever married	0.59	0.49	0	1	74,801	0.56	0.50	0	1	137,158
2) Urban										
Less than Middle School	0.32	0.47	0	1	114,108	0.48	0.50	0	1	212,185
Middle School	0.19	0.40	0	1	114,108	0.19	0.39	0	1	212,185
High School	0.34	0.47	0	1	114,108	0.25	0.43	0	1	212,185
College	0.15	0.35	0	1	114,108	0.09	0.29	0	1	212,185
Years of Schooling	8.98	3.63	0	15	114,108	7.00	4.42	0	15	212,185
Age	27.52	6.38	17	38	114,108	26.56	6.34	17	38	212,185
Employed	0.47	0.50	0	1	114,108	0.35	0.48	0	1	212,185
Ever married	0.60	0.49	0	1	114,108	0.57	0.50	0	1	212,185

Note: Data comes from 2004-2013 HLFS since urban/rural breakdown is not available after 2013. The sample is restricted to individuals with ages 17-38.

Figure 1 and Figure 2 demonstrate the effect of the 1997 Compulsory Schooling Reform on middle school completion of men and women for five regions separately using 2004-2018 THLFS data. Figure 2 comprises a donut-hole where we drop 1986 and 1987 birth cohorts that cause the underestimation of the policy effect. For our middle school completion analyses we assume that middle school completion standing is unchanged after age 17. We take the same number of birth cohorts before and after the threshold. In accordance with the age restriction, we take 1972-1986 (15 years) birth cohorts for the left of the threshold and 1987-2001 (15 years) birth cohorts for the right of the threshold. In all figures we show the policy effect for females on the left-hand side and policy effect for males on the right-hand side. The vertical line in the middle of the graphs stands for the first-time implementation of the 1997 Compulsory Schooling Policy.

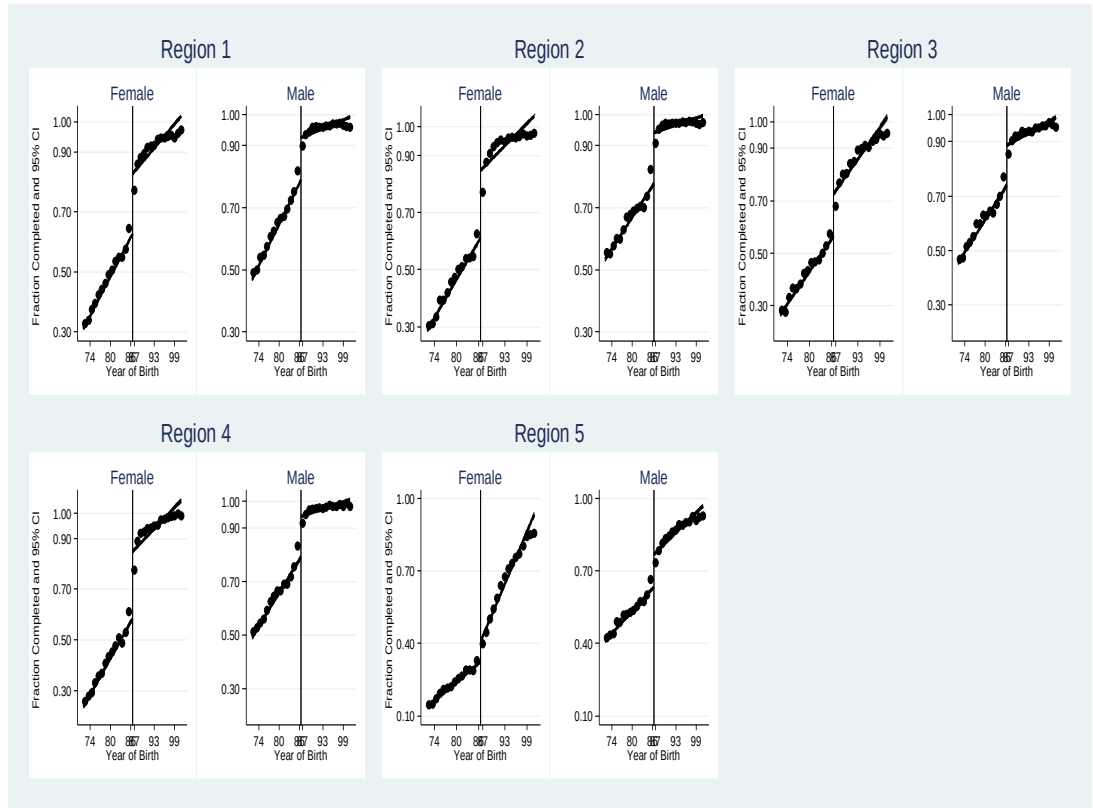


Figure 1. Policy effect on middle school completion for women and men, without donut-hole

In Figure 1, we can observe that there is a significant jump at the threshold for eighth grade completion for all regions. In addition, we can see fuzziness as eighth grade completion is above the fitted line for the 1986 birth cohort on the left of the discontinuity and below the fitted line for the 1987 birth cohort on the right of the discontinuity. The change in the slope after the discontinuity for females in Region 5 is visible and this steeper slope indicates the difficulty in the implementation of the reform and obstacles that females encounter in reaching school participation in conservative regions.

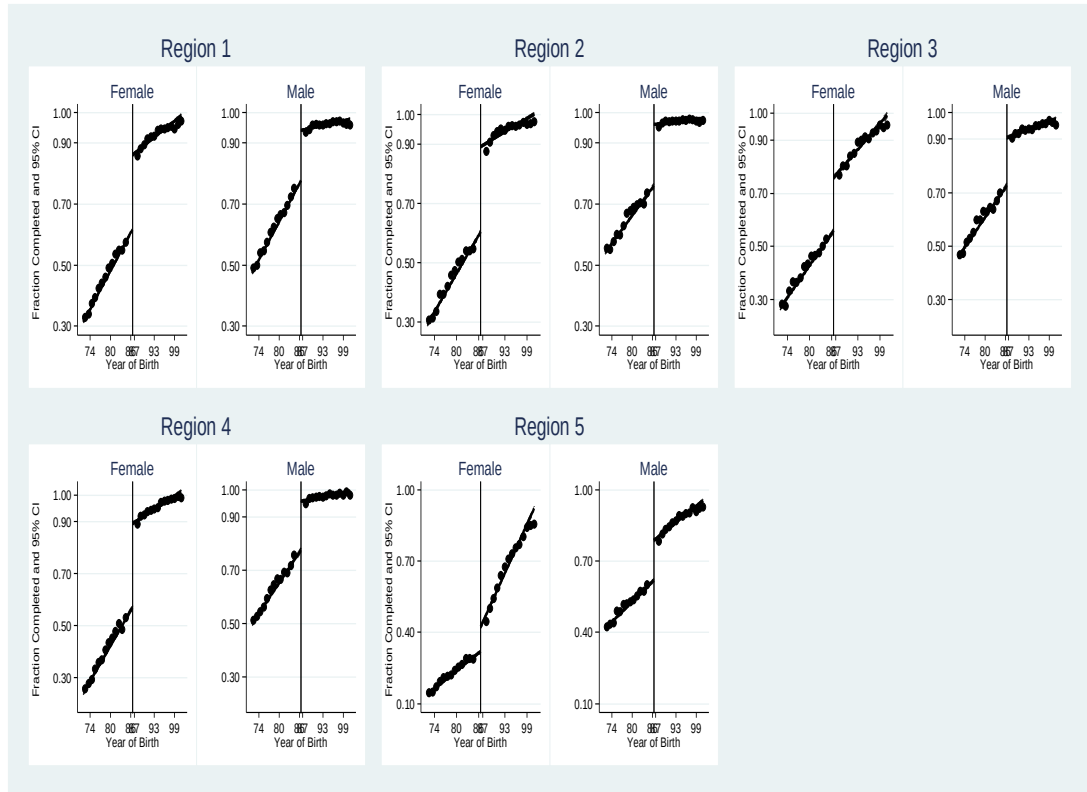


Figure 2. Policy effect on middle school completion for women and men, with donut-hole

In Figure 2, we show same results with excluding two birth cohorts because of the fuzziness. In all regions we observe a significant jump at the threshold. The increase in eight grade completion is almost 30 percentage points for females in Region 1, Region 2 and Region 4. Also, in Region 3 there is an approximately 20 percentage points rise for females. The pre-policy grade completion rates are much more lower for both males and females in Region 5. We can also see that in conservative regions it takes time for people to comply with the policy as the increase is slower for females in Region 5 compared to other four regions.

In Figure 3 and Figure 4 we investigate the policy effect on eleventh grade completion for women and men for five regions separately. We assume that high school completion standing is stable after age 20. We take the same number of birth cohorts before and after the threshold. In accordance with the age restriction, we take 1975-1986 (12 years) birth cohorts for the left of the threshold and 1987-1998 (12 years) birth cohorts for the right of the threshold.

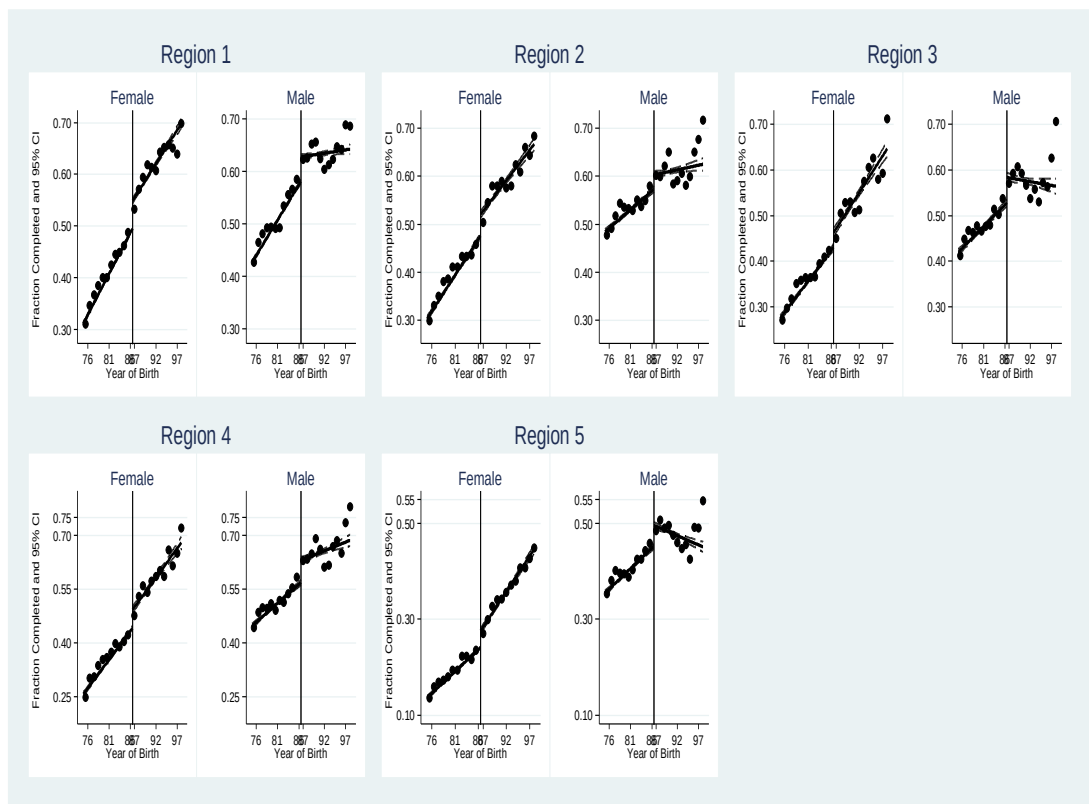


Figure 3. Policy effect on high school completion for women and men, without donut-hole

Even though the policy made only grade six, seven and eight mandatory, in addition to first five years of primary school, we observe an increase also in high school completion. Therefore, the policy has spillover effects on post-compulsory education for males and females that can be seen in Figure 3. These effects are more evident when we exclude 1986 and 1987 birth cohorts in Figure 4.

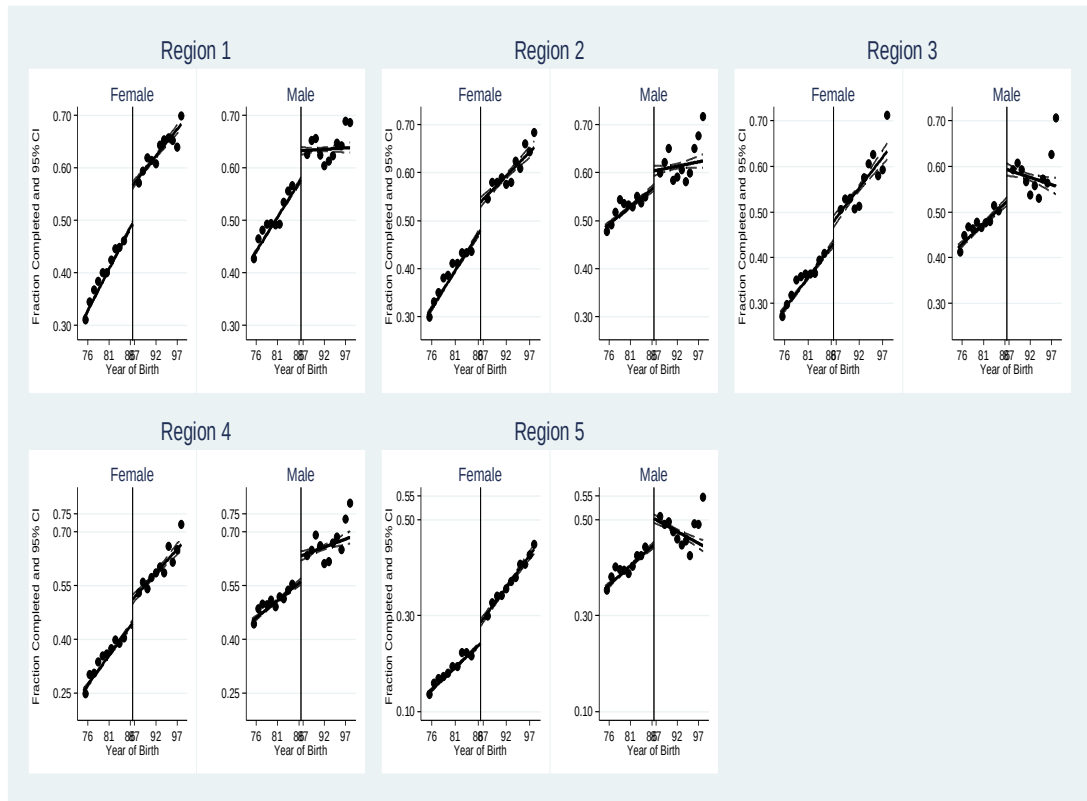


Figure 4. Policy effect on high school completion for women and men, with donut-hole

Figure 4 shows that compulsory schooling policy cause an increase in high school completion rate by around 5 percentage points for females in all regions. The policy has the same positive impact also on males. We observe a decline in high school completion especially for birth cohorts 1992 to 1995. This is mainly due to the fact that males who were in military service at the survey year and university students living in dormitories are missing from the THLFS sample. Also, in 2005-

2006 education year, high schools switched to the four-year education system by adding a twelfth grade and students who are born in 1991 or afterwards are affected from this new law. This change may also cause this decrease in high school completion for those birth cohorts.

Figure 5 and Figure 6 indicate the effect of the compulsory schooling policy on college completion for females and males for five regions separately. We assume that college graduation status does not change after age 24. In accordance with the age restriction, we take 1979-1986 (8 years) birth cohorts before the threshold and 1987-1994 (8 years) birth cohorts after the threshold. We remove 1986 and 1987 birth cohorts in Figure 6 to prevent downward bias.

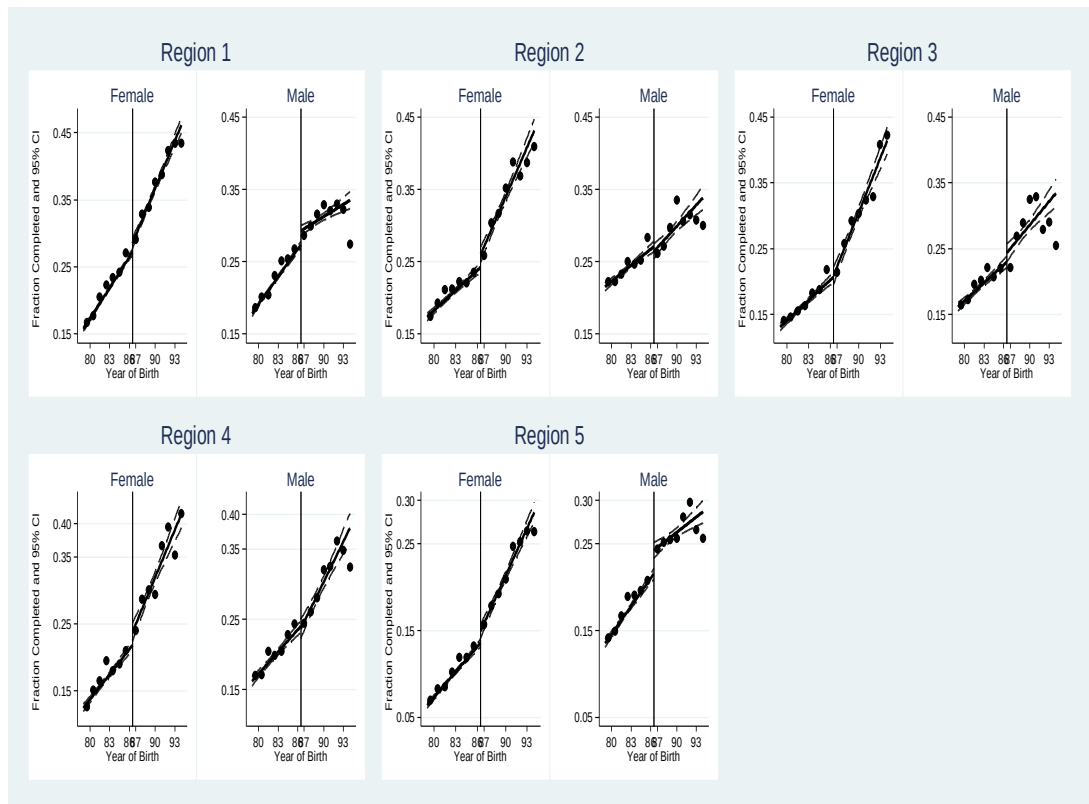


Figure 5. Policy effect on college completion for women and men, without donut-hole

In Figure 5, we observe that the policy has a positive impact on college graduation both for females and males. However, we don't see a significant jump at the cutoff for males living in Region 2 and Region 4. The jumps at the threshold for females and males living in regions 1, 3 and 5 are more apparent when we drop 1986 and 1987 birth cohorts from our sample.

Figure 6 shows the same results of Figure 5 by excluding 1986 and 1987 birth cohorts. The jumps at the threshold are more obvious with donut-hole. However, for males living in Region 4, we cannot observe an effect of the policy on college completion even with donut-hole.

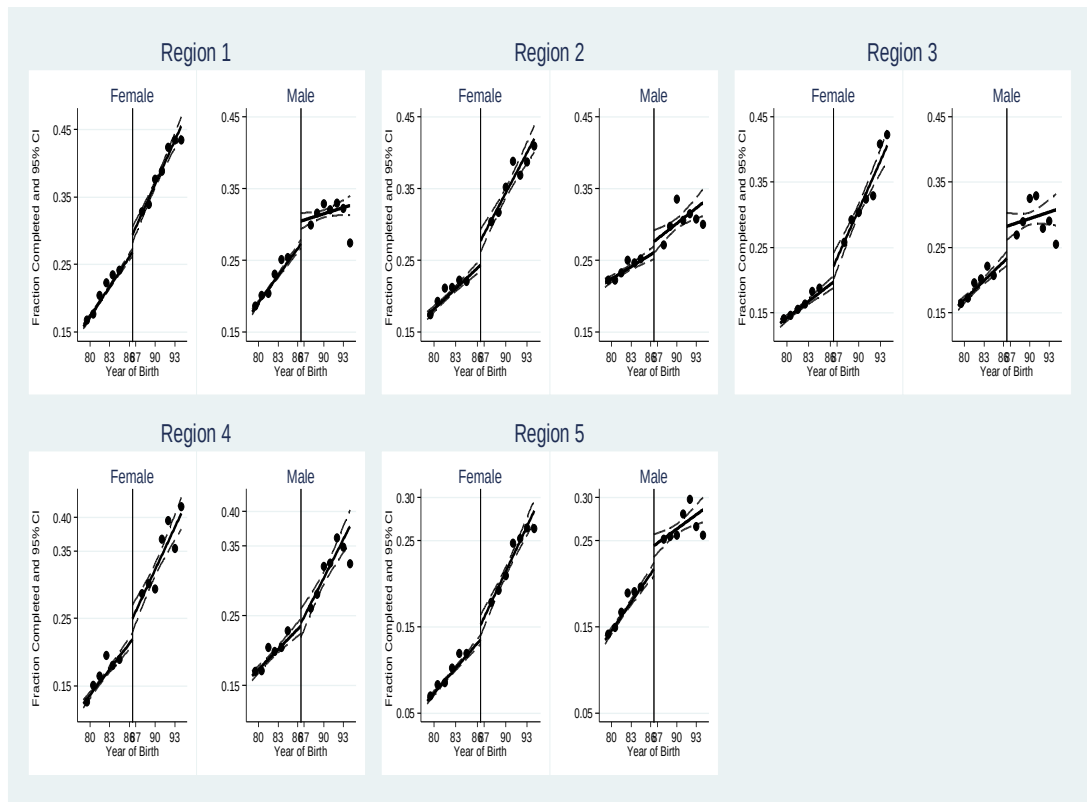


Figure 6. Policy effect on college completion for women and men, with donut-hole

Figure 7 and Figure 8 present the effect of compulsory schooling policy on completed years of schooling. To analyze this effect, we take individuals with age 24 and older. In Figure 8, we use a donut-hole approach.

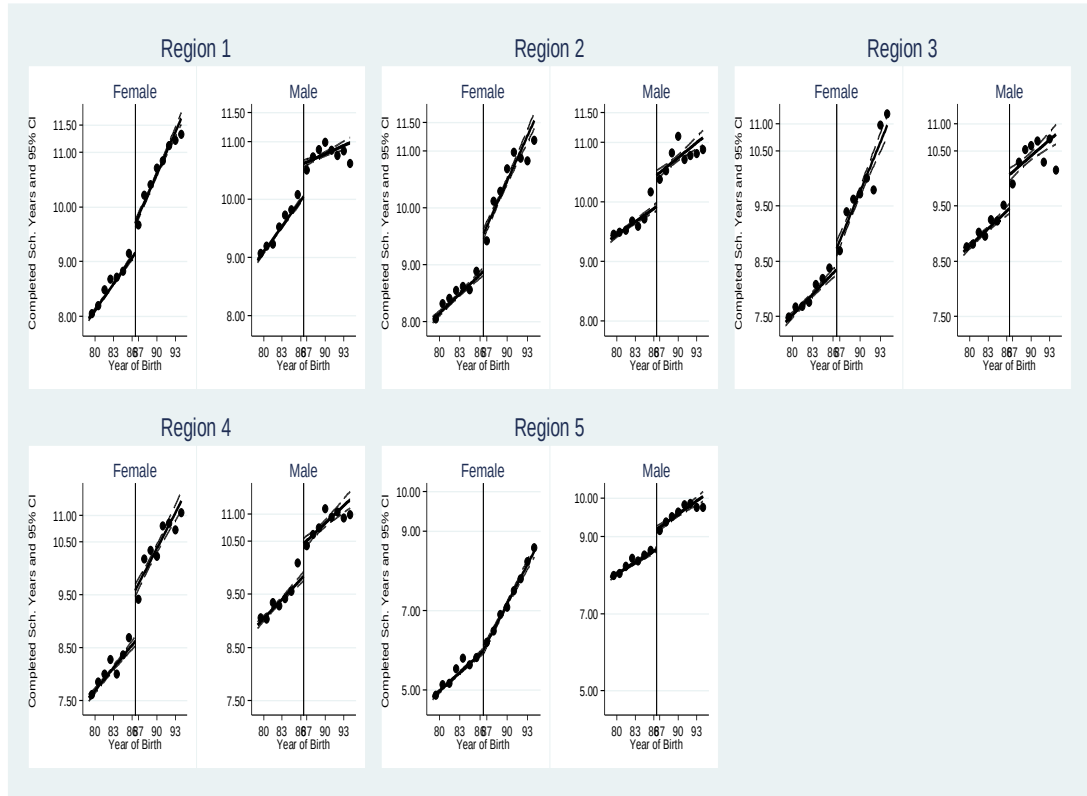


Figure 7. Policy effect on completed schooling years for women and men, without donut-hole

In Figure 7, we see a noticeable jump at the threshold for males and females with the exception of females living in Region 5. The steeper slope after the introduction of the reform in Region 5, shows the various obstacles that females face in conservative areas due to strong traditional and cultural norms.

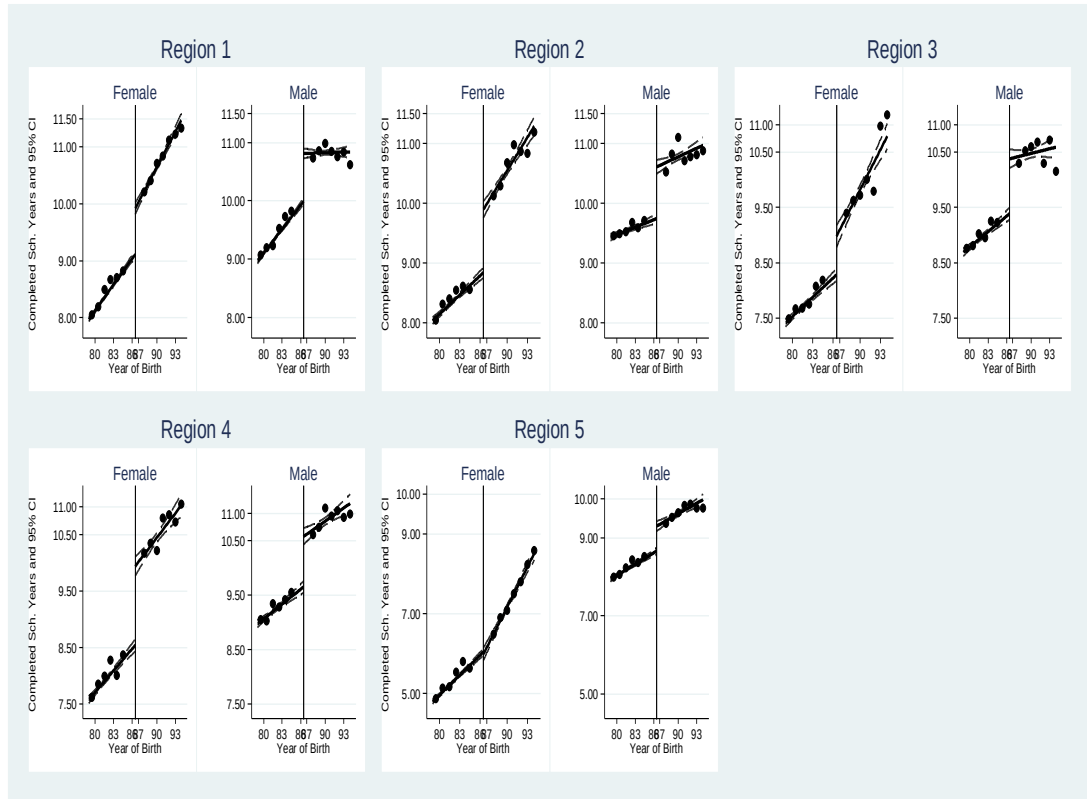


Figure 8. Policy effect on completed schooling years for women and men, with donut-hole

Figure 8 demonstrates policy effect on completed schooling years by excluding 1986 and 1987 birth cohorts. The policy leads to an increase in completed years of schooling for males in all regions and for females in four regions. The only region where an effect is not observed for females is Region 5. The jump is almost one year for females and males in Region 1 and Region 2. The jump exceeds one year in Region 4 for males and is approximately one and a half years for females in that region.

In Figures 9, 10, 11 and 12, we observe the effect of compulsory schooling policy on schooling outcomes for urban and rural residents for five regions separately using 2004-2013 THLFS data since the urban/rural distinction is not available after 2013. We investigate the effect of the policy on eighth and eleventh grades completion but not on college completion because, in line with the age

restriction, the remaining birth cohorts affected by the policy are 1987, 1988 and 1989 for college completion analyses. Because of the data restrictions, we observe the policy effect on middle school and high school completion for rural and urban residents.

In Figure 9 and Figure 10, we observe the policy effect on middle school completion. We take individuals with age 17 or higher. In line with the age restriction, we take 1977-1986 (10 years) birth cohorts for the left of the threshold and 1987-1996 (10 years) birth cohorts for the right of the threshold.

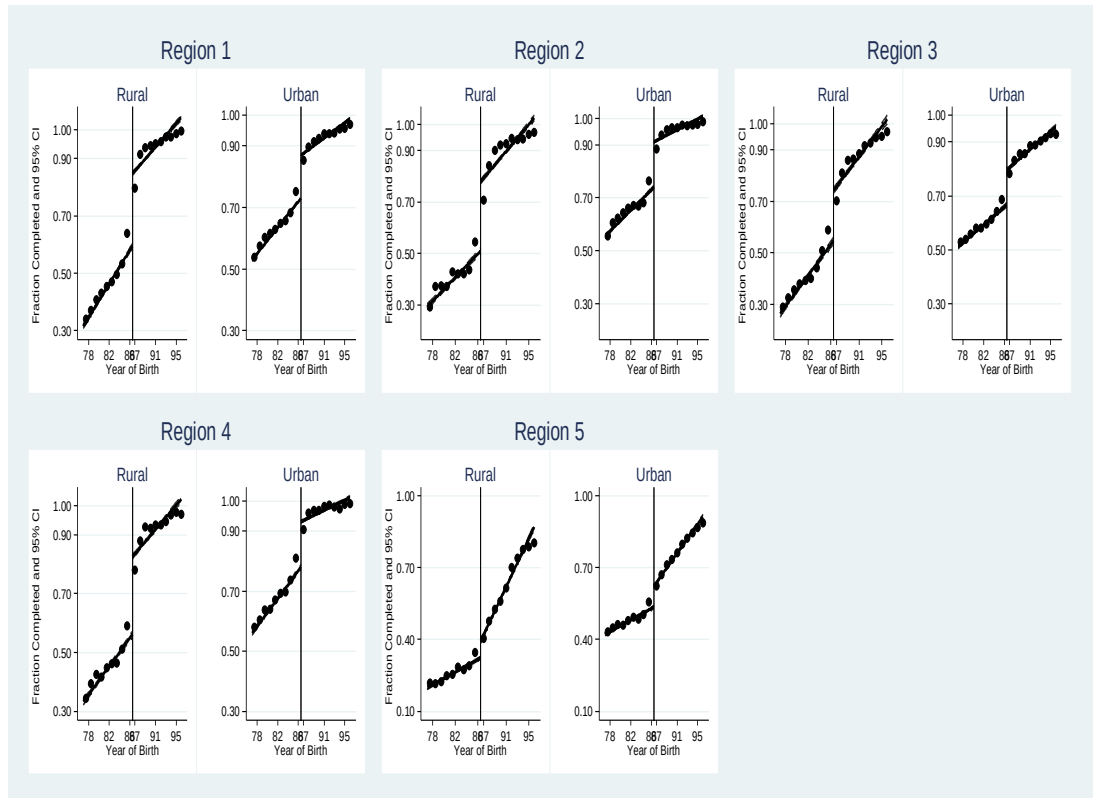


Figure 9. Policy effect on middle school completion for rural and urban residents, without donut-hole

In Figure 9, we can see that the compulsory schooling policy has a positive impact for both urban and rural residents in all regions. However, the slope becomes much more steeper after the implementation of the policy for rural residents in

Region 5. This displays the difficulties in the implementation of the policy in rural areas. Also, lack of boarding schools and transportation problems for students living in distant locations in rural areas may contribute to the late implementation of the policy as explained by Kırdar et al. (2015).

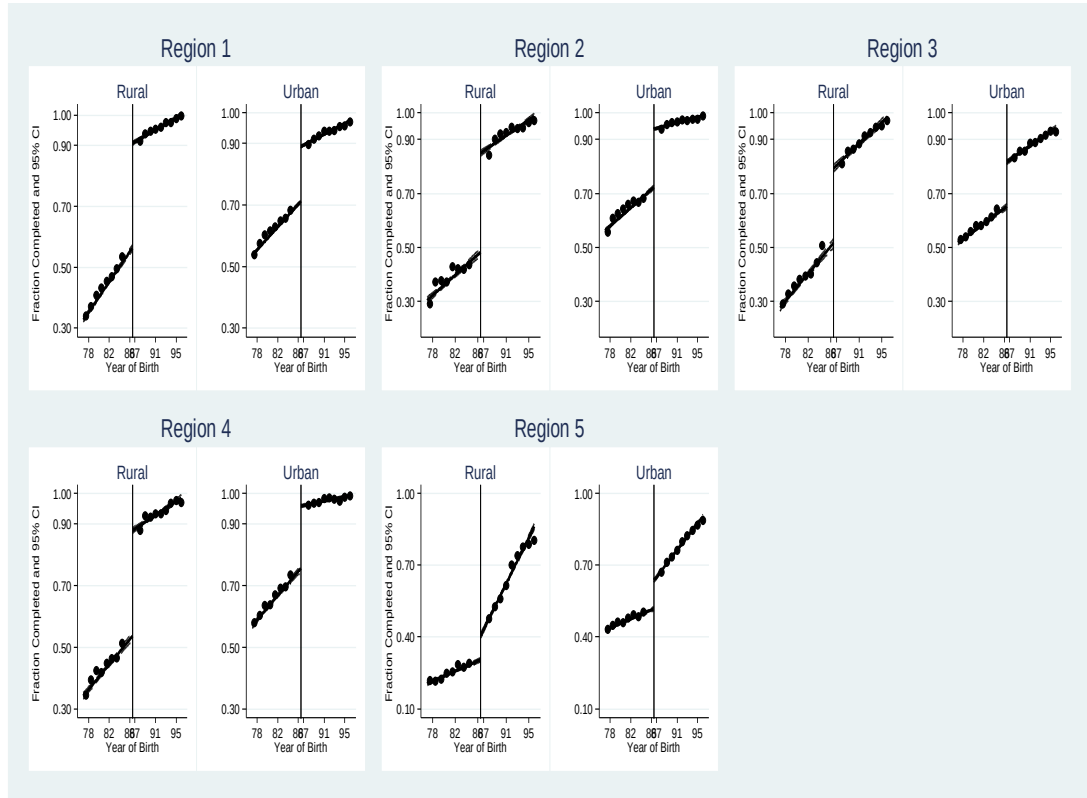


Figure 10. Policy effect on middle school completion for rural and urban residents, with donut-hole

Figure 10 shows the policy effect on middle school completion for rural and urban residents by excluding 1986 and 1987 birth cohorts from the sample (donut-hole). The rise in the eighth grade completion rate is almost 40 percentage points for rural residents in Region 1, Region 2 and Region 4, and 30 percentage points for rural residents living in Region 3. For urban residents the increase is approximately 20 percentage points in these four regions. The lowest increase is observed in Region 5 for both urban and rural residents.

In Figure 11 and Figure 12, we investigate the effect of the policy on high school completion for rural and urban residents. We take individuals with age 20 or higher. In line with the age restriction, we take 1980-1986 (7 years) birth cohorts for the left of the threshold and 1987-1993 (7 years) birth cohorts for the right of the threshold.

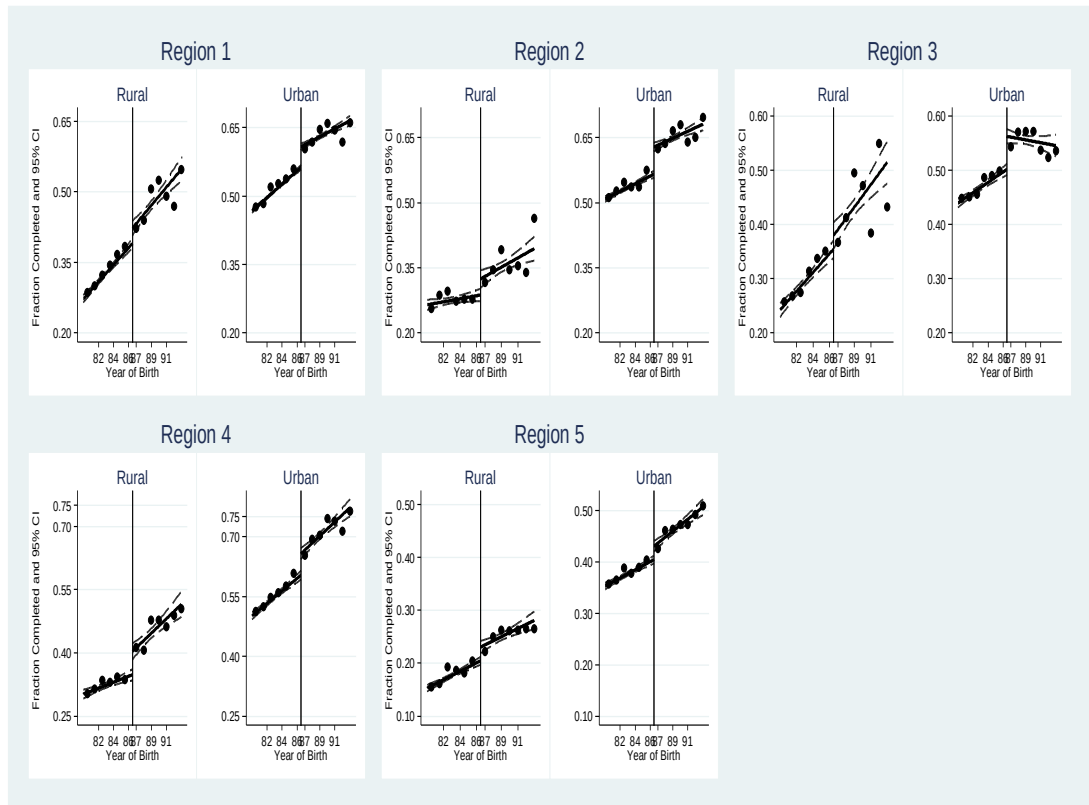


Figure 11. Policy effect on high school completion for rural and urban residents, without donut-hole

Figure 11 shows that the policy has spillover effects on post-compulsory education for urban and rural residents. Even though the effects are marginal without excluding 1986 and 1987 birth cohorts, they are more visible with donut-hole approach.

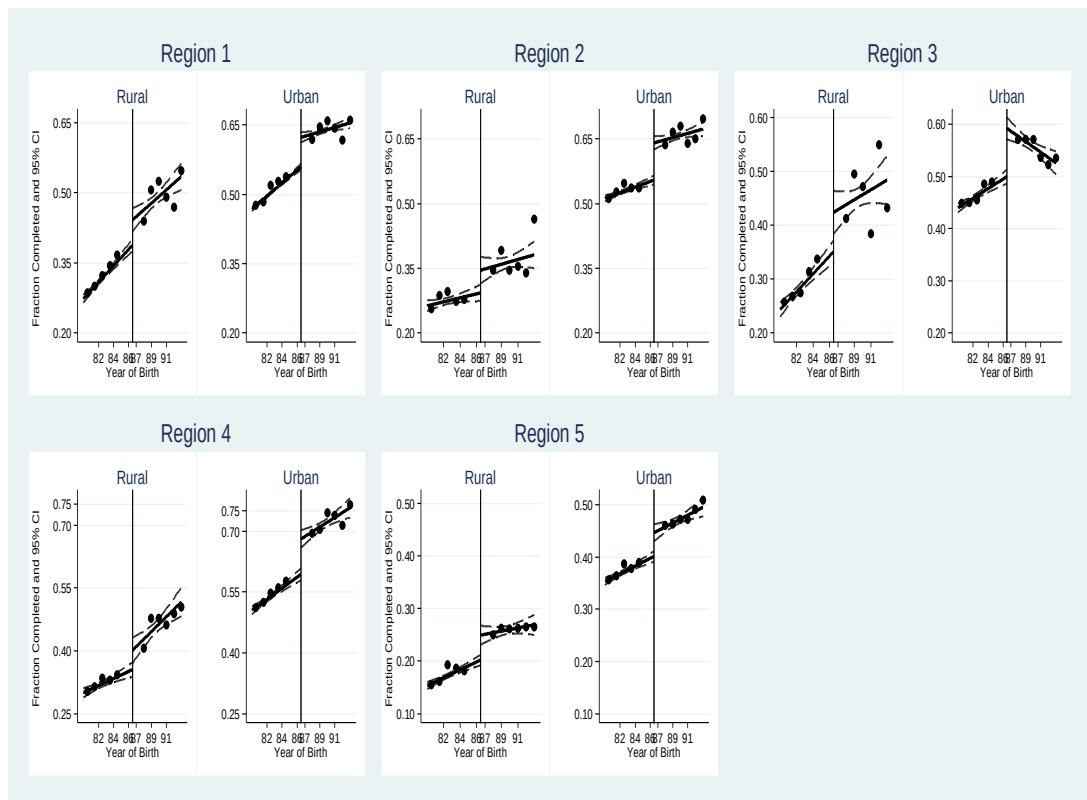


Figure 12. Policy effect on high school completion for rural and urban residents, with donut-hole

In Figure 12, we can observe the spillover effects of the compulsory schooling policy on rural and urban residents by excluding the two birth cohorts in order to avoid fuzziness. The effects are higher for urban residents than rural residents for all regions. Especially in Region 4, the increase is almost 15 percentage points for urban residents.

CHAPTER 5

IDENTIFICATION METHODOLOGY AND ESTIMATION

The compulsory schooling policy is implemented starting from 1997-1998 school year for children who have not completed grade five yet in 1996-1997 school year. Students born in 1987 or afterwards are bounded by the reform and students born in 1986 or before are not affected. This threshold is crucial in the sense that we can compare students who are affected by the policy and who are not affected to find the causal effect of the policy on schooling outcomes within a regression discontinuity design framework.

5.1 Regression discontinuity design

In order to use an RD approach, important assumptions that provide internal validity of the design, must be satisfied.

The first assumption is that the relationship between the outcome variable and the running variable must be continuous and the only discontinuous part must occur at the cutoff point. From Figures 1 to 12, it can be seen that there is a continuous relationship between schooling outcomes and year of birth and we observe a discontinuity at the time of the introduction of the policy. Therefore, the structure of our data is suitable for an RD framework.

The second and the most fundamental assumption is that potential outcomes must be continuous around the threshold, in other words, treatment assignment must be as good as random around the discontinuity. The logic of the RD design is based on the fact that people just above and just below the threshold must be comparable and so we can make a causal interpretation by benefitting from this comparison. The

only difference between treatment and control groups must occur at the cutoff point and must be derived from treatment assignment and all predetermined characteristics must be continuous around threshold. If people try to manipulate the running variable in order to be in a specific side of the threshold, this continuity assumption will be violated. In our study, year of birth is the running variable and its manipulation is not easy and likely in the sense that it is determined much before the introduction of the policy. Nevertheless, in accordance with Imbens and Lemieux (2008) and Lee and Lemieux (2010), in order to control the existence of such a manipulation, we check whether there is a discontinuous jump at the threshold in other covariates that affect our outcome of interest. Our results regarding covariate balance controls are demonstrated in Section 5.2 of this chapter.

The third critical assumption of RD framework is that the timing of the 1997 Compulsory Schooling Reform must be independent of educational outcomes. A violation of this assumption may be occurred if the policy was introduced in a period where grade completion rates were low. However, the implementation of the reform was related to political factors as explained also by Aydemir et al. (2019), Erten and Keskin (2018), Güleşçi and Meyersson (2013), and Kırdar et al. (2015).

The fourth assumption requires that there should be no coincidence between the compulsory schooling policy and other policies that also affect outcome variables. Even though their effects are much more smaller compared to the 1997 reform, there are other two interventions: A Conditional Cash Transfer (CCT) by the government and another CCT driven by a Non-Governmental Organization (NGO) which are introduced in 2003 and 2005 respectively. In our analyses, shorter time periods are not influenced by these interventions and effects of these policies on longer time periods are captured by post-time trends.

As all the assumptions are satisfied, we can conclude that the structure of our data is suitable for an RD design, treatment is randomly assigned around the threshold, and we can compare birth cohorts that are affected from the policy and those that are not affected in identifying the causal effect of the policy on schooling outcomes and in demonstrating the regional variation of the policy effect by gender and urban/rural residences.

In most of the previous studies, the compulsory schooling reform is utilized as a source of exogenous variation in schooling to cope with endogeneity concern caused by omitted variables and to find the causal effect of schooling on post-schooling outcomes like wage rates or labor force participation of women (Aydemir & Kirdar, 2017; Erten & Keskin, 2018; and Güleşçi & Meyersson, 2013). In RD framework, the fuzziness caused by 1986 and 1987 birth cohorts, is generally solved by using fuzzy RDD which is equivalent to two stage least squares estimation (2SLS) where the policy effect on post-schooling outcome, which is called the “reduced form”, is divided by the policy effect on schooling outcome, which is called the “first stage”, through a Wald estimation. In our study, we are concentrating on that “first stage” part. Our study adds a regional dimension to the previous work of Kirdar et al. (2015), where we are investigating whether the compulsory schooling policy equalizes gender gap and urban/rural gap in all regions of Turkey, whether it could be implemented in the same manner across all regions and how specific characteristics of regions affect the implementation of the reform.

In accordance with Angrist and Pischke (2008), the equation we estimate can be written as:

$$s_i = \alpha + \beta D_i + f(x_i') + W'\delta + \eta_i$$

$$\text{where } x_i' = x_i - x_0$$

Here, s represents the dependent variable, in other words, explained or response variable. In our case, s stands for eighth grade completion standing. However, for spillover effects analyses, our dependent variable becomes high school and college completion status in some cases as well. Our running variable (assignment or forcing variable) is x_i , which is year of birth and is normalized by subtracting x_0 , which is the cutoff value (1987 in our case). There may exist a non-linear relationship between the dependent variable and the running variable, which is demonstrated by the smooth function $f(\cdot)$. D is our treatment variable and it is a discontinuous and deterministic function of the running variable. In our case, D is the policy dummy which is one if the individuals' year of birth is greater than or equal to 1987 and zero otherwise. W stands for other control variables and η is the error term. The policy effect on educational outcomes is denoted by β . In order to check robustness of our results, we use year dummies and 26 NUTS-2 region dummies as other covariates in our regressions. Adding other controls into the regression is good in the sense that standard error of the disturbance term will be smaller, which leads to the fall in the variance of β , so we can more precisely estimate the coefficients.

We use sharp RDD in estimating the effect of the policy on educational outcomes rather than 2SLS as we do not estimate the effect of schooling on post-educational outcomes. In our study, we identify reduced form policy effects. As we explained in Chapter 3, the compulsory schooling reform is implemented from the beginning of the 1997-1998 school year and affected individuals who are born in

1987 or afterwards. Even though children generally start school at age 6, a significant number of them may start school one year earlier or later. This leads to fuzziness in the treatment status of 1986 and 1987 birth cohorts and underestimation of the policy effect. Therefore, besides standard regression discontinuity design, we also take advantage of a donut-hole RD design, where we take out the two birth cohorts (the donut-hole) to avoid fuzziness. Since we cannot observe the same person treated and untreated at the same running variable, extrapolating is crucial for RD framework. However, we need more extrapolation in case of the donut-hole RD approach that necessitates extrapolation until the threshold.

The crucial part of our identification methodology is untangling the effect of compulsory schooling policy from time trends in schooling outcomes. We have to separate the policy effect from the strong time trend effects. For this reason, also to check robustness of our findings, besides using single time trends we also allow for time trends to be different before and after the threshold by using split polynomials in some of our analyses, we use high order polynomials as well as we utilize many time intervals (bandwidth).

There are two important approaches that we take advantage of: Global approach and global-to-local approach as in the previous study of Aydemir et al. (2019).

In global (parametric) approach, generally all data with high degree of polynomials are used. In our study, we fix the time interval to the widest possible according to the age restriction that we mentioned in Chapter 4.1, and we use various functional forms: For gender gap analyses, our widest bandwidth covers 1972-2001 (15-year intervals on each side of the cutoff) birth cohorts for middle school completion, 1975-1998 (12-year intervals on each side of the cutoff) birth cohorts for

high school completion, and 1979-1994 (8-year intervals on each side of the cutoff) birth cohorts for college completion. Here, the degree of the split and single time trends goes up to two and four respectively for the widest two time intervals and up to two and three respectively for the narrowest bandwidth. On the other hand, in our urban/rural gap analyses, as the urban/rural distinction is not available after 2013, the widest possible time intervals for middle school and high school completion standings are 1977-1996 (10-year intervals on each side of the cutoff) and 1980-1993 (7-year intervals on each side of the cutoff) respectively. The order of split and single time trends goes up to two and three respectively for both time intervals. As we have to use wider bandwidths with the global approach, we do not analyze the policy effect on college completion for rural and urban residents with this approach because as we assume that the college completion standing is unchanged after age 24, the widest possible time interval for the urban/rural gap analyses is 1984-1989 where there are only 3 years before and after the discontinuity.

In local (non-parametric) approach, generally smaller bandwidths and less flexible (linear most of the time) functional forms of time trends are used. In our study, we use a global-to-local approach as we fix the degree of polynomial (split linear time trend) and experience with different time intervals by gradually narrowing down them around the threshold rather than choosing the optimal time interval as in the local approach. Because, this optimal time interval, chosen by the local approach, is generally the one closest to the neighborhood where the effects of 1986 and 1987 birth cohorts, that lead to fuzziness, will be much more stronger in our case.

For gender gap analyses, the time intervals used for eighth grade completion are 1972-2001, 1975-1998, 1978-1995, 1981-1992 and 1984-1989 where there are 15, 12, 9, 6 and 3 years on each side of the threshold respectively. For high school completion, time windows used are 1975-1998, 1977-1996, 1979-1994, 1981-1992 and 1983-1990 where there are 12, 10, 8, 6 and 4 years on either side of the discontinuity respectively. The bandwidths utilized in identifying the policy effect on college completion are 1979-1994, 1980-1993, 1981-1992, 1982-1991 and 1983-1990 where there are 8, 7, 6, 5, and 4 years before and after the cutoff respectively. For urban/rural gap analyses, because of the data restrictions, we examine the policy effect on middle and high school completion rather than college completion. The time intervals used for middle school completion are 1977-1996, 1979-1994, 1981-1992 and 1983-1990 where there exist 10, 8, 6 and 4 years on each side of the threshold respectively. 1980-1993, 1981-1992, 1982-1991 and 1983-1990 time windows are used in identifying the policy effect on high school completion where there are 7, 6, 5 and 4 years on each side of the discontinuity respectively.

As we mentioned before, extrapolation is a core concept in an RD framework and therefore, choosing the appropriate functional form for time trends is essential: A very high order polynomial may capture the effect of the outliers and may lead to a decrease in precision because of overfitting problem. A less flexible functional form may cause incorrectly considering nonlinearity as the treatment effect.

We use two different approaches in our analyses to show robustness of our results since in RD framework there is always a tradeoff between bias and variance. The global-to-local approach uses narrower time intervals where the risk of misspecifying the functional form of polynomials is reduced, but because of the data limitations, efficiency of the estimates also will be reduced. On the other hand, the

global approach uses wider time intervals which will be beneficial for precisely estimation of the coefficients but the risk of misspecifying the functional form of polynomials will be increased which results in bias.

In our study, in line with the forcing variable, standard errors are clustered at the year of birth level. However, due to the few clusters problem, wild cluster bootstrap p- values are also added, using Bootstrap estimation of Cameron, Gelbach and Miller (2008).

5.2 Identification controls

The crucial assumption of the regression discontinuity design is that treatment and control groups around the threshold must be comparable. Therefore, there should be no differences in predetermined characteristics at the discontinuity.

The violation of this assumption through manipulation of the assignment variable by individuals in order to be in a specific side of the threshold, ruins the validity of the RD design.

We check whether there is a discontinuous jump in the neighborhood of the cutoff for other control variables that affect our dependent variable. Therefore, we run a logistic regression of 26 NUTS-2 region controls on the compulsory schooling policy and show the odds ratios in Appendix Table A1. We use 1977-1996 (10-year intervals on each side of the threshold) and 1980-1993 (7-year intervals on each side of the threshold) birth cohorts and the degree of split and single time trends goes up to two and four respectively for both of the time intervals. We find no evidence regarding the impact of the reform on other control variables. Therefore, the identifying assumption is satisfied.

CHAPTER 6

RESULTS

Results of our analyses consist of two parts: In the first part we demonstrate the effect of the compulsory schooling policy on educational outcomes of men and women and analyze whether the policy narrows or makes even larger the gender gap and how specific regional differences contribute to the variation in the policy effect. In the second part, the policy effect on educational outcomes of the urban and rural residents are shown and we analyze whether the urban/rural gap is narrowed as a result of the 1997 policy and whether regional characteristics play a role in the implementation of the policy.

6.1 Policy effect on schooling of women and men

By using sharp regression discontinuity design and 2004-2018 THLFS data, we estimate the effect of the compulsory schooling reform on educational outcomes of women and men. Besides standard RD design we also take advantage of a donut-hole RD design where we drop 1986 and 1987 birth cohorts to remove fuzziness that causes the underestimation of the policy effect. We use two approaches which are called the global approach and the global-to-local approach as we explained in detail in Chapter 5.1. In line with the forcing variable, standard errors are clustered at the year of birth level. However, due to the few clusters problem, wild cluster bootstrap p- values are also added, using Bootstrap estimation of Cameron et al. (2008). Other control variables used in regressions are year dummies and 26 NUTS-2 region dummies.

Tables A2 and A3 of the Appendix demonstrate the policy effect on educational outcomes of women and men without donut-hole and with donut-hole respectively utilizing the global approach. In Panel 1 of Table A2 the policy effect on middle school completion, in Panel 2 the policy effect on high school completion and in Panel 3 the policy effect on college completion are shown. As we assume that middle school, high school and college graduation standings are unchanged after ages 17, 20 and 24 respectively, the widest possible time intervals used are 1972-2001 (15-year intervals on each side of the cutoff) for middle school analyses, 1975-1998 (12-year intervals on each side of the cutoff) for high school analyses, and 1979-1994 (8-year intervals on each side of the cutoff) for college analyses. Here, for the widest two time intervals, the degree of the split and single time trends goes up to two and four respectively and up to two and three respectively for the narrowest one. Table A2 indicates that, in spite of the fuzziness created by the two birth cohorts just around the discontinuity, we find strong evidence of a policy effect on middle school completion for both men and women, which is statistically significant at 1% level for all degrees of polynomials in all five regions. The policy increases eighth grade completion of women by about 14-19 percentage points in Region 1, 16-21 percentage points in Region 2, 12-17 percentage points in Region 3, 21-27 percentage points in Region 4 and 4-10 percentage points in Region 5. On the other hand, middle school completion of men is increased by around 10-14 percentage points in Region 1, 11-15 percentage points in Region 2, 13-16 percentage points in Region 3, 13-17 percentage points in Region 4 and 10-14 percentage points in Region 5. Panel 1 of Table A2 shows that the policy increases completion of middle school more for women compared to men so the gender gap is decreased for all orders of polynomials for regions 1, 2 and 4 and for most of the polynomial orders

for Region 3. The only exception is Region 5 where eighth grade completion is increased more for men than for women.

The spillover effects of the policy can be seen in Panel 2 of Table A2. Since the coefficient estimates are significant at conventional significance levels for all functional forms of the time trends for women, and for almost all of them for men, we can conclude that the policy has a positive effect on high school completion for women and men. The reform increases the high school completion rate for women by almost 4-6 percentage points in Region 1, 3-6 percentage points in Region 2, 3-5 percentage points in Region 3, 5-9 percentage points in Region 4 and 3-4 percentage points in Region 5. The increase for men is approximately 4-5 percentage points in Region 1, 4-7 percentage points in Region 2, 6-8 percentage points in Region 3, 5-7 percentage points in Region 4, and 5-6 percentage points in Region 5. Especially for the highest degree of polynomials (quartic for single time trends and quadratic for split time trends), the gender gap is increased in all regions except Region 4.

Panel 3 of Table A2 demonstrates the policy effect on college completion for men and women. We fail to find significant coefficient estimates for most of the functional forms of the time trends for both men and women. However, even without excluding 1986 and 1987 birth cohorts, we find statistically significant evidence at conventional levels of a positive policy effect on college completion for women in Region 4 and men in Region 5.

In Table A3 of the Appendix, we estimate the same effect as in the Table A2 by taking out 1986 and 1987 birth cohorts that cause the underestimation of the policy effect. Panel 1, Panel 2 and Panel 3 of Table A3 demonstrate the policy effect on middle school, high school and college completion respectively. We find strong evidence, statistically significant at 1% level for all degrees of time trends that the

policy increases middle school completion of women by around 19-23 percentage points in Region 1, 22-26 percentage points in Region 2, 18-21 percentage points in Region 3, 29-33 percentage points in Region 4 and 5-13 percentage points in Region 5. The increase in the eighth grade completion for men is approximately 11-17 percentage points in Region 1, 15-19 percentage points in Region 2, 15-20 percentage points in Region 3, 17-21 percentage points in Region 4 and 15-18 percentage points in Region 5 and all of the coefficient estimates are statistically significant at 1% level. The coefficient estimates are bigger for both men and women when we remove the fuzziness by dropping 1986 and 1987 birth cohorts. Since the positive impact of the policy on middle school completion is greater for women than for men for all functional form of time trends in regions 1, 2 and 4 and for almost all of them in Region 3, we can conclude that the policy decreases the gender gap in middle school completion and our results are robust. However, the gender gap in middle school completion further widens in Region 5 despite the positive impact of the policy on women. Our results are in line with findings of Tomul (2007). The patriarchal society structure and strong traditional and social norms in the East may be the main reasons of the gender gap in this region as also explained by Gümüş and Chudgar (2016) and Gündüz-Hoşgör and Smits (2007). Moreover, we observe the highest increase in middle school completion for women in Region 4. According to Gümüş and Chudgar (2016) and Gündüz-Hoşgör and Smits (2007), as most of the women are employed in the agricultural sector and their husbands are away from home to be employed in non-agricultural sectors, women in the North feel themselves more independent compared to women in other regions which will contribute to the increase in school participation of their daughters as mothers' attitudes are considered to be crucial in school attendance of girls in Turkey.

The policy effect on post-compulsory schooling is observed in Panel 2 of Table A3. The high school completion of women is increased by about 5-9 percentage points in Region 1, 4-11 percentage points in Region 2, 4-10 percentage points in Region 3, 4-13 percentage points in Region 4 and 4-5 percentage points in Region 5. The estimated coefficients are bigger compared to those in Panel 2 of Table A2 and almost all of them are statistically significant at 1% level. The policy effect on high school completion for men is also higher compared to the “without donut-hole” case and almost all of the coefficients are statistically significant at 1% level. The policy increases high school completion of men by around 5-8 percentage points in Region 1, 5-14 percentage points in Region 2, 7-16 percentage points in Region 3, 6-14 percentage points in Region 4 and 6-10 percentage points in Region 5. Hence, our results are robust and we can conclude that the policy has significant spillover effects for both men and women. Since we are using the global approach, if we consider the models where we utilize high order polynomials, we observe that the gender gap in post-compulsory schooling widens especially in regions 3, 4 and 5. Since women treated by the compulsory schooling policy come from a less marginal and more able group compared to men and the price elasticity of schooling demand is higher for women as explained by Kırđar et al. (2015), we expect higher policy effect in post-compulsory education for women rather than men. According to Kırđar et al. (2015), since the sheepskin effects are more important for men because of their high labor force participation rates compared to women, we may observe a widening gender gap in post-compulsory education.

The effect of the compulsory schooling policy on college completion is shown in Panel 3 of Table A3. After excluding the two birth cohorts that create fuzziness, both the magnitude and statistical significance level of the estimated

coefficients increase for both women and men for most of the models. Nonetheless, we find few coefficients for men that are statistically significant at conventional levels. The only exception is Region 5, where two out of five coefficient estimates are statistically significant at 1% level and one has 5% significance. On the other hand, for women, almost all of the coefficient estimates become statistically significant at conventional levels and this finding is robust for all functional forms across all regions except Region 5, where most of the estimated coefficients are still statistically insignificant. We can conclude that we have strong evidence of an increase in college graduation for men in Region 5 and women in Region 4 and suggestive evidence for women in regions 1, 2 and 3. With the exception of Region 5, the policy effect is stronger for women compared to men for almost all of the functional forms of time trends that leads to a decline in the gender gap in college graduation across four regions. As Kırdar et al. (2015) mention in their study, women treated by the reform generally constitute a less marginal group with higher ability compared to men due to the fact that before the policy, majority of women drop out before completing middle school, and this may be a factor of the narrowing gender gap. Moreover, the decline in the cost of completing secondary education as a result of the decline in the cost of grades six to eight and the increased awareness on the real returns to schooling after completing eight years of education compared to five years may also reinforce the decline in the gender gap in college graduation.

Tables A4 and A5 of the Appendix provide results for the effect of the compulsory schooling policy on educational outcomes of women and men for the five regions of Turkey using the global-to-local approach. In Table A4, we estimate results by including 1986 and 1987 birth cohorts and in Table A5, we express them by excluding those birth cohorts to remove fuzziness. As in the global approach, we

restrict the sample to ages 17 or older for the middle school case, to ages 20 or older for the high school case, and to ages 24 or older for the college case. With the global-to-local approach, we use split linear time trends and experience with different time intervals by gradually narrowing down them around the threshold. For the middle school analyses, the widest bandwidth covers 1972-2001 (15 years on each side of the cutoff) birth cohorts according to the age restriction. Then we gradually narrow them by three years on both sides of the threshold. The other time intervals used are 1975-1998, 1978-1995, 1981-1992 and 1984-1989. The widest possible time interval used in high school completion is 1975-1998. The other time windows, narrowed by two years on each side of the cutoff, are 1977-1996, 1979-1994, 1981-1992 and 1983-1990. For the college graduation analyses, we use five time intervals starting from 1979-1994 and narrowing them by one year from either side of the cutoff. The other four time windows used are 1980-1993, 1981-1992, 1982-1991 and 1983-1990.

The policy effect on middle school completion for women and men including 1986 and 1987 birth cohorts are demonstrated in Panel 1 of Table A4. For all time windows, the policy increases middle school completion of women in all regions. The magnitude of the effect is the biggest at the widest bandwidth but statistical significance is generally at 1% level across all time windows. As we explained in detail in Chapter 5.1, using larger bandwidths is good for precision. On the other hand, since we have split linear polynomials, using narrower time intervals will be safer to reduce the risk of functional form misspecification. The policy increases middle school completion of women by about 11-26 percentage points in Region 4 where the highest rates are observed. Region 4 is followed by Region 2. The lowest increase is observed in Region 5. The increase in middle school completion for men is also statistically significant at 1% level in all regions. If we compare these results

with those in the Panel 1 of Table A5, we can see that the magnitude of the policy effect gets higher as we drop 1986 and 1987 birth cohorts. For women, the highest increase is observed in Region 4, where the policy increases middle school completion by around 25-33 percentage points, which is followed by Region 2 and Region 1. The increase is about 8-10 percentage points for women in Region 5. In line with the study of Gümüş and Chudgar (2016), the relatively low rates in Region 1 and Region 3 compared to Region 4 and Region 2 may be caused by high rate of internal migration from lower developed parts of the country to these regions. The results regarding Region 5 shows that even though the policy has a positive and significant impact on educational attainment for women, in conservative regions, implementation of the policy is more difficult and it takes time for people to comply with the reform. The positive impact of the policy on middle school completion of men is also statistically significant at 1% level for all time intervals used. Except Region 5, the increase in eighth grade completion is higher for women than for men for all time windows and both in “with donut-hole” and “without donut-hole” cases. Therefore, we have strong evidence that the policy has a positive impact on middle school completion for women and men and it narrows the gender gap in all regions except the East. As our findings are also consistent with those with the global approach, we can say that we have robust results.

Panel 2 of Table A4 demonstrates the policy effect on high school completion for the “without donut-hole” case. Although the policy makes only grades six to eighth compulsory in addition to the first five grades, an increase in high school completion rates for men and women across all regions is also prominent. The magnitude of the effect rises when we drop 1986 and 1987 birth cohorts to avoid fuzziness and these results are shown in Panel 2 of Table A5. The policy increases

high school completion of women by approximately 6-8 percentage points in Region 1, 7-10 percentage points in Region 2, 5-10 percentage points in Region 3, 7-14 percentage points in Region 4 and 5-7 percentage points in Region 5. The positive effect of the policy on high school completion of women is statistically significant at 1% level at all time intervals for all regions. In addition, the policy increases high school completion of men and almost all of the estimated coefficients are statistically significant at 1% significance level. In cases where we use the narrowest time interval, some coefficients lose its significance in some regions. As we explained in Chapter 5.1, using narrower bandwidths decreases the probability of bias but at the same time efficiency declines. With the global approach, we find that especially in regions 3, 4 and 5 there is an increase in the gender gap in high school completion, as the increase in high school completion rate is higher for men compared to women. However, for Region 1 and Region 2, we do not observe such an increase. Also with the global-to-local approach, the widening gender gap still persists in Region 3 and Region 5. There may be many reasons regarding this result: The conservative structure of Region 5 is the main barrier for women in school participation. In addition, as the rural areas constitute a non-negligible part of Region 5, lack of boarding schools and transportation problems reinforce the psychic costs which are higher for women in rural areas. Also, the importance of the sheepskin effects for men, because of their higher labor force participation rates compared to women in Turkey, may contribute to the increase in the gender gap in these regions. On the other hand, with both approaches, we observe a narrowing gender gap in Region 1. According to Kırdar et al. (2015), women treated by the compulsory schooling policy come from a less marginal and more able group compared to men and the price

elasticity of schooling demand is higher for women and these may contribute to the narrowing of the gender gap in post-compulsory education in Region 1.

The effect of the compulsory schooling policy on college graduation for “without donut-hole” and “with donut-hole” cases are shown in Panel 3 of Table A4 and Table A5 respectively. When 1986 and 1987 birth cohorts are not excluded from the sample, majority of the estimated coefficients are statistically insignificant for both men and women. We observe few coefficients that are significant at 5% and 10% levels for men and women in some models. However, even without excluding 1986 and 1987 birth cohorts, there is strong evidence, statistically significant at 1% level, for a positive policy effect on college graduation for men in Region 5 and the effect is robust across all time intervals. In addition, we have suggestive evidence of a positive policy effect for women in Region 5, where some of the estimated coefficients are statistically significant at 5% and 10% significance levels. When we take out the two birth cohorts to avoid fuzziness, both the magnitude and statistical significance level of the effect increase both for men and women for most of the models. Nevertheless, for men, we find few coefficients that are statistically significant at 5% and 10% significance levels. The only exception is Region 5, where there is still evidence of a policy impact for most of the time windows. On the other hand, for women, almost all of the coefficient estimates become statistically significant at conventional levels and this finding is robust across all time intervals for all regions except Region 5, where coefficients of three out of five models are significant at 5% and 10% levels. We can say that we have strong evidence of an increase in college graduation for men in Region 5 and suggestive evidence of a positive policy impact on college graduation for women in regions 1, 2, 3 and 4. With the exception of Region 5, the policy effect is stronger for women compared to

men which results in a decline the gender gap in college graduation across four regions. As our findings are also consistent with those with the global approach, we can conclude that our results are robust.

6.2 Policy effect on schooling of rural and urban residents

In order to estimate the effect of the compulsory schooling policy on educational outcomes of rural and urban residents, we use sharp regression discontinuity and 2004-2013 HLFS data since the urban/rural distinction is not available after 2013. With the global approach, we investigate the policy effect on middle school and high school completion rather than college completion due to the fact that as we assume that college completion status is unchanged after age 24, the largest possible bandwidth in line with the age restriction covers 1984-1989 birth cohorts where there are only 3 years before and after the discontinuity. As we have to use also narrower time intervals with the global-to-local approach, we cannot estimate the policy effect on college graduation also with this approach due to data limitations. As in our gender gap analyses, we restrict the sample to ages 17 or older for the middle school case and 20 or older for the high school case. Besides standard RD design we also take advantage of a donut-hole RD design where we drop 1986 and 1987 birth cohorts to remove fuzziness that cause downward bias. We use two approaches as in the gender gap analyses which are the global approach and the global-to-local approach. In line with the forcing variable, standard errors are clustered at the year of birth level. However, due to the few clusters problem, wild cluster bootstrap p-values are also added, using Bootstrap estimation of Cameron et al. (2008). Other control variables used in regressions are year dummies and 26 NUTS-2 region dummies.

Tables A6 and A7 of the Appendix show the policy effect on educational outcomes of rural and urban residents for “without donut-hole” and “with donut-hole” cases respectively by using the global approach. The same analyses conducted through the global-to-local approach are presented in tables A8 and A9 of the Appendix. In the global approach, we fix the time interval to the widest possible according to the age restriction and we use various functional forms of time trends. The widest possible time intervals, in line with the age restriction, for middle school and high school completion standings are 1977-1996 (10-year intervals on each side of the cutoff) and 1980-1993 (7-year intervals on each side of the cutoff) respectively. The order of split and single time trends goes up to two and three respectively for both of the time intervals. In the global-to-local approach instead, we fix the degree of polynomial (split linear polynomial) and use various time intervals by gradually narrowing down them around the threshold. For the middle school analyses, we gradually narrow 1977-1996 time interval by two years on both sides of the threshold. The other time intervals used are 1979-1994, 1981-1992 and 1983-1990. In our high school analyses, we start with 1980-1993 time interval then we gradually narrow it by one year on both sides of the threshold and so we use 1981-1992, 1982-1991 and 1983-1990 time windows as narrower time intervals.

The policy effect on middle school completion of rural and urban residents using the global approach for the “without donut-hole” case is presented in Panel 1 of Table A6. The policy increases middle school completion of rural residents by almost 16-24 percentage points in Region 1, 18-26 percentage points in Region 2, 10-20 percentage points in Region 3, 19-27 percentage points in Region 4 and 3-9 percentage points in Region 5. All the coefficient estimates are statistically significant at conventional levels for all functional forms of time trends in all

regions. For the urban residents, all the coefficients are statistically significant at 1% significance level and the positive policy effect is robust for all functional forms. The highest increases for the urban case are observed in Region 2 and Region 4 where there are about 12-15 percentage points rise and 10-15 percentage points rise respectively. When we drop 1986 and 1987 birth cohorts, the magnitude of the coefficients becomes bigger and statistical significance is still at 1% level which are demonstrated in Panel 1 of Table A7. The policy increases middle school completion of the rural residents by around 30-32 percentage points in Region 1, 35-41 percentage points in Region 2, 20-28 percentage points in Region 3, 32-35 percentage points in Region 4 and 7-13 percentage points in Region 5. On the other hand, the increase in middle school completion for the urban residents is approximately 16-19 percentage points in Region 1, 17-23 percentage points in Region 2, 14-17 percentage points in Region 3, 17-20 percentage points in Region 4 and 12-15 percentage points in Region 5. Since the results are statistically significant for different functional forms of time trends in all regions for both with and without donut-hole cases and the increase in middle school completion is much higher for rural residents compared to their urban counterparts except Region 5, we have strong evidence of a positive policy impact on completing middle school for all regions and of a narrowing urban/rural gap across all regions except the East. Our results are in line with Fang et al. (2012) who also finds a stronger policy effect in rural areas rather than urban areas. According to Kırdar et al. (2015) the psychic costs, opportunity cost of schooling and discount rate are higher in rural regions. Moreover, the difficulties in the enforcement of the policy make the non-compliance with the reform less costly in rural areas. Construction of boarding schools and establishment of bussing schemes take some time and therefore result in the late implementation of

the policy in rural areas. The widespread conservative nature and strong social and traditional norms in rural areas may also act as a barrier in reaching education. Other studies that put emphasis on factors that negatively affect educational attainment of children living in rural regions like patriarchal society structure, traditional gender role attitudes, lack of help in childcare from other family members, large family size and low household income belong to Duman (2010), Gümüş and Chudgar (2016), Gündüz-Hoşgör and Smits (2007), Rankin and Aytaç (2006), and Smits and Huisman (2013). On the other hand, as Kırdar et al. (2015) explain, higher price elasticity of schooling demand in rural regions, accompanied by substantial decline in price of schooling through the compulsory schooling policy may contribute to the narrowing of the urban/rural gap in regions 1,2,3 and 4. In addition, rural residents treated by the policy are more distinctive in terms of ability compared to their urban peers, as their school attainment levels are much more lower than urban residents without compulsory schooling reform and this finding may also be one of the reasons of the narrowing of the urban/rural gap in more developed regions of Turkey.

Spillover effects of the policy with the global approach are shown in Panel 2 of tables A6 and A7 for “without donut-hole” and “with donut-hole” cases respectively. According to the findings in Table A6, we fail to find any statistically significant evidence of a policy impact on rural residents in regions 3 and 5. All of the coefficient estimates are statistically significant at conventional levels for regions 2 and 4 and almost all of them are significant for Region 1. On the other, almost all of the coefficients are statistically significant at conventional levels and the results are robust at all degrees of time trends across all regions for urban residents. The policy increases high school completion of the urban residents by about 2-5 percentage points in Region 1, 4-7 percentage points in Region 2, 3-6 percentage

points in regions 3 and 4, and 2-3 percentage points in Region 5. The estimated coefficients calculated by excluding 1986 and 1987 birth cohorts are presented in Panel 2 of Table A7 and both the magnitude and the significance level of the coefficient estimates increase for urban residents. The policy increases high school completion of the urban residents by around 5-7 percentage points in Region 1, 9-11 percentage points in Region 2, 4-10 percentage points in Region 3, 4-9 percentage points in Region 4 and 3-9 percentage points in Region 5. On the other hand, as we drop the two birth cohorts to remove fuzziness, even though the magnitude of the effect becomes bigger, most of the coefficients are still insignificant at conventional levels for rural residents. Moreover, we lose the significance that we found in “without donut-hole” case for regions 1 and 2, and the significance level declines for some of the models for Region 4. As the policy effect is stronger for urban residents compared to their rural counterparts for all functional form of time trends in all regions, we can say that the policy increases the urban/rural gap in post-compulsory education and our results are robust. As Kırdar et al. (2015) mention in their study, owing to the fact that rural residents treated by the policy are more distinctive in terms of their ability distribution and price elasticity of schooling demand is higher for them, we would expect a stronger policy effect for rural residents on high school completion. Moreover, the decline in costs of grades six to eight with the policy also contributes to the decrease in the cost of secondary education which would also favor rural residents compared to urban ones. However, they add that sheepskin effects are much more stronger for urban residents especially in high school completion compared to rural residents because of the prevalence of agricultural sector and self-employment in rural areas. In addition to this, limitations in school availability for secondary education in rural regions also act as a factor in widening of the

urban/rural gap in high school completion. Regarding to this finding, Chankseliani (2013) and Maljojoki (1983) emphasize in their studies, the obstacles that people face in reaching higher education in less developed and rural parts of the countries.

Policy effect on middle school completion using the global-to-local approach for the “without donut-hole” case is demonstrated in Panel 1 of Table A8. For rural residents, almost all of the coefficients are statistically significant at 1% level for all time intervals and the highest effects are observed at the widest time interval in all regions. The same strong positive policy effect is also observed for urban residents across all regions. When we compare these results with those in the Panel 1 of Table A9, we can see that the magnitude of the coefficient estimates becomes bigger for both rural and urban residents. Moreover, now all of the coefficients are statistically significant at 1% level in all regions for rural and urban residents. The policy increases middle school completion of the rural residents by about 30-34 percentage points in Region 1, 34-38 percentage points in Region 2, 18-28 percentage points in Region 3, 31-35 percentage points in Region 4 and 9-12 percentage points in Region 5. The increase in middle school completion for urban residents is approximately 17-18 percentage points in Region 1, 22-23 percentage points in Region 2, 14-17 percentage points in Region 3, 19-20 percentage points in Region 4 and 12-13 percentage points in Region 5. As we have statistically significant results for all regions at all time intervals and for both with and without donut-hole cases, we can say that we have strong evidence of a positive policy effect on middle school completion for rural and urban residents. Moreover, as the impact of the policy is stronger for rural residents compared to the urban residents at all time intervals for all regions except Region 5, we can conclude that the policy reduces the urban/rural gap in middle school completion in four of the five regions. Since our findings are

also consistent with those of the global approach, we can say that our results are robust.

Spillover effects of the compulsory schooling reform are presented in Panel 2 of tables A8 and A9 for without and with donut-hole cases respectively. By including 1986 and 1987 birth cohorts, we fail to find evidence of a policy effect for rural residents in Region 3. Even though the magnitude of the effect increases noticeably when we exclude the two birth cohorts, we find only one coefficient which is statistically significant at 10% level for the widest time interval for the rural residents in Region 3. For the “without donut-hole” case, we have some evidence of a policy effect for rural residents in Region 1 where the coefficient estimates of the widest two time intervals are statistically significant at 5% level and in Region 5 where all the coefficients are significant at 10% level. However, in the “with donut-hole” case, even though the magnitude of the estimated coefficients increases for both regions, statistical significance at Region 1 disappears, whereas statistical significance level of the coefficients increases at all time intervals for Region 5. For the rural residents living in regions 2 and 4, all the estimates coefficients are statistically significant at conventional levels without excluding 1986 and 1987 birth cohorts. Both the magnitude of the effect and statistical significance level fall for rural residents of Region 4 for the “with donut-hole” case. In Region 2, the statistical significance is preserved, and estimated coefficients are stronger in magnitude when we drop 1986 and 1987 birth cohorts. Even though we find evidence of a policy effect on rural residents especially in regions 2 and 5 with this approach, we could not find any evidence with the global approach. For the urban residents, all the estimated coefficients are statistically significant at 1% and 5% levels at all time windows in all regions for the “without donut-hole” case. The policy increases high school

completion of the urban residents by about 3-5 percentage points in Region 1, 5-7 percentage points in Region 2, 4-7 percentage points in Region 3, 3-6 percentage points in Region 4 and 3 percentage points in Region 5. When we drop 1986 and 1987 birth cohorts, statistical significance is preserved at all time intervals for all regions. Moreover, the magnitude of the policy effect gets bigger. The increase in high school completion becomes approximately 3-7 percentage points in Region 1, 8-10 percentage points in Region 2, 5-10 percentage points in Region 3, 6-9 percentage points in Region 4 and 5-7 percentage points in Region 5. As in the analyses conducted through the global approach, we find strong evidence of a positive policy impact on high school completion for urban residents. With both approaches, we also find that the effect of the policy is stronger for urban residents, which brings about an increase in the urban/rural gap in post-compulsory education and we can say that our results are robust.

CHAPTER 7

CONCLUSION

In our study, we investigate how the 1997 compulsory schooling reform affected schooling outcomes of women and men, and rural and urban residents and whether it contributed to the equality of these outcomes between women and men, and rural and urban residents in five regions of Turkey. We used 2004-2018 THLFS data in our gender gap analyses and 2004-2013 THLFS data for the urban/rural gap analyses. From the point of estimation, we utilized sharp regression discontinuity framework in order to find the causal impact of the reform on educational outcomes. The main contribution of this thesis is that we add a regional dimension to understand how specific regional characteristics affect the implementation of the policy and how policy effects vary across regions.

We find that the policy increases middle school completion of women and men, and rural and urban residents in all regions. The estimated coefficients are statistically significant at conventional levels. The impact is stronger for women and rural residents in all regions with the exception of Region 5, where strong social and traditional norms dominate the society. Prevalent patriarchal society structure in conservative regions acts as a barrier in school participation especially for women. In spite of the positive policy impact on women, the increased gender gap in middle school completion in the short-run in Region 5 shows that lowering the price of schooling as a result of the compulsory schooling policy may not serve as the exact solution to alleviate inequalities in reaching education by gender especially in conservative regions. Besides conservative structure, limitations in school infrastructure and transportation problems in rural regions lead to imperfect

compliance and late implementation of the policy that also contribute to the widening of the urban/rural gap in middle school completion in Region 5.

The policy has a significant positive impact on high school completion of women and men, and urban residents. We fail to find strong evidence of a policy effect on rural residents. We observe the widening of the urban/rural gap in all regions and of the gender gap in some regions with regard to the high school completion. As agricultural sector and self-employment dominate the rural areas and labor force participation rates are much more higher for men compared to women, sheepskin effects become more of an issue for men and urban residents, and this may be a possible explanation of the increase in the gaps in high school completion rates.

We also investigated the policy effect on college graduation for gender gap analyses as we have data for a longer time period. We find suggestive evidence of a positive policy effect on college completion for women in almost all of the regions. Most of the estimated coefficients are statistically insignificant for men except Region 5 where the policy has a significant impact on the outcome. The gender gap narrows in four of the five regions. The only exception is Region 5 where the gender gap widens. Lack of sufficient number of schools also in post-compulsory education is an issue especially in rural areas which constitute a significant part of the East. The conservative nature of the region, transportation problems and lack of boarding schools contribute to the increase in the psychic costs of schooling for women and to the rise in the gender gap in that region. Pre-policy school completion rates are much more lower for women than for men in Turkey. Therefore, women treated by the policy are more able and have higher motivation compared to men. In addition, with the compulsory schooling policy, completing an additional three years may contribute to the increase in the awareness regarding the real returns to education.

These may be the possible reasons of the decrease in the gender gap in college completion in four regions of Turkey.

Ultimately, we can say that the policy has significant positive impact on school participation for women and men and rural and urban residents. This finding is also noteworthy in the sense of numerous economic and social returns to education at the individual and societal levels. Even though we do not investigate the effect of education on post-schooling outcomes in this thesis, there are many studies regarding the effect of schooling on empowerment of women, wage rates and health conditions. We also find that although the policy has a significant positive effect on women and rural residents, it is not always sufficient to eliminate the disparities by gender and by rural and urban residence. Besides cultural reasons, there may be other factors that may contribute to the existence of those disparities. Therefore, other policies targeting the disadvantaged groups may also be implemented. In conservative regions, implementation of the compulsory schooling policy may be more difficult and it takes time for people to comply with the reform. Strong rooted traditional and social thoughts might not disappear suddenly. However, an increase in the education level through this compulsory schooling reform is an important step to narrow the schooling discrepancies by gender and by rural and urban residence and to benefit from the social and economic returns to education. After some time, social and cultural norms may be converted as more and more individuals tend to have higher education through such reforms and join in working life.

APPENDIX

POLICY EFFECTS ON DIFFERENT OUTCOMES

Table A1. Discontinuity Control for Other Control Variables at the Threshold

Time Interval on each side of the cutoff												
Type of Polynomial	10-Year Intervals						7-Year Intervals					
	Split		Single				Split		Single			
Order of Polynomial	One	Two	One	Two	Three	Four	One	Two	One	Two	Three	Four
NUTS2 Level Region of Residence												
NUTS2 Region 1	0.979* [0.012]	1.001 [0.013]	0.968 [0.023]	0.981 [0.013]	0.993 [0.014]	0.997 [0.012]	0.991 [0.013]	1.005 [0.017]	0.985 [0.026]	0.992 [0.013]	1.001 [0.012]	0.998 [0.018]
NUTS2 Region 2	1.020 [0.026]	0.982 [0.037]	1.002 [0.039]	1.022 [0.027]	0.982 [0.036]	0.992 [0.031]	1.002 [0.029]	1.000 [0.035]	0.992 [0.039]	1.004 [0.028]	0.995 [0.035]	0.998 [0.033]
NUTS2 Region 3	1.095*** [0.031]	1.054 [0.038]	1.093*** [0.028]	1.096*** [0.030]	1.068** [0.032]	1.073* [0.039]	1.086** [0.039]	1.006 [0.028]	1.083*** [0.032]	1.088** [0.039]	1.029 [0.045]	1.029 [0.046]
NUTS2 Region 4	1.013 [0.030]	1.018 [0.035]	0.999 [0.032]	1.017 [0.025]	1.015 [0.031]	1.022 [0.037]	1.007 [0.035]	1.037 [0.025]	1.000 [0.030]	1.011 [0.033]	1.037 [0.045]	1.033 [0.037]
NUTS2 Region 5	0.971 [0.023]	0.961 [0.024]	0.975 [0.022]	0.969 [0.023]	0.957 [0.026]	0.958 [0.026]	0.956* [0.022]	1.000 [0.032]	0.955* [0.023]	0.956* [0.023]	0.993 [0.031]	0.993 [0.031]
NUTS2 Region 6	0.992 [0.016]	1.005 [0.028]	0.979 [0.028]	0.993 [0.017]	1.000 [0.019]	1.010 [0.020]	1.001 [0.021]	0.969 [0.022]	0.992 [0.027]	1.004 [0.017]	0.975 [0.023]	0.976 [0.023]
NUTS2 Region 7	0.974 [0.023]	0.998 [0.025]	0.967 [0.022]	0.978 [0.021]	1.006 [0.032]	0.997 [0.025]	1.000 [0.024]	0.947*** [0.015]	1.000 [0.023]	1.000 [0.024]	0.962* [0.021]	0.961* [0.020]
NUTS2 Region 8	0.982 [0.022]	0.981 [0.035]	0.984 [0.024]	0.983 [0.023]	0.996 [0.032]	0.984 [0.027]	0.980 [0.024]	0.955** [0.022]	0.987 [0.030]	0.978 [0.021]	0.966 [0.025]	0.967 [0.024]
NUTS2 Region 9	0.987 [0.025]	0.965 [0.039]	0.969 [0.036]	0.990 [0.021]	0.962 [0.031]	0.972 [0.033]	0.972 [0.029]	0.991 [0.033]	0.963 [0.032]	0.974 [0.025]	0.980 [0.038]	0.983 [0.039]
NUTS2 Region 10	0.979 [0.024]	0.991 [0.033]	0.980 [0.024]	0.977 [0.025]	0.979 [0.032]	0.985 [0.027]	0.981 [0.026]	1.014 [0.030]	0.978 [0.030]	0.982 [0.025]	1.003 [0.026]	1.006 [0.028]
NUTS2 Region 11	1.026 [0.033]	1.105*** [0.033]	1.029 [0.033]	1.027 [0.033]	1.082** [0.034]	1.080** [0.035]	1.061* [0.035]	1.133*** [0.028]	1.064* [0.035]	1.062* [0.035]	1.113*** [0.029]	1.111*** [0.031]
NUTS2 Region 12	1.011 [0.028]	0.970 [0.032]	1.020 [0.036]	1.009 [0.027]	0.986 [0.030]	0.981 [0.029]	0.991 [0.031]	0.962 [0.030]	0.997 [0.036]	0.990 [0.028]	0.975 [0.031]	0.974 [0.031]
NUTS2 Region 13	0.974 [0.024]	0.997 [0.020]	0.980 [0.021]	0.970 [0.024]	0.983 [0.029]	0.992 [0.020]	0.985 [0.019]	0.989 [0.025]	0.982 [0.022]	0.984 [0.020]	0.982 [0.023]	0.989 [0.017]
NUTS2 Region 14	0.970 [0.019]	0.984 [0.023]	0.973 [0.017]	0.969* [0.018]	0.974 [0.021]	0.972 [0.024]	0.969 [0.020]	1.038*** [0.014]	0.971 [0.018]	0.968 [0.020]	1.021 [0.018]	1.021 [0.016]
NUTS2 Region 15	0.968 [0.021]	0.943** [0.024]	0.967 [0.020]	0.969 [0.021]	0.946* [0.029]	0.947* [0.029]	0.957* [0.022]	0.968** [0.012]	0.958* [0.024]	0.959 [0.025]	0.968 [0.035]	0.963* [0.020]
NUTS2 Region 16	0.981 [0.030]	1.029 [0.042]	0.987 [0.028]	0.978 [0.031]	1.013 [0.030]	1.024 [0.032]	0.992 [0.030]	1.024 [0.051]	0.991 [0.027]	0.992 [0.030]	1.018 [0.037]	1.029 [0.045]
NUTS2 Region 17	0.993 [0.030]	0.983 [0.039]	0.985 [0.035]	0.995 [0.031]	0.989 [0.036]	0.990 [0.035]	0.996 [0.035]	0.959 [0.041]	0.994 [0.036]	0.995 [0.035]	0.968 [0.040]	0.971 [0.038]
NUTS2 Region 18	0.994 [0.029]	1.010 [0.038]	1.004 [0.033]	0.992 [0.027]	1.005 [0.032]	1.001 [0.033]	1.001 [0.033]	1.031 [0.041]	1.006 [0.033]	0.999 [0.030]	1.026 [0.042]	1.025 [0.043]
NUTS2 Region 19	1.031 [0.019]	0.958* [0.022]	1.033 [0.021]	1.028 [0.019]	0.962* [0.021]	0.969* [0.016]	0.981 [0.014]	1.022* [0.013]	0.978 [0.016]	0.981 [0.013]	1.015 [0.011]	1.016 [0.011]
NUTS2 Region 20	0.979 [0.022]	1.008 [0.020]	0.981 [0.020]	0.977 [0.022]	0.995 [0.027]	1.000 [0.020]	0.994 [0.020]	1.005 [0.023]	0.992 [0.025]	0.994 [0.021]	0.999 [0.021]	1.002 [0.019]
NUTS2 Region 21	0.937 [0.039]	0.875** [0.049]	0.936 [0.039]	0.938 [0.039]	0.901** [0.046]	0.895** [0.044]	0.917* [0.044]	0.838*** [0.039]	0.919* [0.044]	0.916* [0.043]	0.867*** [0.044]	0.866*** [0.045]

NUTS2 Region 22	1.050 [0.041]	1.031 [0.031]	1.054 [0.035]	1.047 [0.041]	1.028 [0.047]	1.033 [0.042]	1.037 [0.038]	1.023 [0.043]	1.036 [0.041]	1.036 [0.042]	1.012 [0.061]	1.022 [0.032]
NUTS2 Region 23	1.066 [0.052]	1.076 [0.048]	1.066 [0.063]	1.065 [0.058]	1.075 [0.083]	1.074 [0.059]	1.080 [0.052]	1.070 [0.051]	1.078 [0.082]	1.079 [0.058]	1.082 [0.078]	1.083 [0.062]
NUTS2 Region 24	1.041 [0.032]	1.006 [0.022]	1.047 [0.032]	1.038 [0.029]	1.015 [0.032]	1.018 [0.028]	1.034 [0.031]	0.951* [0.029]	1.035 [0.029]	1.033 [0.031]	0.963 [0.037]	0.965 [0.031]
NUTS2 Region 25	1.047* [0.026]	1.027 [0.036]	1.049 [0.040]	1.046* [0.028]	1.037 [0.029]	1.033 [0.022]	1.035 [0.025]	1.005 [0.028]	1.035 [0.042]	1.034* [0.019]	1.010 [0.024]	1.010 [0.025]
NUTS2 Region 26	1.084*** [0.034]	1.096* [0.054]	1.086** [0.042]	1.082*** [0.029]	1.100*** [0.039]	1.098** [0.048]	1.111** [0.049]	1.034 [0.025]	1.110** [0.049]	1.109*** [0.042]	1.054 [0.055]	1.055 [0.040]

Notes: 2004-2018 Turkish Household Labor Force Survey dataset is used in the calculations. Individuals with age 17 or older are taken into consideration. Number of observations are 1,879,073 and 1,391,429 for 1977-1996 time interval and 1980-1993 time interval respectively. Each cell is derived from a logistic regression of 26 NUTS-2 region dummies on policy dummy which is equal to one if year of birth is greater than or equal to 1987 and zero otherwise, on survey year dummies and on single and split time trends. Standard errors are given in brackets under the odds ratios. Clustering is done at the year of birth level. Statistical significance: * 10 percent level, ** 5 percent level, *** 1 percent level.

Table A2. Effect of Policy on Schooling of Men and Women (Global Approach without Donut-Hole)

1986 & 1987 Birth Cohorts are not excluded										
	Female					Male				
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 1	Region 2	Region 3	Region 4	Region 5
1) Effect of Policy on Middle School Completion (15-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.166***	0.189***	0.160***	0.252***	0.103**	0.098***	0.122***	0.128***	0.144***	0.138***
	[0.020]	[0.024]	[0.020]	[0.028]	[0.042]	[0.028]	[0.026]	[0.027]	[0.029]	[0.019]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.095	0.040	0.010	0.001	0.002	0.000
Quadratic										
policy	0.190***	0.210***	0.169***	0.273***	0.074***	0.136***	0.148***	0.158***	0.173***	0.141***
	[0.025]	[0.031]	[0.026]	[0.035]	[0.022]	[0.019]	[0.023]	[0.021]	[0.024]	[0.021]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.006	0.000	0.001	0.000	0.000	0.000
Cubic										
policy	0.164***	0.181***	0.141***	0.238***	0.061**	0.103***	0.120***	0.137***	0.141***	0.112***
	[0.028]	[0.037]	[0.029]	[0.040]	[0.030]	[0.021]	[0.030]	[0.029]	[0.031]	[0.024]
Bootstrap p- value	0.001	0.000	0.002	0.000	0.267	0.002	0.000	0.000	0.000	0.000
Quartic										
policy	0.160***	0.176***	0.132***	0.236***	0.048***	0.108***	0.122***	0.138***	0.145***	0.107***
	[0.029]	[0.038]	[0.028]	[0.043]	[0.017]	[0.020]	[0.029]	[0.028]	[0.030]	[0.022]
Bootstrap p- value	0.001	0.002	0.003	0.001	0.138	0.000	0.000	0.000	0.000	0.000
Split Polynomials										
Linear										
policy	0.184***	0.204***	0.165***	0.268***	0.078***	0.130***	0.144***	0.153***	0.169***	0.140***
	[0.026]	[0.032]	[0.026]	[0.036]	[0.011]	[0.016]	[0.022]	[0.020]	[0.022]	[0.020]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Quadratic										
policy	0.143***	0.157***	0.116***	0.214***	0.043***	0.095***	0.109***	0.127***	0.130***	0.092***
	[0.028]	[0.035]	[0.025]	[0.041]	[0.008]	[0.018]	[0.030]	[0.029]	[0.030]	[0.022]
Bootstrap p- value	0.004	0.005	0.008	0.020	0.005	0.002	0.000	0.000	0.000	0.000
Number of Observations	498,938	223,408	149,104	151,458	302,616	476,193	206,800	133,220	136,770	265,634
2) Effect of Policy on High School Completion (12-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.039***	0.031*	0.030**	0.048***	0.039***	0.015	0.025	0.029	0.051***	0.028
	[0.012]	[0.015]	[0.013]	[0.016]	[0.010]	[0.023]	[0.017]	[0.027]	[0.015]	[0.022]
Bootstrap p- value	0.015	0.101	0.066	0.059	0.012	0.579	0.230	0.342	0.010	0.303
Quadratic										
policy	0.061***	0.048**	0.041**	0.060***	0.037***	0.047***	0.044***	0.063***	0.060***	0.051***
	[0.014]	[0.018]	[0.018]	[0.015]	[0.011]	[0.012]	[0.013]	[0.017]	[0.014]	[0.014]
Bootstrap p- value	0.000	0.035	0.054	0.032	0.007	0.105	0.037	0.054	0.010	0.021
Cubic										
policy	0.057***	0.064***	0.047**	0.090***	0.037**	0.040***	0.068***	0.070***	0.073***	0.047***
	[0.016]	[0.022]	[0.020]	[0.017]	[0.013]	[0.014]	[0.021]	[0.024]	[0.021]	[0.016]
Bootstrap p- value	0.027	0.072	0.061	0.023	0.143	0.136	0.013	0.092	0.001	0.038
Quartic										
policy	0.047***	0.056**	0.042*	0.081***	0.032***	0.052***	0.074***	0.084***	0.073***	0.058***
	[0.014]	[0.022]	[0.022]	[0.016]	[0.011]	[0.012]	[0.019]	[0.024]	[0.022]	[0.015]
Bootstrap p- value	0.008	0.036	0.077	0.014	0.047	0.013	0.010	0.027	0.001	0.000
Split Polynomials										
Linear										
policy	0.055***	0.041**	0.037*	0.052***	0.036***	0.044***	0.040***	0.059***	0.058***	0.049***
	[0.016]	[0.019]	[0.018]	[0.015]	[0.009]	[0.009]	[0.012]	[0.014]	[0.014]	[0.012]
Bootstrap p- value	0.003	0.078	0.092	0.028	0.010	0.008	0.019	0.010	0.007	0.001
Quadratic										
policy	0.041***	0.053**	0.039	0.087***	0.030***	0.048***	0.077***	0.080***	0.070***	0.051**
	[0.011]	[0.020]	[0.023]	[0.015]	[0.007]	[0.014]	[0.021]	[0.027]	[0.024]	[0.019]
Bootstrap p- value	0.004	0.007	0.039	0.029	0.028	0.015	0.002	0.006	0.006	0.009
Number of Observations	367,115	163,264	107,234	108,262	214,496	344,421	149,320	93,189	96,219	183,859

3) Effect of Policy on College Completion (8-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.021*	0.030*	0.010	0.038**	0.021	0.006	0.001	0.012	0.008	0.024***
	[0.011]	[0.015]	[0.019]	[0.016]	[0.012]	[0.010]	[0.015]	[0.017]	[0.009]	[0.005]
Bootstrap p- value	0.097	0.167	0.657	0.194	0.235	0.605	0.919	0.517	0.424	0.006
Quadratic										
policy	0.016	0.024	-0.006	0.028*	0.010	0.021**	-0.001	0.016	-0.001	0.030***
	[0.011]	[0.014]	[0.016]	[0.014]	[0.008]	[0.008]	[0.013]	[0.023]	[0.007]	[0.007]
Bootstrap p- value	0.180	0.177	0.782	0.129	0.357	0.021	0.984	0.608	0.849	0.008
Cubic										
policy	0.014	0.028	-0.019	0.040**	0.007	-0.001	-0.031***	-0.005	-0.009	0.022***
	[0.013]	[0.019]	[0.015]	[0.016]	[0.011]	[0.004]	[0.011]	[0.027]	[0.008]	[0.007]
Bootstrap p- value	0.372	0.273	0.484	0.197	0.839	0.875	0.127	0.915	0.284	0.131
Split Polynomials										
Linear										
policy	0.016	0.022*	-0.002	0.026**	0.010**	0.019*	0.002	0.012	-0.000	0.029***
	[0.010]	[0.011]	[0.015]	[0.010]	[0.004]	[0.009]	[0.012]	[0.021]	[0.007]	[0.007]
Bootstrap p- value	0.120	0.049	0.889	0.055	0.042	0.015	0.168	0.703	0.981	0.008
Quadratic										
policy	0.005	0.012	-0.029*	0.028**	-0.002	-0.009*	-0.041***	-0.035***	-0.019	0.020**
	[0.011]	[0.012]	[0.014]	[0.011]	[0.007]	[0.004]	[0.011]	[0.009]	[0.012]	[0.008]
Bootstrap p- value	0.686	0.384	0.605	0.105	0.847	0.106	0.119	0.143	0.141	0.198
Number of Observations	196,814	89,385	58,052	56,853	113,765	188,314	83,983	50,506	52,030	101,275

Notes: 2004-2018 Turkish Household Labor Force Survey dataset is used in the calculations. Widest possible bandwidth for middle school, high school and college outcomes contains 1972-2001, 1975-1998 and 1979-1994 birth cohorts respectively. Each cell is derived from a separate regression and standard errors are given in brackets under the coefficient estimates. Binary variable, used for the Compulsory Schooling Policy, is equal to one if year of birth is greater than or equal to 1987 and zero otherwise. Other control variables are year dummies, 26 NUTS-2 region dummies and single and split time trends. Clustering is done at the year of birth level. Bootstrap p- values are added, using Bootstrap estimation of Cameron et al. (2008), because of the few clusters problem. Statistical significance: * 10 percent level, ** 5 percent level, *** 1 percent level.

Table A3. Effect of Policy on Schooling of Men and Women (Global Approach with Donut-Hole)

1986 & 1987 Birth Cohorts are excluded										
Female					Male					
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 1	Region 2	Region 3	Region 4	Region 5
1) Effect of Policy on Middle School Completion (14-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.193***	0.224***	0.192***	0.294***	0.127***	0.114***	0.148***	0.151***	0.171***	0.172***
	[0.017]	[0.017]	[0.010]	[0.022]	[0.044]	[0.027]	[0.020]	[0.024]	[0.022]	[0.009]
Bootstrap p- value	0.001	0.000	0.000	0.000	0.061	0.007	0.002	0.004	0.001	0.000
Quadratic										
policy	0.233***	0.261***	0.212***	0.333***	0.090***	0.165***	0.186***	0.194***	0.212***	0.179***
	[0.009]	[0.012]	[0.010]	[0.014]	[0.023]	[0.010]	[0.009]	[0.008]	[0.009]	[0.011]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000
Cubic										
policy	0.219***	0.250***	0.195***	0.314***	0.077**	0.139***	0.175***	0.194***	0.199***	0.164***
	[0.014]	[0.020]	[0.011]	[0.022]	[0.038]	[0.012]	[0.017]	[0.014]	[0.016]	[0.015]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.284	0.004	0.000	0.000	0.000	0.001
Quartic										
policy	0.221***	0.253***	0.188***	0.323***	0.059**	0.151***	0.182***	0.196***	0.207***	0.157***
	[0.014]	[0.021]	[0.009]	[0.022]	[0.023]	[0.009]	[0.015]	[0.012]	[0.014]	[0.011]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.107	0.000	0.000	0.000	0.000	0.000
Split Polynomials										
Linear										
policy	0.225***	0.254***	0.207***	0.327***	0.093***	0.159***	0.180***	0.186***	0.206***	0.176***
	[0.013]	[0.016]	[0.010]	[0.017]	[0.013]	[0.008]	[0.011]	[0.009]	[0.011]	[0.011]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Quadratic										
policy	0.211***	0.242***	0.177***	0.314***	0.049***	0.141***	0.177***	0.196***	0.201***	0.147***
	[0.012]	[0.017]	[0.009]	[0.024]	[0.009]	[0.009]	[0.017]	[0.014]	[0.016]	[0.011]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.060	0.001	0.001	0.000	0.000	0.000
Number of Observations	456,248	204,249	136,523	138,273	274,486	436,404	189,768	122,356	125,483	242,290
2) Effect of Policy on High School Completion (11-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.046***	0.036*	0.042**	0.042*	0.047***	0.011	0.024	0.030	0.062***	0.030
	[0.016]	[0.020]	[0.015]	[0.021]	[0.009]	[0.028]	[0.020]	[0.032]	[0.019]	[0.029]
Bootstrap p- value	0.054	0.170	0.067	0.154	0.001	0.716	0.293	0.454	0.026	0.420
Quadratic										
policy	0.083***	0.068***	0.064***	0.063***	0.046***	0.053***	0.050***	0.077***	0.077***	0.063***
	[0.011]	[0.015]	[0.012]	[0.016]	[0.009]	[0.017]	[0.017]	[0.020]	[0.018]	[0.018]
Bootstrap p- value	0.000	0.010	0.013	0.089	0.002	0.180	0.059	0.074	0.007	0.063
Cubic										
policy	0.086***	0.104***	0.085***	0.112***	0.048***	0.054**	0.105***	0.111***	0.118***	0.070**
	[0.013]	[0.017]	[0.014]	[0.014]	[0.013]	[0.023]	[0.021]	[0.028]	[0.029]	[0.026]
Bootstrap p- value	0.004	0.000	0.009	0.009	0.043	0.150	0.004	0.061	0.001	0.057
Quartic										
policy	0.077***	0.102***	0.086***	0.106***	0.042***	0.076***	0.118***	0.141***	0.125***	0.091***
	[0.012]	[0.020]	[0.017]	[0.014]	[0.011]	[0.019]	[0.023]	[0.023]	[0.033]	[0.018]
Bootstrap p- value	0.012	0.004	0.017	0.027	0.042	0.020	0.000	0.009	0.003	0.009
Split Polynomials										
Linear										
policy	0.075***	0.060***	0.060***	0.054***	0.045***	0.052***	0.045**	0.074***	0.074***	0.061***
	[0.014]	[0.018]	[0.011]	[0.017]	[0.009]	[0.013]	[0.017]	[0.016]	[0.018]	[0.013]
Bootstrap p- value	0.002	0.032	0.008	0.098	0.009	0.028	0.072	0.039	0.027	0.021
Quadratic										
policy	0.073***	0.112***	0.099***	0.127***	0.042***	0.083***	0.137***	0.160***	0.137***	0.096***
	[0.012]	[0.024]	[0.021]	[0.016]	[0.010]	[0.025]	[0.032]	[0.032]	[0.042]	[0.016]
Bootstrap p- value	0.009	0.006	0.009	0.002	0.056	0.015	0.001	0.002	0.010	0.000
Number of Observations	332,506	147,323	97,022	97,996	192,981	312,906	135,186	84,611	87,492	165,760

3) Effect of Policy on College Completion (7-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.038***	0.050***	0.045***	0.047**	0.028*	0.010	0.025*	0.035**	0.017	0.027**
	[0.010]	[0.012]	[0.010]	[0.019]	[0.013]	[0.015]	[0.014]	[0.015]	[0.015]	[0.009]
Bootstrap p- value	0.035	0.024	0.022	0.248	0.139	0.525	0.119	0.103	0.320	0.031
Quadratic										
policy	0.036***	0.048***	0.027**	0.036**	0.013	0.039***	0.023	0.057**	0.002	0.039***
	[0.010]	[0.011]	[0.012]	[0.015]	[0.010]	[0.010]	[0.013]	[0.022]	[0.015]	[0.010]
Bootstrap p- value	0.045	0.035	0.108	0.158	0.264	0.036	0.027	0.033	0.915	0.058
Cubic										
policy	0.045**	0.069***	0.024*	0.065***	-0.002	-0.000	-0.021	0.025	-0.015	0.018
	[0.018]	[0.020]	[0.012]	[0.017]	[0.014]	[0.012]	[0.017]	[0.036]	[0.016]	[0.014]
Bootstrap p- value	0.241	0.078	0.179	0.139	0.941	0.976	0.415	0.888	0.483	0.425
Split Polynomials										
Linear										
policy	0.034***	0.044***	0.031**	0.032**	0.013	0.037***	0.025*	0.052**	0.002	0.037***
	[0.009]	[0.009]	[0.011]	[0.014]	[0.008]	[0.011]	[0.014]	[0.022]	[0.014]	[0.009]
Bootstrap p- value	0.029	0.013	0.124	0.147	0.088	0.026	0.026	0.038	0.883	0.040
Quadratic										
policy	0.038*	0.047***	0.038*	0.051	-0.031**	-0.019	-0.052**	-0.022	-0.057**	0.011
	[0.018]	[0.014]	[0.019]	[0.031]	[0.014]	[0.014]	[0.019]	[0.025]	[0.026]	[0.026]
Bootstrap p- value	0.414	0.245	0.092	0.355	0.055	0.250	0.146	0.497	0.132	0.866
Number of Observations	174,260	77,781	51,336	50,247	100,520	166,499	73,366	44,527	45,962	88,463

Notes: 2004-2018 Turkish Household Labor Force Survey dataset is used in the calculations. Widest possible bandwidth for middle school, high school and college outcomes contains 1972-2001, 1975-1998 and 1979-1994 birth cohorts respectively. Each cell is derived from a separate regression and standard errors are given in brackets under the coefficient estimates. Binary variable, used for the Compulsory Schooling Policy, is equal to one if year of birth is greater than or equal to 1987 and zero otherwise. Other control variables are year dummies, 26 NUTS-2 region dummies and single and split time trends. Clustering is done at the year of birth level. Bootstrap p- values are added, using Bootstrap estimation of Cameron et al. (2008), because of the few clusters problem. Statistical significance: * 10 percent level, ** 5 percent level, *** 1 percent level.

Table A4. Effect of Policy on Schooling of Men and Women (Global-to-Local Approach without Donut-Hole)

1986 & 1987 Birth Cohorts are not excluded										
	Female					Male				
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 1	Region 2	Region 3	Region 4	Region 5
Birth Cohorts	Estimates					Estimates				
1) Effect of Policy on Middle School Completion										
1972-1986, 1987-2001	0.201*** [0.026]	0.234*** [0.033]	0.166*** [0.025]	0.263*** [0.035]	0.084*** [0.013]	0.136*** [0.017]	0.163*** [0.022]	0.149*** [0.020]	0.150*** [0.019]	0.132*** [0.019]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Obs	498,938	223,408	149,104	151,458	302,616	476,193	206,800	133,220	136,770	265,634
1975-1986, 1987-1998	0.193*** [0.028]	0.225*** [0.035]	0.161*** [0.026]	0.251*** [0.037]	0.077*** [0.012]	0.129*** [0.018]	0.156*** [0.024]	0.148*** [0.022]	0.143*** [0.021]	0.122*** [0.019]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Obs	421,380	189,840	125,227	127,268	261,931	401,861	175,684	111,646	114,750	227,196
1978-1986, 1987-1995	0.182*** [0.029]	0.214*** [0.036]	0.145*** [0.026]	0.241*** [0.041]	0.065*** [0.011]	0.123*** [0.021]	0.152*** [0.029]	0.147*** [0.027]	0.139*** [0.025]	0.112*** [0.022]
Bootstrap p- value	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
Obs	337,380	152,235	99,903	101,715	213,301	320,307	140,825	88,275	90,949	182,806
1981-1986, 1987-1992	0.162*** [0.032]	0.187*** [0.038]	0.127*** [0.028]	0.214*** [0.045]	0.055*** [0.011]	0.096*** [0.020]	0.130*** [0.034]	0.115*** [0.028]	0.108*** [0.024]	0.086*** [0.021]
Bootstrap p- value	0.007	0.010	0.013	0.010	0.005	0.008	0.003	0.005	0.004	0.006
Obs	237,070	105,734	69,176	70,856	151,013	221,833	97,723	60,797	63,345	128,046
1984-1986, 1987-1989	0.093*** [0.018]	0.115*** [0.024]	0.065*** [0.014]	0.112*** [0.022]	0.040*** [0.011]	0.053*** [0.010]	0.050*** [0.014]	0.052*** [0.012]	0.050*** [0.010]	0.037*** [0.008]
Bootstrap p- value	0.094	0.094	0.094	0.063	0.094	0.063	0.063	0.063	0.063	0.063
Obs	123,700	55,230	35,778	37,577	79,736	114,307	50,201	31,165	32,647	66,433
2) Effect of Policy on High School Completion										
1975-1986, 1987-1998	0.052*** [0.013]	0.050*** [0.016]	0.036*** [0.016]	0.053*** [0.016]	0.035*** [0.009]	0.047*** [0.010]	0.034*** [0.012]	0.056*** [0.013]	0.065*** [0.011]	0.046*** [0.011]
Bootstrap p- value	0.003	0.014	0.031	0.017	0.005	0.007	0.018	0.006	0.003	0.004
Obs	367,115	163,264	107,234	108,262	214,496	344,421	149,320	93,189	96,219	183,859
1977-1986, 1987-1996	0.055*** [0.013]	0.057*** [0.016]	0.043*** [0.017]	0.063*** [0.015]	0.037*** [0.009]	0.056*** [0.011]	0.048*** [0.013]	0.072*** [0.015]	0.078*** [0.012]	0.056*** [0.011]
Bootstrap p- value	0.000	0.010	0.003	0.002	0.003	0.001	0.006	0.000	0.000	0.000
Obs	319,450	143,132	93,473	94,203	190,963	299,170	131,094	81,005	83,723	162,930
1979-1986, 1987-1994	0.053*** [0.012]	0.065*** [0.017]	0.049*** [0.018]	0.069*** [0.017]	0.034*** [0.009]	0.054*** [0.011]	0.059*** [0.016]	0.072*** [0.017]	0.072*** [0.013]	0.052*** [0.012]
Bootstrap p- value	0.003	0.006	0.000	0.006	0.018	0.002	0.000	0.000	0.001	0.000
Obs	265,729	119,502	77,817	78,132	162,138	247,909	109,946	66,885	69,229	137,491
1981-1986, 1987-1992	0.047*** [0.014]	0.063*** [0.018]	0.051*** [0.024]	0.066*** [0.017]	0.034*** [0.009]	0.037*** [0.012]	0.043*** [0.014]	0.058*** [0.019]	0.057*** [0.012]	0.039*** [0.012]
Bootstrap p- value	0.035	0.014	0.031	0.016	0.020	0.057	0.008	0.013	0.021	0.008
Obs	204,905	92,832	59,474	59,882	125,273	189,105	85,344	51,104	53,130	106,039
1983-1986, 1987-1990	0.033*** [0.008]	0.046*** [0.013]	0.013 [0.016]	0.064*** [0.020]	0.033*** [0.010]	0.020*** [0.005]	0.014 [0.016]	0.030*** [0.012]	0.023*** [0.010]	0.030*** [0.009]
Bootstrap p- value	0.055	0.063	0.609	0.055	0.055	0.180	0.633	0.117	0.234	0.016
Obs	138,924	63,212	40,195	40,559	84,817	126,397	57,853	34,204	35,358	71,070

3) Effect of Policy on College Completion										
1979-1986, 1987-1994	0.011	0.017*	-0.002	0.021*	0.011**	0.015*	-0.011	0.008	-0.003	0.024***
	[0.007]	[0.010]	[0.011]	[0.012]	[0.004]	[0.008]	[0.010]	[0.020]	[0.007]	[0.005]
Bootstrap p- value	0.162	0.122	0.895	0.095	0.029	0.017	0.420	0.786	0.696	0.017
Obs	196,814	89,385	58,052	56,853	113,765	188,314	83,983	50,506	52,030	101,275
1980-1986, 1987-1993	0.008	0.015	-0.004	0.021	0.008**	0.008	-0.019*	0.001	-0.009	0.021***
	[0.007]	[0.010]	[0.011]	[0.013]	[0.004]	[0.005]	[0.009]	[0.019]	[0.005]	[0.005]
Bootstrap p- value	0.299	0.180	0.789	0.138	0.077	0.084	0.230	0.979	0.179	0.030
Obs	171,300	78,993	50,479	49,454	100,200	163,994	74,423	44,081	45,625	89,783
1981-1986, 1987-1992	0.005	0.017*	-0.003	0.019*	0.008*	0.005	-0.024**	-0.001	-0.016***	0.016***
	[0.007]	[0.009]	[0.013]	[0.009]	[0.004]	[0.004]	[0.009]	[0.019]	[0.005]	[0.005]
Bootstrap p- value	0.569	0.072	0.869	0.059	0.102	0.272	0.194	0.972	0.068	0.100
Obs	144,176	67,376	42,350	41,554	84,827	137,592	63,763	37,202	38,571	76,502
1982-1986, 1987-1991	0.010	0.013*	-0.010	0.026**	0.004	0.001	-0.028**	-0.007	-0.012	0.024***
	[0.008]	[0.007]	[0.011]	[0.011]	[0.004]	[0.005]	[0.011]	[0.011]	[0.008]	[0.003]
Bootstrap p- value	0.320	0.088	0.657	0.038	0.413	0.917	0.198	0.722	0.328	0.031
Obs	117,337	55,975	34,692	33,698	69,310	112,491	53,172	30,441	31,461	63,317
1983-1986, 1987-1990	0.007	0.012	-0.019	0.038*	0.011**	0.003	-0.035**	-0.012	-0.025***	0.033***
	[0.008]	[0.008]	[0.010]	[0.017]	[0.003]	[0.002]	[0.014]	[0.008]	[0.006]	[0.003]
Bootstrap p- value	0.382	0.016	0.469	0.008	0.023	0.305	0.266	0.367	0.102	0.055
Obs	92,504	44,774	27,292	26,767	54,413	88,226	42,444	24,119	24,846	50,257

Notes: 2004-2018 Turkish Household Labor Force Survey dataset is used in the calculations. In order to avoid censoring, individuals with age 17 and above, 20 and above and 24 and above are taken into consideration in calculating the effect of policy on middle school, high school and college completion respectively. Each cell is derived from a separate regression and standard errors are given in brackets under the coefficient estimates. Various time intervals are used starting from the widest possible according to age restrictions and narrowing gradually around the threshold. Binary variable, used for the Compulsory Schooling Policy, is equal to one if year of birth is greater than or equal to 1987 and zero otherwise. Other control variables are year dummies and split linear time trends on both sides of the threshold. Clustering is done at the year of birth level. Bootstrap p- values are added, using Bootstrap estimation of Cameron et al. (2008), because of the few clusters problem. Statistical significance: * 10 percent level, ** 5 percent level, *** 1 percent level.

Table A5. Effect of Policy on Schooling of Men and Women (Global-to-Local Approach with Donut-Hole)

1986 & 1987 Birth Cohorts are excluded										
	Female					Male				
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 1	Region 2	Region 3	Region 4	Region 5
Birth Cohorts	Estimates					Estimates				
1) Effect of Policy on Middle School Completion										
1972-1985, 1988-2001	0.245*** [0.011]	0.286*** [0.017]	0.206*** [0.011]	0.322*** [0.012]	0.102*** [0.014]	0.166*** [0.008]	0.199*** [0.010]	0.182*** [0.010]	0.182*** [0.009]	0.165*** [0.010]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Obs	456,248	204,249	136,523	138,273	274,486	436,404	189,768	122,356	125,483	242,290
1975-1985, 1988-1998	0.243*** [0.011]	0.284*** [0.018]	0.206*** [0.009]	0.317*** [0.014]	0.096*** [0.013]	0.162*** [0.008]	0.197*** [0.011]	0.189*** [0.010]	0.180*** [0.011]	0.159*** [0.010]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Obs	378,690	170,681	112,646	114,083	233,801	362,072	158,652	100,782	103,463	203,852
1978-1985, 1988-1995	0.241*** [0.010]	0.284*** [0.016]	0.194*** [0.009]	0.323*** [0.017]	0.082*** [0.012]	0.166*** [0.010]	0.209*** [0.012]	0.203*** [0.013]	0.188*** [0.013]	0.157*** [0.011]
Bootstrap p- value	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.001
Obs	294,690	133,076	87,322	88,530	185,171	280,518	123,793	77,411	79,662	159,462
1981-1985, 1988-1992	0.242*** [0.009]	0.280*** [0.010]	0.197*** [0.012]	0.327*** [0.017]	0.076*** [0.010]	0.147*** [0.010]	0.211*** [0.016]	0.187*** [0.013]	0.166*** [0.014]	0.140*** [0.009]
Bootstrap p- value	0.001	0.000	0.005	0.003	0.023	0.005	0.000	0.003	0.008	0.000
Obs	194,380	86,575	56,595	57,671	122,883	182,044	80,691	49,933	52,058	104,702
1984-1985, 1988-1989	0.209*** [0.002]	0.273*** [0.001]	0.149*** [0.003]	0.251*** [0.005]	0.086*** [0.003]	0.119*** [0.006]	0.138*** [0.005]	0.131*** [0.005]	0.107*** [0.005]	0.087*** [0.010]
Bootstrap p- value	0.125	0.125	0.000	0.125	0.125	0.000	0.000	0.250	0.125	0.125
Obs	81,010	36,071	23,197	24,392	51,606	74,518	33,169	20,301	21,360	43,089
2) Effect of Policy on High School Completion										
1975-1985, 1988-1998	0.071*** [0.011]	0.066*** [0.016]	0.054*** [0.013]	0.067*** [0.015]	0.046*** [0.008]	0.055*** [0.014]	0.040** [0.017]	0.069*** [0.016]	0.073*** [0.014]	0.057*** [0.012]
Bootstrap p- value	0.000	0.025	0.039	0.032	0.004	0.020	0.050	0.046	0.013	0.012
Obs	332,506	147,323	97,022	97,996	192,981	312,906	135,186	84,611	87,492	165,760
1977-1985, 1988-1996	0.077*** [0.010]	0.077*** [0.015]	0.066*** [0.013]	0.082*** [0.013]	0.049*** [0.009]	0.070*** [0.015]	0.061*** [0.019]	0.096*** [0.014]	0.096*** [0.014]	0.075*** [0.011]
Bootstrap p- value	0.000	0.007	0.015	0.012	0.004	0.000	0.027	0.004	0.000	0.006
Obs	284,841	127,191	83,261	83,937	169,448	267,655	116,960	72,427	74,996	144,831
1979-1985, 1988-1994	0.078*** [0.009]	0.095*** [0.016]	0.082*** [0.016]	0.097*** [0.011]	0.046*** [0.011]	0.071*** [0.018]	0.085*** [0.021]	0.106*** [0.016]	0.093*** [0.017]	0.073*** [0.009]
Bootstrap p- value	0.004	0.004	0.018	0.005	0.027	0.001	0.000	0.001	0.008	0.004
Obs	231,120	103,561	67,605	67,866	140,623	216,394	95,812	58,307	60,502	119,392
1981-1985, 1988-1992	0.077*** [0.014]	0.104*** [0.019]	0.104*** [0.019]	0.103*** [0.011]	0.052*** [0.013]	0.048* [0.023]	0.070** [0.022]	0.096*** [0.021]	0.079*** [0.023]	0.059*** [0.007]
Bootstrap p- value	0.041	0.025	0.019	0.051	0.060	0.097	0.033	0.021	0.044	0.028
Obs	170,296	76,891	49,262	49,616	103,758	157,590	71,210	42,526	44,403	87,940
1983-1985, 1988-1990	0.063*** [0.003]	0.093*** [0.012]	0.046*** [0.008]	0.138*** [0.020]	0.065*** [0.006]	0.007 [0.009]	0.015 [0.010]	0.059** [0.020]	0.006 [0.011]	0.057*** [0.009]
Bootstrap p- value	0.000	0.125	0.250	0.031	0.031	0.625	0.281	0.344	0.719	0.156
Obs	104,315	47,271	29,983	30,293	63,302	94,882	43,719	25,626	26,631	52,971

3) Effect of Policy on College Completion										
1979-1985, 1988-1994	0.024***	0.033***	0.020*	0.033**	0.015**	0.028**	0.009	0.042*	0.006	0.027***
	[0.007]	[0.007]	[0.010]	[0.014]	[0.006]	[0.013]	[0.015]	[0.022]	[0.013]	[0.009]
Bootstrap p- value	0.042	0.023	0.237	0.175	0.104	0.027	0.615	0.104	0.678	0.059
Obs	174,260	77,781	51,336	50,247	100,520	166,499	73,366	44,527	45,962	88,463
1980-1985, 1988-1993	0.020**	0.032***	0.021	0.033*	0.011*	0.016	-0.001	0.031	-0.004	0.020*
	[0.007]	[0.009]	[0.013]	[0.017]	[0.006]	[0.009]	[0.014]	[0.022]	[0.010]	[0.009]
Bootstrap p- value	0.136	0.076	0.244	0.259	0.189	0.107	0.962	0.309	0.722	0.192
Obs	148,746	67,389	43,763	42,848	86,955	142,179	63,806	38,102	39,557	76,971
1981-1985, 1988-1992	0.017*	0.035***	0.032**	0.030*	0.009	0.010	-0.009	0.031	-0.017**	0.008
	[0.009]	[0.010]	[0.011]	[0.016]	[0.007]	[0.009]	[0.013]	[0.025]	[0.008]	[0.010]
Bootstrap p- value	0.392	0.289	0.008	0.344	0.408	0.348	0.788	0.429	0.114	0.606
Obs	121,622	55,772	35,634	34,948	71,582	115,777	53,146	31,223	32,503	63,690
1982-1985, 1988-1991	0.032***	0.029**	0.027**	0.051**	0.001	0.000	-0.012	0.019	-0.009	0.022**
	[0.006]	[0.010]	[0.009]	[0.018]	[0.010]	[0.011]	[0.016]	[0.015]	[0.015]	[0.008]
Bootstrap p- value	0.141	0.500	0.031	0.164	0.922	0.984	0.641	0.438	0.688	0.242
Obs	94,783	44,371	27,976	27,092	56,065	90,676	42,555	24,462	25,393	50,505
1983-1985, 1988-1990	0.035***	0.039***	0.022*	0.102***	0.018*	0.002	-0.029**	0.013	-0.040**	0.045***
	[0.008]	[0.009]	[0.011]	[0.012]	[0.007]	[0.003]	[0.008]	[0.016]	[0.011]	[0.004]
Bootstrap p- value	0.500	0.375	0.250	0.094	0.344	0.344	0.219	0.594	0.188	0.063
Obs	69,950	33,170	20,576	20,161	41,168	66,411	31,827	18,140	18,778	37,445

Notes: 2004-2018 Turkish Household Labor Force Survey dataset is used in the calculations. In order to avoid censoring, individuals with age 17 and above, 20 and above and 24 and above are taken into consideration in calculating the effect of policy on middle school, high school and college completion respectively. Each cell is derived from a separate regression and standard errors are given in brackets under the coefficient estimates. Various time intervals are used starting from the widest possible according to age restrictions and narrowing gradually around the threshold. Binary variable, used for the Compulsory Schooling Policy, is equal to one if year of birth is greater than or equal to 1987 and zero otherwise. Other control variables are year dummies and split linear time trends on both sides of the threshold. Clustering is done at the year of birth level. Bootstrap p- values are added, using Bootstrap estimation of Cameron et al. (2008), because of the few clusters problem. Statistical significance: * 10 percent level, ** 5 percent level, *** 1 percent level.

Table A6. Effect of Policy on Schooling of Urban and Rural Residents (Global Approach without Donut-Hole)

1986 & 1987 Birth Cohorts are not excluded										
Rural						Urban				
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 1	Region 2	Region 3	Region 4	Region 5
1) Effect of Policy on Middle School Completion (10-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.225*** [0.039]	0.263*** [0.054]	0.194*** [0.037]	0.262*** [0.036]	0.089* [0.044]	0.128*** [0.021]	0.134*** [0.025]	0.130*** [0.019]	0.132*** [0.028]	0.108*** [0.028]
Bootstrap p- value	0.000	0.003	0.000	0.001	0.179	0.003	0.001	0.000	0.001	0.024
Quadratic										
policy	0.237*** [0.041]	0.252*** [0.053]	0.199*** [0.038]	0.265*** [0.039]	0.064*** [0.018]	0.139*** [0.021]	0.148*** [0.025]	0.127*** [0.019]	0.149*** [0.026]	0.091*** [0.018]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000
Cubic										
policy	0.188*** [0.044]	0.228*** [0.067]	0.133*** [0.032]	0.227*** [0.042]	0.046* [0.022]	0.119*** [0.026]	0.134*** [0.033]	0.098*** [0.017]	0.118*** [0.028]	0.078*** [0.022]
Bootstrap p- value	0.004	0.025	0.013	0.031	0.268	0.006	0.006	0.030	0.025	0.031
Split Polynomials										
Linear										
policy	0.236*** [0.041]	0.251*** [0.050]	0.199*** [0.038]	0.263*** [0.039]	0.069*** [0.015]	0.137*** [0.019]	0.145*** [0.025]	0.128*** [0.018]	0.147*** [0.024]	0.094*** [0.017]
Bootstrap p- value	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Quadratic										
policy	0.159*** [0.043]	0.179*** [0.056]	0.101*** [0.028]	0.190*** [0.035]	0.031** [0.013]	0.103*** [0.024]	0.115*** [0.032]	0.081*** [0.015]	0.103*** [0.025]	0.062*** [0.019]
Bootstrap p- value	0.019	0.003	0.022	0.057	0.011	0.022	0.014	0.067	0.033	0.011
Number of Observations	89,751	40,099	32,841	52,565	103,614	378,870	155,728	97,619	80,792	160,093
2) Effect of Policy on High School Completion (7-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.033*** [0.010]	0.066** [0.027]	0.020 [0.017]	0.078*** [0.014]	0.013 [0.009]	0.038*** [0.008]	0.062*** [0.014]	0.049*** [0.013]	0.060*** [0.016]	0.026** [0.009]
Bootstrap p- value	0.014	0.168	0.201	0.007	0.209	0.013	0.001	0.044	0.002	0.030
Quadratic										
policy	0.034** [0.014]	0.044** [0.020]	0.028 [0.024]	0.075*** [0.016]	0.016 [0.011]	0.047*** [0.011]	0.065*** [0.016]	0.064*** [0.014]	0.052*** [0.014]	0.030** [0.012]
Bootstrap p- value	0.033	0.053	0.200	0.001	0.243	0.014	0.003	0.002	0.002	0.015
Cubic										
policy	0.018 [0.012]	0.060** [0.021]	-0.006 [0.021]	0.059*** [0.018]	0.024 [0.014]	0.020* [0.010]	0.052*** [0.016]	0.032*** [0.010]	0.028*** [0.008]	0.027** [0.011]
Bootstrap p- value	0.250	0.119	0.823	0.120	0.245	0.293	0.018	0.052	0.027	0.003
Split Polynomials										
Linear										
policy	0.033** [0.012]	0.044*** [0.013]	0.027 [0.024]	0.074*** [0.014]	0.014 [0.011]	0.046*** [0.012]	0.065*** [0.015]	0.063*** [0.016]	0.056*** [0.015]	0.029*** [0.012]
Bootstrap p- value	0.029	0.025	0.250	0.007	0.261	0.020	0.007	0.007	0.001	0.020
Quadratic										
policy	-0.001 [0.016]	0.047*** [0.015]	-0.026 [0.022]	0.043** [0.014]	0.021 [0.014]	0.006 [0.009]	0.036** [0.014]	0.019 [0.012]	0.017 [0.010]	0.024* [0.013]
Bootstrap p- value	0.941	0.093	0.440	0.328	0.201	0.621	0.059	0.492	0.263	0.057
Number of Observations	50,963	23,197	18,421	29,947	58,674	229,789	95,228	57,614	47,442	94,045

Notes: 2004-2013 Turkish Household Labor Force Survey dataset is used in the calculations since urban/rural breakdown is available until 2013. Widest possible bandwidth for middle school and high school outcomes contains 1977-1996 and 1980-1993 birth cohorts respectively. Each cell is derived from a separate regression and standard errors are given in brackets under the coefficient estimates. Binary variable, used for the Compulsory Schooling Policy, is equal to one if year of birth is greater than or equal to 1987 and zero otherwise. Other control variables are year dummies, 26 NUTS-2 region dummies and single and split time trends. Clustering is done at the year of birth level. Bootstrap p- values are added, using Bootstrap estimation of Cameron et al. (2008), because of the few clusters problem. Statistical significance: * 10 percent level, ** 5 percent level, *** 1 percent level.

Table A7. Effect of Policy on Schooling of Urban and Rural Residents (Global Approach with Donut-Hole)

1986 & 1987 Birth Cohorts are excluded										
Rural						Urban				
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 1	Region 2	Region 3	Region 4	Region 5
1) Effect of Policy on Middle School Completion (9-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.297***	0.359***	0.266***	0.334***	0.127**	0.161***	0.173***	0.167***	0.170***	0.149***
	[0.019]	[0.034]	[0.027]	[0.023]	[0.048]	[0.011]	[0.019]	[0.011]	[0.023]	[0.027]
Bootstrap p- value	0.001	0.001	0.002	0.001	0.117	0.001	0.001	0.000	0.001	0.011
Quadratic										
policy	0.324***	0.355***	0.278***	0.347***	0.092***	0.181***	0.200***	0.166***	0.200***	0.126***
	[0.008]	[0.032]	[0.023]	[0.022]	[0.014]	[0.007]	[0.010]	[0.010]	[0.014]	[0.012]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.002
Cubic										
policy	0.314***	0.408***	0.226***	0.350***	0.082***	0.186***	0.225***	0.149***	0.192***	0.135***
	[0.013]	[0.049]	[0.027]	[0.037]	[0.023]	[0.012]	[0.015]	[0.013]	[0.026]	[0.018]
Bootstrap p- value	0.000	0.013	0.011	0.003	0.189	0.002	0.003	0.002	0.004	0.019
Split Polynomials										
Linear										
policy	0.321***	0.349***	0.278***	0.343***	0.097***	0.176***	0.194***	0.167***	0.196***	0.127***
	[0.008]	[0.028]	[0.021]	[0.022]	[0.008]	[0.009]	[0.013]	[0.010]	[0.012]	[0.007]
Bootstrap p- value	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.001
Quadratic										
policy	0.314***	0.374***	0.204***	0.324***	0.069***	0.173***	0.218***	0.135***	0.194***	0.121***
	[0.013]	[0.030]	[0.024]	[0.037]	[0.014]	[0.012]	[0.015]	[0.012]	[0.022]	[0.009]
Bootstrap p- value	0.000	0.003	0.002	0.010	0.095	0.001	0.002	0.001	0.000	0.001
Number of Observations	78,276	35,080	28,662	45,443	89,279	332,628	136,814	85,502	70,741	138,528
2) Effect of Policy on High School Completion (6-year intervals on each side of the cutoff)										
Single Polynomials										
Linear										
policy	0.044**	0.083**	0.040	0.084***	0.016	0.050***	0.088***	0.062**	0.086***	0.034**
	[0.019]	[0.032]	[0.031]	[0.024]	[0.013]	[0.012]	[0.011]	[0.024]	[0.023]	[0.014]
Bootstrap p- value	0.076	0.145	0.233	0.023	0.336	0.035	0.018	0.142	0.002	0.143
Quadratic										
policy	0.051	0.055	0.066	0.085**	0.025	0.070***	0.104***	0.095***	0.082***	0.045**
	[0.035]	[0.036]	[0.041]	[0.037]	[0.014]	[0.017]	[0.014]	[0.015]	[0.020]	[0.016]
Bootstrap p- value	0.145	0.147	0.066	0.005	0.258	0.018	0.018	0.023	0.015	0.088
Cubic										
policy	0.018	0.088**	-0.000	0.036	0.054**	0.019	0.111***	0.040**	0.043*	0.057**
	[0.039]	[0.038]	[0.036]	[0.038]	[0.018]	[0.022]	[0.018]	[0.014]	[0.023]	[0.020]
Bootstrap p- value	0.742	0.116	0.991	0.530	0.176	0.600	0.025	0.164	0.090	0.151
Split Polynomials										
Linear										
policy	0.048	0.054	0.070	0.084**	0.024	0.070***	0.101***	0.098***	0.088***	0.046***
	[0.034]	[0.031]	[0.042]	[0.037]	[0.014]	[0.019]	[0.014]	[0.012]	[0.018]	[0.014]
Bootstrap p- value	0.145	0.050	0.033	0.003	0.268	0.016	0.008	0.004	0.013	0.097
Quadratic										
policy	-0.062	0.074	-0.012	-0.029	0.079***	-0.015	0.100***	0.041	0.046*	0.088***
	[0.047]	[0.053]	[0.075]	[0.039]	[0.023]	[0.028]	[0.029]	[0.026]	[0.025]	[0.020]
Bootstrap p- value	0.546	0.258	0.806	0.709	0.143	0.742	0.087	0.396	0.255	0.085
Number of Observations	43,649	19,666	15,604	25,324	49,512	195,741	80,942	48,790	40,371	79,167

Notes: 2004-2013 Turkish Household Labor Force Survey dataset is used in the calculations since urban/rural breakdown is available until 2013. Widest possible bandwidth for middle school and high school outcomes contains 1977-1996 and 1980-1993 birth cohorts respectively. Each cell is derived from a separate regression and standard errors are given in brackets under the coefficient estimates. Binary variable, used for the Compulsory Schooling Policy, is equal to one if year of birth is greater than or equal to 1987 and zero otherwise. Other control variables are year dummies, 26 NUTS-2 region dummies and single and split time trends. Clustering is done at the year of birth level. Bootstrap p- values are added, using Bootstrap estimation of Cameron et al. (2008), because of the few clusters problem. Statistical significance: * 10 percent level, ** 5 percent level, *** 1 percent level.

Table A8. Effect of Policy on Schooling of Urban and Rural Residents (Global-to-Local Approach without Donut-Hole)

1986 & 1987 Birth Cohorts are not excluded										
	Rural					Urban				
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 1	Region 2	Region 3	Region 4	Region 5
Birth Cohorts	Estimates					Estimates				
1) Effect of Policy on Middle School Completion										
1977-1986, 1987-1996	0.247*** [0.042]	0.263*** [0.050]	0.197*** [0.041]	0.264*** [0.039]	0.073*** [0.016]	0.140*** [0.019]	0.169*** [0.025]	0.130*** [0.018]	0.152*** [0.025]	0.092*** [0.017]
Bootstrap p- value	0.000	0.001	0.001	0.003	0.000	0.000	0.000	0.000	0.000	0.000
Obs	89,751	40,099	32,841	52,565	103,614	378,870	155,728	97,619	80,792	160,093
1979-1986, 1987-1994	0.233*** [0.044]	0.261*** [0.053]	0.176*** [0.041]	0.257*** [0.041]	0.059*** [0.015]	0.136*** [0.021]	0.170*** [0.028]	0.119*** [0.018]	0.142*** [0.027]	0.086*** [0.018]
Bootstrap p- value	0.001	0.004	0.001	0.005	0.004	0.000	0.000	0.002	0.000	0.000
Obs	75,498	34,005	27,437	44,839	90,426	320,149	131,912	82,749	68,126	138,545
1981-1986, 1987-1992	0.210*** [0.046]	0.223*** [0.052]	0.141*** [0.038]	0.224*** [0.038]	0.054*** [0.017]	0.121*** [0.023]	0.158*** [0.031]	0.106*** [0.018]	0.120*** [0.027]	0.072*** [0.018]
Bootstrap p- value	0.008	0.008	0.007	0.017	0.008	0.008	0.006	0.010	0.000	0.005
Obs	59,190	25,984	21,335	35,610	71,896	250,014	103,423	64,439	53,251	110,162
1983-1986, 1987-1990	0.153*** [0.039]	0.162*** [0.045]	0.079** [0.025]	0.177*** [0.031]	0.049** [0.020]	0.096*** [0.021]	0.126*** [0.030]	0.083*** [0.015]	0.094*** [0.026]	0.054** [0.018]
Bootstrap p- value	0.094	0.070	0.070	0.094	0.039	0.078	0.078	0.078	0.078	0.055
Obs	41,306	17,945	14,701	24,808	50,304	172,131	71,448	44,207	36,571	77,348
2) Effect of Policy on High School Completion										
1980-1986, 1987-1993	0.032** [0.012]	0.044** [0.015]	0.029 [0.023]	0.071*** [0.012]	0.023* [0.011]	0.049*** [0.010]	0.067*** [0.014]	0.065*** [0.016]	0.055*** [0.014]	0.029** [0.011]
Bootstrap p- value	0.003	0.030	0.165	0.004	0.055	0.014	0.003	0.008	0.001	0.014
Obs	50,963	23,197	18,421	29,947	58,674	229,789	95,228	57,614	47,442	94,045
1981-1986, 1987-1992	0.031** [0.013]	0.051** [0.017]	0.022 [0.022]	0.066*** [0.012]	0.021* [0.011]	0.041*** [0.011]	0.070*** [0.016]	0.059*** [0.017]	0.047*** [0.013]	0.029** [0.011]
Bootstrap p- value	0.071	0.024	0.370	0.007	0.101	0.027	0.008	0.010	0.004	0.023
Obs	44,126	20,303	16,022	26,334	51,666	200,185	83,823	50,357	41,338	82,645
1982-1986, 1987-1991	0.014 [0.010]	0.056*** [0.014]	0.016 [0.026]	0.068*** [0.012]	0.022* [0.011]	0.031*** [0.007]	0.065*** [0.017]	0.047** [0.015]	0.039*** [0.011]	0.029** [0.012]
Bootstrap p- value	0.257	0.019	0.659	0.044	0.129	0.068	0.028	0.043	0.017	0.043
Obs	37,206	17,280	13,451	22,125	44,056	168,596	71,484	42,563	34,857	70,502
1983-1986, 1987-1990	0.002 [0.009]	0.053** [0.015]	-0.019 [0.013]	0.062*** [0.010]	0.026* [0.012]	0.030*** [0.005]	0.052** [0.018]	0.035** [0.012]	0.030** [0.009]	0.028** [0.011]
Bootstrap p- value	0.805	0.070	0.461	0.055	0.023	0.055	0.039	0.117	0.023	0.008
Obs	29,960	14,088	10,854	17,988	35,579	136,283	58,121	34,443	28,112	57,735

Notes: 2004-2013 Turkish Household Labor Force Survey dataset is used in the calculations since urban/rural breakdown is available until 2013. In order to avoid censoring, individuals with age 17 and above and 20 and above are taken into consideration in calculating the effect of policy on middle school and high school completion respectively. Each cell is derived from a separate regression and standard errors are given in brackets under the coefficient estimates. Various time intervals are used starting from the widest possible according to age restrictions and narrowing gradually around the threshold. Binary variable, used for the Compulsory Schooling Policy, is equal to one if year of birth is greater than or equal to 1987 and zero otherwise. Other control variables are year dummies and split linear time trends on both sides of the threshold. Clustering is done at the year of birth level. Bootstrap p- values are added, using Bootstrap estimation of Cameron et al. (2008), because of the few clusters problem. Statistical significance: * 10 percent level, ** 5 percent level, *** 1 percent level.

Table A9. Effect of Policy on Schooling of Urban and Rural Residents (Global-to-Local Approach with Donut-Hole)

1986 & 1987 Birth Cohorts are excluded										
Birth Cohorts	Rural					Urban				
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 1	Region 2	Region 3	Region 4	Region 5
Estimates										
1) Effect of Policy on Middle School Completion										
1977-1985, 1988-1996	0.336***	0.359***	0.283***	0.347***	0.102***	0.180***	0.216***	0.167***	0.204***	0.127***
	[0.008]	[0.026]	[0.024]	[0.020]	[0.008]	[0.008]	[0.014]	[0.009]	[0.007]	[0.009]
Bootstrap p- value	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Obs	78,276	35,080	28,662	45,443	89,279	332,628	136,814	85,502	70,741	138,528
1979-1985, 1988-1994	0.334***	0.379***	0.270***	0.352***	0.086***	0.183***	0.230***	0.158***	0.202***	0.125***
	[0.009]	[0.021]	[0.026]	[0.022]	[0.009]	[0.007]	[0.010]	[0.008]	[0.008]	[0.009]
Bootstrap p- value	0.000	0.000	0.001	0.000	0.013	0.001	0.000	0.000	0.000	0.000
Obs	64,023	28,986	23,258	37,717	76,091	273,907	112,998	70,632	58,075	116,980
1981-1985, 1988-1992	0.333***	0.359***	0.246***	0.327***	0.090***	0.178***	0.234***	0.155***	0.190***	0.119***
	[0.010]	[0.023]	[0.027]	[0.021]	[0.009]	[0.007]	[0.008]	[0.010]	[0.008]	[0.007]
Bootstrap p- value	0.000	0.006	0.016	0.006	0.045	0.010	0.000	0.000	0.004	0.004
Obs	47,715	20,965	17,156	28,488	57,561	203,772	84,509	52,322	43,200	88,597
1983-1985, 1988-1990	0.304***	0.335***	0.177***	0.305***	0.123***	0.171***	0.231***	0.141***	0.197***	0.119***
	[0.006]	[0.010]	[0.016]	[0.019]	[0.012]	[0.008]	[0.007]	[0.010]	[0.009]	[0.010]
Bootstrap p- value	0.000	0.000	0.031	0.000	0.063	0.000	0.000	0.031	0.000	0.000
Obs	29,831	12,926	10,522	17,686	35,969	125,889	52,534	32,090	26,520	55,783
2) Effect of Policy on High School Completion										
1980-1985, 1988-1993	0.053	0.063**	0.078*	0.074**	0.040***	0.069***	0.093***	0.097***	0.088***	0.049***
	[0.031]	[0.026]	[0.041]	[0.032]	[0.012]	[0.019]	[0.018]	[0.012]	[0.011]	[0.009]
Bootstrap p- value	0.006	0.075	0.031	0.018	0.127	0.022	0.029	0.001	0.015	0.038
Obs	43,649	19,666	15,604	25,324	49,512	195,741	80,942	48,790	40,371	79,167
1981-1985, 1988-1992	0.054	0.081**	0.067	0.065*	0.040**	0.059**	0.104***	0.093***	0.079***	0.052***
	[0.036]	[0.028]	[0.046]	[0.033]	[0.014]	[0.022]	[0.019]	[0.013]	[0.011]	[0.008]
Bootstrap p- value	0.122	0.041	0.116	0.034	0.154	0.055	0.037	0.013	0.012	0.041
Obs	36,812	16,772	13,205	21,711	42,504	166,137	69,537	41,533	34,267	67,767
1982-1985, 1988-1991	0.018	0.097***	0.071	0.066	0.046**	0.037*	0.102***	0.074***	0.068***	0.059***
	[0.032]	[0.026]	[0.057]	[0.038]	[0.014]	[0.018]	[0.024]	[0.012]	[0.008]	[0.007]
Bootstrap p- value	0.742	0.008	0.320	0.063	0.188	0.234	0.109	0.031	0.078	0.031
Obs	29,892	13,749	10,634	17,502	34,894	134,548	57,198	33,739	27,786	55,624
1983-1985, 1988-1990	-0.024	0.105**	-0.018	0.042	0.070***	0.033***	0.084***	0.049***	0.061***	0.069***
	[0.014]	[0.031]	[0.031]	[0.028]	[0.007]	[0.005]	[0.007]	[0.008]	[0.012]	[0.007]
Bootstrap p- value	0.688	0.188	0.813	0.219	0	0.125	0.094	0.188	0.219	0.094
Obs	22,646	10,557	8,037	13,365	26,417	102,235	43,835	25,619	21,041	42,857

Notes: 2004-2013 Turkish Household Labor Force Survey dataset is used in the calculations since urban/rural breakdown is available until 2013. In order to avoid censoring, individuals with age 17 and above and 20 and above are taken into consideration in calculating the effect of policy on middle school and high school completion respectively. Each cell is derived from a separate regression and standard errors are given in brackets under the coefficient estimates. Various time intervals are used starting from the widest possible according to age restrictions and narrowing gradually around the threshold. Binary variable, used for the Compulsory Schooling Policy, is equal to one if year of birth is greater than or equal to 1987 and zero otherwise. Other control variables are year dummies and split linear time trends on both sides of the threshold. Clustering is done at the year of birth level. Bootstrap p- values are added, using Bootstrap estimation of Cameron et al. (2008), because of the few clusters problem. Statistical significance: * 10 percent level, ** 5 percent level, *** 1 percent level.

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