# Child Marriage and Women Educational attainment: Evidences from policy Experiment in Ethiopia

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*Abstract*

*This study examines the impact of Ethiopia's Revised Family Code (RFC), which raised the minimum legal age for marriage to 18, on early marriage and women's educational attainment. Utilizing data from the Ethiopian Demographic and Health Survey (DHS) spanning four waves (2000, 2005, 2011, and 2016), the analysis employs a generalized difference-in-differences (DID) method with multiple groups and time periods to evaluate the effects of the RFC adoption. The findings reveal that the RFC significantly reduced the likelihood of early marriage and raised the average age at marriage by 0.59 years, holding other factors constant. Additionally, the adoption of the RFC resulted in a 0.12-year increase in women's maximum years of completed education. The study also explores the bi-directional relationship between age at marriage and educational attainment, demonstrating that later marriage positively affects educational outcomes, while early marriage significantly hampers educational attainment. These results highlight the critical role of policy interventions like the RFC in enhancing women's education and decreasing early marriage in Ethiopia. The study concludes that strengthening the implementation of the RFC and raising awareness, in combination with addressing socio-economic challenges, can further maximize its positive effects.*

*Keywords: Child marriage, Women's education, Revised Family Code, Ethiopia, Educational attainment, Policy intervention.*

## 1. Introduction

International organizations, such as the United Nations Committee on the Rights of the Child, recognize child marriage as a harmful practice and advocate for its prohibition. At the Fourth United Nations International Conference on Women held in Beijing in 1995, actions to combat early marriage were outlined, including educational initiatives aimed at families. In line with this, the United Nations Human Rights Council (UNHRC) has called for the elimination of child marriage, early marriage, and forced marriage. Additionally, the Sustainable Development Goals (SDGs), specifically Goal 5 on gender equality, prioritize the eradication of child marriage, with Target 5.3 explicitly calling for an end to the practice. According to "Girls Not Brides," approximately 15 million girls are married before reaching the legal age of marriage every year. The organization further reports that one in three children is married before their 18th birthday in many developing countries. It is projected that, unless effective interventions are implemented, by 2050, nearly 1.2 billion girls will be married before reaching the age of 18 (Tong & White, 2017).

In Sub-Saharan Africa, data from the Demographic and Health Surveys (DHS) covering 34 countries shows that 54 percent of women aged 20-24 experienced child marriage. There is considerable variation across the continent, with Rwanda having the lowest rate at 16.5% and Niger having the highest at 81.7% (Yaya et al., 2019). A UNICEF report highlights the ongoing increase in child marriage across Sub-Saharan Africa, with one in three girls in the region married before reaching the legal minimum age, compared to one in seven girls 25 years ago (UNICEF, 2018a).

Research by Koski et al. (2017) categorizes the trends of child marriage in Africa into four patterns: minimal change, an initial decline followed by stagnation, a recent decline, and a decreasing rate of decline. Countries like Chad, Malawi, Tanzania, Zimbabwe, and Namibia show little progress in reducing child marriage, while in nations such as Cote d'Ivoire, Niger, Senegal, and Kenya, initial declines have stalled. In Nigeria, child marriage rates have been rising again, whereas countries like Mozambique, Zambia, and Uganda show a more recent decline. Finally, Burkina Faso, Ghana, and Togo have witnessed a slowing down in the rate of decline (Koski et al., 2017).

As the largest demographic in Africa is young, with a high proportion of girls, the slow pace of change in the prevalence of child marriage continues to pose a significant risk for girl children. UNICEF reports that even if child marriage trends are declining, the pace remains insufficient to reduce the number of girls marrying before the legal age (UNICEF, 2015).

Ethiopia has made notable progress in reducing child marriage in recent years. According to the 2016 Ethiopian DHS data, the prevalence of child marriage dropped from 60 percent in 2005 to 40 percent in 2015, marking a significant 20 percent reduction. UNICEF reports that 4 out of 10 females between the ages of 20 and 24 marry before reaching the legal age of marriage in Ethiopia. Other African countries, such as Rwanda, have also made progress in reducing child marriage rates (UNICEF, 2018). Furthermore, the Ethiopia Performance Monitoring and Accountability Survey (2014-2016) reported a decline in the cumulative probability of child marriage from 55.3 percent to 28.7 percent over the past two decades (Mekonnen et al., 2018).

## 2. Statement of the Problem

According to the World Day of Prayer for Children at Risk (2012), on average, one girl is subjected to early marriage every three seconds, and more than 25,000 children are exposed to early marriage every day. If current trends

continue, over 100 million adolescents will be married off in the next decade (World Day of Prayer for Children, 2012). One of the SDGs aims to eliminate child marriage globally, recognizing the harmful effects of the practice: "It perpetuates the cycle of poverty by limiting girls' education, exposing them to early and frequent pregnancies, and reducing their employment opportunities."

Child marriage violates the rights of girls and limits their educational opportunities, future career prospects, and overall well-being, contributing to increased poverty within society. The negative consequences of child marriage extend to various aspects of a girl's life, including psychological, social, economic, and health implications. Common adverse effects include poor academic performance, limited socio-economic opportunities, physical and mental health challenges, restricted participation in the labor market, and limited autonomy in household decision-making (Parsons et al., 2015; Jensen & Thornton, 2003; Malhotra, 2013). Moreover, child brides often lose their freedom, are isolated in their husband's household, and cut off from family and friends (Nour, 2009; Le Stat et al., 2011; Parsons et al., 2015).

A study by Vogelstein and reports from UNICEF emphasize the detrimental impact of early marriage on girls' education. Child brides are more likely to drop out of school, which leads to both short-term and long-term consequences. In the short term, they lose social connections with their peers, while in the long term, they are excluded from the labor market and lack economic independence (Vogelstein, 2013; UNICEF, 2014). Field and Ambrus (2008), using the age at first menarche as an instrument, demonstrated the negative impact of early marriage on educational attainment in Bangladesh. Similarly, Nguyen and Wodon (2012) found that for every additional year of early marriage, the likelihood of accessing

education decreased by 3.2 percentage points. Their findings underscore the broader national consequences of child marriage. Studies in Sub-Saharan Africa also show that early marriage is a leading cause of school drop-out (Lloyd & Mensch, 2008).

In Ethiopia, the 2016 DHS data shows the average marriage age is 16.5 years, indicating that more than 50 percent of girls experience child marriage. This highlights the significance of early marriage as a societal issue in Ethiopia. The physical and psychological effects on child brides are severe. Physically, early marriage exposes girls to early sexual activity, pregnancy, childbirth complications, maternal mortality, and domestic violence. Psychologically, they experience isolation from friends and family, which leads to feelings of loneliness. School drop-out and low educational attainment further exclude them from economic opportunities.

Existing literature on early marriage in Ethiopia attributes the practice to religious, economic, and social factors. Some religious traditions in Ethiopia support early marriage, while economic challenges, particularly in rural areas, drive families to use early marriage as a means of alleviating financial burdens. Social factors, such as traditional norms and community values, also play a significant role in perpetuating child marriage. Deviating from these societal expectations can lead to exclusion and discrimination (UNICEF, 2016).

In response to these issues, the Ethiopian government revised the Family Code in 2000, raising the minimum legal age for marriage from 15 to 18. This study aims to assess the impact of this legal intervention on the incidence of early marriage and its effect on the maximum years of education completed by females in Ethiopia. Additionally, the study will examine how early marriages influence the educational outcomes of females in the country.

## 3. Research Questions

This study aims to address the following research questions:

- What impact has the adoption of the Revised Family Code (RFC) had on the age at marriage in Ethiopia?

- How has the adoption of the RFC influenced women's educational attainment in Ethiopia?

- What is the effect of the age at marriage on women's educational attainment in Ethiopia?

## 4. Significance of the Study

This study is distinctive in its focus on examining the impact of the implementation of the Revised Family Code (RFC) on educational attainment in Ethiopia, in addition to analyzing the broader issue of early marriage in the country. Given that the implementation of the RFC is an ongoing process in Ethiopia, and despite increased attention from both the federal government and international organizations, the findings of this study will provide valuable insights for the design of effective mechanisms to achieve the ultimate goal of reducing early marriage. To date, there is a lack of research offering specific policy guidance for decision-makers in this domain. As such, this study contributes a novel perspective and serves as a critical resource for Ethiopian policymakers, as well as decision-makers and implementers in other developing countries. The study's findings will also support the realization of the first Sustainable Development Goal (SDG), which seeks to empower women and improve their socio-economic status by addressing the issue of child marriage globally.

## 5. Scope of the Study

This study focuses on the impact of the adoption and implementation of the Revised Family Code (RFC) on early marriage and educational attainment among women in Ethiopia. The scope of the research is limited to the analysis of the legal and policy changes associated with the RFC, specifically its effect on the minimum legal age of marriage and subsequent outcomes for women's education. The study will examine data and trends related to child marriage, educational attainment, and socio-economic factors in Ethiopia before and after the adoption of the RFC.

The geographic scope of the study is confined to Ethiopia, with a particular emphasis on rural and urban areas, where the practice of early marriage and the implementation of the RFC may differ in their impact. The study will focus on women aged 20-30, as this cohort represents individuals who are directly affected by both early marriage and changes in legal marriage age.

Furthermore, the study will explore the broader implications of child marriage on women's educational attainment, investigating both short-term and long-term effects. It will consider the influence of socio-economic, cultural, and religious factors in Ethiopia, as well as the role of governmental and non-governmental interventions in addressing early marriage.

While the study is primarily concerned with Ethiopia, its findings may offer insights that can be applied to other developing countries facing similar challenges related to child marriage and women's education. The study does not address the broader social and health impacts of child marriage but will focus on its educational consequences.

## 6. Review of Related Literature

### Definition of Child Marriage

Child marriage refers to an illegal marital union where individuals, typically girls, marry before reaching the minimum legal age of 18. It is considered a violation of children's rights, with adverse social, physical, and emotional consequences for those involved. Over 58 million girls were married before reaching

adulthood, according to UNICEF (2005) and UNFPA (2006).

## 6.1. Theoretical Literature

International laws prohibit child marriage, but many developing countries still practice it, with parents often making marriage decisions for girls. Education is a key factor in preventing early marriage, as it empowers women, improves their health and economic outcomes, and increases their decision-making autonomy. Despite global education goals, millions of children, especially girls in developing nations, still lack access to education (UNICEF, 2004).

### 6.1.1. Grounds for Early Marriage

Key drivers of early marriage include poverty, lack of education, and societal values that prioritize family honor and reputation. In many developing nations, parents push for early marriage as a means to relieve financial burdens or protect family status. In Ethiopia, girls are often married or promised in marriage at very young ages (UNFPA, 2012).

### 6.1.2 Exogenous Policy Interventions to Control Early Marriage

Several policy interventions have been implemented to reduce early marriage:

- **Girls' Empowerment and Life Skills Programs**: Programs focused on educating and empowering girls have been found effective in reducing early marriage rates (Malhotra et al., 2011; Austrian et al., 2016).

- **Conditional Cash Transfers (CCT)**: Economic interventions, like cash transfers tied to school attendance, have shown mixed results, with combined approaches being more effective (Kalamar et al., 2016; Baird et al., 2011).

- **Providing Free Education**: Enhancing access to free education has been shown to delay marriage (Koski, 2016), though other educational interventions have had limited success (Malhotra et al., 2016).

- **Legal and Advocacy Approaches**: Legal frameworks, such as Indonesia's 1974 National Marriage Act, have shown limited impact due to poor enforcement (Koski, 2016).

- **Multi-Component Approaches**: Comprehensive programs that address the individual, family, and community dimensions of early marriage have been more effective than single-component interventions (Chae & Ngo, 2017).

- **Creating Employment Opportunities for Women**: Early marriage leads to lower educational attainment, which, in turn, limits employment opportunities. Addressing both marriage and education can reduce socio-economic disadvantages (Raj, 2010; UNFPA, 2013).

## 6.2. Empirical Literature

- **Determinants of Child Marriage**: The major causes of early marriage include poverty, social norms, and low levels of education. Families in financially strained situations often push girls into marriage as a way to reduce economic burdens (Bayisenge, 2010; Mathu et al., 2003).

- **Consequences of Child Marriage**: Early marriage leads to a range of negative outcomes, including reduced educational attainment, economic dependency, and higher fertility rates (Klasen & Pieters, 2012; Ahmed et al., 2013). Studies also show that early marriage increases the risk of health complications, such as pregnancy-related deaths (Godha et al., 2013; WHO, 2011).

### 6.3. Conceptual framework of the study

**Figure 1: Conceptual framework of the study**
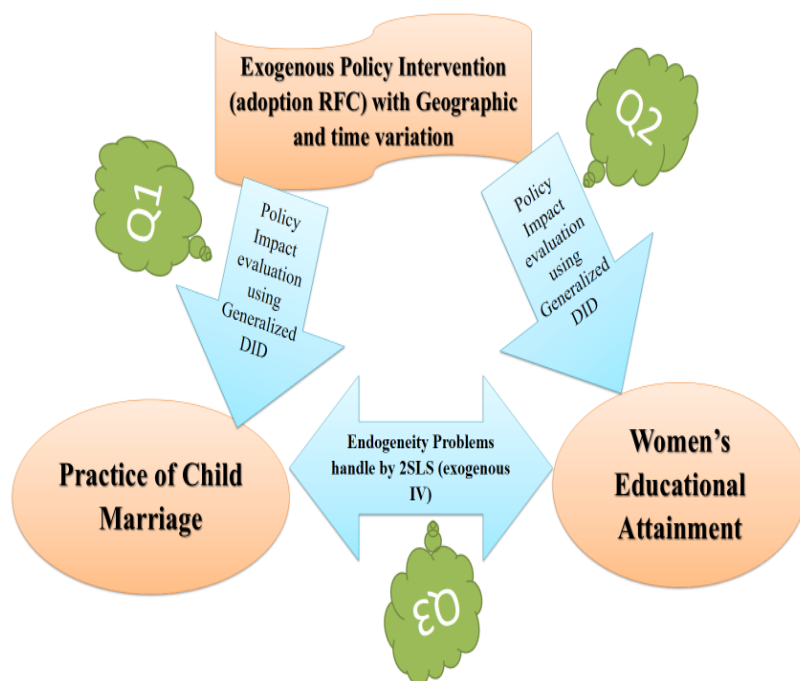


Source: Drawn by authors, 2024

### 6.4 Identified Research Gaps

While many studies have explored the causes and consequences of early marriage, limited research has focused on the effects of legal interventions, such as the adoption of the RFC in Ethiopia. This study aims to fill this gap by examining the impact of the RFC on early marriage and educational attainment using generalized Difference-in-Differences (DID) techniques. Additionally, most studies have not addressed the endogeneity issue in the relationship between educational attainment and early marriage, a challenge this research will address using an instrumental variable approach. The study will also consider the varying regional adoption of the RFC, making it a unique contribution to the existing literature.

### 7.  Material and Methods

#### 7.1. Research Design and Approach

The primary objective of this study is to assess the causal impact of the Revised Family Code (RFC) on early marriage and educational attainment in Ethiopia. To achieve this, the study employs a **Generalized Difference-in-Differences (DID) approach**. This approach is suitable for evaluating the effects of policy changes when there are multiple groups and time periods, and it helps to account for both regional and temporal variations in the adoption of the RFC. Below, we outline the specific steps taken in the research design and approach:

#### 7.2. Data Sources and Types

The primary data source for this study is the Ethiopian Demographic and Health Survey (DHS), which has been conducted four times: in 2000, 2005, 2011, and 2016. This study utilizes

all available DHS datasets to conduct the analysis. To facilitate the examination of changes over time, the authors create a pooled cross-sectional dataset by combining the results from all four waves of the Ethiopian DHS data.

### 7.3. Identification Strategy

In 2000, the Ethiopian government implemented a significant revision of the Family Code, which had originally been enacted in 1960. Under the 1960 Family Code, the minimum legal age for marriage was set at 15 years. However, the revised Family Code (RFC) raised the legal minimum marriage age to 18 years. The RFC has been in effect since 2000, addressing various issues related to family law, including marriage and divorce, with specific emphasis on the legal age for marriage. Article 7, Sub-article 1 of the RFC states: *"Neither a man nor a woman who has not attained the full age of eighteen years shall conclude a marriage."* This study focuses on the change in the minimum age at marriage as a key policy intervention. To address the identified research gaps, the authors exploit this exogenous policy change as a natural experiment, analyzing its impact on early marriage and educational attainment.

### 7.4. Econometric Model

To examine the causal effects of the RFC on early marriage and educational outcomes, the study employs a **Generalized Difference-in-Differences (DID)** approach with multiple groups and time periods. Ethiopia is a federal state comprising ten regions: Tigray, Amhara, Afar, Oromia, Somali, Southern Nations, Nationalities, and Peoples' Region (SNNP), Gambela, Benishangul-Gumuz, Sidama, and Harari, along with the two city administrations of Addis Ababa and Dire Dawa. The Sidama regional state was established in 2019, and prior

to this, it was part of the SNNP region. In this study, Sidama is considered as part of the SNNP region to maintain consistency across time periods.

The DID approach allows for the comparison of the outcomes before and after the policy implementation (in 2000) across different regions that adopted the RFC at varying times. By grouping regions based on their respective adoption periods of the RFC, this method accounts for regional and temporal variations in the implementation of the policy, thus providing a comprehensive analysis of the RFC's impact on early marriage and educational attainment.

The implementation of the Revised Family Code (RFC) in Ethiopia in 2000 varied geographically and over time. Initially, the RFC was adopted immediately by Tigray, Amhara, Oromia, Addis Ababa, and Dire Dawa, forming **Group One**. Six other regions delayed adoption: Gambela and SNNP adopted the RFC after 2005, while Benishangul-Gumuz, Afar, Somali, and Harari continued using the 1960 Family Code, forming **Group Two**. Finally, after 2011, the remaining four regions adopted the RFC, categorizing them as **Group Three**. This geographic and temporal variation creates a framework for analyzing the effects of the RFC across different regions and periods.

*For this study, all regions that adopted the RFC in the first phase (Tigray, Amhara, Oromia, Addis Ababa, and Dire Dawa) are categorized under Group One and marked in yellow color as shown above. The regions with Rose color (SNNP of Ethiopia and Gambela) are categorized under Group Two. The other regions with Blue color (Benishangul-Gumuz, Somali, Afar, and Harari) are categorized under Group Three to run our generalized DID with multiple groups and time estimation techniques.*

**Figure 2**: Description of geographic variation on adoption of the RFC
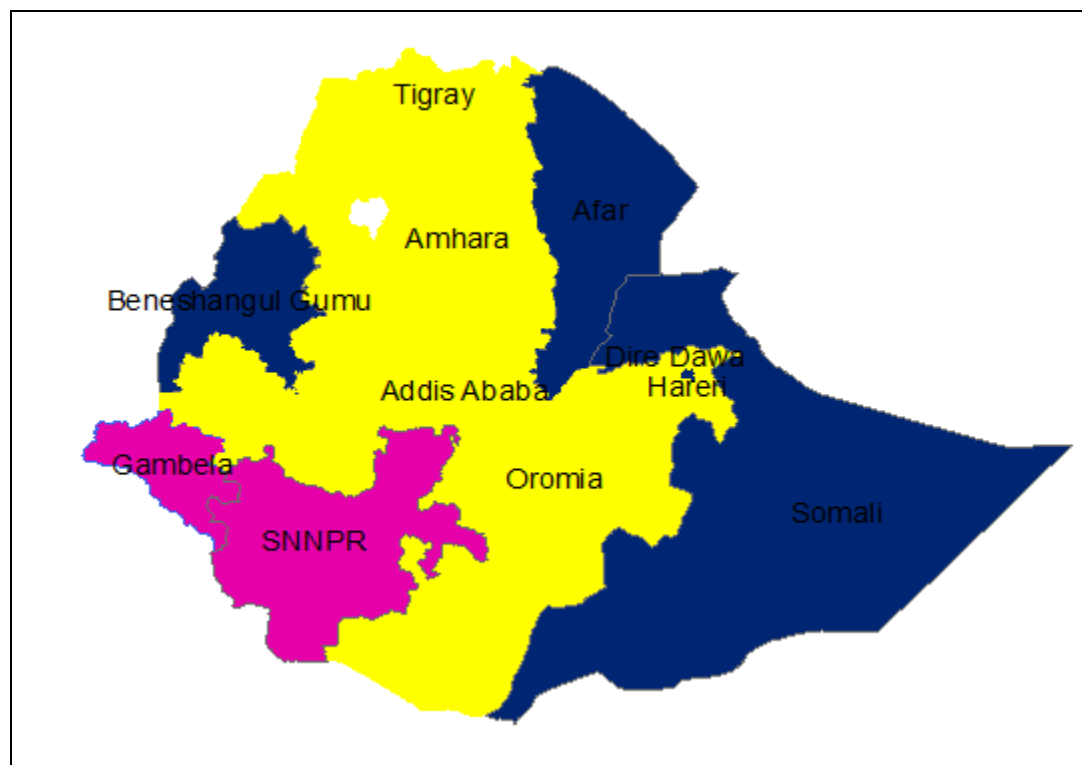


*Source: drawn by authors, 2024*

*Depending on year of the marriage of our respondents, the authors identifies four time periods: pre-2000, 2001-2005, 2006-2011, and 2012-2016. The existence of time and geographic variations on the adoption of the RFC led to the adoption of a Generalized DID with multiple groups and time periods research design.*

To estimate the immediate impact of adopting RFC, the authors run the following Generalized DID with multiple groups and time period regression. The immediate impact of the RFC adoption is measured by rate of the prevalence of the RFC, age at marriage and women's educational attainments.

$$
\begin{aligned}
(immediateimpactof&adoptingRFC)_{igt} \\
= \beta_o &+ \delta_1(treatmentdummy)_{igt} + \beta_1(wealthindexdummy)_{igt} \\
&+ \beta_2(urbanresidencydummy)_{igt} + \beta_3(dummyforxposuretomedia)_{igt} \\
&+ \beta_4(setofreligiondummy)_{igt} + \beta_5(workstatusdummy)_{igt} + \beta_6(familysize)_{igt} \\
&+ \beta_7(femaleheadedhh)_{igt} + \beta_8(partnerseducationinyears)_{igt} + \lambda_t + \alpha_g + \psi_g t \\
&+ \varepsilon_{igt} - - - - - - - - - - - (1)
\end{aligned}
$$

In equation one, (immediateimpactofadoptingRFC)_{igt} represent the immediate goal of adopting the RFC which includes its effect on prevalence of child marriage, age at marriage and maximum years of women's education attainments;

(treatmentdummy)_{igt} is a dummy variable that represent whether RFC was active for woman 'i' in the group 'g' at time 't' when she got married; (wealthindexdummy)_{igt} represent wealth index of the individual; (urbandummy)_{igt} represent a dummy variable for an urban resident; (workstatusdummy)_{igt} represent a dummy for

work status; (dummyforexposuretomedia)$_{igt}$ dummy for the frequency of exposure to mass media per-week; (familysize)$_{igt}$ shows number of family members and (orderofbirth)$_{igt}$ shows the order of birth in the family; (partnerseducationyears)$_{igt}$ partners maximum years of completed education; $\lambda_t$ time periods dummies; $\alpha_g$ groups dummies and $\psi_g t$ group specific linear time trends and ε$_{igt}$ is an error term for woman "i" group 'g' at time 't'. δ is the parameter of interest, which indicates the impact of the implementation of the RFC on outcome variables in Ethiopia.

One of the basic assumptions we need to test under generalized DID with multiple groups and time periods estimation techniques is whether the parallel trend assumption holds or not. To generate the pseudo treatment value, the authors creates four pseudo time periods depending on the year of marriage of respondents: Pre-1985; 1985-1990; 1991-1995; 1996-1999. The authors also assumes that group 1 adopted the policy in the time period 1985- 1990, group two adopted the policy in the time period 1991-1995, and group three adopted the policy in the time period 1996-1999. Thus, the authors identifies the pseudo treatment dummy value that represents whether RFC was active for individual 'i' from group 'g' at time 't' when she got married. Thus, we conducted the placebo test to know whether

our outcome variable had the same trend before the adoption of the Revised Family Code in Ethiopia or not. The result is presented in the next chapter.

### 7.5.    Test of policy endogeneity problem

To isolate the impact of the adoption of the RFC from potential policy Endogeneity problem, we have to ensure absence of any differential change of time-varying regional-level variables for treated and controlled groups or change in similar fashion for both treated and controlled groups (Besley and Case, 2000). Controlling region fixed effect could not overcome suspected policy endogeneity problem. The timing of the adoption of the RFC may depend on factors before the adoption of program such as the prevalence of child marriage practice in the country and high gender disparity on women's years of completed education. If there were specific trends on the prevalence of child marriage practice and gender disparity on women's years of completed education that were correlated with the timing of adoption of the RFC across the regional government, a generalized difference-in-differences could be problematic (Hahn and Yang, 2016). To test this, the authors regress Post on one- and two-year lagged of prevalence of child marriage, age at marriage, and women's educational attainment.

$$
\begin{aligned}
(post)_{gt} = \beta_0 &+ \beta_1(lagoneearlymarriage)_{igt} + \beta_2(lagtwoearlymarriage)_{igt} \\
&+ \beta_3(lagoneageatmarriage)_{igt} + \beta_4(lagtwoageatmarriage)_{igt} \\
&+ \beta_5(lagoneeducationinyears)_{igt} + \beta_6(lagtwoeducationinyears)_{igt} + \varepsilon_{igt} -- \\
&---------(2)
\end{aligned}
$$

Where, (Post)$_{gt}$ represent for whether group 'g' at time period 't' adopted the RFC or not; (lagoneearlymarriage)$_{igt}$ represent for lag one year of dummy for the prevalence of child marriage; (lagtwoearlymarriage)$_{igt}$ represent for lag two years of dummy for the prevalence of child marriage; (lagoneageatmarriage)$_{igt}$ represent for lag one year of age at marriage;

(lagtwoageatmarriage)$_{igt}$ lag two year of age at marriage; (lagoneyeareducationinyears) represent for lag one year of women maximum years of education attainment; (lagtwoyeareducationinyears)$_{igt}$ represent for lag two years of women maximum years of education attainment.

**Table 1: Test of policy endogeneity problem**

| Variables | Post$_{gt}$ | Post$_{gt}$ | Post$_{gt}$ | Post$_{gt}$ |
|---|---|---|---|---|
| First lag of prevalence of child marriage | .001 (.003) | | | -.002 (.0003) |
| Second lag of prevalence of child marriage | .0002 (.0005) | | | .0002 (.0003) |
| First lag of age at marriage | | -.001 (.0003) | | -.001 (.0003) |
| Second lag of age at marriage | | .0004 (.0001) | | .0005 (.0001) |
| First lag of years of completed education | | | .0008 (.0006) | .001 (.0002) |
| Second lag of years of completed education | | | -.0003 (.0002) | -.0005 (.0001) |
| Observation | 170,986 | 169,990 | 170,985 | 169,990 |
| R-square | 0.93 | 0.94 | 0.93 | 0.94 |
| Source: Authors' estimation | | | | |
| *, ** and *** represent for 10%, 5% and 1% significance level, respectively | | | | |

Table 1 presents a test for policy endogeneity problem on adoption of the RFC across the regional government of Ethiopia. All the coefficients are close to zero and statistically insignificant. We find no significant impact of previous prevalence of child marriage, age at marriage and education gender disparity on the timing of adoption of the RFC across the regional government of Ethiopia. This result implies that policy endogeneity is not a huge concern in this study.

### 7.6. *Two-Stage Least-Squares (2SLS) estimation methods*

#### ■ *Issues and requirements*

There is reverse causality between women's years of completed education and prevalence of child marriage. The level of educational attainment of girls directly determines whether they get married early or not. In the same way, the age at marriage determines the level of education attained by girls. Thus, this model has the endogeneity problem caused by reverse causality, omitted variable bias, and or measurement error. Our coefficient from OLS will be biased because of the omitted variable, reverse causality, and or measurement error problem between early marriage and educational attainment. Under this condition, the classical linear regression model assumption will be violated (Heanue & O'Donoghue, 2014).

Scholars recommended different mechanisms to overcome the Endogeneity problem. By selecting an exogenous instrumental variable that could fulfill exogeneity and exclusion restriction requirements, the reverse causality, omitted

variable, or measurement error problems could be overcome. According to the exogeneity condition, the selected instrumental variable must be correlated with the endogenous explanatory variable. In the case of exclusion restriction criteria, the selected IV must be uncorrelated with the dependent variable and all variables categorized under the error term (Murray, 2006). Thus, the instrumental variable design successfully overcomes the endogeneity problem (Card, 1999; Cawley & Meyerhoefer, 2012).

■ **Functional form of the model**

The authors created the exogenous IV 'the treatment dummy' that shows whether the RFC was active for individual 'i', from group 'g' at time 't' when she got married. As explained in the analysis and discussion part, this instrumental variable fulfills exogeneity and exclusion restriction requirements (Wooldridge, 2013).

**First-stage regression equation:**

$$(\widehat{earlymarraige})_{igt}$$
$$= \delta_0 + \delta_1(treatmentdummy)_{igt} + \beta_1(wealthindex)_{igt} + \beta_2(urban)_{igt}$$
$$+ \beta_3(mediaexposure)_{igt} + \beta_4(religion)_{igt} + \beta_5(workstatus)_{igt}$$
$$+ \beta_6(familysize)_{igt} + \beta_7(femaleheadedhh)_{igt}$$
$$+ \beta_8(partnerseducationinyears)_{igt} + \beta_9(birhtorder)_{igt} + \lambda_t + \alpha_g + \psi_g t + \varepsilon_{igt}$$
$$-------------- (2)$$

**Second-stage regression equation:**

$$(educatt)_{igt} = \alpha_0 + \delta_1(\widehat{earlymarriage})_{igt} + \delta_2(wealthindex)_{igt} + \delta_3(urban)_{igt}$$
$$+ \delta_4(religion)_{igt} + \delta_5(workstat)_{igt} + \delta_6(partnerseducationinyears)_{igt}$$
$$+ \delta_7(mediaexp)_{igt} + \delta_8(famsize)_{igt} + \delta_9(birhtorder)_{igt}$$
$$+ \delta_{10}(femaleheadedhh)_{igt} + \lambda_t + \alpha_g + \psi_g t + \varepsilon ----- (3)$$

$(treatmentdummy)_{igt}$ represent treatment dummy whether the RFC was active for indivudial 'i' from group 'g' at time 't' when she got married; $(Eduatt)_{igt}$ is women's maximum years of completed education; $(earlymarriage)_{igt}$ is the dummy variable for early marriage; $(wealthindex)_{igt}$ is the dummy for wealth index of the individual; $(urban)_{igt}$ is the dummy variable for an urban resident; $(workstat)_{igt}$ is the partner's work status; $(parteduc)_{igt}$ is the partner's education in years; $(media)_{igt}$ denotes the frequency of exposure to mass media; $(famsize)_{igt}$ shows the number of family members and $(birthtorder)_{igt}$ shows the order of birth in the family.

■ **Specification tests**

For the validity of the constructed instrumental variable, it should fulfill exogeneity and exclusion restriction requirements. For the validity of the exclusion restriction requirement, Wald 'F' statistics must exceed 10 to ensure that the instrument is not weak (Wooldridge, 2013). The exclusion restriction condition will be checked through the theoretical justification of the absence of any relationship between IV and variables in the error terms.

## 8. Results and Discussion

This study assesses the impact of the adoption of the Revised Family Code (RFC) on early marriage, age at marriage, and women's educational attainment in Ethiopia. Additionally, it explores how early marriage influences women's educational attainment. To achieve these objectives, two primary estimation techniques were employed: **Generalized Difference-in-Differences (DID)** with multiple

groups and time periods, and **Two-Stage Least Squares (2SLS)**.

### 8.1. Summary of the statistics

The data for this study were sourced from the Ethiopian Demographic and Health Surveys (DHS). Ethiopia has conducted four waves of DHS, and this research utilized all available data from these surveys. The authors pooled cross-sectional data across all available years, resulting in a dataset of approximately 170,000 observations.

Descriptive statistics for key variables under investigation in this study are presented in the table below. These variables include demographic factors such as head of household, place of residence, religion, wealth index, work status, age at marriage, and number of household members. Additionally, the study considers variables like land ownership status, media exposure, and partner's years of education.The primary outcome variables in this study are **age at marriage**, the **dummy variable for early marriage**, and **years of completed education**. These variables are central to understanding the effects of the RFC adoption on early marriage and educational outcomes for women in Ethiopia.

Table 2 presents a summary of the main variables used in this study. The overall data indicates that the average age at marriage in Ethiopia is 15.96 years, with the treated observations having an average age at marriage of 18.11 years and untreated observations having a slightly lower average of 15.71 years. This reveals that, on average, the age at marriage across the country remains below the legal minimum age of 18.

The second outcome variable, the dummy for early marriage, reflects the prevalence of early marriage in Ethiopia. According to the data, over 72% of the observations were married before the legal minimum age. Regarding education, the average maximum years of completed education

for the entire sample is 1.16 years. For treated observations, this figure is higher at 2.69 years, while untreated observations have a lower average of 0.98 years.

One of the key explanatory variables in this study is the sex of the head of the household. Among the total observations, 78% are male-headed households. In the treated group, 78.2% of households are male-headed, while the control group shows a similar proportion of 78%. The data also reveals that 17.8% of the total observations live in urban areas, while 82.2% reside in rural areas.

Religion varies by group, with the majority of treated observations identifying as Muslim (42.6%) or Orthodox Christian (38.1%). Wealth differences are notable as well, with 53.4% of the treated observations being classified as wealthier compared to the untreated group. Employment status also differs between the two groups, as 45.3% of treated respondents are employed, compared to a lower percentage in the untreated group.

A key finding is that a higher percentage of untreated observations (75.04%) married before reaching the legal age of marriage, compared to 52.4% of treated observations. Additionally, a larger proportion of treated observations (92.7%) own land, compared to 87.8% of the control group. Exposure to media also differs, with 26.1% of treated observations having regular media exposure, compared to only 15.3% of untreated observations.

Lastly, the education level of partners also shows a significant difference: the average number of years of education completed by partners of treated observations is 4.84 years, while for untreated observations, it is 3.08 years.

Table 2: Summary statistics

| Variables | Summary for Major data file | | | Summary for treated observations | | Summarily for untreated observations | |
|---|---|---|---|---|---|---|---|
| | Observations | Mean | SD | Mean | SD | Mean | Standard deviation |
| Place of residence (1 if urban) | 170,987 | .178 | .382 | .234 | .424 | .171 | .377 |
| Religion dummy | | | | | | | |
| Orthodox | 65,958 | .386 | .487 | .381 | .485 | .381 | .486 |
| Catholic | 1,518 | .009 | .094 | .006 | .079 | .010 | .099 |
| Muslim | 71,396 | .418 | .493 | .426 | .494 | .414 | .492 |
| Protestant | 27,933 | .163 | .370 | .009 | .093 | .010 | .099 |
| Traditional | 2,890 | .017 | .129 | .016 | .124 | .020 | .138 |
| Other | 461 | .003 | .052 | .005 | .067 | .002 | .045 |
| Wealth index | 126,813 | .528 | .499 | .571 | .495 | .521 | .500 |
| Employment status | 170,891 | .387 | .487 | .453 | .498 | .362 | .480 |
| Female headed household | 170,987 | .219 | .413 | .218 | .413 | .220 | .414 |
| Age at marriage (Years) | 170,401 | 15.96 | 3.484 | 18.108 | 4.262 | 15.708 | 3.288 |
| Number of family members | 170,987 | 6.398 | 2.354 | 5.410 | 2.174 | 6.515 | 2.346 |
| Education (in Years) | 170,987 | 1.161 | 2.863 | 2.688 | 4.104 | .981 | 2.621 |
| Early marriage (1/0) | 170,987 | .726 | .446 | .524 | .499 | .750 | .432 |
| Media exposure (1/0) | 170,778 | .164 | .370 | .261 | .439 | .153 | .359 |
| Group one dummy | 170,987 | .506 | .500 | .279 | .448 | .721 | .448 |
| Group two dummy | 170,987 | .205 | .404 | .249 | .432 | .751 | .432 |
| Group three dummy | 170,987 | .269 | .443 | .265 | .442 | .734 | .442 |
| Partner's education (Years ) | 165,998 | 3.266 | 10.175 | 4.843 | 9.426 | 3.083 | 10.242 |
| Modern contraceptive usage | 170,987 | .156 | .363 | .299 | .457 | .139 | .346 |
| Source: Authors' estimation, 2024 | | | | | | | |

Figure 3: prevalence of child marriage based on year of marriage
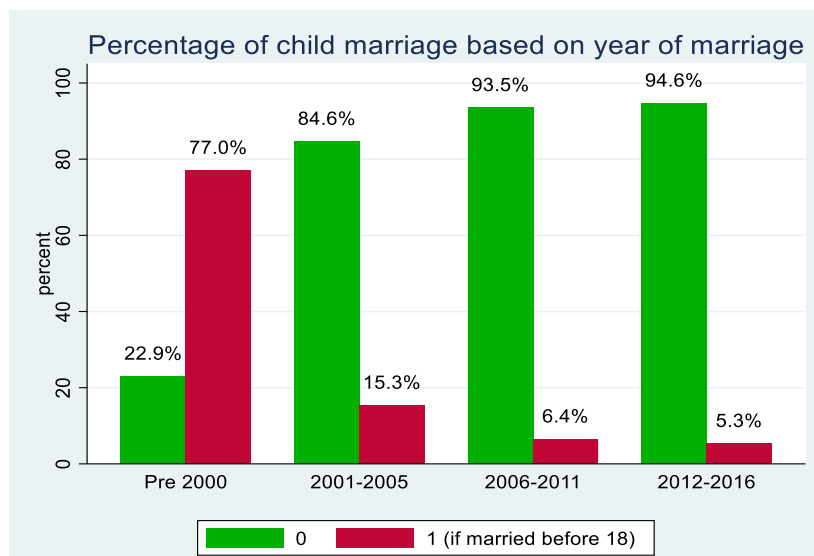


Source: Drawn by authors

Figure 2 illustrates the prevalence of child marriage for individual 'i' from group 'g' at time 't' after receiving the treatment. Prior to the approval of the RFC, 77% of the respondents married before reaching the legal age of marriage. Following the adoption of the RFC, the prevalence of child marriage steadily declined for those observations that received the treatment.

The above clustered bar chart shows the prevalence of early marriage across different time periods. In pre-2000, 77 percent of our observations married before the legal age of marriage. This value slightly declined to 68 percent in 2016.

## 8.2. Immediate impact of adopting the RFC

### Impact of Adopting the RFC Using the Full Sample

The RFC raised the legal minimum age for marriage to 18 years. However, there were time and geographic variations in the adoption of the RFC across regional governments. The implementation of the Code occurred in three phases. In the first phase (2000–2005), two federal city administrations and three regional

governments adopted the RFC, which we categorized as Group One. The second phase (2005–2011) saw the adoption of the RFC by two additional regional governments, categorized as Group Two. Finally, after 2011, the remaining four regions adopted the RFC, placing them in Group Three. This study employs a generalized Difference-in-Differences (DID) approach with multiple groups and time periods. Table 3 below presents the immediate impact of adopting the RFC on the prevalence of child marriage, age at marriage, and years of completed education using the full sample.

Table 3 presents the results on the impact of the RFC adoption on early marriage and the maximum years of completed education. Columns 1 and 2 show the effect of adopting the RFC on early marriage in Ethiopia. Column 1 reports the results without controlling for potential explanatory variables that could influence the outcome variable. The adoption of the RFC decreases the probability of early marriage by 0.07 for treated observations relative to untreated observations. Column 2 controls for various explanatory variables that could affect early marriage. The results indicate

that the RFC adoption reduces the probability of early marriage by 0.07 for treated observations compared to untreated ones, assuming all other factors remain constant. In this model, factors such as urban residence, employment status, media exposure, and female-headed households are associated with a reduced probability of early marriage in Ethiopia.

Figure 4: prevalence of child marriage in Ethiopia
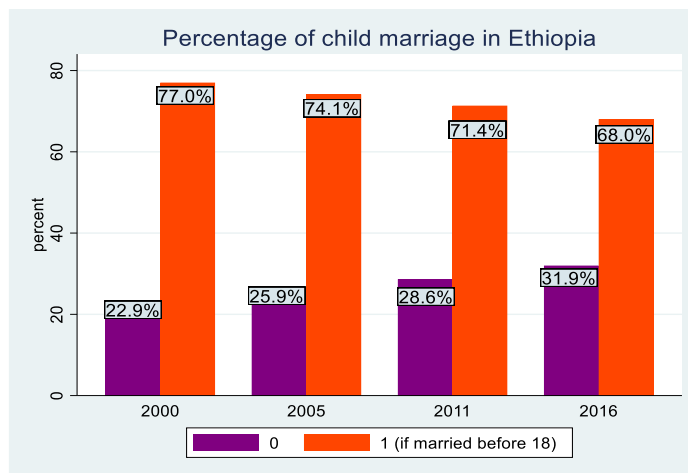


Source: Drawn by authors

Columns 3 and 4 present the impact of adopting the RFC on the age at marriage for treated versus untreated observations. Model 1 evaluates the effect using the basic generalized DID with multiple groups and time periods. The results show that the adoption of the RFC increases the age at marriage by 0.59 years for treated observations compared to untreated ones, assuming all other explanatory variables remain constant. Model 2 controls for various factors influencing the outcome and finds that the RFC adoption increases the age at marriage by 0.17 years for treated observations relative to untreated ones, assuming all other variables stay constant. In this model, urban residence, employment, media exposure, and female-headed households significantly increase the age at marriage.

Columns 5 and 6 of Table 3 assess the impact of RFC adoption on the maximum years of
Table 3: Immediate impact of adopting the RFC using full sample

completed education for treated observations relative to untreated observations. Model 1, using the basic generalized DID with multiple groups and time periods, shows that the adoption of the RFC significantly increases the maximum years of completed education by 0.02 years for treated observations relative to untreated ones, assuming other factors remain constant. Model 2, which controls for all relevant explanatory variables, finds a stronger effect, with RFC adoption increasing the maximum years of completed education by 0.12 years for treated observations compared to untreated ones, assuming all other covariates are held constant. In this model, urban residence, employment, and media exposure significantly increase women's maximum years of completed education for treated observations compared to untreated ones.

Table 3: Immediate impact of adopting the RFC using full sample

| Variables | Child Marriage(1 if married before 18) | | Age at marriage (Years ) | | Education Attainment (Years ) | |
|---|---|---|---|---|---|---|
| | *(1)* | *(2)* | *(3)* | *(4)* | *(5)* | *(6)* |
| ***Group-time ATET (1/0)*** | **-.074\*\*\* (.009)** | **-.074\*\*\* (.009)** | **.591\*\*\* (.069)** | **.165\*\*\* (.033)** | **.0181 (.030)** | **.124\*\*\* (.032)** |
| *Urban Residence (1/0)* | | -.024\*\*\* (.004) | | .034\*\* (.014) | | 1.988\*\*\* (.032) |
| *Employment Status (1/0)* | | -.004\* (.002) | | .011 (.009) | | .275\*\*\* (.014) |
| *Media Exposure (1/0)* | | -.025\*\*\* (.003) | | .050\*\*\* (.013) | | 1.452\*\*\* (.025) |
| *Size of HH* | | .006\*\*\* (.0005) | | -.006\*\*\* (.002) | | -.089\*\*\* (.003) |
| *Modern contraceptive (1/0)* | | -.0009 (.003) | | .042\*\*\* (.011) | | .568\*\*\* (.021) |
| *Dummy for time period 2006-2011* | .148\*\*\* (.014) | -.051\*\*\* (.005) | .267\*\*\* (.038) | .062\*\*\* (.018) | .052\*\* (.023) | .062\*\*\* (.020) |
| *Dummy for time period 2012-2016* | .104\*\*\* (.011) | -.028\*\*\* (.004) | -.069\*\*\* (.029) | .165\*\*\* (.021) | .070\*\* (.032) | .256\*\*\* (.029) |
| *Dummy for second group* | .148\*\*\* (.014) | .147\*\*\* (.014) | -1.331\*\*\* (.107) | -.346\*\*\* (.051) | -.072 (.047) | -.223\*\*\* (.062) |
| *Dummy for third groups* | .104\*\*\* (.011) | .104\*\*\* (.011) | -.836\*\*\* (.085) | -.167\*\*\* (.040) | -.069 (.061) | -.123\*\*\* (.044) |
| *Constant* | 29.1\*\*\* (1.528) | 28.7\*\*\* (1.533) | -208.1 \*\*\* (11.679) | -40.2\*\*\* (6.784) | -138.1\*\*\* (10.021) | -69.3\*\*\* (8.860) |
| *Group specific- linear time trend* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Individual and household variables* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Observation* | 170,987 | 170,682 | 170,401 | 148,148 | 170,987 | 147,880 |
| *R-Square* | 0.07 | 0.07 | 0.11 | 0.82 | 0.20 | 0.41 |

*Source: Authors' estimation*

*\*\*\*, \*\*, \* one, five, and ten percent significance level, respectively*

## Impact of Adopting the RFC Using a Restricted Sample

In this study, treated observations are identified based on whether the RFC was active for individual 'i' from group 'g' at time 't' when they got married. To assess the sensitivity of our results for older respondents who may have completed more years of education and married later, we conduct sensitivity checks using respondents older than 30 from the latest Ethiopian DHS survey. Additionally, to assess the consistency of our results in cases of intra-regional migration, we perform sensitivity checks on observations that have lived in the place of the interview for more than 20 years. Table 4 below presents the regression results that examine the consistency of our findings using these restricted samples.

Table 4 presents the impact of the implementation of the RFC on child marriage and women's maximum years of completed education using a restricted sample. Columns 1 and 2 show the effect of the RFC on the prevalence of child marriage. Column 1 uses observations from respondents older than 30 years from the latest Ethiopian DHS survey, while Column 2 includes observations from individuals who have lived in the place of the interview for more than 20 years. In both columns, the impact of the RFC on the prevalence of child marriage remains consistent with the results obtained from the unrestricted sample.

Columns 3 and 4 illustrate the impact of the RFC on age at marriage using restricted samples. Column 3 uses observations from respondents older than 30 years, and Column 4 includes respondents who have lived in the place of the interview for more than 20 years. The results in both columns are consistent with those observed in the unrestricted sample, showing that the impact of RFC adoption on the age at marriage is unchanged.

Columns 5 and 6 examine the effect of the RFC on the maximum years of completed education using restricted samples. Column 5 reports the impact using observations from individuals older than 30 years from the latest Ethiopian DHS survey, while Column 6 includes observations from those who have lived in the place of the interview for more than 20 years. In both columns, the impact of adopting the RFC is consistent with the findings from the unrestricted sample.

Thus, the results presented in Table 4 demonstrate the consistency of the impact of adopting the RFC across both unrestricted and restricted samples.

## Falsification Test

One crucial assumption to test when using generalized DID with multiple groups and time periods estimation techniques is whether the parallel trends assumption holds. To verify this assumption, the coefficients in the following table assess the parallel trends assumption using pre-adoption data of the Revised Family Code (RFC). To generate a pseudo-treatment variable, we create four time periods: pre-1985, 1985-1990, 1991-1995, and 1996-1999. In this framework, we assume that Group 1 adopted the RFC between 1985-1990, Group 2 between 1991-1995, and Group 3 between 1996-1999.

The authors then create a pseudo-treatment dummy variable that indicates whether the RFC was active for individual 'i' from group 'g' at time 't' when they got married. A placebo test is conducted to determine whether the outcome variables follow the same trends prior to the adoption of the RFC in Ethiopia, ensuring the validity of the parallel trends assumption.

**Table 4: Immediate impact of adopting the RFC using restricted sample**

| Variables | Child marriage dummy | | Age at marriage (years) | | Women educational attainment (years) | |
|---|---|---|---|---|---|---|
| | Sensitivity for marriage at later age | Sensitivity check for migration | Sensitivity for marriage at later age | Sensitivity check for migration | Sensitivity for marriage at later age | Sensitivity check for migration |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Group-time ATET (1/0)* | **-.087*** (.009)** | **-.072*** (.011)** | **.165** (.080)** | **.161*** (.046)** | **.127** (.056)** | **.132** (.055)** |
| *Urban Residence (1/0)* | -.004 (.008) | -.152*** (.020) | .001 (.0008) | 1.748*** (.165) | 2.085*** (.065) | 1.921*** (.045) |
| *Dummy for time period 2006-2011* | .260*** (.019) | -.093*** (.013) | 1.324*** (.075) | .831*** (.110) | -.504*** (.127) | .047* (.028) |
| *Dummy for time period 2012-2016* | -.271*** (.012) | -.083*** (.014) | .862*** (.046) | .913*** (.082) | 1.632*** (.107) | -96.558*** (33.504) |
| *Dummy for group two* | .075*** (.015) | -34.734*** (9.346) | -.383*** (.053) | -.742*** (.070) | .860*** (.213) | 1.164*** (.085) |
| *Dummy for group three* | -.152*** (.014) | 29.517*** (6.184) | .394*** (.048) | -198.134*** (41.304) | .795*** (.106) | .8002*** (.076) |
| *Constant* | 2.195*** (.018) | 10.117*** (1.171) | 4.655*** (.091) | -71.004*** (10.074) | .764*** (.084) | -67.206*** (6.096) |
| *Group specific linear time trend* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Individual and household variables* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Observation* | 27,524 | 92,438 | 27,524 | 92,440 | 31,418 | 90,904 |
| *R-Square* | 0.47 | 0.10 | 0.87 | 0.23 | 0.41 | 0.43 |
| Source: authors' estimation | | | | | | |
| ***, **, * one, five and ten percent significance level, respectively | | | | | | |

Table 5: Falsification test

| Variables | Child marriage (1 if married before 18) | | Age at first marriage (years) | | Education Attainment in years | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| **Pseudo Group-time ATET (1/0)** | *.665* *(.459)* | *.004* *(.006)* | *-.066* *(.044)* | *-.024* *(.043)* | *.155* *(.276)* | *.039* *(.261)* |
| Urban Residence | | *-.037\*\*\** *(.004)* | | *.334\*\*\** *(.035)* | | *2.603\*\*\** *(.311)* |
| Media Exposure | | *-.009\*\** *(.004)* | | *.161\*\*\** *(.031)* | | *1.670\*\*\** *(.234)* |
| Female headed household | | *-.026\*\*\** *(.003)* | | *.144\*\*\** *(.025)* | | *.076\** *(.039)* |
| Constant | *-52.898\*\*\** *(6.816)* | *43.486\*\*\** *(3.636)* | *14.460\*\*\** *(.538)* | *14.394\*\*\** *(.093)* | *-136.6\*\*\** *(6.611)* | *-69.369\*\*\** *(9.028)* |
| Dummies for groups | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* |
| Dummies for time periods | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* |
| Group specific linear time trend | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* |
| Individual and household variables | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* |
| Observation | 123,526 | 123,804 | 123,963 | 123,367 | 123,963 | 123,804 |
| R-square | 0.16 | 0.08 | 0.06 | 0.10 | 0.22 | 0.36 |
| Source: authors' estimation | | | | | | |
| \*\*\*, \*\*, \* one, five and ten percent significance level, respectively | | | | | | |

Table 5 presents the results of the placebo test, assessing the impact of the Revised Family Code (RFC) on various outcome variables prior to its adoption. Columns 1 and 2 report the placebo effect of adopting the RFC on the probability of child marriage. The coefficient on the pseudo-treatment variable shows an insignificant placebo test result, indicating that the impact of adopting the RFC on the probability of child marriage is not statistically significant before its actual implementation.

Columns 3 and 4 display the placebo test results for the effect of the RFC on age at first marriage. The coefficient on the pseudo-treatment variable reveals an insignificant placebo test value for the

impact of the RFC on age at first marriage before its adoption.

The last two columns show the placebo effect of the RFC on women's maximum years of completed education using the pseudo-treatment variable. The coefficient on the pseudo-treatment variable again demonstrates an insignificant placebo test value, suggesting that the RFC had no significant impact on women's educational attainment before the program was implemented.

## 8.4. Impact of Child Marriage on Women's Educational Attainment in Ethiopia

### *Relevance and Exclusion Restriction Conditions*

Table 6 reports the first-stage regression results for the 2SLS (Two-Stage Least Squares) instrument, confirming that the instruments meet the relevance condition. To effectively address endogeneity issues caused by reverse causality, measurement errors, and omitted variable bias, the instrumental variable (IV) must satisfy both the relevance and exclusion restriction criteria.

Table 6 illustrates the impact of the adoption of the Revised Family Code (RFC) on both age at marriage and the prevalence of child marriage. The adoption of the RFC significantly increases the age at marriage and reduces the prevalence of child marriage. These regressions evaluate the strength of the preferred instrumental variable (IV). The identified IV is the treatment dummy, which indicates whether the RFC was active for individual 'i' from group 'g' at time 't' when she got married. The F-statistic reported in the table exceeds the rule-of-thumb threshold of 10, suggesting that the instrument is strong. The results confirm a significant relationship between the instrumental variable and the endogenous variables (age at marriage and early marriage) in the study.

The second requirement for a valid instrumental variable is the exclusion restriction. This condition states that the IV should not correlate with any unobserved covariates in the error terms or other independent variables controlled for in the model. In our case, the IV is entirely unrelated to the outcome variables and all other exogenous variables included in the model. Moreover, the instrument does not correlate with the covariates left in the error term. Therefore, the exclusion restriction condition is satisfied for our instrumental variable.

The relationship between age at marriage and educational attainment is bidirectional. The age at marriage influences educational attainment, while educational attainment also affects the age at marriage. The duration that children stay in school can determine whether they marry early. Thus, reverse causality may be a concern. To address this issue, we employ the instrumental variable (IV) technique. The selected exogenous IV is the treatment dummy, indicating whether the RFC was active for individual 'i' from group 'g' at time 't' when she married. Table 7 presents evidence on the effect of early marriage on women's maximum years of completed education, estimated using the two-stage least squares (2SLS) approach.

Table 6: First-stage regressions

| Variables | Child Marriage(1 if married before 18) | Age at marriage (Years) |
|---|---|---|
| | (1) | (2) |
| *Adoption of the RFC (IV) (1/0)* | -.074*** | .165*** |
| | (.009) | (.033) |
| *Urban Residence (1/0)* | -.024*** | .034** |
| | (.004) | (.014) |
| *Media Exposure (1/0)* | -.025*** | .050*** |
| | (.003) | (.013) |
| *Size of HH* | .006*** | -.006*** |
| | (.0005) | (.002) |
| *Head of HH (1/0)* | -.010**** | .072*** |
| | (.003) | (.012) |
| *Dummy for time period 2006-2011* | -.051*** | .062*** |
| | (.005) | (.018) |
| *Dummy for time period 201-2016* | -.028*** | .165*** |
| | (.004) | (.021) |
| *Dummy for second group* | .147*** | -.346*** |
| | (.014) | (.051) |
| *Dummy for third groups* | .104*** | -.167*** |
| | (.011) | (.040) |
| *Constant* | 28.660*** | -40.153*** |
| | (1.533) | (6.784) |
| *Group specific- linear time trend* | Yes | Yes |
| *Individual and household variables* | Yes | Yes |
| *Observation* | 170,682 | 148,148 |
| *R-Square* | 0.07 | 0.82 |
| *F-statistics* | 65.78 | 24.77 |
| *Source: Authors' estimation* | | |
| *\*\*\*, \*\*, \* one, five, and ten percent significance level, respectively* | | |

**Table 7: Impact of early marriage on women's maximum years of completed education**

| Variables | Educational Attainment (Years) | | | |
|---|---|---|---|---|
| | Pooled OLS | 2SLS | Pooled OLS | 2SLS |
| | (1) | (2) | (3) | (4) |
| Age at marriage | .109*** (.002) | .592*** (.038) | | |
| Child Marriage (1/0) | | | -.672*** ( .014) | -1.388*** (.409) |
| Work Status (1/0) | .354*** ( .016) | .331*** (.024) | .351*** ( .012) | .369*** (.013) |
| Urban (1/0) | 1.839*** (.033) | 1.627*** (.161) | 2.218*** ( .026) | 2.164*** (.041) |
| Exposure to Media (1/0) | 1.361*** (.026) | 1.712*** (.041) | 1.686 (.024)*** | 1.655*** (.026) |
| Size of HH | -.049*** (.003) | -.011*** (.004) | -.054*** ( .003) | -.049*** (.004) |
| Age | -.090*** ( .006) | -.208*** (.012) | -.087*** (.007) | -.110*** (.015) |
| Age square | .0006*** (.00009) | .002*** (.0002) | .0006*** (.00009) | .0009*** (.0002) |
| Constant | 1.216***(.143) | -4.871*** (.472) | 3.190*** ( .112) | 4.088*** (.550) |
| Dummies for groups | Yes | Yes | Yes | Yes |
| Dummies for time periods | Yes | Yes | Yes | Yes |
| Group specific linear time trend | Yes | No | Yes | No |
| Individuals and households variables | Yes | Yes | Yes | Yes |
| Observations | 126,083 | 170,036 | 170,616 | 170,616 |
| R-square | 0.41 | --- | 0.38 | 0.38 |
| Source: Authors' estimation | | | | |
| ***, **, * one, five, and ten percent significance level, respectively | | | | |

Table 7 presents the impact of early marriage on women's maximum years of completed education, using both age at marriage and a dummy variable for early marriage as explanatory variables. Column 1 shows the estimated coefficient for the effect of age at marriage on women's maximum years of completed education, using ordinary least squares (OLS). The OLS coefficient is positive and statistically significant, indicating that for every one-year increase in the age at marriage, women's educational attainment increases by 0.11 years, holding all other covariates constant.

In Column 2, the impact of age at marriage on educational attainment is estimated using the two-stage least squares (2SLS) estimation technique. The coefficient is positive and statistically significant, suggesting that for each additional year in the age at marriage, women's maximum years of completed education increase by 0.59 years, assuming all other covariates remain constant.

Columns 3 and 4 present the estimated coefficients using a dummy variable for early marriage. In Column 3, the coefficient for early marriage is statistically significant at the 1% level, and as the probability of early marriage increases by one unit, the maximum years of educational attainment decreases by 0.67 years, holding all other covariates constant. Column 4 reports the results from the 2SLS estimation, showing that if the probability of early marriage increases by one unit, the maximum years of completed education will decrease by 1.39 years, ceteris paribus. All other controlled covariates in this model are statistically significant and exhibit the expected signs.

Overall, the findings of this study reveal that age at marriage positively affects women's educational attainment, while the probability of early marriage negatively impacts women's maximum years of education in Ethiopia. These results are consistent with the findings of

previous studies by Vogelstein (2013), Lloyd and Mensch (2008), Nguyen and Wodon (2012), Klasen and Pieters (2012), Parson (2015), Field and Ambrus (2008), Nguyen and Wodon (2015), Bayisenge (2010), Hotchkiss et al. (2016), Delprate et al. (2018), and Wodona et al. (2018).

## 9.    Conclusion and policy implication

This study evaluates the impact of Ethiopia's Revised Family Code (RFC), which raised the legal age of marriage to 18, on early marriage and women's educational attainment. The results from a generalized difference-in-differences (DID) analysis show that the adoption of the RFC significantly increases the age at marriage and improves educational outcomes for Ethiopian women. Specifically, the RFC adoption reduced the likelihood of early marriage and increased the maximum years of completed education. Additionally, the study found that age at marriage positively impacts educational attainment, while early marriage negatively affects it. The findings suggest that policies promoting later marriage contribute to better educational outcomes and that increasing awareness about the advantages of education and delaying marriage could have positive societal effects.

In light of these findings, the study recommends that the Ethiopian government enhance the implementation and enforcement of the RFC across all regions, with a focus on providing adequate human and financial resources for monitoring and support. Moreover, efforts to raise community awareness about the benefits of education and delaying marriage, particularly among rural populations, are crucial. The study also highlights the importance of addressing barriers such as large family sizes, which hinder educational attainment, and encourages the government to increase access to family planning services. Additionally, expanding media coverage and focusing on educational

content could further support the positive impacts of education on women's lives.

## Acknowledgement

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