UNIVERSIDADE CATÓLICA PORTUGUESA

The causal effect of education on gender role attitudes:

Evidence from a natural experiment

Master's Final Assignment presented to *Universidade Católica Portuguesa*
to obtain a master's degree in finance

by

Henrique Vicente Sabino Domingues Soares da Mota

Under supervision of
Dr. Z. Eylem Gevrek

Católica Porto Business School
April 2025

Acknowledgments

This dissertation would not have been possible without the support and presence of those who accompanied me along the way. I am truly grateful to each of them.

I would like to thank my professor, Eylem Gevrek, for her full availability, infinite patience, and all the knowledge she shared with me throughout this journey. Her guidance, presence, and enthusiasm were essential to the development of this work. Thank you for your kindness, calmness, and commitment.

To my mother, Margarida, and my father, Renato, thank you for providing the best conditions for the development of this thesis, for your unconditional support throughout my entire academic path, and for always being there.

To my younger siblings, Miguel and Maria, for making me want to be better, and an example in your growth and your lives.

To my grandparents, Isabel, Rui, and Arlindo, for following my path with a proud smile on their faces. To my closest friends, for the encouragement, the necessary breaks, and the constant friendship.

To Inês, for your constant presence, for your motivation on difficult days, and your calm in the right moments; this journey was also yours, marked by your quiet support, your tireless patience, and a steady confidence that was always there…simple and unwavering.

Sumário Executivo

Esta dissertação analisa o efeito causal da educação sobre as atitudes em relação aos papéis de género, utilizando dados dos Inquéritos Demográficos e de Saúde da Turquia (TDHS) de 2013 e 2018. Para lidar com a potencial endogeneidade da educação, recorre-se ao método das variáveis instrumentais (IV), utilizando como fonte de variação exógena a reforma educativa de 1997 na Turquia, que aumentou a escolaridade obrigatória de cinco para oito anos. A reforma elevou significativamente os níveis de escolaridade entre as mulheres, constituindo uma experiência natural credível. As estimativas IV mostram que, contrariamente às associações positivas encontradas através de modelos de regressão OLS, a educação não tem um efeito estatisticamente significativo sobre as atitudes de género. Este resultado mantém-se consistente em vários índices que captam opiniões sobre a tomada de decisões familiares, o emprego feminino, a participação política e normas sociais de género. Os resultados sugerem que a educação, por si só, não é suficiente para transformar atitudes tradicionais sobre os papéis de género, salientando a importância de dinâmicas culturais e institucionais mais amplas na formação destas crenças.

Palavras-chave: Educação, Atitudes sobre os Papéis de Género, Experimento Natural, Turquia

Abstract

This dissertation examines the causal effect of education on gender role attitudes using data from the 2013 and 2018 Turkish Demographic and Health Surveys. To address the potential endogeneity of education, the method of instrumental variables (IV) is employed, using the 1997 education reform in Turkey, which extended compulsory schooling from 5 to 8 years, as a source of exogenous variation. The reform significantly increased educational attainment among women, providing a credible natural experiment. The IV estimates show that, contrary to the positive associations found in ordinary least squares (OLS) regressions, education has no statistically significant effect on gender role attitudes. This result holds across multiple indices capturing views on family decision-making, female employment, political participation, and gender norms. The findings suggest that education alone is not sufficient to transform traditional gender role attitudes, pointing to the importance of broader cultural and institutional dynamics in shaping beliefs about gender roles.

Keywords: Education, Gender Role Attitudes, Natural Experiment, Turkey

Contents

Acknowledgements 2
Sumário Executivo 4
Abstract 5
Contents 7
Table of Figures 9
Table of Tables 10
1. Introduction 12
2. Literature Review 15
3. The 1997 Education Reform in Turkey 20
4. Data and Descriptive Statistics 22
5. Empirical Analysis 33
6. Results 36
6.1 Ordinary least squares (OLS) estimates 36
6.2 Instrumental variables (IV) estimates 41
6.3 Robustness checks 46
7. Conclusion 44
Disclosure of AI-Assisted Writing Tools 52
References 54
Appendix 57
AI Prompts List 64

Table of Figures

Figure 1: Proportion of females with at least the middle school degree across birth cohorts 26

Figure 2: The impact of the 1997 education reform in Turkey on gender role attitudes 63

Table of Tables

Table 1 Descriptive Statistics 30

Table 2 OLS: Basic Specification - GRA Indexes 1 to 3 37

Table 3 OLS: Basic Specification – Statements 1 to 7 37

Table 4 OLS: Extended Specification - GRA Indexes 1 to 3 39

Table 5 OLS: Extended Specification – Statements 1 to 7 40

Table 6 IV: Basic Specification - GRA Indexes 1 to 3 42

Table 7 IV: Basic Specification – Statements 1 to 7 42

Table 8 IV: Extended Specification - GRA Indexes 1 to 3 44

Table 9 IV: Extended Specification – Statements 1 to 7 45

Table 10 Robustness Check - IV: Narrowing the range of birth cohorts GRA Index 1 57

Table 11 Robustness Check - IV: Narrowing the range of birth cohorts GRA Index 2 57

Table 12 Robustness Check - IV: Narrowing the range of birth cohorts GRA Index 3 58

Table 13 Robustness Check - IV: Inclusion of 1986 cohort, GRA Index1-Index3 (Treatment = 0.3) 59

Table 14 Robustness Check - IV: Inclusion of 1986 cohort, Statements 1 to 7 (Treatment = 0.3) 60

Table 15 Robustness Check - IV: Inclusion of 1986 cohort, GRA Index1-Index3 (Treatment = 0.5) 61

Table 16 Robustness Check - IV: Inclusion of 1986 cohort, Statements 1 to 7 (Treatment = 0.5) 62

1. Introduction

"One child, one teacher, one book, and one pen can change the world."

Malala Yousafzai, United Nations Youth Assembly, July 12, 2013

Education is widely regarded as one of the most transformative forces in society. While much attention has been given to its impact on economic outcomes such as income, employment, and productivity, education also plays a critical role in shaping non-pecuniary aspects of life. These include health, subjective well-being, civic engagement, and social attitudes. Among the latter, gender role attitudes stand out as particularly consequential, as they influence how individuals perceive and assign roles to men and women within families, the labour market, and society.

In recent years, the question of whether education can foster more egalitarian views and challenge traditional gender norms has gained prominence in both academic and policy debates. Gender role attitudes are central to this discussion, as they affect women's access to resources, opportunities, and decision-making power. Although a growing body of research has documented a positive association between education and more progressive gender views, most of this evidence is based on correlational analyses. Such associations may be confounded by unobserved characteristics, such as family background, values, or ability, that influence both educational attainment and attitudes, raising endogeneity concerns. This study addresses this limitation by providing causal evidence on the relationship between education and gender role attitudes. The analysis exploits the 1997 education reform in Turkey, which increased compulsory schooling from five to eight years. The reform was implemented abruptly at the end of the 1996–1997 academic year. This institutional change

created a source of exogenous variation in educational attainment that can be leveraged using the method of instrumental variables (IV).

Using data from the 2013 and 2018 waves of the Turkish Demographic and Health Surveys (TDHS), the study investigates the effect of education on women's gender role attitudes across several domains: household decision-making, female employment, political participation, education, domestic violence, and social norms concerning women's autonomy and behavior. Index measures are constructed to capture the extent to which respondents hold egalitarian versus traditional views. Education is instrumented using exposure to the reform to isolate its causal effect.

The results reveal a marked contrast between ordinary least squares (OLS) and IV estimates. While the OLS results suggest that higher educational attainment is associated with more egalitarian attitudes, the IV estimates indicate no statistically significant causal effect. This suggests that the observed associations may be driven by omitted variable bias, and that education alone may not be sufficient to shift deeply rooted gender norms.

These findings contribute to the literature on the non-pecuniary returns to education and underscore the importance of considering cultural and institutional contexts in understanding how education influences social attitudes. They also highlight the need to complement educational policies with broader interventions aimed at challenging and transforming persistent gender inequalities.

The remainder of this dissertation is structured as follows. Section 2 reviews the related literature. Section 3 provides background on the 1997 education reform. Section 4 describes the data. Section 5 presents the empirical methodology. Section 6 reports the results and robustness checks. Section 7 concludes.

2. Literature Review

Gender role attitudes refer to individuals' beliefs and perceptions regarding the appropriate roles and responsibilities of men and women in society. They are critical in shaping societal structures, influencing labor market participation, family dynamics, and broader societal outcomes. Egalitarian gender role attitudes, which advocate for equal opportunities and responsibilities for men and women, have been associated with higher female labor force participation, narrower gender wage gaps, and improved intergenerational educational outcomes (Blau et al., 2011; Fortin, 2005). By contrast, traditional gender role attitudes reinforce patriarchal norms that confine women primarily to caregiving and household responsibilities, perpetuating gender disparities (van der Horst, 2014). Education is widely considered a transformative force capable of reshaping entrenched gender norms. Through increased exposure to diverse perspectives and critical thinking skills, education challenges traditional societal roles, fostering more egalitarian gender attitudes (Oreopoulos & Salvanes, 2011). Theoretical frameworks, such as human capital theory (Becker, 1964), suggest that education enhances individuals' capacity to engage with complex social issues, including gender equality. However, the extent to which education can achieve this transformative role varies significantly across cultural and institutional contexts, necessitating empirical investigation.

Education disrupts the intergenerational transmission of traditional gender norms by broadening individuals' cognitive horizons and fostering critical thinking. The intergenerational cultural transmission theory (Bisin & Verdier, 2001) highlights how societal norms are passed down but can be disrupted by formal education. Educational attainment exposes individuals to new ideas, challenges traditional beliefs, and provides tools to question patriarchal

structures (Bolzendahl & Myers, 2004; Davis & Greenstein, 2009). This is particularly relevant in societies with deeply entrenched gender norms, where education may catalyse social change.

Empirical evidence supports the notion that education promotes gender equality by fostering more egalitarian attitudes. Oreopoulos and Salvanes (2011) demonstrated that higher educational attainment is associated with progressive attitudes toward gender roles. This aligns with Inglehart and Norris's (2003) modernization theory, which posits that societal advancement, including increased education and economic development, leads to more egalitarian gender norms. However, they caution that cultural and institutional factors significantly mediate this relationship, suggesting that the impact of education on gender role attitudes is context dependent.

Numerous studies have examined the impact of education on various societal outcomes, such as political preferences, economic behaviors, and social attitudes. For example, Cesur and Mocan (2018) utilized Turkey's 1997 Education Reform as a natural experiment to demonstrate that higher educational attainment led to more progressive political attitudes in a predominantly Muslim society. Similarly, Gevrek et al. (2021) found that education increased political dissatisfaction and emigration intentions, highlighting its role in sensitizing individuals to societal inequalities.

Dursun and Cesur's (2016), provides valuable insights into the causal relationship between education and subjective well-being. Using data from Turkey's Life Satisfaction Survey, their research demonstrates that while education may not directly enhance overall happiness, it significantly influences various dimensions of life satisfaction, particularly for women. These findings highlight the indirect channels through which education can shape societal attitudes, including those related to gender roles. Despite this wealth of research, there is a relative lack of studies directly linking education to gender role

attitudes, particularly in non-Western contexts. Fortin (2005) showed that higher education levels correlate with more egalitarian gender role attitudes in OECD countries. Similarly, Dildar (2015) highlighted how patriarchal norms and religiosity limit women's labor force participation in Turkey, despite increased educational attainment. This underscores the complexity of the relationship between education and gender norms, suggesting the need for more direct empirical investigations. The effectiveness of education in shaping gender role attitudes is heavily influenced by cultural and institutional contexts. In Turkey, patriarchal norms and religious conservatism remain significant barriers to achieving gender equality, even as educational attainment rises (Dincer et al., 2014; Kandiyoti, 1988). The Global Gender Gap Index (Hausmann et al., 2012) underscores persistent disparities in gender equality across different regions, despite widespread improvements in educational access. These findings highlight the importance of considering socio-cultural factors when evaluating education's role in transforming gender norms.

Studies focusing on Middle Eastern contexts, such as those by Dildar (2015) and Dincer et al. (2014), emphasize the limitations of education in shifting deeply ingrained norms. For instance, while education has been shown to improve women's reproductive health and labor market outcomes, its impact on attitudes toward gender equality remains constrained by societal expectations and religious influences. Gevrek et al. (2021) also noted regional disparities in the effectiveness of educational reforms, suggesting that institutional support plays a crucial role in translating educational gains into attitudinal shifts. These findings suggest that education alone may be insufficient to dismantle entrenched patriarchal norms without concurrent changes in cultural and institutional structures.

Empirical research on education and gender role attitudes increasingly relies on rigorous econometric methodologies to address potential endogeneity and

causal inference challenges. Studies by Oreopoulos (2007) and Dursun and Cesur (2016) leveraged education reforms as exogenous instruments to isolate the causal effects of education on subjective well-being and societal attitudes. The method of instrumental variables is used to address biases arising from unobserved confounders. The current study employs Turkey's 1997 Education Reform as a natural experiment to estimate the causal impact of increased educational attainment on gender role attitudes. By comparing cohorts exposed to different compulsory schooling requirements, the study seeks to identify how additional years of education influence attitudinal changes. This methodological approach builds on previous research while addressing gaps in the literature specific to gender role attitudes.

To strengthen the academic foundation, this study draws on the works of leading researchers in the fields of education, gender, and societal transformation. Goldin (1990) pioneered research on women's labor market participation, providing historical insights into how education shapes gender norms. Giuliano (2007) explores cultural persistence and institutional change, elucidating the complex interplay between education and societal norms. Additionally, Fernández and Fogli (2009) extensively study the intergenerational transmission of cultural values, offering valuable perspectives on how education disrupts traditional gender roles. Other notable contributions include Currie and Moretti's (2003) research on educational determinants of health and economic outcomes, as well as Lundberg and Pollak's (1993) work on family decision-making and economic outcomes.

In conclusion, this study provides robust evidence on the causal effect of education on gender role attitudes, offering important insights for policies in conservative, patriarchal settings. While education can influence gender norms, its impact depends on broader cultural and institutional contexts. Thus,

educational reforms should be accompanied by wider societal efforts to promote lasting gender equality.

3. The 1997 Education Reform in Turkey

In August 1997, Turkey introduced a transformative education reform that extended the duration of compulsory schooling from 5 to 8 years. This reform marked a turning point in the country's education system and was implemented unexpectedly by a newly elected secular coalition government. The decision was influenced by Turkey's aspirations to join the European Union, as aligning with EU standards was seen as essential for the nation's socio-economic progress. Moreover, the reform aimed to reduce the influence of religious education, particularly Imam-Hatip schools, by ensuring children remained in secular education for a longer period. By focusing on expanding access to education, the policy set the stage for significant societal changes, with far-reaching effects on various social and economic outcomes (Dülger, 2004; Cesur and Mocan, 2018).

The swift implementation of the reform required substantial investments in educational infrastructure and resources. Between 1997 and 2003, the Turkish government constructed more than 63,000 new classrooms, representing a 19% increase compared to 1996 levels. The number of primary school teachers also rose by 36%, reflecting the government's commitment to addressing the demand for additional educational capacity. To further support students, the government introduced free transportation services for children living in remote areas and provided textbooks and meals for low-income families. These measures helped ensure that children from diverse socio-economic backgrounds could benefit from the reform, particularly in regions with historically low enrolment rates (Dülger, 2004; Turkish Statistical Institute, 2006).

The reform was highly effective in increasing school enrolment, particularly in grades 6 to 8. In the years following its implementation, enrolment rates in these grades rose sharply, with gross enrolment reaching nearly 100% by 2003.

The effects were especially pronounced in less developed regions, where pre-reform dropout rates were highest. By narrowing regional disparities, the reform not only expanded educational access but also played a critical role in promoting equity across Turkey's diverse socio-economic landscape (Gevrek et al., 2021; Dincer et al., 2014).

This natural experiment, which created an exogenous increase in educational attainment, has been widely studied for its broader societal implications. Researchers have utilized the reform to explore its causal effects on various outcomes, including political preferences (Cesur & Mocan, 2018), women's empowerment (Dincer et al., 2014) and fertility rates (Güneş, 2015). The 1997 reform represents a milestone in Turkey's education policy, illustrating the profound impact of education on societal outcomes. By significantly increasing access to education, particularly among disadvantaged groups, the reform addressed structural inequities and catalysed social progress. Its success in improving enrolment rates and narrowing regional disparities underscores the importance of investing in education as a tool for social change. Moreover, the lessons learned from this policy have relevance for other countries seeking to leverage education reforms to promote development and equality. As research continues to uncover the multifaceted impacts of the reform, it stands as a testament to the enduring value of education in shaping more equitable and inclusive societies.

4. Data and Descriptive Statistics

The dataset used in this study is derived from the 2013 and 2018 Turkish Demographic and Health Surveys (TDHS), which provide nationally representative data on demographic and health-related characteristics of women. It comprises a comprehensive set of variables that are essential for understanding the relationship between education and gender role attitudes. The dependent variables capture gender role attitudes across seven key dimensions, each corresponding to a specific statement on traditional gender norms. Respondents were asked whether they agree, disagree, or selected “don’t know/depends” regarding the seven statements explained below. To facilitate interpretation, these responses were transformed into dummy variables, ensuring that higher values consistently indicate more egalitarian attitudes.

The first statement, "Statement 1: Family decisions should be made only by men", examines household decision-making authority. The dummy variable takes the value of 1 if the respondent disagrees, indicating support for shared decision-making, and 0 otherwise, supporting male authority in decision-making. The second statement, "Statement 2: Men should also do housework", captures attitudes toward men’s role in domestic labor. The dummy variable takes the value of 1 if the respondent agrees, signaling a belief that men should participate in housework, and 0 otherwise, indicating adherence to traditional gender roles where household chores are primarily a woman’s responsibility. The third statement, "Statement 3: It is better to educate a son than a daughter", assesses views on educational priorities. The dummy variable takes the value of 1 if the respondent disagrees, indicating support for equal educational opportunities for boys and girls, and 0 otherwise, suggesting a preference for prioritizing boys' education over girls. The fourth statement, "Statement 4:

Women should not work", evaluates gender roles in the labor market by questioning whether women should participate in employment regardless of family obligations. The dummy variable takes the value of 1 if the respondent disagrees, supporting female labor force participation, and 0 otherwise, reinforcing traditional views that women should not work. The fifth statement, "Statement 5: Women should be more involved in politics", measures attitudes toward female political participation. The dummy variable takes the value of 1 if the respondent agrees, reflecting a belief that women should have greater political engagement, and 0 otherwise, implying a preference for restricting women's participation in politics. The sixth statement, "Statement 6: Women should be virgin at wedding night", reflects expectations about female sexuality, particularly societal expectations surrounding premarital chastity. The dummy variable takes the value of 1 if the respondent disagrees, rejecting traditional norms surrounding virginity before marriage, and 0 otherwise, supporting the belief that women should remain virgins until marriage. The seventh statement, "Statement 7: A husband is never justified in beating his wife", captures attitudes toward domestic violence by asking whether a husband is ever justified in beating his wife. The dummy variable takes the value of 1 if the respondent disagrees with all justifications for wife-beating, including instances where the wife goes out without telling her husband, neglects the children, argues with him, refuses sex, or burns food, thereby indicating a complete rejection of domestic violence. It takes the value of 0 if the respondent agrees with at least one justification for wife-beating, reflecting a belief that under certain circumstances, domestic violence may be acceptable.

The gender role attitudes indexes in this study were constructed using the swindex command in Stata, which applies a Generalized Least Squares (GLS) weighting procedure as described by Anderson (2008). This method ensures that

each component included in the index contributes in a statistically meaningful way, allowing for a standardized measure of gender attitudes.

The first index, Gender Role Attitudes: Index 1[1], was constructed using five survey statements that reflect key aspects of traditional gender norms. These statements measure attitudes towards decision-making within the household, domestic labor division, gender-based educational preferences, women's employment, and political participation. This index captures fundamental beliefs about gender roles in both the private and public spheres. The second index, Gender Role Attitudes: Index 2[2], extends the measurement of gender norms by incorporating an additional statement regarding expectations about female premarital virginity. This inclusion broadens the index to reflect not only attitudes toward gender roles in work, education, and politics but also beliefs about personal morality and social expectations placed on women. The third index, Gender Role Attitudes: Index 3[3], further expands on the previous two by adding a statement that assesses attitudes toward domestic violence. By including this component, the index becomes a comprehensive measure that captures gender norms across multiple dimensions, including household decision-making, labor and education, political engagement, moral expectations, and tolerance of gender-based violence.

These indexes follow a well-established methodology that has been used in previous studies on gender attitudes. The methodology used in this study closely aligns with that of Dhar, Jain, and Jayachandran (2019), which examines the

[1] Gender Role Attitudes: Index 1 consists of Statement 1: "The important decisions in the family should be made only by men of the family"; Statement 2: "Men should also do housework"; Statement 3: "It is better to educate a son than a daughter"; Statement 4: "Women should not work"; Statement 5: "Women should be more involved in politics".

[2] Gender Role Attitudes: Index 2 consists of all statements in Index 1 plus Statement 6: "Women should be virgins on their wedding night".

[3] Gender Role Attitudes: Index 3 consists of all statements in Index 2 plus Statement 7: "A husband is never justified in beating his wife".

intergenerational transmission of gender attitudes in India, where a weighted gender index was constructed by normalizing individual survey responses and applying the inverse covariance matrix weighting method as proposed by Anderson (2008). The advantage of this approach lies in its ability to reduce measurement error and enhance reliability by ensuring that each variable contributes proportionally to the overall measure. The index is standardized to have a mean of zero and a standard deviation of one, making it comparable across different subgroups and facilitating a more precise estimation of the effects of education on gender role attitudes.

By employing this methodology, this study ensures that the constructed indexes provide a robust and interpretable measure of gender attitudes, allowing for meaningful comparisons and facilitating a rigorous empirical analysis of how education influences these attitudes. The use of GLS-weighted indexes strengthens the reliability of the findings by accounting for the variation in survey responses and providing a statistically sound aggregation of gender-related beliefs.

The main independent variable in this study is "Education", measured using a binary indicator that takes the value of 1 if the respondent completed at least eight years of schooling, reflecting the extension of compulsory education introduced by the 1997 reform, and 0 otherwise. Individuals born between 1980 and 1985 constitute the control group, as they had already completed at least five years of schooling before the reform was enacted and were therefore not subject to the new requirements. In contrast, those born between 1987 and 1992 form the treatment group, as they were directly affected by the reform, which mandated an additional three years of compulsory education.

Figure 1 further illustrates this impact by plotting the proportion of women with at least eight years of schooling by birth year. The vertical red line at 1986 marks the cutoff for reform exposure, distinguishing the pre-reform

cohorts from those likely affected by the policy change. The graph shows a clear upward shift in educational attainment beginning with the 1987 birth cohort, consistent with the reform's implementation.

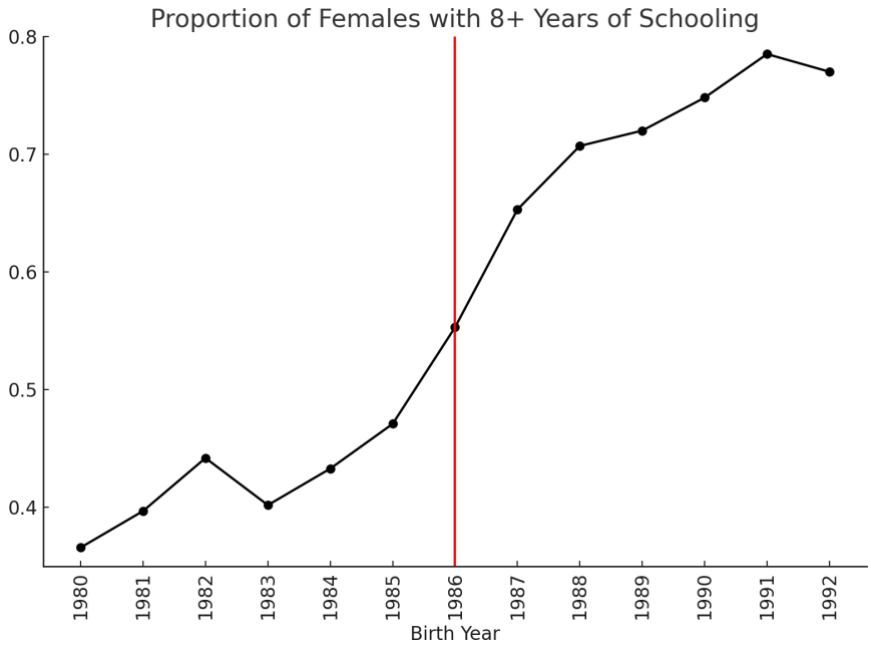


Figure 1: Proportion of females with at least the middle school degree across birth cohorts

Educational attainment is potentially endogenous due to two main sources: omitted variable bias and reverse causality. Omitted variable bias may arise if unobserved factors such as parental beliefs, socio-economic background, or access to progressive social networks influence both an woman's educational attainment and their gender role attitudes. Reverse causality is also a concern, as women with more egalitarian gender attitudes may be more likely to seek higher education rather than education shaping these attitudes. If not properly addressed, these endogeneity issues can lead to biased estimates of the true causal effect of education on gender role attitudes.

"Reform" variable takes the value of 1 if the respondent was affected by the reform—meaning they had not yet completed fifth grade in 1997 and were thus required to stay in school longer—and 0 if they had already completed fifth grade

before the reform took effect, making them unaffected by the policy change. To properly implement this identification strategy, women are divided into treatment and control groups based on their birth cohorts.

The treatment group consists of women who were young enough to be directly affected by the reform, meaning they had not yet completed fifth grade in 1997 and were required to continue schooling until at least the eighth grade. Conversely, the control group includes women who had already completed fifth grade by the time the reform was implemented, making them unaffected by the new compulsory schooling requirements.

However, the 1986 birth cohort poses a methodological challenge due to potential selection bias in school enrollment timing. In Turkey, children typically start first grade at age six or seven, but parents have the discretion to delay school entry if they perceive their child as not being mature enough. This creates a situation where children born in the same year may enter school at different times, leading to some being affected by the reform while others are not. Consequently, the 1986 cohort contains a mix of treated and untreated women, making it problematic for a clean comparison between treatment and control groups. The presence of delayed school entry in this cohort could introduce systematic differences in the characteristics of students who were exposed to the reform versus those who were not, potentially biasing the estimates.

To ensure the robustness of the analysis, women born in 1986 are excluded from the main estimation sample, preventing contamination of the treatment and control groups. By doing so, the study strengthens its identification strategy, ensuring that the estimated effect of education on gender role attitudes is not confounded by endogenous school entry decisions.

To ensure that the observed differences in gender attitudes are not driven by other confounding factors, the analysis includes a set of control

variables. "Age" is measured as a continuous variable, as younger cohorts may exhibit more progressive attitudes due to broader societal shifts over time. A dummy variable indicating "Urban" residence is included, as urban settings are often associated with more egalitarian gender norms compared to rural areas. To introduce Ethnicity, we created three dummy variables based on mother tongue, distinguishing between "Turkish", "Kurdish", and "Other Ethnicity" (Arabic or other). This classification follows linguistic identity rather than self-reported ethnicity, capturing cultural differences in gender norms that are often transmitted through language, family values, and social traditions. Language serves as a proxy for deeper cultural affiliations and societal expectations, particularly in a diverse country like Turkey, where different ethnic groups may exhibit varying degrees of adherence to traditional gender roles. Employment status is measured using a dummy variable, employed, which takes the value of 1 if the respondent is currently employed and 0 otherwise. In the Turkish context, female labor force participation has historically been low, influenced by cultural norms that emphasize women's roles in childcare and household responsibilities. Employment is a crucial factor in shaping gender role attitudes, as working women may be more likely to adopt egalitarian views due to their economic independence and exposure to diverse social environments. For many women in Turkey, particularly in urban and industrialized regions, employment provides opportunities to engage in decision-making both inside and outside the household, potentially challenging traditional gender norms. Conversely, in more conservative and rural areas, where female employment rates remain low, traditional attitudes about gender roles tend to persist, reinforcing the idea that women should prioritize domestic responsibilities over professional aspirations. Additionally, employment status may affect power dynamics within the household, as working women often contribute financially, which can lead to

more balanced decision-making structures and shifts in traditional gender norms.

Marital status is also included as a dummy variable, married, coded as 1 if the respondent is married and 0 otherwise. In Turkey, marriage remains a central institution that significantly influences women's gender role attitudes. Married women often face heightened social and familial expectations regarding household labor and childcare, particularly in traditional and patriarchal family structures, which are more prevalent in rural and conservative regions. These expectations can reinforce traditional gender norms, limiting women's autonomy and participation in the workforce. However, in urban and educated populations, where dual-income households are more common, marriage may lead to evolving gender attitudes, with women engaging in both professional and domestic spheres. Additionally, the presence of a working spouse may influence gender norms within the household, as married women in dual-earner families may experience more equitable divisions of labor and decision-making compared to those in single-income households.

Additionally, regional dummy variables are incorporated to capture variations across geographical areas, including "Marmara", "Aegean", "Mediterranean", "Central Anatolia" and "Black Sea".

Table 1 Descriptive Statistics

	All	Control	Treatment
Statement 1: Family decision should be made only by men	0.89	0.88	0.89
	(0.31)	(0.32)	(0.31)
Statement 2: Men should also do housework	0.68	0.69	0.67
	(0.47)	(0.46)	(0.47)
Statement 3: It is better to educate a son than a daughter	0.92	0.92	0.92
	(0.27)	(0.28)	(0.27)
Statement 4: Women should not work	0.51	0.50	0.51
	(0.50)	(0.50)	(0.50)
Statement 5: Women should be more involved in politics	0.72	0.73	0.70
	(0.45)	(0.44)	(0.46)
Statement 6: Women should be virgin at wedding night	0.28	0.26	0.29
	(0.45)	(0.44)	(0.45)
Statement 7: Beating is not acceptable	0.87	0.87	0.88
	(0.33)	(0.34)	(0.33)
Gender Role Attitudes: Index 1	0.00	0.01	-0.02
	(1.01)	(1.01)	(1.01)
Gender Role Attitudes: Index 2	0.00	-0.01	0.00
	(1.01)	(1.00)	(1.02)
Gender Role Attitudes: Index 3	0.00	-0.01	0.00
	(1.01)	(1.00)	(1.02)
Age	29.21	32.59	25.51
	(4.65)	(3.02)	(3.01)
Urban	0.74	0.76	0.73
	(0.44)	(0.43)	(0.45)
Turkish	0.76	0.77	0.75
	(0.43)	(0.42)	(0.43)
Kurdish	0.21	0.20	0.22
	(0.41)	(0.40)	(0.41)
Other Ethnicity	0.04	0.04	0.04
	(0.19)	(0.19)	(0.18)
Employed	0.30	0.32	0.27
	(0.46)	(0.46)	(0.45)
Education	0.57	0.42	0.73
	(0.50)	(0.49)	(0.44)
Married	0.75	0.89	0.60
	(0.43)	(0.31)	(0.49)
Marmara	0.26	0.28	0.24
	(0.44)	(0.45)	(0.43)
Aegean	0.12	0.12	0.13
	(0.33)	(0.32)	(0.33)
Mediterranean	0.20	0.21	0.19
	(0.40)	(0.41)	(0.39)
Central Anatolia	0.13	0.13	0.13
	(0.34)	(0.34)	(0.33)
Black Sea	0.29	0.26	0.31
	(0.45)	(0.44)	(0.46)
Observations	6130	3209	2921

Notes: The table presents the mean values of the variables with standard deviations shown in parentheses. Women born between 1987 and 1992 form the treatment group, while those born between 1980 and 1985 constitute the control group. The total sample consists of 6,130 observations, with 3,209 women in the control group and 2,921 in the treatment group.

Table 1 offers a snapshot of gender role attitudes across treatment and control groups, showing limited differences despite the increase in educational attainment. A strong rejection of male authority in household decisions is evident, with 89% of respondents in our sample disagreeing with the statement.

For more contested roles—such as domestic labor and employment—the patterns are similar. Slightly more women in the control group (69%) than in the treatment group (67%) agree that men should do housework. Attitudes toward women working are nearly identical across groups, with 51% in the treatment group and 50% in the control group rejecting the idea that women should not work. Support for women's political involvement is slightly lower in the treatment group (70%) compared to the control group (73%), indicating that education does not necessarily translate into stronger beliefs about public participation. Small differences are observed in views on female sexuality and domestic violence: 29% of the treatment group reject virginity expectations (versus 26% in the control group), and 88% reject wife-beating (compared to 87% in the control group).

Overall, while the reform increased schooling, its influence on gender attitudes appears modest. The persistence of traditional norms suggests that formal education alone may not be sufficient to shift deeply rooted beliefs.

The gender role attitudes indexes further reinforce these trends. "Gender Role Attitudes: Index 1", which captures beliefs about decision-making, housework, education, work, and politics, is slightly lower in the treatment group (-0.02) compared to the control group (0.01), confirming that exposure to additional schooling did not lead to a marked shift in gender attitudes in these domains. "Gender Role Attitudes: Index 2" (which adds attitudes toward female virginity) and "Gender Role Attitudes: Index 3" (which further incorporates attitudes toward domestic violence) show similarly minor differences between the two groups.

These findings reveal a nuanced relationship between education and gender norms. While additional schooling shows a modest positive impact on attitudes toward domestic violence and female autonomy, it does not significantly shift views on male authority, domestic labour, or women's employment, suggesting that some norms are deeply ingrained and resistant to change.

Importantly, gender attitudes evolve unevenly across domains. Educational equality is widely accepted, yet norms around household roles and female sexuality remain contested. This suggests that while formal education can influence certain beliefs—especially those linked to rights and violence—it is insufficient on its own.

For real progress in gender equality, education must be paired with policies that promote women's economic participation, legal protections, and cultural shifts. Education may serve as a catalyst, but its impact depends on the broader social and institutional context.

5. Empirical Analysis

This study examines the causal effect of education on gender role attitudes by exploiting the exogenous variation in educational attainment induced by the 1997 education reform in Turkey. Specifically, we estimate the impact of education on women's gender role attitudes using the following baseline econometric model:

$$GRA_i = \beta_0 + \beta_1 Educ_i + X_i\beta_2 + \mu_i \qquad (1)$$

where GRA_i represents the gender role attitudes of woman i, measured through responses to seven key statements that are aggregated into indices capturing overall gender role attitudes. The variable $Educ_i$ is a binary indicator that takes the value of 1 if the woman completed at least eight years of schooling (i.e., holds a middle school diploma or higher), and 0 otherwise. The vector X_i includes control variables such as survey year dummy[4], age, age squared[5], while μ_i is the error term. Estimating equation (1) using ordinary least squares (OLS) may lead to biased results due to potential endogeneity concerns. For example, unobserved factors such as family background and economic conditions may simultaneously influence both educational attainment and gender role attitudes, introducing omitted variable bias. Consequently, the observed association between education and gender attitudes may not reflect a true causal relationship, but rather the influence of underlying characteristics not accounted for in the OLS specification.

[4] The variable survey year dummy takes the value of 1 if the individual was surveyed in 2013 and 0 if the woman was surveyed in 2018.

[5] As a robustness check, we also include ethnicity, employment status, marital status, urban residence, and regional dummies in the set of explanatory variables.

The method of instrumental variables (IV) is employed to address this issue, leveraging an external source of variation in educational attainment that is unrelated to gender role attitudes. The 1997 Education Reform in Turkey, which increased compulsory schooling from five to eight years, serves as a natural experiment and a valid instrument for education. The IV estimation follows a two-stage least squares (2SLS) approach. In the first stage, the reform variable predicts a woman's likelihood of completing at least eight years of schooling, isolating the exogenous variation in education. In the second stage, the predicted values from the first stage are used to estimate the causal effect of education on gender role attitudes. The first-stage regression is specified as follows:

$$Educ_i = \alpha_0 + \alpha_1 Reform_i + X_i\alpha_2 + \varepsilon_i \qquad (2)$$

where $Reform_i$ is a binary variable that takes the value of 1 if woman i was born between 1987 and 1992 (i.e., belongs to the treatment group subject to the 1997 education reform), and 0 if she was born between 1980 and 1985 (i.e., belongs to the control group). The variable serves as a valid instrument under the assumption that it affects gender role attitudes only through its impact on educational attainment.

X_i represents the set of control variables already outlined in Equation (1), including age, age squared, survey year dummies, and other observed woman characteristics, while ε_i is the error term.

In the second stage, the fitted values of education from the first stage, $Educ_i$, are used to estimate the causal effect of education on gender role attitudes:

$$GRA_i = \gamma_0 + \gamma_1 \widehat{Educ_\iota} + X_i\gamma_2 + \xi_i \qquad (3)$$

Equation (3) replaces the potentially endogenous variable $Educ_i$ with its predicted values, isolating the exogenous variation in education driven by the reform. The coefficient γ_1 captures the local average treatment effect of education on gender role attitudes for compliers—women whose educational attainment was influenced by the reform. The error term is ξ_i.

6. Results

6.1 Ordinary least squares (OLS) estimates

The ordinary least squares (OLS) estimates presented in Tables 2 to 5 provide an initial assessment of the relationship between education and gender role attitudes. To examine this relationship, we estimate equation (1) by OLS. Additional specifications further include controls for urban residence, ethnicity, employment status, marital status, and regional dummies to account for potential confounders.

The results in Table 2 indicate a strong positive association between education and gender role attitudes across all three constructed indices. Women with at least a middle school diploma exhibit systematically more egalitarian attitudes than their less-educated counterparts. [6] The magnitude of the estimated coefficients suggests that education is associated with a substantial shift toward more progressive views on gender roles. This relationship remains robust across different specifications, reinforcing the notion that schooling contributes to shaping attitudes toward household decision-making, labour division, education, political participation, and broader gender norms.

Table 3 explores the relationship between education and individual statements that comprise the gender role attitudes indices. The estimates reveal a significant and positive association between education and rejecting the notion that men should be the sole decision-makers in the family, opposing the idea that educating sons is more important than educating daughters, and supporting women's right to work. The results also suggest that higher educational

[6] The estimated coefficients correspond to approximately 50% of the standard deviation of the indices, indicating a meaningful effect.

attainment is linked to increased agreement with the notion that women should participate in politics and reduced support for traditional expectations regarding female virginity before marriage. Furthermore, education appears to play a role in shifting attitudes toward gender-based violence, with higher levels of schooling associated with stronger rejection of justifications for wife-beating.

Table 2 OLS: Basic Specification - GRA Indexes 1 to 3

	GRA: Index 1	GRA: Index 2	GRA: Index 3
Education	0.455***	0.531***	0.591***
	(0.040)	(0.038)	(0.040)
R squared	0.044	0.062	0.078
Observations	6130	6130	6130

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. All regressions control for survey year dummy, age, and age squared.

Table 3 OLS: Basic Specification – Statements 1 to 7

	Stat. 1	Stat. 2	Stat. 3	Stat. 4	Stat. 5	Stat. 6	Stat. 7
Education	0.154***	0.008	0.071***	0.210***	0.045*	0,191***	0.0156***
	(0.007)	(0.033)	(0.007)	(0.013)	(0.015)	(0.014)	(0.011)
R squared	0.053	0.012	0.017	0.050	0.005	0.051	0.054
Observations	6130	6130	6130	6130	6130	6130	6130

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. All regressions control for survey year dummy, age, and age squared. Each column reports the results from a separate regression in which the dependent variable is a binary indicator equal to 1 if the respondent expresses the specified gender role attitude, and 0 otherwise. Stat. 1: "The important decisions in the family should be made only by men." (Disagree = 1); Stat. 2: "Men should also do housework." (Agree = 1); Stat. 3: "It is better to educate a son than a daughter." (Disagree = 1); Stat. 4: "Women should not work." (Disagree = 1); Stat. 5: "Women should be more involved in politics." (Agree = 1); Stat. 6: "Women should be virgins on their wedding night." (Disagree = 1); Stat. 7: "A husband is never justified in beating his wife." (Agree = 1).

The results in Table 4 extend this analysis by including additional control variables to account for potential confounding factors. While the estimated coefficients on education remain positive and statistically significant, their magnitudes decrease slightly when ethnicity, employment status, marital status, urban residence and regional dummies are included in the regressions. This suggests that while education has an independent effect on gender role attitudes, part of its influence may operate through labor market participation or broader socio-cultural environments. The estimates further show that urban residence is correlated with more egalitarian gender attitudes, while women of Turkish ethnicity tend to hold more progressive views compared to other ethnic groups. Employment is positively associated with rejecting traditional gender norms. Married women tend to hold more conservative gender role attitudes

The alternative specifications presented in Table 5 provide further robustness checks, generally confirming the patterns observed in earlier tables. While the inclusion of additional controls slightly reduces the estimated effect sizes, the core relationship between education and gender attitudes remains evident. The strongest effects continue to be observed in attitudes toward women's work and political participation, while the impact on male household responsibilities is less pronounced.

Overall, the OLS results indicate that higher educational attainment is systematically associated with more egalitarian gender role attitudes. Education appears to shape beliefs related to women's autonomy, labor market participation, and political engagement, while also contributing to a rejection of traditional norms regarding male authority and domestic violence. However, given the possibility of omitted variable bias and reverse causality, these estimates should be interpreted with caution. Unobserved factors such as parental background and early socialization may influence both educational attainment and gender role attitudes, raising concerns about endogeneity. To

address this issue and establish a causal relationship, the next section presents instrumental variable estimates that exploit exogenous variation in schooling induced by the 1997 education reform.

Table 4 OLS: Extended Specification - GRA Indexes 1 to 3

	GRA: Index 1	GRA: Index 2	GRA: Index 3
Education	0.331***	0.393***	0.439***
	(0.040)	(0.036)	(0.038)
Urban	0.136***	0.151***	0.178***
	(0.036)	(0.037)	(0.041)
Turkish	0.297***	0.305***	0.338***
	(0.091)	(0.091)	(0.085)
Kurdish	0.153**	0.172**	0.178**
	(0.068)	(0.068)	(0.066)
Employed	0.086**	0.126***	0.103***
	(0.034)	(0.027)	(0.026)
Married	-0.139***	-0.198***	-0.183***
	(0.044)	(0.040)	(0.043)
Marmara	0.025	0.071**	0.094***
	(0.029)	(0.028)	(0.025)
Aegean	0.089**	0.102***	0.090**
	(0.032)	(0.028)	(0.032)
Mediterranean	-0.043	-0.017	-0.009
	(0.039)	(0.041)	(0.037)
Central Anatolia	-0.039	-0.032	-0.004
	(0.058)	(0.059)	(0.058)
R squared	0.059	0.085	0.104
Observations	6130	6130	6130

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. This table extends the analysis presented in Table 2 by incorporating additional control variables, including urban residence, ethnicity, employment status, marital status, and regional dummies, to account for potential confounding factors. The dependent variables remain the three gender role attitudes indices, where higher values indicate more egalitarian gender views.

Table 5 OLS: Extended Specification – Statements 1 to 7

	Stat. 1	Stat. 2	Stat. 3	Stat. 4	Stat. 5	Stat. 6	Stat. 7
Education	0.105***	-0.002	0.069***	0.132***	0.049***	0.139***	0.116***
	(0.078)	(0.026)	(0.007)	(0.014)	(0.015)	(0.017)	(0.009)
Urban	0.075***	0.007	0.025**	0.049***	-0.014	0.044***	0.061***
	(0.011)	(0.019)	(0.010)	(0.013)	(0.017)	(0.015)	(0.014)
Turkish	0.062**	0.111**	0.062**	0.075**	-0.017	0.043	0.080***
	(0.029)	(0.046)	(0.024)	(0.033)	(0.030)	(0.031)	(0.019)
Kurdish	-0.002	0.067	0.065***	-0.037	0.036	0.028	0.023
	(0.035)	(0.041)	(0.022)	(0.029)	(0.027)	(0.034)	(0.018)
Employed	0.017*	-0.003	-0.004	0.063***	0.033**	0.069***	-0.013*
	(0.009)	(0.015)	(0.006)	(0.016)	(0.012)	(0.017)	(0.007)
Married	-0.015	-0.019	-0.007	0.062***	0.054***	0.095***	-0.003
	(0.013)	(0.031)	(0.011)	(0.017)	(0.012)	(0.023)	(0.010)
Marmara	0.033**	0.059**	-0.006	0.037**	0.040**	0.074***	0.043***
	(0.014)	(0.025)	(0.010)	(0.017)	(0.015)	(0.013)	(0.009)
Aegean	0.038**	0.040*	-0.004	0.013	0.005	0.026	-0.002
	(0.017)	(0.020)	(0.011)	(0.021)	(0.020)	(0.018)	(0.017)
Mediterranean	0.011	-0.030	-0.025*	0.004	0.009	0.031	0.010
	(0.014)	(0.022)	(0.013)	(0.017)	(0.014)	(0.021)	(0.015)
Central Anatolia	0.016	-0.025	-0.018	0.034	-0.036	0.011	0.035**
	(0.020)	(0.023)	(0.014)	(0.028)	(0.025)	(0.024)	(0.017)
R squared	0.078	0.018	0.021	0.069	0.012	0.072	0.072
Observations	6130	6130	6130	6130	6130	6130	6130

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. All regressions control for survey year dummy, age, and age squared. Each column reports the results from a separate regression in which the dependent variable is a binary indicator equal to 1 if the respondent expresses the specified gender role attitude, and 0 otherwise. Stat. 1: "The important decisions in the family should be made only by men." (Disagree = 1); Stat. 2: "Men should also do housework." (Agree = 1); Stat. 3: "It is better to educate a son than a daughter." (Disagree = 1); Stat. 4: "Women should not work." (Disagree = 1); Stat. 5: "Women should be more involved in politics." (Agree = 1); Stat. 6: "Women should be virgins on their wedding night." (Disagree = 1); Stat. 7: "A husband is never justified in beating his wife." (Agree = 1).

6.2 Instrumental variables (IV) estimates

The method of instrumental variables (IV) estimates presented in Tables 6 to 9 address the potential endogeneity of education by exploiting the exogenous variation in schooling induced by the 1997 education reform. The reform, which increased the mandatory years of schooling from five to eight, serves as a valid instrument for education under the assumption that it affects gender role attitudes solely through its impact on educational attainment.

The first-stage results in Tables 6 and 7 confirm that the reform significantly increased educational attainment, raising the likelihood of completing at least eight years of schooling by approximately 18 percentage points. These findings are consistent with those of Gevrek et al. (2021), who also document a substantial increase in educational attainment following the 1997 reform. Their study highlights that the policy led to a significant rise in schooling years, particularly benefiting individuals from disadvantaged backgrounds. The strength of the instrument is confirmed by the first-stage F-statistics, which exceed the conventional threshold of 10, indicating that weak instrument bias is unlikely to be a concern (Stock & Watson, 2020).

Table 6 shows that the estimated coefficient of education is not statistically significant across all gender role attitudes indices, suggesting that the positive correlation found in the OLS estimates was likely driven by unobserved factors. Table 7 reinforces this conclusion, showing no statistically significant impact on attitudes toward household decision-making, labor division, education, women's work, and political participation. Similarly, the estimates for domestic violence and female virginity norms remain insignificant. These findings suggest that while education correlates with more progressive gender attitudes, its causal effect is limited when controlling for endogeneity.

Table 6 IV: Basic Specification - GRA Indexes 1 to 3

	GRA: Index 1	GRA: Index 2	GRA: Index 3
Education	-0.262	-0.354	-0.391
	(0.233)	(0.279)	(0.305)
First-stage:			
Reform	0.180	0.180	0.180
	(0.027)	(0.027)	(0.027)
First-stage F test	44.090	44.090	44.090
Observations	6130	6130	6130

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. All regressions control for survey year dummy, age, and age square.

Table 7 IV: Basic Specification – Statements 1 to 7

	Stat. 1	Stat. 2	Stat. 3	Stat. 4	Stat. 5	Stat. 6	Stat. 7
Education	-0.680	-0.188	0.029	0.002	-0.381	-0.123	-0.079
	(0.105)	(0.124)	(0.067)	(0.099)	(0.097)	(0.118)	(0.097)
First-stage:							
Reform	0.180	0.180	0.180	0.180	0.180	0.180	0.180
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
First-stage F test	44.090	44.090	44.090	44.090	44.090	44.090	44.090
Observations	6130	6130	6130	6130	6130	6130	6130

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. All regressions control for survey year dummy, age, and age squared. Each column reports the results from a separate regression in which the dependent variable is a binary indicator equal to 1 if the respondent expresses the specified gender role attitude, and 0 otherwise. Stat. 1: "The important decisions in the family should be made only by men." (Disagree = 1); Stat. 2: "Men should also do housework." (Agree = 1); Stat. 3: "It is better to educate a son than a daughter." (Disagree = 1); Stat. 4: "Women should not work." (Disagree = 1); Stat. 5: "Women should be more involved in politics." (Agree = 1); Stat. 6: "Women should be virgins on their wedding night." (Disagree = 1); Stat. 7: "A husband is never justified in beating his wife." (Agree = 1).

The results in Tables 8 and 9 indicate that completing at least eight years of schooling does not have a statistically significant causal impact on gender role attitudes, even after controlling for urban residence, ethnicity, employment status, marital status, and regional dummies. While urban residence and employment are associated with more egalitarian views, and marriage correlates with more traditional beliefs, the effect of education remains consistently insignificant across all three Gender Role Attitudes indices and individual attitudinal measures. This holds true for attitudes concerning household decision-making, labor division, women's right to work and participate politically, and norms related to domestic violence and female sexuality.

These findings suggest that the positive associations observed in the OLS results are likely driven by omitted variable bias, reinforcing the importance of addressing endogeneity. However, the statistically insignificant IV estimates may also be explained by the specific margin of education analyzed in this study—namely, the effect of completing at least a middle school education as mandated by the 1997 reform. It is plausible that the causal effect of education on gender role attitudes is more pronounced at higher educational margins, such as completing high school or tertiary education. As noted by Gevrek et al. (2021), the impact of education reforms can vary depending on the level of schooling targeted. Therefore, while basic education may not be sufficient to shift deeply embedded gender norms, future research should explore whether more advanced educational attainment, possibly induced by different reforms, can play a more transformative role in shaping gender attitudes.

Table 8 IV: Extended Specification - GRA Indexes 1 to 3

	GRA: Index 1	GRA: Index 2	GRA: Index 3
Education	-0.240	-0.333	-0.366
	(0.241)	(0.298)	(0.326)
Urban	0.214***	0.251***	0.289***
	(0.048)	(0.054)	(0.060)
Turkish	0.426***	0.469***	0.520***
	(0.103)	(0.103)	(0.105)
Kurdish	0.057	0.049	0.042
	(0.084)	(0.098)	(0.097)
Employed	0.145**	0.201***	0.186***
	(0.046)	(0.049)	(0.051)
Married	-0.223***	-0.305***	-0.302***
	(0.056)	(0.058)	(0.061)
Marmara	0.065*	0.122***	0.151***
	(0.036)	(0.041)	(0.045)
Aegean	0.098**	0.114***	0.103***
	(0.033)	(0.030)	(0.036)
Mediterranean	-0.006	0.030	0.043
	(0.035)	(0.039)	(0.042)
Central Anatolia	0.011	0.032	0.067
	(0.059)	(0.061)	(0.063)
First-stage:			
Reform	0.182	0.182	0.182
	(0.024)	(0.024)	(0.024)
First-stage F	58.217	58.217	58.217
Observations	6130	6130	6130

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. In addition to survey year dummy age, and age squared, all regressions control for urban residence, ethnicity, employment status, marital status, and regional dummies.

Table 9 IV: Extended Specification – Statements 1 to 7

	Stat. 1	Stat. 2	Stat. 3	Stat. 4	Stat. 5	Stat. 6	Stat. 7
Education	-0.074	-0.179	0.037	0.000	-0.44	-0.122	-0.071
	(0.100)	(0.139)	(0.065)	(0.106)	(0.094)	(0.130)	(0.095)
Urban	0.097***	0.031	0.030*	0.067***	-0.001	0.079***	0.086***
	(0.019)	(0.027)	(0.016)	(0.019)	(0.018)	(0.020)	(0.019)
Turkish	0.099**	0.151***	0.069**	0.105**	0.004	0.102**	0.122***
	(0.036)	(0.048)	(0.030)	(0.047)	(0.033)	(0.039)	(0.033)
Kurdish	-0.029	0.037	0.059**	-0.059*	0.020	-0.016	-0.009
	(0.040)	(0.055)	(0.022)	(0.031)	(0.036)	(0.047)	(0.021)
Employed	0.033**	0.015	-0.001	0.077***	0.043***	0.095***	0.007
	(0.013)	(0.022)	(0.009)	(0.020)	(0.015)	(0.025)	(0.012)
Married	-0.039**	-0.045	-0.012	-0.081***	0.068***	-0.134***	-0.031*
	(0.017)	(0.036)	(0.012)	(0.023)	(0.021)	(0.028)	(0.016)
Marmara	0.045**	-0.047	-0.004	0.046**	0.047**	0.093***	0.057***
	(0.017)	(0.030)	(0.012)	(0.020)	(0.018)	(0.017)	(0.016)
Aegean	0.041**	0.043**	-0.003	0.015	0.007	0.030	0.001
	(0.018)	(0.019)	(0.011)	(0.021)	(0.021)	(0.019)	(0.018)
Mediterranean	0.021	-0.019	-0.023*	0.012	0.015	0.048**	0.022
	(0.015)	(0.023)	(0.013)	(0.017)	(0.016)	(0.021)	(0.021)
Central Anatolia	0.030	-0.009	-0.015	0.045*	-0.028	0.034	0.052**
	(0.022)	(0.033)	(0.015)	(0.024)	(0.030)	(0.023)	(0.019)
First-stage:							
Reform	0.182	0.182	0.182	0.182	0.182	0.182	0.182
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
First-stage F	58.217	58.217	58.217	58.217	58.217	58.217	58.217
Observations	6130	6130	6130	6130	6130	6130	6130

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. All regressions control for survey year dummy, age, and age squared. Each column reports the results from a separate regression in which the dependent variable is a binary indicator equal to 1 if the respondent expresses the specified gender role attitude, and 0 otherwise. Stat. 1: "The important decisions in the family should be made only by men." (Disagree = 1); Stat. 2: "Men should also do housework." (Agree = 1); Stat. 3: "It is better to educate a son than a daughter." (Disagree = 1); Stat. 4: "Women should not work." (Disagree = 1); Stat. 5: "Women should be more involved in politics." (Agree = 1); Stat. 6: "Women should be virgins on their wedding night." (Disagree = 1); Stat. 7: "A husband is never justified in beating his wife." (Agree = 1).

6.3 Robustness checks

To assess the internal validity of the main results, two robustness checks are performed. These tests aim to ensure that the estimated causal effect of education on gender role attitudes is not driven by sample composition, treatment misclassification, or unobserved heterogeneity around the reform threshold.

The first robustness check narrows the range of birth cohorts included in the analysis. The baseline specification considers women born between 1980 and 1992, capturing those plausibly exposed to the 1997 education reform while maintaining a sufficiently large sample. However, variation in cohort composition may introduce bias if unobserved characteristics correlated with birth year independently affect gender role attitudes. To address this, the analysis is replicated using two narrower birth cohort windows: 1981–1991 and 1982–1990. In the 1981–1991 window, individuals born between 1981 and 1985 form the control group, while those born between 1987 and 1991 constitute the treatment group. In the 1982–1990 window, the control group includes women born between 1982 and 1985 and the treatment group comprises those born between 1987 and 1990. These refinements allow for a sharper focus on cohorts closer to the reform threshold and aim to minimize bias from broader cohort trends.

Tables 10 through 12, in the appendix, present the IV estimates from this exercise using the three gender role attitudes (GRA) indices. Across all samples and outcomes, the estimated coefficients on education remain statistically insignificant, consistent with the baseline results. While narrowing the cohort windows reduces the sample size, the lack of statistical significance persists, reinforcing the conclusion that education does not have a causal effect on gender

role attitudes. Furthermore, the instrument remains strong in all cases, as reflected in the high first-stage F-statistics.[7]

The second test addresses the uncertainty surrounding the treatment status of the 1986 birth cohort. In the main analysis, this cohort is excluded due to ambiguity regarding their exposure to the 1997 education reform. Since the reform was enacted in August 1997 and applied to individuals who had not yet completed fifth grade by that time, women born in 1986 fall near the eligibility threshold.

To assess whether excluding this cohort affects the main findings, the analysis is repeated by reintroducing the 1986 cohort under two alternative assumptions. A modified treatment variable, reform1, is constructed in which women born in 1986 are assigned a treatment value of 0.3, reflecting the assumption that only a minority were exposed to the reform. In a second specification, reform2 assigns a value of 0.5 to the same cohort, assuming that exposure was equally likely. These partial-treatment definitions allow for a more realistic representation of exposure while preserving the internal consistency of the identification strategy.

Tables 13 and 14, in the appendix, report the results using reform1 (partial treatment = 0.3), and Tables 15 and 16, in the appendix, show the estimates based on reform2 (partial treatment = 0.5). In both specifications, the estimated coefficient on education remains statistically insignificant across all three gender role attitudes (GRA) indices and the seven individual attitudinal outcomes.

Moreover, the instrument continues to demonstrate strong predictive power, with first-stage F-statistics well above the conventional threshold across all models, reinforcing the robustness of the main finding that education does not have a causal effect on gender role attitudes.

[7] The extended specification (unreported results) yields the same conclusions. The estimated coefficients of education are statistically insignificant

7 Conclusion

This dissertation investigates the causal effect of education on gender role attitudes, drawing on data from the 2013 and 2018 waves of the Turkish Demographic and Health Surveys. Exploiting the exogenous variation introduced by the 1997 education reform, which extended compulsory schooling from five to eight years, the analysis employs the method of instrumental variables to address the endogeneity of education. The reform led to a significant increase in educational attainment, offering a credible setting to assess whether additional schooling influences gender-related beliefs.

The results reveal a stark contrast between correlation and causation. While ordinary least squares estimates suggest that higher educational attainment is associated with more egalitarian gender attitudes, the instrumental variable estimates show no statistically significant causal effect. This suggests that the positive associations widely reported in the literature may be largely attributable to unobserved factors, such as family background or personal disposition, rather than education itself. In short, education—at least at the margin studied—does not appear to be a powerful force for transforming deeply rooted gender norms. These findings have important implications. First, the analysis captures only the effect of completing at least eight years of schooling. It remains an open question whether higher levels of education, such as secondary or tertiary schooling, may have stronger or more lasting impacts on gender role attitudes. Second, the study focuses on women born between 1980 and 1992, and future research could examine whether the effect of education evolves over the life course.

Ultimately, while education remains a cornerstone of human development, these results suggest that it alone may not be sufficient to challenge and reshape

traditional gender norms. Structural inequalities and social attitudes are often embedded within broader cultural and institutional frameworks. As such, meaningful progress toward gender equality may require a more comprehensive approach—one that combines educational reform with targeted efforts to confront discriminatory norms, empower women, and shift societal expectations.

Disclosure of AI-Assisted Writing Tools

During the preparation of my written dissertation, "The causal effect of education on gender role attitudes: Evidence from a natural experiment", I used ChatGPT to support and guide my research process. A detailed list of the prompts used throughout the research process is included in the AI Prompts List section at the end of this document. After using this tool, I carefully reviewed and edited all content to ensure its accuracy and academic integrity, and I take full responsibility for the final version of the submitted work.

I also declare that I am aware of and comply with the AI Code of Conduct of Católica Porto Business School.

References

Anderson, M. L. (2008). Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects. *Journal of the American Statistical Association, 103*(484), 1481–1495.

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Bisin, A., & Verdier, T. (2001). The economics of cultural transmission and the dynamics of preferences. *Journal of Economic Theory, 97*(2), 298–319.

Blau, F. D., Kahn, L. M., & Blau, D. M. (2011). Gender differences in pay. *Journal of Economic Perspectives, 25*(4), 75–102.

Bolzendahl, C. I., & Myers, D. J. (2004). Feminist attitudes and support for gender equality: Opinion change in women and men, 1974–1998. *Social Forces, 83*(2), 759–789.

Cesur, R., & Mocan, N. H. (2018). Education, religion, and voter preference in a Muslim country. *Journal of Population Economics, 31*(1), 1–44.

Currie, J., & Moretti, E. (2003). Mother's education and the intergenerational transmission of human capital: Evidence from college openings. *The Quarterly Journal of Economics, 118*(4), 1495–1532.

Davis, S. N., & Greenstein, T. N. (2009). Gender ideology: Components, predictors, and consequences. *Annual Review of Sociology, 35*, 87–105.

Dhar, D., Jain, T., & Jayachandran, S. (2019). Reshaping adolescents' gender attitudes: Evidence from a school-based experiment in India. *American Economic Review, 109*(3), 575–579.

Dildar, Y. (2015). Patriarchal norms, religion, and female labor supply: Evidence from Turkey. *World Development, 76*, 40–61.

Dincer, M. A., Kaushal, N., & Grossman, M. (2014). Women's education: Harbinger of another spring? Evidence from a natural experiment in Turkey. *World Development, 64*, 243–258.

Dülger, İ. (2004). *Turkey: Rapid coverage for compulsory education—The 1997 Basic Education Program* (World Bank Working Paper Series No. 39). World Bank.

Dursun, B., & Cesur, R. (2016). The impact of education on health and health-related behaviors: Evidence from a natural experiment in Turkey. *Social Science & Medicine, 170*, 91–106.

Fernández, R., & Fogli, A. (2009). Culture: An empirical investigation of beliefs, work, and fertility. *American Economic Journal: Macroeconomics, 1*(1), 146–177.

Fortin, N. M. (2005). Gender role attitudes and the labour-market outcomes of women across OECD countries. *Oxford Review of Economic Policy, 21*(3), 416–438.

Gevrek, Z. E., Kunt, P., & Ursprung, H. W. (2021). Education, political discontent, and emigration intentions: Evidence from a natural experiment in Turkey. *Public Choice, 186*(3–4), 563–585.

Giuliano, P. (2007). Living arrangements in Western Europe: Does cultural origin matter? *Journal of the European Economic Association, 5*(5), 927–952.

Goldin, C. (1990). *Understanding the gender gap: An economic history of American women*. Oxford University Press.

Güneş, P. M. (2015). The impact of female education on teenage fertility: Evidence from Turkey. *The B.E. Journal of Economic Analysis & Policy, 15*(4), 1653–1688.

Hausmann, R., Tyson, L. D., & Zahidi, S. (2012). *The global gender gap report*. World Economic Forum.

Inglehart, R., & Norris, P. (2003). *Rising tide: Gender equality and cultural change around the world*. Cambridge University Press.

Kandiyoti, D. (1988). Bargaining with patriarchy. *Gender & Society, 2*(3), 274–290.

Lundberg, S., & Pollak, R. A. (1993). Separate spheres bargaining and the marriage market. *Journal of Political Economy, 101*(6), 988–1010.

Oreopoulos, P. (2007). Do dropouts drop out too soon? Wealth, health and happiness from compulsory schooling. *Journal of Public Economics, 91*(11–12), 2213–2229.

Oreopoulos, P., & Salvanes, K. G. (2011). Priceless: The nonpecuniary benefits of schooling. *Journal of Economic Perspectives*, *25*(1), 159–184.

Stock, J. H., & Watson, M. W. (2020). *Introduction to Econometrics* (4th ed.). Pearson.Turkish Statistical Institute. (2006). *Education Statistics*. Ankara: TURKSTAT.

van der Horst, M. (2014). Gender role attitudes. In A. C. Michalos (Ed.), *Encyclopedia of quality of life and well-being research* (pp. 2451–2453). Springer.

Ventura, G. (2021). *The impact of education on happiness: Evidence from a natural experiment* [Master's thesis, Católica Porto Business School].

Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. MIT Press.

Wooldridge, J. M. (2012). *Introductory econometrics: A modern approach* (5th ed.). Cengage Learning.

Appendix

Table 10 Robustness Check - IV: Narrowing the range of birth cohorts GRA Index 1

GRA: Index 1	(1) 1980-1992	(2) 1981-1991	(3) 1982-1990
Education	-0.267	-0.456	-0.199
	(0.227)	(0.279)	(0.322)
First-stage:			
Reform	0.180***	0.176***	0.178***
	(0.027)	(0.031)	(0.036)
First-stage F test	44.090	32.948	24.701
Observations	6130	5077	4035

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. All regressions control for survey year dummy, age, and age squared.

Table 11 Robustness Check - IV: Narrowing the range of birth cohorts GRA Index 2

GRA: Index 2	(1) 1980-1992	(2) 1981-1991	(3) 1982-1990
Education	-0.354	-0.492	-0.219
	(0.279)	(0.290)	(0.333)
First-stage:			
Reform	0.180***	0.176***	0.178***
	(0.027)	(0.031)	(0.036)
First-stage F test	44.090	32.948	24.701
Observations	6130	5077	4035

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. All regressions control for survey year dummy, age, and age squared.

Table 12 Robustness Check - IV: Narrowing the range of birth cohorts GRA Index 3

GRA: Index 3	(1) 1980-1992	(2) 1981-1991	(3) 1982-1990
Education	-0.391	-0.524	-0.257
	(0.305)	(0.293)	(0.338)
First-stage:			
Reform	0.180***	0.176***	0.178***
	(0.027)	(0.031)	(0.036)
First-stage F test	44.090	32.948	24.701
Observations	6130	5077	4035

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. All regressions control for survey year dummy, age, and age squared.

Table 13 Robustness Check - IV: Inclusion of 1986 cohort, GRA Index1-Index3
(Treatment = 0.3)

	GRA: Index 1	GRA: Index 2	GRA: Index 3
Education	-0.278	-0.378	-0.386
	(0.259)	(0.314)	(0.332)
Urban	0.221***	0.258***	0.293***
	(0.047)	(0.054)	(0.059)
Turkish	0.408***	0.467***	0.516***
	(0.104)	(0.108)	(0.111)
Kurdish	0.028	0.033	0.031
	(0.085)	(0.098)	(0.098)
Employed	0.148***	0.208***	0.193***
	(0.048)	(0.052)	(0.053)
Married	-0.231***	-0.313***	-0.308***
	(0.056)	(0.058)	(0.060)
Marmara	0.069*	0.128***	0.159***
	(0.036)	(0.042)	(0.047)
Aegean	0.092***	0.114***	0.107***
	(0.031)	(0.030)	(0.036)
Mediterranean	0.008	0.040	0.055
	(0.053)	(0.039)	(0.043)
Central Anatolia	0.014	0.035	0.064
	(0.060)	(0.058)	(0.059)
First-stage:			
Reform1	0.171***	0.171***	0.171***
	(0.023)	(0.023)	(0.023)
First-stage F	54.760	54.760	54.760
Observations	6684	6684	6684

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. In addition to survey year dummy age, and age squared, all regressions control for urban residence, ethnicity, employment status, marital status, and regional dummies.

Table 14 Robustness Check - IV: Inclusion of 1986 cohort, Statements 1 to 7
(Treatment = 0.3)

	Stat. 1	Stat. 2	Stat. 3	Stat. 4	Stat. 5	Stat. 6	Stat. 7
Education	-0.091	-0.173	0.040	-0.015	-0.049	-0.141	-0.047
	(0.120)	(0.162)	(0.068)	(0.111)	(0.093)	(0.135)	(0.085)
Urban	0.098***	0.031	0.032**	0.069***	0.002	0.081***	0.084***
	(0.020)	(0.027)	(0.016)	(0.019)	(0.016)	(0.020)	(0.018)
Turkish	0.095***	0.145***	0.063**	0.092*	0.015	0.117***	0.119***
	(0.035)	(0.051)	(0.032)	(0.049)	(0.032)	(0.043)	(0.031)
Kurdish	-0.039	0.028	0.058***	-0.081**	0.029	-0.007	-0.004
	(0.039)	(0.052)	(0.022)	(0.037)	(0.032)	(0.044)	(0.023)
Employed	0.038**	0.012	0.001	0.077***	0.042***	0.102***	0.007
	(0.015)	(0.023)	(0.009)	(0.021)	(0.016)	(0.023)	(0.010)
Married	-0.046**	-0.043	-0.009	-0.085***	-0.071***	-0.136***	-0.029**
	(0.019)	(0.036)	(0.013)	(0.022)	(0.021)	(0.027)	(0.014)
Marmara	0.050***	-0.050*	-0.004	0.049***	0.046**	0.097***	0.061***
	(0.018)	(0.029)	(0.011)	(0.018)	(0.018)	(0.019)	(0.015)
Aegean	0.039**	0.038**	-0.004	0.016	0.007	0.038**	0.005
	(0.017)	(0.017)	(0.010)	(0.020)	(0.019)	(0.017)	(0.016)
Mediterranean	0.024	-0.017	-0.024**	0.021	0.019	0.047**	0.026
	(0.015)	(0.023)	(0.012)	(0.017)	(0.016)	(0.020)	(0.018)
Central Anatolia	0.036	-0.013	-0.016	0.052**	-0.030	0.035	0.046***
	(0.023)	(0.032)	(0.014)	(0.021)	(0.030)	(0.023)	(0.017)
First-stage:							
Reform1	0.171***	0.171***	0.171***	0.171***	0.171***	0.171***	0.171***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
First-stage F	54.760	54.760	54.760	54.760	54.760	54.760	54.760
Observations	6684	6684	6684	6684	6684	6684	6684

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All regressions control for survey year dummy, age, and age squared. Each column reports the results from a separate regression in which the dependent variable is a binary indicator equal to 1 if the respondent expresses the specified gender role attitude, and 0 otherwise. Stat. 1: "The important decisions in the family should be made only by men." (Disagree = 1); Stat. 2: "Men should also do housework." (Agree = 1); Stat. 3: "It is better to educate a son than a daughter." (Disagree = 1); Stat. 4: "Women should not work." (Disagree = 1); Stat. 5: "Women should be more involved in politics." (Agree = 1); Stat. 6: "Women should be virgins on their wedding night." (Disagree = 1); Stat. 7: "A husband is never justified in beating his wife." (Agree = 1).

Table 15 Robustness Check - IV: Inclusion of 1986 cohort, GRA Index1-Index3
(Treatment = 0.5)

	GRA: Index 1	GRA: Index 2	GRA: Index 3
Education	-0.253	-0.347	-0.378
	(0.247)	(0.304)	(0.327)
Urban	0.218***	0.254***	0.292***
	(0.047)	(0.053)	(0.058)
Turkish	0.402***	0.460***	0.514***
	(0.101)	(0.103)	(0.107)
Kurdish	0.032	0.038	0.032
	(0.087)	(0.101)	(0.102)
Employed	0.145***	0.205***	0.192***
	(0.044)	(0.049)	(0.051)
Married	-0.228***	-0.309***	-0.306***
	(0.055)	(0.056)	(0.059)
Marmara	0.067*	0.126***	0.159***
	(0.035)	(0.041)	(0.046)
Aegean	0.091***	0.114***	0.106***
	(0.031)	(0.030)	(0.036)
Mediterranean	0.006	0.032	0.064
	(0.034)	(0.057)	(0.058)
Central Anatolia	0.011	0.181***	0.181***
	(0.054)	(0.024)	(0.024)
First-stage:			
Reform2	0.181***	0.181***	0.181***
	(0.024)	(0.024)	(0.024)
First-stage F	57.760	57.760	57.760
Observations	6684	6684	6684

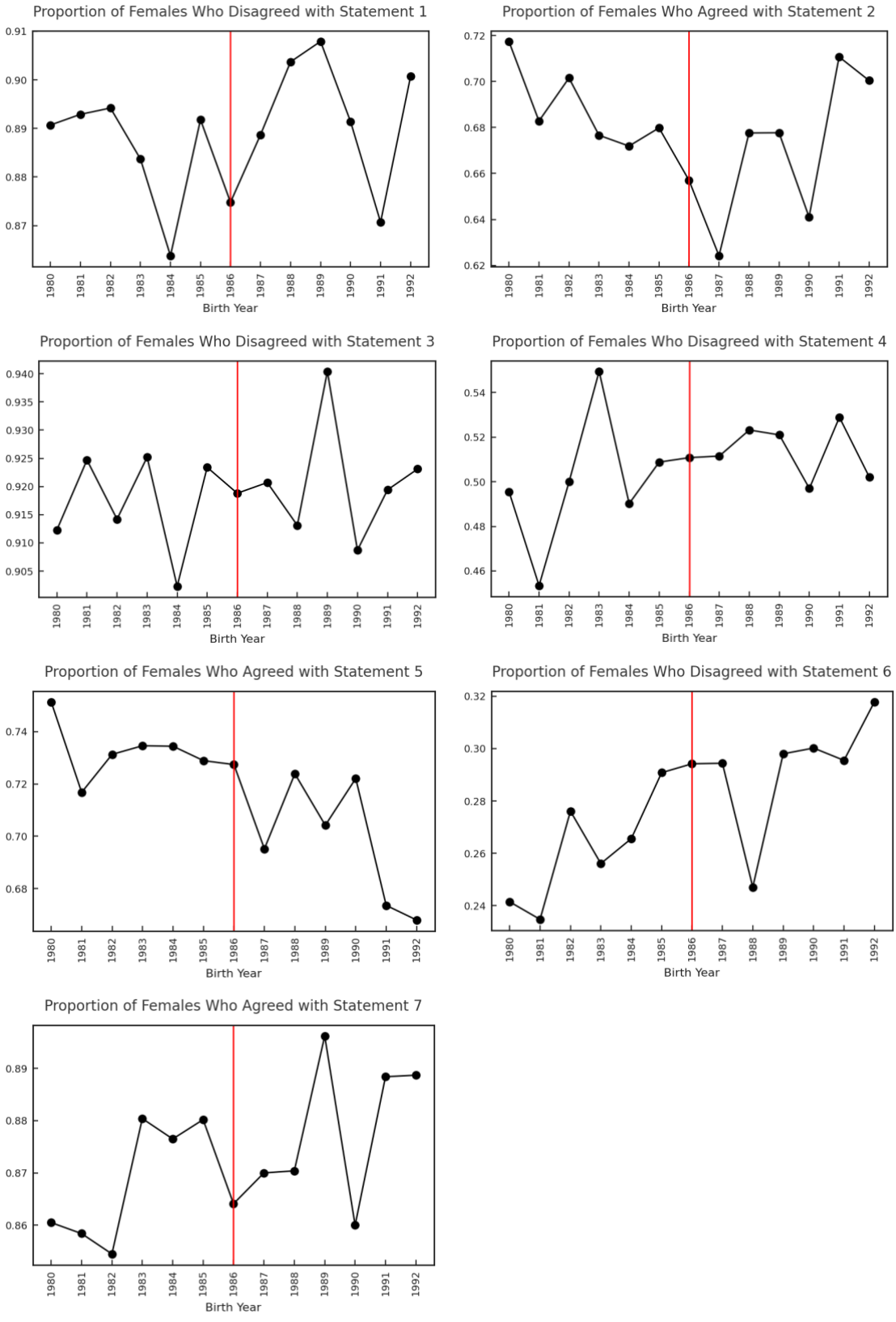
Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The "Education" indicator variable takes the value of one if the woman has at least a middle school diploma (i.e., completed at least 8 years of schooling) and zero otherwise. In addition to survey year dummy age, and age squared, all regressions control for urban residence, ethnicity, employment status, marital status, and regional dummies.

Table 16 Robustness Check – IV: Inclusion of 1986 cohort, Statements 1 to 7
(Treatment = 0,5)

	Stat. 1	Stat. 2	Stat. 3	Stat. 4	Stat. 5	Stat. 6	Stat. 7
Education	-0.054	-0.187	0.036	-0.009	-0.044	-0.125	-0.069
	(0.106)	(0.144)	(0.066)	(0.110)	(0.090)	(0.132)	(0.091)
Urban	0.093***	0.032	0.032**	0.069***	0.001	0.079***	0.087***
	(0.019)	(0.024)	(0.016)	(0.020)	(0.016)	(0.020)	(0.018)
Turkish	0.086**	0.148***	0.064**	0.090*	0.014	0.114***	0.124***
	(0.035)	(0.047)	(0.030)	(0.048)	(0.030)	(0.041)	(0.032)
Kurdish	-0.033	0.026	0.058**	-0.080**	0.030	-0.004	-0.008
	(0.037)	(0.051)	(0.023)	(0.038)	(0.033)	(0.045)	(0.023)
Employed	0.034**	0.014	0.001	0.076***	0.042***	0.100***	0.009
	(0.014)	(0.021)	(0.009)	(0.020)	(0.015)	(0.023)	(0.012)
Married	-0.040**	-0.045	-0.010	-0.084***	-0.071***	-0.134***	-0.032**
	(0.017)	(0.034)	(0.012)	(0.023)	(0.020)	(0.027)	(0.014)
Marmara	0.047***	-0.049*	-0.004	0.049**	0.046**	0.096***	0.063***
	(0.016)	(0.029)	(0.011)	(0.019)	(0.018)	(0.018)	(0.016)
Aegean	0.038**	0.039**	-0.004	0.016	0.007	0.037**	0.005
	(0.017)	(0.017)	(0.010)	(0.020)	(0.019)	(0.016)	(0.016)
Mediterranean	0.024	-0.017	-0.024**	0.021	0.019	0.047**	0.026
	(0.015)	(0.023)	(0.012)	(0.017)	(0.016)	(0.020)	(0.018)
Central Anatolia	0.036	-0.013	-0.016	0.052**	-0.030	0.035	0.046***
	(0.023)	(0.032)	(0.014)	(0.021)	(0.030)	(0.023)	(0.017)
First-stage:							
Reform2	0.181***	0.181***	0.181***	0.181***	0.181***	0.181***	0.181***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
First-stage F	57.760	57.760	57.760	57.760	57.760	57.760	57.760
Observations	6684	6684	6684	6684	6684	6684	6684

Notes: Robust standard errors, corrected for clustering at the age level, are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All regressions control for survey year dummy, age, and age squared. Each column reports the results from a separate regression in which the dependent variable is a binary indicator equal to 1 if the respondent expresses the specified gender role attitude, and 0 otherwise. Stat. 1: "The important decisions in the family should be made only by men." (Disagree = 1); Stat. 2: "Men should also do housework." (Agree = 1); Stat. 3: "It is better to educate a son than a daughter." (Disagree = 1); Stat. 4: "Women should not work." (Disagree = 1); Stat. 5: "Women should be more involved in politics." (Agree = 1); Stat. 6: "Women should be virgins on their wedding night." (Disagree = 1); Stat. 7: "A husband is never justified in beating his wife." (Agree = 1).

Figure 2: The impact of the 1997 education reform in Turkey on gender role attitudes



AI Prompts List

1 - “I’ve drafted this paragraph myself — could you help me spot and fix any grammar or syntax issues?”

2 - “Can you go through this part of my writing and clean up the grammar and punctuation, without changing the way I express things?”

3 - “I’d appreciate it if you could check this text just for grammar and suggest small tweaks to make it more accurate.”

4 - “Could you polish the grammar and flow of this passage I wrote, while keeping the meaning and tone the same?”