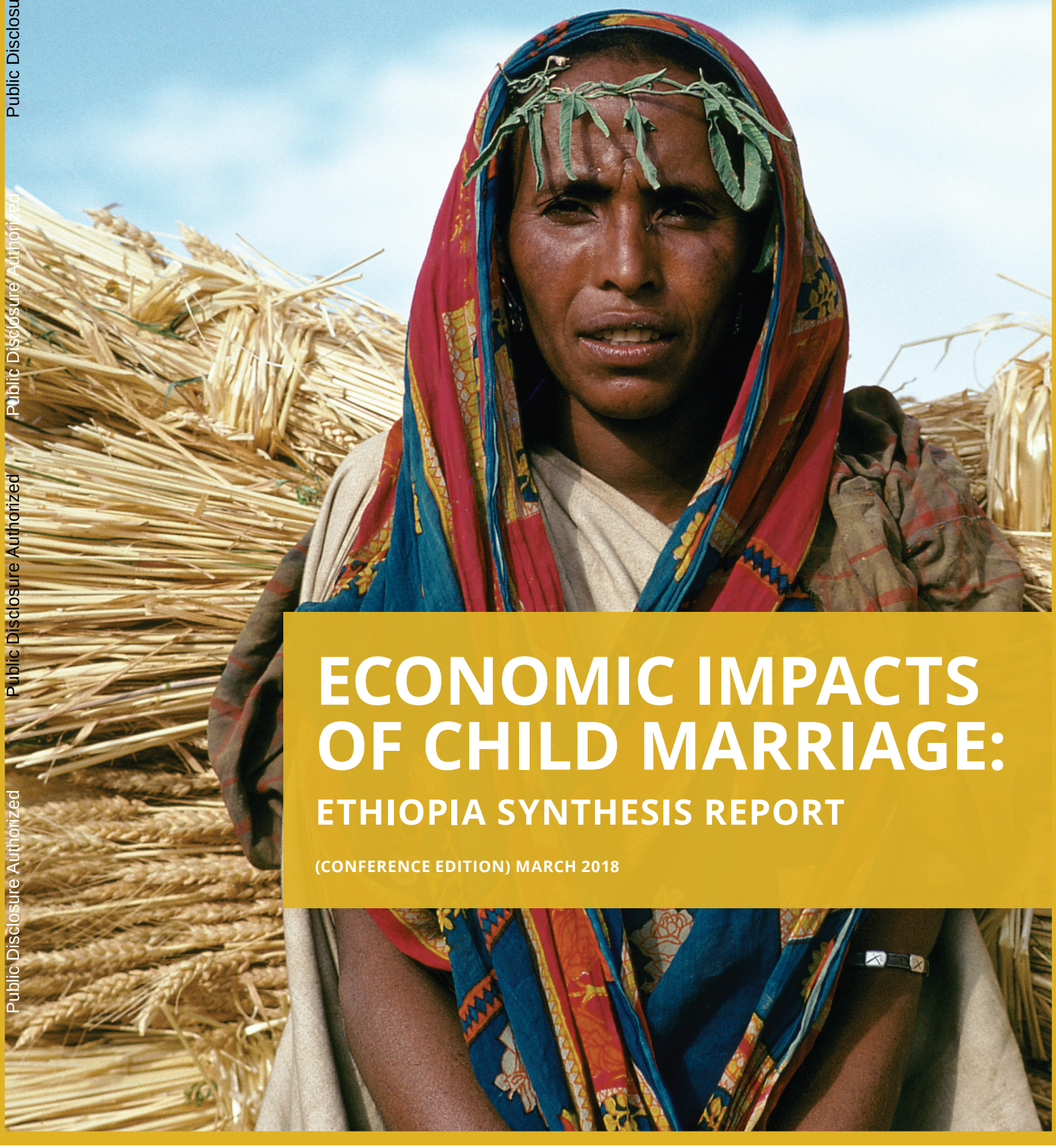
Public Disclosure Authorized
Public Disclosure Authorized
Public Disclosure Authorized
Public Disclosure Authorized

The economic impacts of child marriage



ECONOMIC IMPACTS OF CHILD MARRIAGE:

ETHIOPIA SYNTHESIS REPORT

(CONFERENCE EDITION) MARCH 2018

BILL & MELINDA GATES foundation
CIFF CHILDREN'S INVESTMENT FUND FOUNDATION
GLOBAL PARTNERSHIP for EDUCATION
ICRW INTERNATIONAL CENTER FOR RESEARCH ON WOMEN
THE WORLD BANK IBRD • IDA | WORLD BANK GROUP

Economic Impacts of Child Marriage in Ethiopia: Synthesis Report

By Quentin Wodon, Chata Male, Ada Nayihouba, Adenike Onagoruwa, Aboudrahyme Savadogo, Ali Yedan, Aslihan Kes, Neetu John, Mara Steinhaus, Lydia Murithi, Jeff Edmeades and Suzanne Petroni.

Conference Edition - March 2018

The *Economic Impacts of Child Marriage* project is a collaborative effort by the International Center for Research on Women (ICRW) and the World Bank, with funding from the Bill & Melinda Gates Foundation and the Children's Investment Fund Foundation, and additional support from the Global Partnership for Education. This series of papers is jointly produced by the International Center for Research on Women and the World Bank and is available at the World Bank's Open Knowledge Repository (https://openknowledge.worldbank.org/). The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organizations or to members of its Board of Executive Directors or the countries they represent. Citation and the use of material presented in this series should take into account this provisional character. The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Rights and Permissions

The material in this work is subject to copyright. Information and illustrations contained in this report may be freely reproduced, published, or otherwise used for noncommercial purposes without permission from the World Bank or ICRW. However, the World Bank and ICRW request that the original study be cited as the source. The recommended citation is Wodon, Q., Male, C., Nayihouba, A., Onagoruwa, A., Savadogo, A., Yedan, A., Kes, A., John, N., Steinhaus, M., Murithi, L., Edmeades, J., and Petroni, S. (2018). *Economic Impacts of Child Marriage in Ethiopia: Synthesis Report,* Washington, DC: The World Bank and International Center for Research on Women.

Any queries on rights and licenses, including subsidiary rights, should be addressed to World Bank Publications, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; fax: 202-522-2625; e-mail: pubrights@worldbank.org.

Correspondence Details

Quentin Wodon, World Bank, 1818 H Street, NW, Washington, DC 20433, USA. Telephone: +1-202-473-1446. Email: qwodon@worldbank.org.

Aslihan Kes, International Center for Research on Women, 1120 20th St NW #500 North, Washington, DC 20036, USA. Telephone: +1-202-797-0007. Email: akes@icrw.org.

© 2018 The International Bank for Reconstruction and Development / The World Bank and The International Center for Research on Women (ICRW), Washington, DC 20433.All rights reserved.

Economic Impacts of Child Marriage in Ethiopia: Synthesis Report

Quentin Wodon[a] Chata Male[a] Ada Nayihouba[a] Adenike Onagoruwa[a] Daniel Perlman[a] Aboudrahyme Savadogo[a] Ali Yedan[a] Aslihan Kes[b], Neetu John[b], Mara Steinhaus[b], Lydia Murithi[b], Jeffrey Edmeades[b], and Suzanne Petroni[b]

[a] Education Global Practice, World Bank, Washington DC, USA
[b] International Center for Research on Women, Washington DC, USA

Conference Edition - March 2018

Paper prepared for the Economic Impacts of Child Marriage project, a collaborative effort by the International Center for Research on Women and the World Bank with funding from the Bill and Melinda Gates Foundation and the Children's Investment Fund Foundation, and additional support from the Global Partnership for Education.

Abstract: The international community is increasingly aware of the negative impacts of child marriage on a wide range of development outcomes. Ending child marriage is now part of the Sustainable Development Goals. Yet investments to end the practice remain limited across the globe. Ethiopia recently adopted a strategy to end child marriage, and some of the projects being implemented in the country should contribute to reduce the practice child marriage. Still, more could be done. In order to inspire greater commitments towards ending child marriage, this study demonstrates the negative impacts of the practice and their associated economic costs. The study looks at five domains of impacts: (i) fertility and population growth; (ii) health, nutrition, and violence; (iii) educational attainment and learning; (iv) labor force participation and earnings; and (v) participation, decision-making, and investments. Economic costs are estimated for several of the impacts. Overall, the costs are high. They suggest that investing to end child marriage is not only the right thing to do, but also makes sense economically.

Keywords: child marriage, economic cost, early childbirths, education, health

Table of Contents

ACKNOWLEDGMENTS 5

EXECUTIVE SUMMARY 6

CHAPTER I – INTRODUCTION 18

CHAPTER II – CHILD MARRIAGE AND EARLY CHILDBIRTHS 23
- Extent of Child Marriage and Early Childbirths 23
- Share of Early Childbirths Likely Due to Child Marriage 26
- Factors Leading to Child Marriage and Early Childbirths 29
- Profile of Child Marriage by Level of Wealth 33
- Geographic Profile of Child Marriage 35

CHAPTER III – IMPACTS ON FERTILITY AND POPULATION GROWTH 37
- Impact of Child Marriage on Total Fertility 37
- Impact of Child Marriage and Early Childbirths on Population Growth 41
- Welfare Benefits from Reduced Population Growth 43
- Education Budget Savings from Reduced Population Growth 46

CHAPTER IV – IMPACTS ON HEALTH, NUTRITION, AND VIOLENCE 48
- Child Marriage, Early Childbirths, and Health 48
- Potential Impact of Early Childbirths on Maternal Mortality 49
- Impact of Early Childbirths on Under-five Mortality and Stunting 51
- Impact of Child Marriage on Intimate Partner Violence 54

CHAPTER V – IMPACTS ON EDUCATION, LABOR, AND EARNINGS 58
- Child Marriage, Early Childbirths, and Education for Girls 58
- Impact of Child Marriage and Early Childbirths on Girls' Education 60
- Impact of Child Marriage on Labor Force Participation 63
- Impact of Child Marriage on Earnings and Productivity 65
- Impact of Child Marriage on Household Welfare 68
- Intergenerational Impact of Child Marriage on Education 68

CHAPTER VI – SELECTED OTHER IMPACTS 69
- Impact of Child Marriage on Women's Decision Making 69
- Impact of Child Marriage on Individual Perceptions 71
- Impact of Child Marriage on Land Ownership 71
- Impact of Child Marriage on Women's Knowledge of HIV-AIDS 73
- Impact of Child Marriage on Birth Registrations 74

CHAPTER VII – CONCLUSION 76

ANNEX 1 – METHODOLOGICAL NOTE 79

ANNEX 2 – DATA SOURCES 82

ANNEX 3 – CORE SET OF COUNTRIES FOR THE ESTIMATIONS 84

ANNEX 4 – STRATEGIES TO END CHILD MARRIAGE 85

REFERENCES 89

ACKNOWLEDGMENTS

This report was produced as part of the Economic Impacts of Child Marriage study, a joint project of the International Center for Research on Women (ICRW) and the World Bank's Education Global Practice. The project is funded by the Bill & Melinda Gates Foundation (BMGF) and the Children's Investment Fund Foundation (CIFF) with additional support from the Global Partnership for Education (GPE).

The conceptual framework for this study was created jointly by the ICRW and World Bank teams. The report was drafted by the World Bank team with inputs from the ICRW team. Comments from colleagues at the World Bank as well as peer reviewers, including Diana Arango, Manav Bhattari, Luis Benveniste, Rafael Cortez, Benedicte de la Briere, Michele Gragnaloti, Sarah Haddock, Louise Mvono, Elizabeth Ninan, Margareta Norris Harrit, Qaiser Khan, Hasley Rogers, and Lakshmi Sundaram (Girls Not Brides) are gratefully acknowledged. The team is also grateful for comments as well as continuous support provided by staff at the Bill and Melinda Gates Foundation (Haven Ley and Julie Wroblewski), the Children's Investment Fund Foundation (Miles Kemplay, Erin McCarthy, and Linda Weisert), and the Global Partnership for Education (Louise Banham and Karen Mundy).

The team is especially thankful to the Ministry of Women and Children for the support provided from the start of the study until its finalization. Special thanks are due to Mr. Seleshi Tadesse and Ms. Misrak Tsehay at the Ministry for their leadership. The team is also grateful to Shimljash Braha and colleagues at JaRco Consulting for data collection. The opinions expressed in the report are those of the authors only and need not reflect the views of the World Bank, its Executive Directors, of the countries they represent.

EXECUTIVE SUMMARY

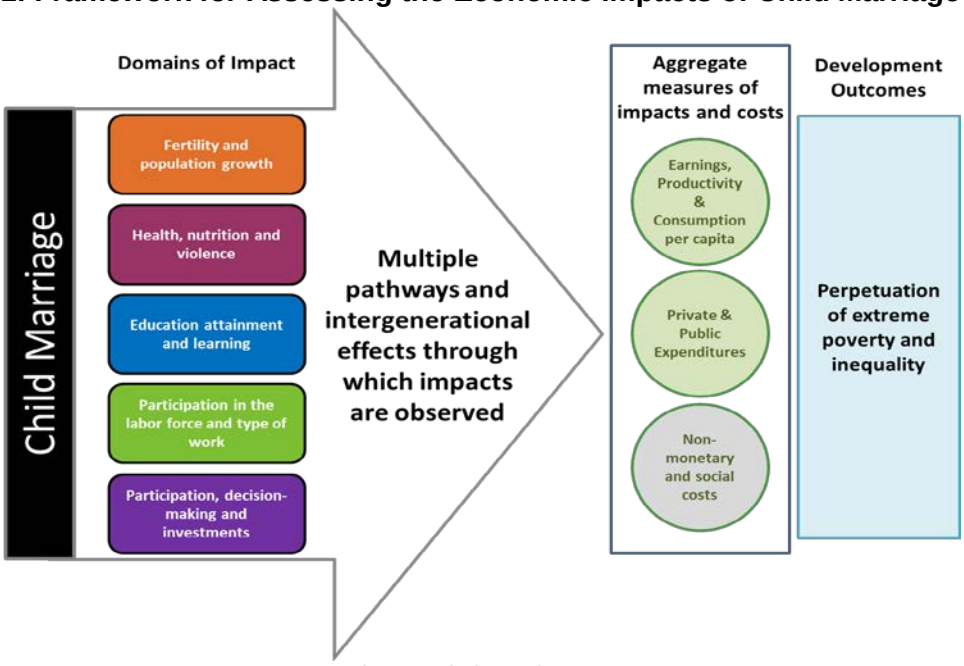
MOTIVATION FOR THE STUDY

1. **Child marriage is defined as a marriage or union taking place before the age of 18. In Ethiopia, the practice has decreased over time substantially, but more than a third of girls are still married by the age of 18.** According to Demographic and Health Surveys (DHS) for about 60 countries, in the past 30 years the prevalence of child marriage has decreased by 11 percentage points in those countries (Nguyen and Wodon, 2015; see also UNFPA, 2012, and UNICEF, 2014). In some countries, the share of girls marrying before the age of 18 has been decreasing rapidly in the last decade or two. In Ethiopia as well, there has been a rapid decline. The share of women ages 18-22 who married before the age of 18 was 36.7 percent according to the latest DHS for 2016. This share was much lower than the share observed among women ages 23-30 at 50.5 percent. Still, more than a third of girls continue to marry before the age of 18. In addition, 17.4 percent of women ages 18-22 still have their first child before the age of 18. In some countries, quite many early childbirths (women having a child before the age of 18 or children being born of mothers younger than 18) may take place outside of marriage. In Ethiopia however, early childbirths are in a majority of cases a direct consequence of child marriage.

2. **Ethiopia and the international community are increasingly aware of the negative impacts of child marriage, yet investments to end the practice remain limited.** Ending child marriage is now part of the Sustainable Development Goals, but few countries have adopted comprehensive strategies to end the practice, and investments in terms of programs and policies to do so remain limited. Ethiopia is in some respects a leader in addressing the harms of child marriage. It adopted a national strategy against harmful traditional practices in 2013 and has been the site of many projects that aim to reduce child marriage. These efforts should help to drive change, but more could be done given the large negative impacts of child marriage.

3. **In order to inspire greater commitments towards ending child marriage, this study demonstrates the negative impacts of the practice and its economic costs in Ethiopia.** The study looks at five domains of impacts of child marriage: (i) fertility and population growth; (ii) health, nutrition, and violence; (iii) educational attainment; (iv) labor force participation, earnings, and productivity; and (v) decision-making and other areas. For some of these impacts, the economic costs associated with the impacts are estimated. Overall, the costs associated with child marriage are high. They suggest that investing towards ending child marriage is not only the right thing to do, but also makes sense from an economic point of view. The conceptual framework for the study is displayed in Figure 1. Annex 1 provides a more detailed visualization of the analysis undertaken in order to document the pathways – both direct and indirect - through which child marriage as well as early childbirths may affect child brides, their children, their community, and society at large.

Figure 1: Framework for Assessing the Economic Impacts of Child Marriage



Source: Wodon et al. (2015).

Box 1: What Do We Mean by "Impacts" and Associated Costs?

The aim of this study is to estimate the impacts of child marriage on a wide range of development outcomes and the economic costs associated with some of these impacts.

The term "impact" is used for simplicity, but one must be careful about not necessarily inferring causality. Estimates of impacts in this study are typically obtained through regression analysis aiming to isolate the potential impact of child marriage or early childbirths on various outcomes controlling for other factors affecting those outcomes. In the literature, this approach is known as "association studies". What is measured is a statistical association between child marriage or early childbirths and outcomes. This is not necessarily an impact as could be observed with a randomized control trial. Since child marriage cannot be randomized, the study must rely on regression analysis to estimate impacts, but there is always a risk of bias in the measures of likely impacts.

Based on measures of likely impacts, costs associated with some of these impacts are computed. These costs are based on a number of assumptions that could be debated, including in some cases discount rates. Therefore, cost estimates only represent an order of magnitude of potential costs, as opposed to precise estimations.

Source: Wodon (2017a); see also Annex 1.

4. **Child marriage has a large impact on fertility and population growth.** Total fertility is defined as the number of live births that women are (statistically) expected to have over their lifetime under current conditions. Controlling for other factors affecting total fertility, in Ethiopia a girl marrying at 14 will have on average 28 percent more children over her lifetime than if she had married at 18 or later. If a girl marries at 17, this increases total fertility by 13 percent versus marrying at 18 or later. These are very large impacts. Considering the rate of child marriage in the country and the characteristics of the girls who marry early, ending child marriage would reduce the national rate of total fertility by 13 percent, a rather large effect. A large part of the impact of child marriage on total fertility comes from the fact that women marrying earlier also tend to have children earlier. In Ethiopia, child marriage is likely to be the cause of early childbirths for about four in five girls who have their first child before the age of 18. Marrying very early (at age 14 or earlier) has a negative impact on modern contraceptive use later in life, but ending child marriage without any associated changes in programs or policies would not, in itself, have a large effect on contraceptive use nationally. Finally, ending child marriage and early childbirths could reduce population growth in Ethiopia by 0.10 percentage points. The magnitude of these various impacts is summarized in table1.

Table1: Impacts on Fertility and Population Growth

Indicators	Estimated Impacts
(1) Number of live births over lifetime	Depending on the age at marriage, child marriage increases total fertility for women by 13% to 28%
(2) National rate of total fertility	Ending child marriage would reduce the estimate of the national total fertility rate by 13%
(3) Early childbirth (first child before 18)	Child marriage is likely the cause of about four in five girls having children before the age of 18
(4) National rate of early childbirths	Ending child marriage could reduce the share of girls having a child before 18 by about four-fifths
(5) Use of modern contraception	Child marriage is associated with a decrease in modern contraceptive use
(6) National rate of contraceptive use	Ending child marriage would increase modern contraceptive use by one percentage point
(7) Population growth	Ending child marriage and early childbirths could reduce population growth by 0.10 percentage point

Sources: Onagoruwa and Wodon (2017a) for (1) & (2); Wodon, Male, and Onagoruwa (2017) for (3) & (4); Onagoruwa and Wodon (2017b) for (5) & (6); Wodon and Yedan (2017a) for (7).

5. **Through early childbirths, child marriage has large impacts on the health and nutrition of the children of young mothers, but probably less impact on maternal mortality. In Ethiopia, child marriage may affect intimate partner violence for girls marrying very early.** The literature suggests that adolescent girls have in many countries a higher level of maternal morbidity and mortality than women ages 20-24. At the same time, while avoiding pregnancy at a very young age is essential, it does not follow that ending child marriage and thereby reducing early childbirths would necessarily result in a decrease in maternal mortality ratios at the national level. Other health impacts of child marriage and early childbirths are more clear-cut. First, child marriage is the likely cause of more than four in five children born of mothers younger

than 18 in Ethiopia. In turn, when a child is born of a young mother, this increases at the margin (that is, controlling for other factors) the risk for the child of dying by age five and the risk of stunting. Ending child marriage and early childbirths would however not necessarily have as large an effect on the national under-five mortality and stunting rates simply because only a relatively small share of children are born of mothers younger than 18 at the time of their birth. Finally, child marriage may be associated with higher risks of intimate partner violence for women who marry very early in Ethiopia. The magnitude of the impacts on health, nutrition, and violence estimated for Ethiopia are summarized in table2.

Table 2: Impacts on Health, Nutrition, and Intimate Partner Violence

Indicators	Estimated Impacts
(1) Maternal mortality	The impact that ending child marriage would have on maternal mortality ratios is not fully clear
(2) Being born of a young mother	Child marriage is likely the cause of four in five births of children from mothers younger than 18
(3) Risk for children of dying by age 5	Being born of a mother younger than 18 increases the risk of under-five mortality by 3.6 percentage points
(4) National rate of under-five mortality	Ending all early childbirths would reduce under-five mortality by 0.15 percentage point nationally
(5) Risk for children of being stunted	Being born of a mother younger than 18 increases the risk of under-five stunting by 13 percentage points
(6) National rate of under-five stunting	Ending all early childbirths would reduce under-five mortality by 0.43 percentage point nationally
(7) Intimate partner violence	When marrying very early, child marriage may have a direct impact on intimate partner violence

Sources: Wodon (2017b) for (1); Wodon, Male, and Onagoruwa (2017) for (2); Onagoruwa and Wodon (2017c) for (3) & (4); Onagoruwa and Wodon (2017d) for (5) & (6); Onagoruwa and Wodon (2017e) for (7).

6. **Child marriage has a negative effect on educational attainment for girls. It also affects through a mother's education the education prospects of children.** Two approaches can be used to assess the impact of child marriage on educational attainment for girls. The first approach consists in asking parents in household surveys why their daughters dropped out of school. According to parents, child marriage is the reason for dropping out of school for at least one in ten adolescent girls ages 12-17, but this estimate could be on the low side. The second approach consists of estimating the impact of child marriage on educational attainment econometrically. Estimates for Ethiopia suggest a statistically significant impact of child marriage on secondary education enrollment and completion, depending on the dataset used. Together, the two approaches point to a large impact of child marriage on education for girls. This is confirmed by the fact that the choice for (or given to) girls in Ethiopia is often to either be married or be in school. Indeed, girls out of school often marry, and once married it is difficult to remain in school. Finally, while having been married as a child may not have a direct negative impact on the education of a woman's children, child marriage may reduce the education prospects of children (boys and girls) indirectly by curtailing a mother's education. The impacts of child marriage on education are summarized in table 3. Importantly, estimates also suggest that increasing girls' education is one of the best ways to avoid child marriage. In Ethiopia, each year of secondary education is associated with a reduction in the risk of child marriage by six percentage points.

Table 3: Impacts on Educational Attainment

Indicators	Estimated Impacts
(1) Girls dropping out of school	According to parents, child marriage is responsible for at least one in ten adolescent girls dropping out of school
(2) Educational attainment for girls	Child marriage reduces the likelihood of enrolling in and completing secondary school
(3) Marriage vs. schooling trade-off	Once a girl is married, statistics suggest that it is very difficult for her to remain in school, whatever her age
(4) Intergenerational effects	Child marriage affects the education of the children of girls marrying early indirectly
(5) Education's impact on marriage	Each year of secondary education leads to a reduction in the likelihood of marrying as a child of six percentage points

Sources: Wodon, Yedan, and Nguyen. (2017) for (1), (2) & (3); Wodon and Yedan (2017b) for (4); Wodon and Yedan (2017c) for (5).

Box 2: Child Marriage and Education: A Complex Relationship

The relationship between child marriage and education is complex, with each influencing the other. More parents and community members today advocate for girls' education*:* At the same time, for many girls in Ethiopia, the options are to continue formal schooling or to marry, but not both. This comes out clearly not only in household surveys, but also in qualitative studies. A mother explained as follows her reasoning for marrying off her daughter at the age of 12: "*I was married at 7 and gave birth at 13, so I felt there was no reason for her [referring to her daughter] not to get married at 12. If she wasn't going to be attending school, then she should at least be married. She comes from a poor family; it's either education or marriage. What other options does she have? Is she going to beg on the street? So, then I decided to have her get married."* (ICRW, 2017)

Apart from cost and lack of academic success, the pressure to marry plays a role in decisions for girls to drop out of school: *"There are at least two reasons for stopping education. The first one is when they score small mark in the school. Here they think as they can't be success through education. Therefore they lose moral to learn. The second one is wish to get marriage. As their age is enough for marriage they start thinking about boyfriends and stop thinking about education"* (Jones et al., 2016). In some areas, a lack of (secondary) education facilities nearby can also force girls to drop out, either because schools are simply too far or because walking long distances to schools represents a risk for adolescent girls to be harassed or abducted on the way to school.

Once they get married or become pregnant, it is very difficult for girls to remain in school. But while child marriage reduces education prospects for girls, conversely better education opportunities may reduce the likelihood of marrying early. Estimates for many countries (Wodon and Yedan, 2017c) as well as the literature (Kalamar et al. 2016) suggest that keeping girls in schools is one of the best ways to delay marriage. This is why Brown (2012) suggested to look at tipping-point policies in education for ending child marriage, including programs to reduce the cost for girls to go to secondary school.

7. **While child marriage does not affect labor force participation much, it reduces women's education and thereby expected earnings and household welfare.** In Ethiopia, child marriage is not associated directly with a higher labor force participation for women, but it does seem to have an impact through other channels. Specifically, given its indirect effects in terms of fertility and education levels, ending child marriage results in a small increase in labor force participation for women. Through its impact on educational attainment for girls, child marriage also reduces women's earnings and productivity in adulthood. According to results from wage regressions and simulations of earnings, Ethiopian women marrying as children have expected earnings (actual or imputed) in adulthood nine percent lower than if they had married after the age of 18. As a result, taking into account the earnings of all women and men, ending child marriage could increase the population's earnings and productivity nationally by 1.5 percent. In most cases, based on research for other counties, child marriage does not itself have a direct impact on household consumption per capita or food adequacy after controlling for household size and the education level of the household head and spouse. However, through its impact on fertility and thereby household size as well as through its impact on education, child marriage reduces household welfare. The magnitude of the impacts on labor force participation and women's earnings, as well as the potential impact on household welfare are summarized in table4.

Table 4: Impacts on Labor Force Participation, Earnings, and Welfare

Indicators	Estimated Impacts
(1) Women's labor force participation	Child marriage does not have a direct statistically significant impact on labor force participation for women
(2) Direct impact on women's earnings	For the most part, child marriage does not appear to have a direct impact on women's earnings
(3) Indirect impact on earnings	Through its impact on education, child marriage reduces earnings in adulthood for women marrying early by 9%
(4) National impact on earnings	Ending child marriage could increase the population's earnings and productivity nationally by 1.5%
(5) Household welfare	Based on evidence from other countries, child marriage matters for welfare indirectly through education/fertility.

Sources: Savadogo and Wodon (2017a) for (1); Savadogo and Wodon (2017b) (2), (3) & (4); Evidence from other countries for (5).

8. **The impacts of child marriage on women's agency tend to be smaller, and in some cases no direct impacts are observed.** For this study, we consider measures of household decision-making, land ownership, self-worth, and knowledge of HIV and AIDS as elements of women's agency. In Ethiopia, controlling for other variables, child marriage does not across surveys typically affect an index of women's decision-making ability within the household directly, but it does matter indirectly through its impact on education (given that a higher level of education is associated with higher decision-making ability within the household). Child marriage is associated with a higher likelihood of land ownership for women, with the positive impact at two to four percentage points when statistically significant. Child marriage is not associated with a reduction in adulthood in women's knowledge of HIV-AIDS, but indirect effects may be at work through education. The magnitude of the impacts of child marriage on women's decision-making within the household as well as selected other dimensions is summarized in table 5.

Table 5: Impacts on Women's Decision-making and Other Impacts

Indicators	Estimated Impacts
(1) Women's decision-making ability	Child marriage does not affect decision-making ability negatively for women, but it matters through education
(2) Women's land ownership	Child marriage is associated with a higher likelihood of land ownership for women of a few percentage points
(3) Women's knowledge of HIV-AIDS	Child marriage is not associated with a reduction in adulthood in women's knowledge of HIV/AIDS

Sources: Onagoruwa and Wodon (2017e) for (1); Savadogo and Wodon (2017c) for (2); Onagoruwa and Wodon (2017f) for (3).

9. **Overall, the impacts of child marriage are large for fertility, population growth, and education as well as earnings, but somewhat smaller in other dimensions.** The discussion so far suggests that the impacts of child marriage on fertility and population growth, as well as on educational attainment for girls in Ethiopia tend to be substantial. Impacts on women's earnings and productivity are also fairly large, principally due to the fact that child marriage curtails girls' education, with educational attainment being a key factor affecting earnings. Some of the impacts on health, nutrition, and violence are large at the margin for the girls marrying early and their children. This is especially the case for children born of young mothers, but ending child marriage would not necessarily make a large difference for national level indicators such as under-five mortality and stunting. Other direct impacts of child marriage, including on women's decision-making and intimate partner violence tend to be smaller or not statistically significant both at the margin for the women being affected and in terms of national measures.

ECONOMIC COSTS

10. **The impacts of child marriage and early childbirths on multiple development outcomes have implications for economic well-being.** Child marriage profoundly affects the girls who marry early as well as their children in multiple ways. It leads women to have children earlier and more children over their lifetime than if they had married later. It affects girl's educational attainment negatively, thereby curtailing future opportunities for them to compete for well-paying jobs. Child marriage may also lead to higher health risks for young mothers and especially for their children. Finally, child marriage may in some cases directly or indirectly reduce agency for women and increase other risks such as that of intimate partner violence. These impacts have negative consequences not only for the girls marrying early, but also for their children and for communities and societies as a whole. While it is not feasible to provide a monetary valuation of all costs associated with the negative impacts of child marriage, estimates can be provided for the largest impacts/costs. This study provides estimates of selected annual costs associated with the impacts of child marriage (on the difference between annual and lifetime costs, see Box 3).

Box 3: Annual versus Lifetime Costs of Child Marriage

The costs of child marriage can be computed on an annual or lifetime basis. This study focuses mostly on annual costs. For example, we estimate losses in annual earnings for women who married early in comparison to what they might have earned if they had married later. Similarly, we provide estimates of annual as opposed to lifetime benefits from reduced population growth when ending child marriage. The one exception to the reliance on annual losses/benefits is for child mortality and stunting, where lifetime losses are estimated, but for the annual number of children avoiding death or stunting.

Instead of relying mostly on annual costs, lifetime costs could be estimated, considering for example the net present value of future earning losses over their lifetime for women marrying early. While such estimates are not provided in this study, they could be the focus of future work relying on new data to be released by the World Bank on the Wealth of Nations, including for the first time human capital wealth. In general, the resulting lifetime costs of child marriage would be substantially larger than annual costs.

Source: Wodon (2017a).

11. **The global economic costs associated with the impacts of child marriage on fertility and population growth, children's health, and education are particularly large.** Given that the impacts of child marriage on fertility and population growth, children's health, and education and earnings tend to be the largest, these are the impacts for which a monetary value is estimated in this study. Tentative global estimates of the annual costs (see Box 3) associated with the impacts of child marriage – or equivalently, estimates of the benefits from ending child marriage - are provided in table 6. These estimates should not be considered as precise given that they depend on (1) econometric estimates of impacts that have themselves standard errors and (2) a range of assumptions for costing that could be debated. Still, the estimates provide an order of magnitude of the potential costs of child marriage. Estimates are provided in terms of annual costs or benefits. For the purposes of this study, we posit the total elimination of child marriage (and in some cases early childbirths) in 2014. This choice of starting date is done in order to be closer to the latest available data sources in the estimations. Estimates of costs/benefits are provided for 2015 and for 2030, as the reference year for achieving the Sustainable Development Goals.

    - Welfare benefits from lower fertility and population growth: The welfare benefits from lower population growth when ending child marriage in 2015/16 are estimated at $117 million (in purchasing power parity or PPP terms). The benefits increase to $4.9 billion by 2030. The rapid increase in benefits stems from the fact that the impact of child marriage on population growth is cumulative. That is, each year the gains become larger because the cumulative reduction in population growth keeps growing from one year to the next. In addition, as standards of living (GDP per capita) improve, the valuations also become larger.

    - Benefits from the reduction in under-five mortality and malnutrition: Ending child marriage would not reduce national rates of under-five mortality and stunting

dramatically, but many children would nevertheless survive at least until their fifth birthday and more would avoid stunting. The benefits from saved lives and children not being stunted are not primarily monetary. But with all necessary caveats, a tentative monetary value can be associated with avoiding the death of young children as well as stunting. The valuation is based on the discounted value of future wages and welfare levels for the children who survive past age five or avoid stunting. In Ethiopia, using a discount rate of five percent, the estimated benefits rise from $0.9 billion (PPP) in 2015/16 to $2.5 billion in 2030 in the case of under-five mortality. In the case of stunting estimates the estimated benefits rise from $0.2 billion (PPP) in 2015/16 to $0.5 billion in 2030.

- Budget savings from lower fertility and population growth: Budget savings can be reaped from lower population growth. For the provision of public education, for example, benefits start to be reaped six years after child marriage and early childbirths are ended since this is the time needed for fewer children to enter primary school. Savings are estimated as the reduction in the anticipated cost of reaching universal secondary education by 2030. The benefits increase over time and could reach up to $288 million in current US dollars by 2030 if the country were to achieve universal secondary education by then. This is an upper bound estimate of potential savings as the country may not reach universal secondary education by 2030, but the estimate provides an order of magnitude of potential benefits. When considering the elimination of only child marriage, benefits are a bit lower.

Table 6: Order of Magnitude of the Benefits from Ending Child Marriage – Selected Estimates

	Annual Benefit in 2015	Annual Benefit in 2030
(1) Welfare benefit from reduced population growth	$0.1 billion	$4.9 billion
(2) Benefit from reduced under-five mortality	$0.9 billion	$2.5 billion
(3) Benefit from reduced under-five stunting	$0.2 billion	$0.5 billion

Sources: Wodon (2017b) for (1); Wodon (2017d) for (2) and (3).

12. **In addition, the costs related to earnings losses for women married as children are high.** These costs are related for the most part to the fact that child marriage curtails the educational attainment of some of the girls who marry early, and higher educational attainment leads to higher expected lifetime earnings. The gains in earnings and productivity that would have been observed today if women had not married early in the past are estimated at $1.6 billion (Savadogo and Wodon, 2017c). These gains would increase over time due to population growth and higher standards of living and wages in most countries.

13. **To illustrate the magnitude of the benefits from ending child marriage, comparisons with net Official Development Assistance may be useful**. For comparison purposes, it may be useful to compare some of the estimates with Net Official Development Assistance (ODA), which consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies. The agencies included are the members of the Development Assistance Committee (DAC), multilateral institutions, and non-DAC countries. Net ODA includes

loans with at least a fourth comprised of grant elements. Net ODA in Ethiopia has amounted to six to eight percent of Gross National Income in recent years. This suggests that by 2030, ending child marriage and early childbirths in 2015 could generate simply through the welfare effects of population growth benefits equivalent to up to one-sixth of the net ODA received by Ethiopia. When adding all benefits from ending child marriage, gains are larger, and would continue to grow in the future.

Box 4: Why Are Some Impacts and Costs Large and Others Smaller?

In economic terms, the fact that child marriage or early childbirths may only lead to a small reduction in national measures for some outcomes does not imply that the economic costs associated with those impacts are small. For example, across countries, child marriage tends to reduce the earnings of populations as a whole by about one percent on average. One percent may not appear fo be a very large proportion, but the associated economic cost is very large, and for the women affected, the losses in earnings are even larger.

The largest impact of child marriage in terms of their economic costs tend to be related to fertility and population growth, education and earnings, and the health of the children born of young mothers. These impacts are closely related. When use of modern contraception is low, child marriage leads to early childbirths, which increases health risks for the children born of young mothers. The timing of child marriages and early childbirths conflicts with the ability of girls to continue their education, which depresses earnings in adulthood. All those effects are at work at the time of marriage or soon after. By contrast, impacts in other domains – from violence to labor force participation and decision-making, are observed throughout a woman's life and depend on many other factors than whether girls marry early. For example, intimate partner violence and a lack of decision-making ability are the result, at least in part, of widespread gender inequality. Child marriage contributes to perpetuating gender inequality, but delaying marriage by a few year may not be sufficient to fundamentally change gender roles and social norms. This is probably why in these domains, while ending child marriage may help, impacts tend to be smaller.

Source: Wodon (2017a).

CONCLUSION AND IMPLICATIONS

14. **While economic costs should not be the sole rationale for investment decisions related to child marriage, they are an important consideration.** Ending child marriage is the right thing to do from a moral and ethical standpoint. The eradication of child marriage has also been identified as a priority, as exemplified by its inclusion in the Sustainable Development Goals and increasing attention to the issue from a human rights perspective (UN General Assembly 2016). The primary motivation for ending the practice should be the fact that it may lead to substantial risks and suffering for the girls who marry early and their children. Child marriage curtails the opportunities provided to young girls and their children. The evidence of the negative impacts of the practice on a wide range of outcomes is clear. But in addition, the practice has large economic costs. The hope is that the demonstration of these costs will help generate higher investments aiming to end child marriage and early childbirths, and promote

instead girls' education.

15. **Importantly, the negative impacts of child marriage tend to be larger for the poor and the likelihood of marrying early is also higher among the poor.** Although this is not discussed in detail in this study, it can be shown that the poor are likely to suffer more from some of the negative impacts of child marriage than the better off, for example due to various constraints they face (such as barriers in access to health and education services). In addition, as discussed in chapter 2, child marriage is more likely among the poor. This implies that ending child marriage would benefit the poor the most. Implementing programs and policies to end the practice would reduce poverty and also be pro-poor.

16. **While this study does not focus on interventions that could be implemented to end child marriage, the literature provides insights in terms of what may work.** While this study does not focus on policies and interventions that could be implemented to end child marriage and early childbirths, the literature provides insights of what may work (see Annex 4). In one of the first reviews of interventions aiming to end child marriage, Malhotra et al. (2013) identify five types of strategies that can be used to prevent or delay early marriage: (1) Empowering girls with information, skills, and support networks; (2) Educating and mobilizing parents and community members; (3) Enhancing the accessibility and quality of formal schooling for girls; (4) Offering economic support and incentives for girls and their families; and (5) Fostering an enabling legal and policy framework. A more recent review by Kalamar et al. (2016) suggests that interventions to promote education, including cash transfers, school vouchers, free school uniforms, reductions in school fees, teacher training, and life skills curricula, are among the most likely to help. In some cases the evidence is mixed, but in many cases such interventions are found to reduce child marriage, or at least increase the age at first marriage. This is confirmed by the review of Botea et al. (2017) and underscored under the tipping point approach suggested by Brown (2012).

17. **In practice, interventions must be adapted to the context of each country or even region within a country.** Perlman et al. (2017) propose as a first cut for a typology of potential programs \according to four main target groups whose needs tend to differ: (1) Girls ages 10-15 still in school and not married; (2) Girls ages 10-16 out of school but not yet married; (3) Girls ages 16-19 still in school and not married; and (4) Married girls out of school. Many of the interventions proposed by Perlman et al. (2017) as well as the broader literature are already being implemented or at least tested in Ethiopia under projects supported by donors such as USAID, DfID, the World Bank, UNFPA, and UNICEF, for example. It will be important to learn from these experiences and ultimately scale up the interventions that prove most successful.

Box 5: Economic Impacts of Child Marriage for Boys

This study focuses on the impact of child marriage on child brides, their children, and societies at large. The reason for a focus on girls is that in most countries, the likelihood that girls will marry early, or will have a child early, is much higher than for boys. This does not mean that child marriage does not also affect boys. Boys may have to drop out of school when they marry early, and they may take low-paying jobs in order to support their newly formed family, further perpetuating poverty. While the economic impacts and costs of child marriage for boys are likely to be lower than for girls, they may still be substantial. Estimating their orders or magnitude could be the topic of further work.

CHAPTER I
INTRODUCTION

Ending child marriage is a target under the Sustainable Development Goals, yet investments to end the practice remain limited. Ethiopia adopted a national strategy against harmful traditional practices in 2013, but more could be done. In order to inspire greater commitments towards ending child marriage, this study documents the negative impacts of the practice in a more comprehensive way than was previously the case. The study also estimates a number of monetary costs associated with these impacts. This first chapter provides the rationale and framework for this study.

"I was married when I was eight years old… Before that they used to take me to his house so I can be familiar with him. I thought he was a relative but then when I got more matured I found out he was my husband." (ICRW, 2017)

"When I asked her why she was forced to marry against her will, she told me that her mother was dead and her aunts had asked her to marry a rich man. They told her that he would relieve their poverty and hers... I told her that I can take her to the police and file her case. But the girl was afraid because they [her relatives] pay her school fees and support her in her education" (Boyden et al., 2013).

18. **Child marriage is defined as a marriage or union taking place before the age of 18[1]. The practice has a wide range of negative impacts for girls, their children, and communities.** The practice primarily affects girls and is widely considered as a violation of human rights[2]. It profoundly affects the girls who marry early as well as their children in multiple ways. Child marriage leads women to have children earlier and more children over their lifetime than if they had married later. It affects girl's educational attainment and literacy negatively, thereby curtailing future opportunities for them to compete for well-paying jobs. Child marriage also leads to higher health risks for young mothers and their children. Finally, it may reduce voice and agency for women and it may also increase other risks such as the risks of intimate partner violence and of sexually transmitted infections, including HIV. These impacts have negative consequences not only for girls, but also for their children and for communities and societies as a whole.

19. **Worldwide, the prevalence of child marriage has been declining slowly over time, but due to population growth, the total number of child brides continues to increase in many countries. In Ethiopia, there has been a substantial decline**

[1] The threshold of 18 years to define child marriage is used in a number of conventions, treaties, and international agreements, including the Convention on the Rights of the Child, the Convention on the Elimination of All forms of Discrimination against Women, and the Universal Declaration of Human Rights as well as resolutions of the UN Human Rights Council.

[2] As enshrined in UN General Assembly Resolution 71/175 of December, 2016, *"child, early and forced marriage is a harmful practice that violates, abuses or impairs human rights."*

in the share of girls marrying early. Trends in child marriage worldwide show a decline, but a slow one. As a result, today child marriage affects millions of girls each year, especially in sub-Saharan Africa and South Asia. In Ethiopia, the prevalence of child marriage has been reduced substantially over the last decade, but more than one third of girls still marry before the age of 18 and almost two in ten have their first child before the age of 18 (this is referred to as an early childbirth).

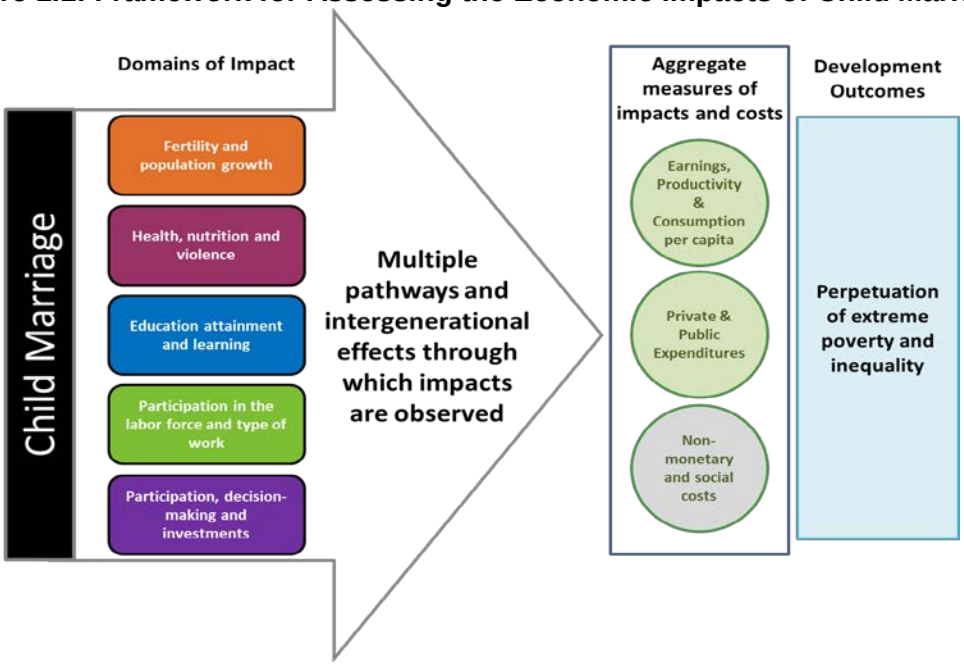
20. **The Government of Ethiopia is committed to reducing child marriage and is investing with partners in projects that have the potential to do so.** The government has adopted a national strategy against harmful traditional practices and has long stated its commitment to ending child marriage. Various projects in the country tackle the issue of child marriage directly, and others do so indirectly through efforts to promote girls' education and make reproductive health services more broadly available. Investments made by NGOs, foundations, and bilateral or multilateral agencies also aim directly or indirectly to reduce early pregnancies and improve girls' education. Finally, Ethiopia is one of 12 countries taking part in the joint UNFPA and UNICEF Global Programme to Accelerate Action to End Child Marriage.

21. **There is broad support to end child marriage on moral and ethical grounds, but while adopting legal provisions for the minimum age at marriage is a first step, this is not sufficient to create lasting change.** Increasing awareness of the negative impacts of child marriage has led the practice to be prohibited by law in many countries. Ending child marriage is a target adopted under the Sustainable Development Goals (Goal 5.3). But laws and policies are not enough. Targeted interventions are needed to end the practice, not only to deal with economic constraints contributing to child marriage, but also to tackle social norms and cultural traditions that contribute to the persistence of the practice. Such interventions require significant and long-term financial investments and political will. While Ethiopia and a number of other countries have adopted projects and in some cases national strategies to end child marriage, insufficient domestic and donor resources are being allocated to programs and policies that could reduce child marriage over time. In other words, while there is a consensus that child marriage has a wide range of negative impacts, investments to end the practice are limited.

22. **The lack of adequate investments in many countries to end child marriage is likely due in part to the fact that the economic case for ending the practice has not yet been made forcefully.** The fact that child marriage may be primarily perceived as a social or human rights issue, and not necessarily an economic issue, may be one of the reasons why ending the practice has not received sufficiently targeted investment. The objective of this study, which contributes to a larger work program on the economic impacts and costs of child marriage, is to document in detail some of the main negative impacts of child marriage and early childbirths on development outcomes as well as the costs associated with those impacts. The study for Ethiopia is part of a set of country studies prepared under the Economic Impacts of Child Marriage (EICM) project (see www.costsofchildmarriage.org). By documenting the economic impacts and costs of child marriage, this study helps in making a strong case for investments by the governments and other stakeholders to reduce child marriage.

23. **A simple conceptual framework guides the analysis.** The framework developed for this study is shown in Figure 1.1 (for information on the actual methodology used for the study, see Annex 1). Five domains of impacts of child marriage are considered: (i) fertility and population growth; (ii) educational attainment and learning; (iii) labor force participation; (iv) participation, decision-making, and investments; and (v) health, nutrition, and violence. In turn, impacts in these domains may lead to three types of costs or benefits related to (i) earnings, productivity, and household consumption per capita; (ii) public and private expenditures (mostly for education and health); and (iii) non-monetary social and health costs. These impacts and associated costs have broader consequences at the national level in terms of the perpetuation of extreme poverty and inequality. Annex 1 provides a more detailed visualization of the analysis undertaken in order to document the pathways – both direct and indirect - through which child marriage as well as early childbirths may affect child brides, their children, their community, and society at large.

Figure 1.1: Framework for Assessing the Economic Impacts of Child Marriage



Source: Wodon et al. (2015).

24. **Apart from measuring the impacts of child marriage, this study also considers the impacts of early childbirths.** In this study early childbirth is defined in two different ways. At the level of women, we define early childbirth as having a first child before the age of 18. At the level of children, we define early childbirth as being born of a mother younger than 18. While the framework in Figure 1.1 does not explicitly mention early childbirths, several of the negative impacts of child marriage on girls marrying early and their children are related to early childbirths, which is often but not always a consequence of child marriage. This is especially the case for the impacts of child marriage through early childbirths on fertility and health outcomes, and it may be the case for education outcomes. Therefore, the impacts of both child marriage and early childbirths are discussed in the study. When needed a distinction is made for the

impacts of each (child marriage or early childbirths). This also means that for several impacts, an assessment is made of the share of the impacts – when occurring through early childbirths – that can be attributed to child marriage. More details on the methodology used for the analysis are provided in Annex 1.

Box 1.1: What Do We Mean by "Impacts" and Associated Costs?

The aim of this study is to estimate the impacts of child marriage on a wide range of development outcomes and the economic costs associated with some of these impacts.

The term "impact" is used for simplicity, but one must be careful about not necessarily inferring causality. Estimates of impacts in this study are typically obtained through regression analysis aiming to isolate the potential impact of child marriage or early childbirths on various outcomes controlling for other factors affecting those outcomes. In the literature, this approach is known as "association studies". What is measured is a statistical association between child marriage or early childbirths and outcomes. This is not necessarily an impact as could be observed with a randomized control trial. Since child marriage cannot be randomized, the study must rely on regression analysis to estimate impacts, but there is always a risk of bias in the measures of likely impacts.

Based on measures of likely impacts, costs associated with some of these impacts are computed. These costs are based on a number of assumptions that could be debated, including in some cases discount rates. Therefore, cost estimates only represent an order of magnitude of potential costs, as opposed to precise estimations.

Source: Wodon (2017a); See also Annex 1.

25. **The study is based on a rich array of existing data as well as new data collected for the study.** The study is primarily based on an analysis of existing data, but existing data sources are complemented for selected topics by new data collection. For quantitative analysis, Demographic and Health Surveys have information on child marriage or early childbirths (Box 1.2). These datasets can be used to measure the impacts of child marriage on a wide range of outcomes as well as associated monetary costs. For the impact of child marriage on earnings, simulations are carried out using the World Bank's I2D2 database. In addition, a complementary survey was implemented specifically for this study with national coverage. Qualitative analysis is also based on both existing data (through reference to published qualitative studies) and new data (focus groups and interviews in two locations). More information on data sources and their use for estimations is provided in Annex 2.

26. **The structure of the study broadly follows the conceptual framework, with a chapter providing a contextual analysis of child marriage in Ethiopia followed by four chapters on its domains of impacts and a conclusion.** Chapter 2 discusses the extents of child marriage and early childbirths, as well as some of the factors leading to child marriage. The next four chapters consider the five domains of impacts of child marriage listed in Figure 1.1 (education and labor force participation are combined in one chapter because of the close relationship between education and earnings). In each of these chapters, analysis is provided to measure the impact of

child marriage and/or early childbirths. For some of the impacts, an assessment of the associated economic costs is provided. In some cases, contemporaneous costs are provided. In other cases, costs from 2015 to 2030 are estimated. The year 2030 is chosen because it corresponds to the target date for the completion of the Sustainable Development Goals. A conclusion summarizes the findings. A series of annexes provide more information on methodology and data. In addition, options for programs that can help end child marriage are also provided in an Annex.

Box 1.2: Data Sources for the Analysis

This study is based on a rich array of existing data sources for Ethiopia as well as new data collection. The main existing data sources used for the quantitative analysis are Demographic and Health Surveys (DHS), with the last two publicly available DHS for Ethiopia implemented in 2011 and 2016. For the impact of child marriage on earnings, simulations parametrized with DHS data are carried out with wage regressions estimated using the World Bank's I2D2 database. Data from the 2015 LSMS are also used. In addition, for selected topics, estimates are based on a nationally representative survey implemented for this project (Economic Impacts of Child Marriage or EICM survey) by the International Center for Research on Women (ICRW) in 2016. For the qualitative analysis, apart from referencing insights from existing studies, analysis is based on qualitative data collected for this study in the Oromia and Amhara regions by ICRW (2017).

Source: See Annex 2.

CHAPTER 2
CHILD MARRIAGE AND EARLY CHILDBIRTHS

This chapter provides estimates of the extent of child marriage and early childbirths in Ethiopia together with comparisons for selected other countries. Trends over time in child marriage and early child births are estimated, as is the share of early childbirths likely due to child marriage. A brief discussion of some of the factors that may lead to child marriage and early childbirths is also provided. Finally, an assessment is made for the prevalence of child marriage and early childbirths by quintiles of household wealth and by geographic location.

"A girl should get married as early as possible as it is the only option she has within the community. A girl should get married before 15 years, if not she may not get married at all. It is a long lived tradition... getting married as early as possible is the only available option for a girl to lead better life in her future" (Save the Children, 2011).

"[If I had not married early] I would be mature in making my own choices and I would not suffer in raising a child in my childhood… Last year, it was my daughter's birthday and I didn't have any money to celebrate her birthday and I was so sad on that day and my mom borrowed 50 Birr from my neighbors and we bought candles and celebrated her birthday. This would not happen if I was married years later and I would use family planning if I knew there was such a thing. I advise the government or NGOs to teach people about family planning to avoid unplanned pregnancy" (ICRW, 2017).

EXTENT OF CHILD MARRIAGE AND EARLY CHILDBIRTHS

27. **Child marriage has decreased in the developing world fairly slowly. In Ethiopia, there has been a fairly significant decline in the prevalence of the practice over time.** According to DHS data for about 60 countries, in the past 30 years the prevalence of child marriage decreased by only 11 percentage points in those countries (Nguyen and Wodon, 2015; see also UNFPA, 2012, and UNICEF, 2014). In Ethiopia, as shown in table 2.1, the share of women ages 18-22[3] who married before the age of 18 was 36.7 percent according to the latest DHS for 2016. This share was much lower than the share observed among women ages 23-30 (50.5 percent), suggesting that child marriage has been substantially reduced over the past decade. Still, more than a third of girls continue to marry before the age of 18. In addition, 17.4 percent of women ages 18-22 have their first child before the age of 18. In some

[3] The prevalence of child marriage, sometimes referred to as prevalence, has been estimated in previous reports among others by UNICEF and UNFPA for women ages 20 to 24. Nothing prevents however the analysis to be carried for women ages 18 to 22, which tracks more closely the conditions prevailing in countries at the time of the survey. Measures of child marriage could be estimated solely among girls 18 years of age, but using a larger bracket in terms of years provides more robustness in terms of statistical results. In addition to estimating the prevalence of the practice, it is useful to estimate other measures following the approach outlined in Nguyen and Wodon (2012, 2015). These other measures are available in background work.

countries, a substantial share of early childbirths at the level of women or children (i.e., children born of mothers younger than 18) may take place outside of marriage. In Ethiopia however, as will be discussed below, early childbirths are in most cases a direct consequence of child marriage and the two phenomena are closely related. Table 2.1 also provides the share of girls marrying or having their first child before age 15, with overall fairly similar trends over time.

Table 2.1: Trends in Child Marriage and Early Childbirths for Mothers in Ethiopia (%)

	Child marriage (women)		Early childbirth (women)	
	Before 18 years	Before 15 years	Before 18 years	Before 15 years
All women ages 18-49	52.0	21.7	31.9	5.7
Age group in 2012				
18-22 years	36.7	11.7	17.4	2.5
23-30 years	50.5	20.7	31.5	5.2
31-40 years	60.1	26.8	39.5	7.7
41-49 years	64.9	30.5	41.2	8.2

Source: Male and Wodon (2017a).

Box 2.1: Defining Child Marriage and Early Childbirths

Child marriage is defined as a marriage or union taking place before a boy or a girl reaches the age of 18. In Ethiopia as well as in other countries the practice affects mostly girls, so the focus is on girls in this study. The term early childbirth is used in the study in two different ways. At the level of women/mothers, early childbirth is defined as having a first child before the age of 18. At the level of children, early childbirth is defined as a child being born of a mother younger than 18 at the time of the child's birth. Because DHS surveys have been vetted for many years and provide estimates that can be compared to those obtained in other countries, these are the surveys used for measuring child marriage and early childbirths in this chapter.

28. **It is useful for perspective and when feasible to compare results obtained in Ethiopia with results observed in other countries.** Depending on the topic, a total of 15 to 25 countries are considered for international comparisons. For comparisons of trends in the prevalence of child marriage, detailed analysis has been conducted for 25 countries. The first four columns in table 2.2 provide trends over time in the prevalence of child marriage among women ages 18 to 22 years in the larger set of 25 countries. The prevalence of child marriage measured among women ages 18 to 22 ranges from 16.5 percent in Egypt to 76.8 percent in Niger according to the latest publicly available DHS in each country. In most countries, the prevalence of the practice has been reduced. This is visualized in Figure 2.1 by comparing the prevalence of the practice among women ages 23-30 with those ages 18-22. Most countries lie below the diagonal (plain line), suggesting a decline over time. On average, the regression through the scatter plot (dotted line) suggests a reduction of 11 percent in prevalence between the two age groups (coefficient of 0.89). Ethiopia is identified by the red circle in the Figure (in that Figure data for Ethiopia are for the 2011 DHS for consistency with the global study on the economic costs of child marriage, but the estimates for the 2016 DHS mentioned above are very similar).

Table 2.2: Child Marriage and Early Childbirth (for Mothers) by Age Group (%)

	Share of women with first marriage before age 18 by age group				Share of women with first child before age 18 by age group			
	18-22	23-30	31-40	41-49	18-22	23-30	31-40	41-49
Bangladesh	59.4	71.9	76.4	82.3	33.7	48.3	49.9	46.3
Burkina	49.8	52	53.5	51	25.2	30.1	29.1	27.7
Chad	68.7	73.5	73.8	69.7	44.8	49	48.9	40.3
Cote d'Ivoire	32	32.9	36.5	42.7	29.7	31.2	33.6	39.9
Dem. Rep. of Congo	35.9	40.3	42	47.9	25.6	26.3	28.6	32.6
Dominican Republic	34.6	40.7	40	35.2	20.4	27.1	25.1	20.9
Egypt	16.5	18.6	23.6	30.3	6.6	7.8	10.9	13.3
Ethiopia	**36.7**	**50.5**	**60.1**	**64.9**	**17.4**	**31.5**	**39.5**	**41.2**
Ghana	17.2	24.1	28.7	34.2	15.5	18.6	21.5	25.4
Guinea	51.1	56.5	60.1	60.1	41	41.6	43.6	37.7
India	40	51.5	58.6	58.2	17.8	28.5	31.6	28.4
Indonesia	16.2	20.3	27.3	39.4	6.4	9.6	13.8	23.2
Malawi	45.9	51	51.3	55.3	31.7	35.5	35	38.6
Mali	59.9	56.3	46.9	42.8	44.9	42.2	31	31.9
Mauritania	35.2	45	59.6	60.1	19.8	26.5	32.5	33.2
Mozambique	51.5	46.5	39.3	42	39	39.6	31.7	33.8
Nepal	38.5	48.7	56.7	59.4	17.4	23.2	23.7	19.5
Niger	76.8	76.1	76.6	80.1	47.1	47.4	42.7	37.2
Nigeria	42.1	47	47.8	51	28	32.1	31.1	34.4
Pakistan	18.73	27.04	36.83	43.15	6.8	11.7	15.5	18.6
Peru	17.3	21.7	21.3	22.7	14.4	15.4	15.8	16.6
Rep. of Congo	34.0	33.2	33.2	39.6	31.8	28.0	31.7	34.7
Senegal	31.4	33.1	35.2	39.6	17.2	20.4	19.7	22.1
Uganda	36.5	46.3	53.3	52.8	28.6	39.2	42.6	40.4
Zambia	28.5	39.5	44.4	51.5	29.5	33.1	33.8	37.6

Source: Male and Wodon (2017a).

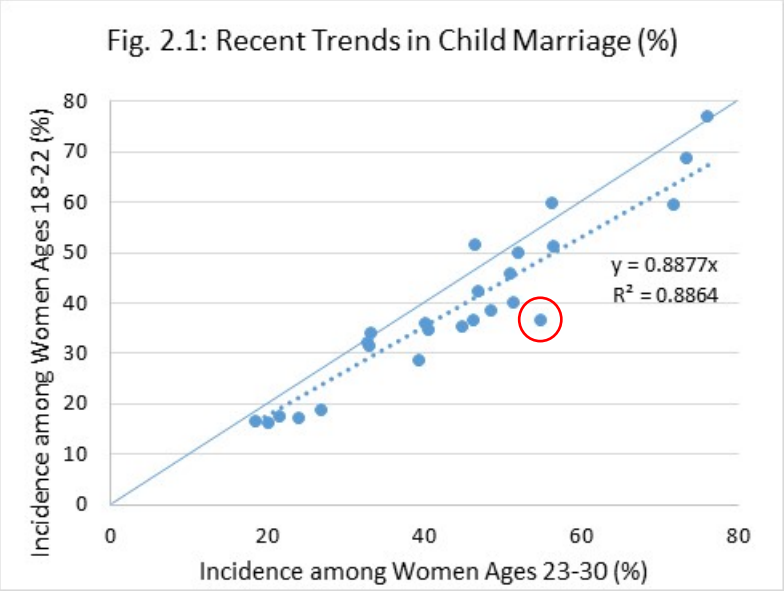
Box 2.2: Measuring Child Marriage and Early Childbirths

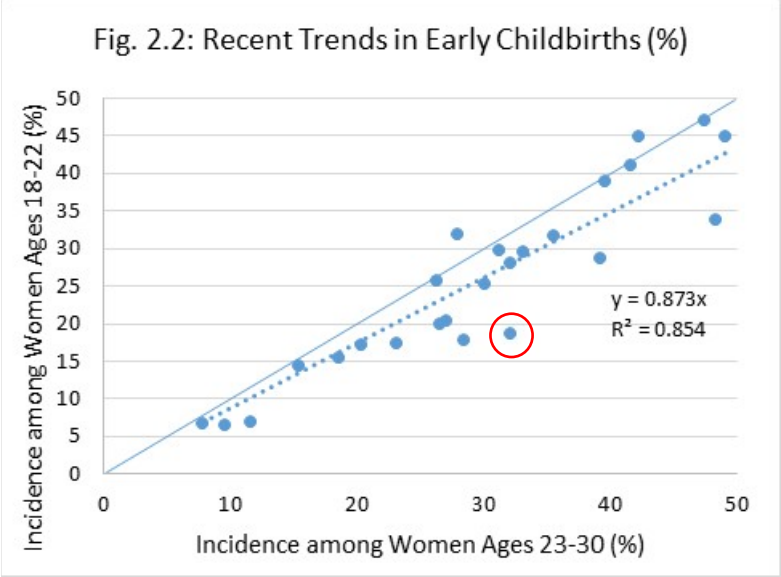
For simplicity, only the share of girls marrying before the age of 18, and the share of girls having their first child before the age of 18 are reported as measures of child marriage and early childbirths in this study. However, the impacts of child marriage and early childbirths on development outcomes tend to be more severe when girls marry very early. Higher order measures of child marriage and early childbirths inspired from the poverty literature can be defined to properly take into account how early girls marry or have a child. These measures are available in the background papers for this study.

Source: Nguyen and Wodon (2012); Male and Wodon (2017a).

29. **For early childbirths, there has also been a marked decline in Ethiopia in recent years.** Table 2.2 also provides trends in early childbirth at the level of women in the 25 countries. In the age group 18-22, the prevalence of early childbirths at the level of women ranges from less than one percent in Egypt to 47.1 percent in Niger. As was the case with child marriage, and as shown in Figure 2.2, the prevalence of early childbirths has been reduced in recent years in many countries. The regression through the scatter plot (dotted line again) suggests a reduction of about 13 percent in

prevalence between women ages 18-22 and those ages 23-30. Ethiopia is one of the countries where early childbirths have been reduced substantially over time, particularly in the last decade.





Source: Male and Wodon (2017a). Data source: DHS. Ethiopia highlighted in red circle. For consistency with the global study on the economic costs of child marriage, estimates for Ethiopia are based on the 2011 DHS in the Figure. Estimates in table 2.2 for 2016 are similar.

SHARE OF EARLY CHILDBIRTHS LIKELY DUE TO CHILD MARRIAGE

30. **Since several negative impacts of child marriage occur through early childbirths, it is important to assess the share of early childbirths that are likely due to child marriage.** While factors leading to early childbirths differ between

countries, child marriage is clearly a major factor at play. As an illustration, in table 2.2, there is a strong relationship between the prevalence of child marriage and early childbirths across countries but this relationship varies between countries. If most early childbirths are due to child marriage, we would expect the measures of early childbirths for women to be lower than those for child marriage since a girl marrying at, say, age 17, is not likely to have her first child before 18. This is typically the case, as expected. But there are a few exceptions.[4]

31. **Estimating the share of early childbirths at the level of mothers likely due to child marriage is not straightforward, but simple statistical approaches can be used as an approximation.** The relationships between child marriage and early childbirths are complex. For some girls, having one or more children before the age of 18 may be the consequence of child marriage. For others, marriage may result from an early childbirth or pregnancy. For yet others, early childbirths may not be related to child marriage at all. Still, using simple assumptions, it is feasible to get a rough measure of the share of early childbirths likely due to child marriage (see Box 2.3 for the methodological approach used to derive estimates). It is important however to note that our methodology does not establish causality – only plausibility.

Box 2.3: Measuring the Share of Early Childbirths Due to Child Marriage

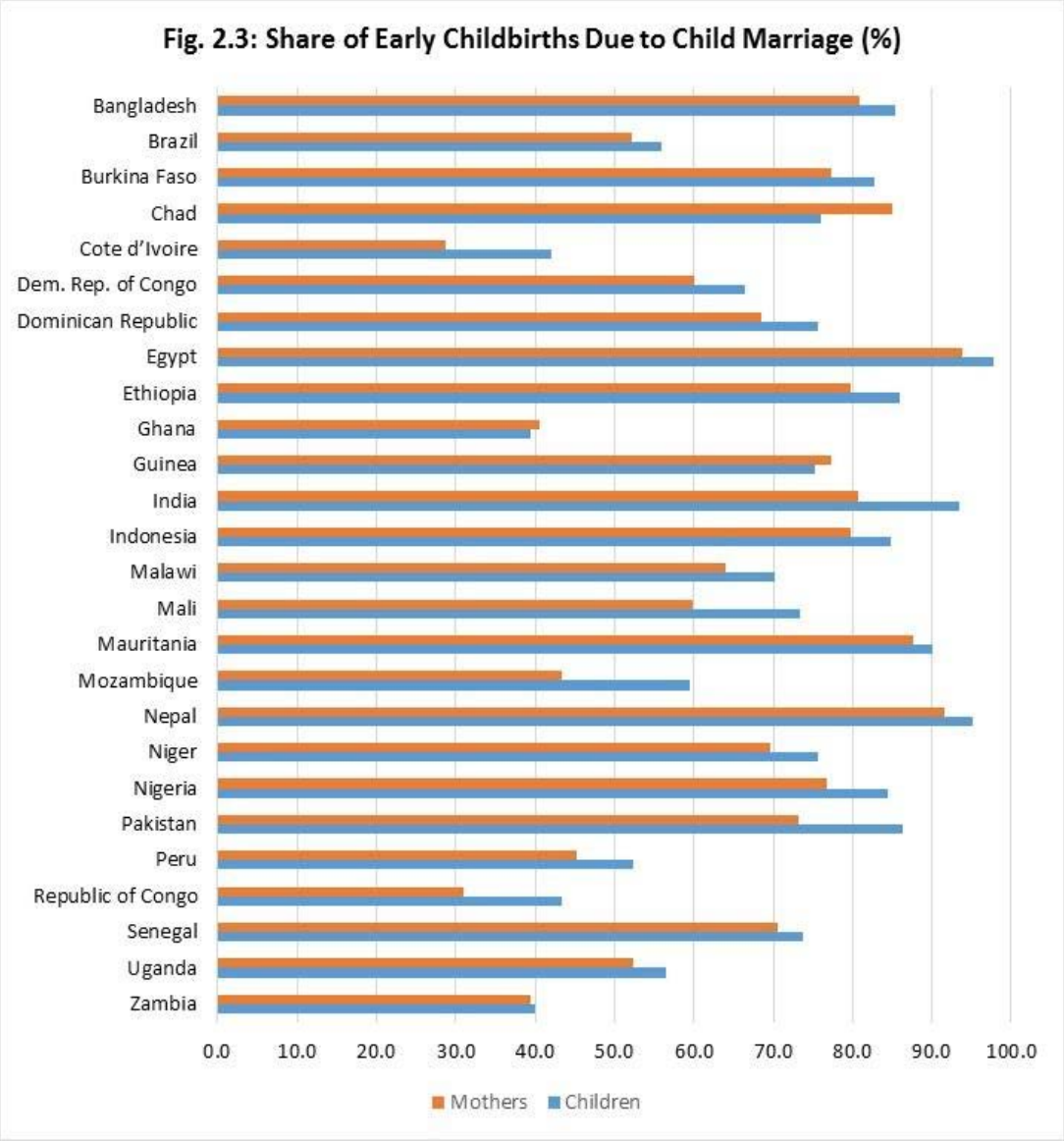
A simple statistical approach is used to estimate the share of early childbirths likely due to child marriage. Consider first early childbirths as it is defined at the level of mothers (having a first child before age 18). An upper bound for the share of early childbirths for mothers likely due to child marriage can be defined as one minus the share of mothers who had their first child before the age of 18 but did not marry before 18. A lower bound can be defined by subtracting from the upper bound the share of women who did marry before the age of 18, but had their first child less than nine months after their first marriage, which could suggest that marriage was not the cause of the early childbirth. An intermediate estimate could use a threshold of six months instead of nine months for the comparison of the timing of the first birth and first marriage. Indeed, if a girl/woman does not know for sure that she is pregnant, the pregnancy may not affect the decision to marry. In addition, in some countries, even in traditional contexts, cohabitation and sexual activity is permitted before a formal marriage as long as the marriage has been agreed to. The same approach and definitions can be used when looking at the share of early childbirths as defined at the level of children as opposed to mothers.

Source: Wodon, Male and Onagoruwa (2017).

[4] In some countries such as Cote d'Ivoire, the prevalence of early childbirth and child marriage are close to each other, suggesting that many early childbirths may take place outside of marriage. In Zambia, the prevalence of early childbirth is higher than that of child marriage. By contrast, in a few countries, early childbirths are rare even if child marriage is not. This is the case in Egypt.

32. **For Ethiopia, estimates suggest that at the level of mothers, about four in five childbirths may be due to child marriage. At the level of children, more than four in five early childbirths may be due to child marriage.** The share of women having their first child before 18 due to child marriage is 79.7 percent according to the intermediate estimate defined in Box 2.2 in the 2011 DHS. In addition, 86 percent of children born of mothers younger than 18 could be attributed to child marriage. These intermediate estimates are provided in Figure 2.3. The estimates are similar with the 2016 DHS. These estimates are tentative only and may be affected by how the variables are measured in the DHS as compared to existing practices in the country. But they do suggest that a large majority of early childbirths are likely due to child marriage. Ending child marriage should therefore have a major positive impact towards reducing early childbirths, whether at the level of mothers or that of children[5].

[5] At the margin ending child marriage entail behavioral responses which in some cases could lead to births among young mothers out of wedlock. The extent to which such behavioral responses could be observed would need to be estimated using more advanced models as opposed to simple statistics. But the simple statistics provided in table 2.3 do suggest that even if such behavioral responses were to be observed in some cases, it is still likely that ending child marriage should lead in most countries to a major reduction in early childbirths. It is important to note, however, that ending child marriage would not be sufficient for avoiding all early pregnancies and childbirths. Providing adolescents with access to comprehensive sexuality education and adolescent-friendly reproductive health information and services are critical ways to ensure that adolescents do not face unintended pregnancies even outside of marriage.



Source: Wodon, Male, and Onagoruwa (2017). For consistency with the global study on the economic costs of child marriage, estimates for Ethiopia are based on the 2011 DHS in the Figure. Estimates for the 2016 DHS are very similar.

FACTORS LEADING TO CHILD MARRIAGE AND EARLY CHILDBIRTHS

33. **Multiple factors contribute to the perpetuation of child marriage and early childbirths.** Factors leading to child marriage and early childbirths include socio-economic factors such as poverty, a lack of education opportunities for girls (in some traditional societies, it is often an "either/or" choice between getting married or remaining in school assuming schools are available nearby), and cultural factors as well as social norms. In a probably small minority of cases, anecdotal evidence also suggests that child marriage may also be related to elopement. As noted in multiple

reviews (e.g., UNICEF 2005; National Research Council 2005; Santhya et al. 2006; Jain et al. 2007; Malhotra et al. 2011; Vogelstein 2013; UNFPA 2012; UNICEF 2014; Klugman et al. 2014; Parsons et al., 2015; Wodon, 2015a, 2017a), the importance of social and cultural norms that relate to gender roles and gender inequality cannot be understated. When overlaid with a culture that assigns specific gender roles to men and women, poverty and a lack of education and formal employment opportunities often leave few options for girls but to marry early, contributing further to a lack of empowerment for women in adulthood and the perpetuation of child marriage and patterns of gender discrimination. As a result, child marriage and broader pattern of gender discrimination may squash the aspirations of young girls: *"As a child I use to sit and think about building a very big house a house with brick walls… A very nice house, a house that has a fridge… That was my dream, but what made my dream to not come true is this harmful tradition of child marriage. It was this old outdated culture that took a way my dream"* (ICRW, 2017).

34. **Causality related to child marriage is complex. This can be illustrated with the relationship between child marriage and poverty.** The drivers of child marriage and early childbirths are complex, and causality often runs both ways, with child marriage affecting various outcomes, but some of those outcomes also potentially affecting child marriage. This can be illustrated in the case of poverty. On the one hand, girls from poorer socio-economic backgrounds are more likely to marry early, but on the other hand, marrying early may lead to a higher likelihood of being poor later in life. The pathways through which poverty may increase the likelihood of marrying early are themselves multiple. When poverty makes it hard for a household to send all children to school, prevailing gender norms may mean that boys receive preferential treatment for household investments in schooling, at least at the secondary level. Moreover, girls may be kept home from school to help take care of the housework that needs to be completed. Parents in traditional societies may place a lower value on girls than boys simply because the benefits of educating girls are likely to accrue to in-laws, while the benefits of educating boys are more likely to benefit the family of origin. In many cultures, this then implies that girls are likely to have to marry early because parents prefer not to take the risk of their daughter becoming sexually active outside of marriage. In addition, a lack of formal employment opportunities for young women may mean that secondary education is devalued, such that parents find little benefit to investing in girls' education. Further, in countries like Ethiopia where many poor families may face food insecurity, having a girl marry early gives that family one less mouth to feed. One woman explained her difficult childhood and how she collapsed while writing an exam due to hunger: *"We were starving in the house so it is a really bad memory for me. One day I remember there was school exam and we were told not to be absent from school on that day. The day before we hadn't eaten dinner or breakfast but went to school because they [teachers] ordered us to be there. After that, I don't remember what happened. They just told me that I fainted. Then, when I woke up my teacher asked me what the problem was and I told her I hadn't eaten any food. She bought me tea with bread. Then, I went back home after that."* (ICRW, 2017)

35. **Financial transactions around marriage may also contribute to the practice of child marriage, especially in contexts of poverty and vulnerability.** In communities where the groom or his family pays a bride wealth at the time of marriage, parents may benefit from marrying their daughters early if waiting increases bride

wealth prices. In communities or countries where the bride brings resources at the time of marriage (dowry, which is more prevalent in South Asia), the required dowry to be paid by parents may be lower if the bride is younger. Marrying a daughter at a younger age also reduces the investments that a family has to make in her education, without necessarily curtailing future returns to those investments if those returns benefit mostly the groom's family. This may lead parents to reap immediate benefits from an early marriage even if this is not in the long term interest of the girl marrying early. There is significant regional variation in how marriage rituals drives child marriage in Ethiopia. In the Oromia region, where bride wealth is common, poverty may incentivize parents to effectively exchange their daughters for cash or farm animals among the pastoralists (Boyden et al., 2012).

36. **While poverty and vulnerability may contribute to child marriage, child marriage may also contribute to poverty.** Early marriage leads girls to have children earlier and more children over their lifetime, which may reduce consumption per capita or per equivalent adult in the household in adulthood, thereby increasing the likelihood of being poor. Girls marrying early in Ethiopia almost always leave school, especially when this involves moving to the new husband's hometown, and a lower education level is likely to curtail their earnings potential as adults. These are but two of the channels through which child marriage may lead to higher poverty. Given these relationships between poverty and child marriage, not all girls are equally likely to marry early, or have their first child early. Girls from poorer socio-economic backgrounds as well as girls from rural areas or lagging regions tend to be much more likely to marry early and/or have their first child before reaching 18 than girls from urban or more privileged backgrounds. This is true even if differences in the prevalence of child marriage and early childbirth between areas as well as by socio-economic status are not uniform across communities or countries. The same can typically be said of early childbirths.

37. **Qualitative work helps to elucidate why child marriage remains so entrenched.** Many women interviewed for this study explained that their economically poor backgrounds contributed to their early marriages (ICRW, 2017). While some came from families that lacked the very basic needs, like food, others were orphaned or abandoned by their parents and forced to live with members of their extended families who subjected them to abuse and neglect. Poor living conditions deprived girls of an opportunity to go to school and exposed them to social harms such as rape and abduction. Traditionally, once a girl has been abducted or raped, she becomes a "source of great shame" to the family and most often she is forced to marry her abductor. One woman narrated how she ended up getting married at the age of 15 after being abducted twice: *"They abducted me… the man; he would lock me in whenever he left. For two days, he locked me in and left, then after that, I broke the door and hid and came to my parents. And back at my parents', the rural mentality… the idea of bringing shame on them and all of that. Even tolerating all of that I stayed at home. But while I was back there, I didn't even stay a month. Again, someone else abducted me… And, well, that's where I lived for eight years because it was far away, I didn't know how to get back… I didn't know this place well. That is how I lived for eight years."* Besides poverty, traditional practices and beliefs also contribute to child marriage in Ethiopia. For instance, in some communities it is common for a girl child to be engaged at a very young age, even as an infant, and given to the in-laws to raise

her to ensure that they instill in her "values of a good wife" for their son. One woman explained that she thought her now husband was her brother since they were raised together: *"I thought he was my brother but I knew later he was my husband… they told me to move with him to this house when my menstruation started… I was 12 when they told me."* Further, the desire or need to maintain the family's good name and social standing is a major driver of child marriage in communities in the Amhara region since to the parents, especially fathers, a daughter's success rests in her making a good marriage. *"My parents wanted me to marry him because he comes from a rich family… my father did not want to bring shame to our family if I didn't marry into a good family."* Early marriage is also viewed as a way of preserving a girl's virginity since, as one women put it*: "If she is not married early she might go somewhere and bring shame."*

Box 2.4: Minimum Legal Age for Marriage

The Convention on the Rights of the Child emphasizes the need for full and informed consent for marriage, and notes that children do not have the capability to provide full and informed consent. This is one of the reasons why the age of 18 is recommended as the minimum age for marriage.

In Ethiopia, the Family Code of 2000 sets the minimum age to marry for both men and women at 18 years old. However, under article 7.2 it is also specified that the Minister of Justice may grant a waiver of not more than two years to future spouses or parents or guardian to marry earlier.

38. **Lack of employment opportunities for girls and structural weaknesses in education provision also contribute indirectly to early marriage.** In many cases, particularly in rural Ethiopia, girls have few career choices outside of marriage and child rearing. The lack of meaningful social and economic alternatives makes it difficult for some girls and their families to envision viable alternatives to early marriage and childbearing. In addition, structural weaknesses in the provision of education also play a role. The fact that schools are of poor quality, sometimes far away, or costly for families in terms of both fees and lost hours of (unpaid) household work for girls when they go to school may lead to de-prioritizing girls' education and may encourage parents to marry off their daughter, particularly if she is deemed to be of marriageable age and the suitor is acceptable.

35. **Access to quality primary and secondary education is probably one of the most effective ways to delay marriage.** Many parents know that school can give their daughters a better chance of finding meaningful employment. Why then do so few girls, complete secondary school? Parents wishing to educate their daughters face an array of economic, social and institutional barriers, especially school costs (including both out of pocket and opportunity costs) and the poor quality of the education being provided. Without alternatives, early marriage is attractive to many girls and parents.

36. **In most societies, polygamy tends to be associated with child marriage statistically speaking.** Data from the Demographic and Health Survey for 2011 for Ethiopia indicate that eleven percent of married women are in a polygamous marriage

and suggest that the share of women who marry early tends to be higher in polygamous as compared to monogamous households for women ages 18-49 but not for younger women ages 18-22. There is some anecdotal qualitative evidence across countries that polygamy is related to child marriage, at least when husbands take on an additional and younger wife. While additional research would be needed on this issue in order to establish links after controlling for a range of other factors affecting child marriage, simple statistics suggest that there may indeed be a link.

Table 2.3: Child Marriage Rates among Monogamous and Polygamous Unions (%)

	Women ages 18-22		Women ages 18-49	
	Monogamous union	Polygamous union	Monogamous union	Polygamous union
Burkina Faso	67.98	72.86	54.40	60.12
DRC	64.74	66.96	48.23	53.12
Ethiopia	**68.17**	**63.53**	**64.83**	**67.14**
Malawi	54.82	62.65	48.40	54.97
Mali	77.01	79.01	55.68	58.27
Mozambique	67.94	72.5	49.91	50.57
Nepal	62.1	63.85	57.23	62.46
Niger	85.93	89.67	78.35	83.35
Nigeria	70.21	84.7	49.23	70.06
ROC	59.53	69.4	40.58	45.41
Uganda	57.41	63.67	52.49	56.29
Zambia	57.51	71.74	48.3	57.92

Source: Onagoruwa and Wodon (2017h).

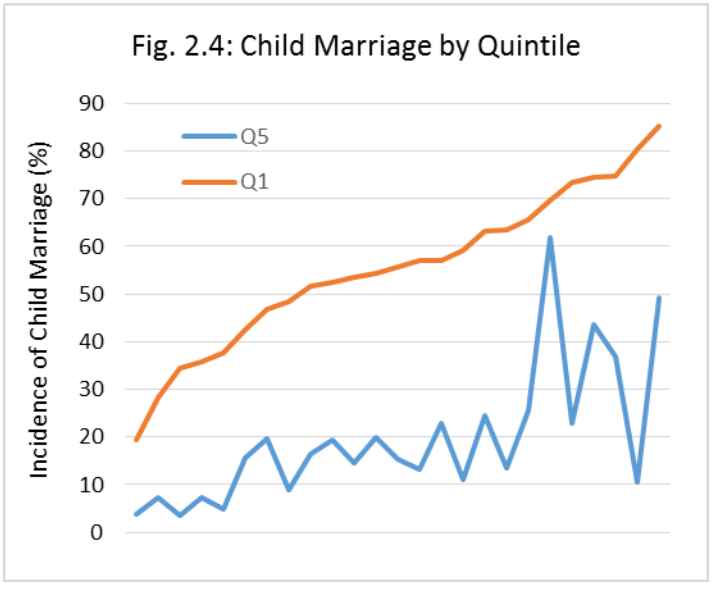
PROFILE OF CHILD MARRIAGE BY LEVEL OF WEALTH

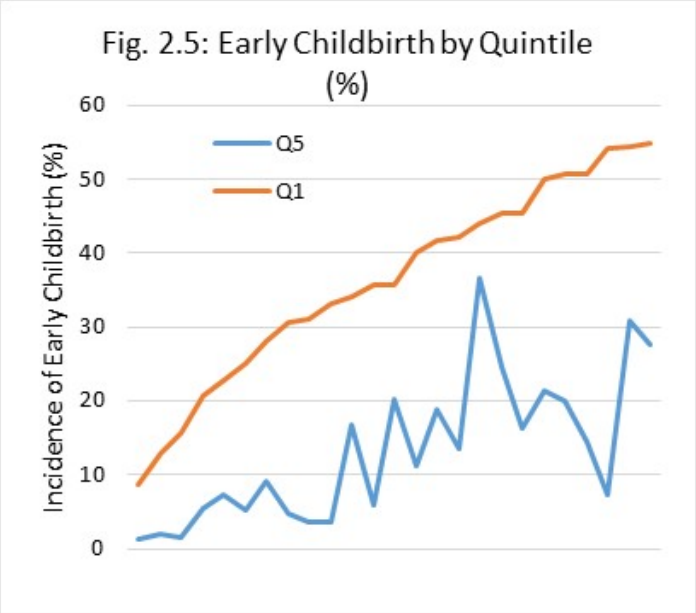
37. **The relationship between poverty and child marriage is clear in a multi-country perspective, including in Ethiopia where child marriage is more common in the bottom quintiles of wealth.** Household welfare can be measured in DHS surveys through a wealth index. In table 2.4 households are categorized in five quintiles from poorest to richest. Both child marriage and early childbirth are more likely among poorer groups, as expected. In Ethiopia, the prevalence of child marriage is especially high in the bottom three quintiles, after which it decreases, especially in the richest quintile. Similar patterns are observed for the prevalence of early childbirths (for mothers) across quintiles. The differences in prevalence between socio-economic groups are visualized for in Figures 1.4 and 1.5 where countries have been ranked on the horizontal axis according to the prevalence of child marriage or early childbirth in the bottom (poorest) quintile of well-being, with this prevalence represented with the top curve in the Figure in red. The bottom curve represents the prevalence of child marriage or early childbirth in the top (richest) quintile. Clearly, the prevalence of child marriage is lower across countries among higher socio-economic groups, but with some differences in ratios between quintiles depending on the country. Note that in Figures 2.4 and 2.5, data for Ethiopia are from the 2011 DHS for comparison purposes, but values for the 2016 DHS as reported in Table 2.4 are very similar.

Table 2.4: Child Marriage and Early Childbirth by Wealth Quintile, Ages 18-22 (%)

	Share of women with first marriage before age 18 by age group					Share of women with first child before age 18 by age group				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Bangladesh	74.4	67.1	60.7	57.1	43.6	50.6	41.0	36.1	27.5	19.9
Burkina	65.7	63.8	59.9	52.9	25.5	40	32.7	27.4	26.8	11.3
Chad	69.7	68.2	76.8	68.6	61.9	44.1	48.1	49.5	46.4	36.7
Cote d'Ivoire	55.8	39.2	31.4	31.1	15.4	50.6	45.3	28.8	22.9	14.5
Dem. Rep. Congo	51.6	40.1	44.8	34.2	16.5	34.1	26.6	30.3	24	16.7
Dominican Republic	59.1	51.7	31.6	23.5	11	35.6	32.2	16.5	13.8	6.0
Egypt	19.4	21.4	24.2	13.8	3.7	8.6	9.4	9.1	4.7	1.3
Ethiopia	**52.5**	**53.6**	**44.1**	**26.9**	**19.1**	**25.3**	**29.6**	**22.1**	**11.7**	**6.2**
Ghana	28.2	21.7	16.2	15.2	7.3	20.7	24.4	14.4	14.6	5.5
Guinea	73.4	70.6	59.7	46.7	22.8	50	59.9	47	38.5	21.4
India	63.4	54.6	43.8	30	13.5	31.1	26.7	18.9	12.1	3.6
Indonesia	34.4	21.1	16.1	11.4	3.6	15.6	7.7	5.9	3.9	1.6
Malawi	57	56.9	53.8	43.5	22.9	35.8	36.4	36.2	32.3	20.3
Mali	74.9	68.7	72.4	57.7	36.8	54.8	50.5	50.2	48.2	27.7
Mauritania	42.6	45.1	35.6	28.7	15.6	22.8	26.3	18.3	20	7.3
Mozambique	63.2	60.1	65.4	54.5	24.4	45.4	36.9	49.3	43	24.7
Nepal	53.6	49.1	47.9	32	14.5	25.1	24.2	20.9	14.3	5.2
Niger	85.2	85.8	86.3	85.1	49.2	54.5	54.5	52.8	48.1	30.9
Nigeria	80.5	63.4	36.3	25.3	10.4	54.1	40.1	26	15.6	7.4
Pakistan	35.74	27.63	17.03	11.43	7.31	12.8	10.6	7.4	3.3	2
Peru	37.8	29.6	13.3	9.7	4.8	30.6	24.7	12.2	6.8	4.7
Rep. of Congo	46.7	44.6	37.8	27.2	19.8	45.4	39.8	36.0	27.3	16.2
Senegal	56.9	44.2	32.8	21	13.3	33.1	25.6	20.2	11.2	3.5
Uganda	54.4	49.9	40.5	29.9	19.9	41.6	36.6	31.3	21.8	18.9
Zambia	48.4	42.3	34.5	21.9	8.8	42.1	42.7	34.2	25.9	13.5

Source: Male and Wodon (2017a).





Countries ranked by increasing prevalence of child marriage in Q1. For consistency with the global study on the economic costs of child marriage, estimates for Ethiopia are based on the 2011 DHS in the Figure. Estimates for 2016 provided in table 2.4 are very similar. Source: Male and Wodon (2017a). Data source: DHS.Note: Q5 = richest quintile, Q1 = poorest quintile.

38. **An important implication of patterns by wealth status is that a substantial share of the benefits of ending child marriage and early childbirths would accrue to the poor.** The costs associated with the impacts of child marriage and early childbirths on development outcomes are borne principally by the girls marrying early and their children, simply because child marriage and early childbirths are most prevalent among the poor. This also means that the benefits from ending child marriage and early childbirths would also accrue in large part to the poor. Ending child marriage and early childbirth are thereby pro-poor policies, including in Ethiopia

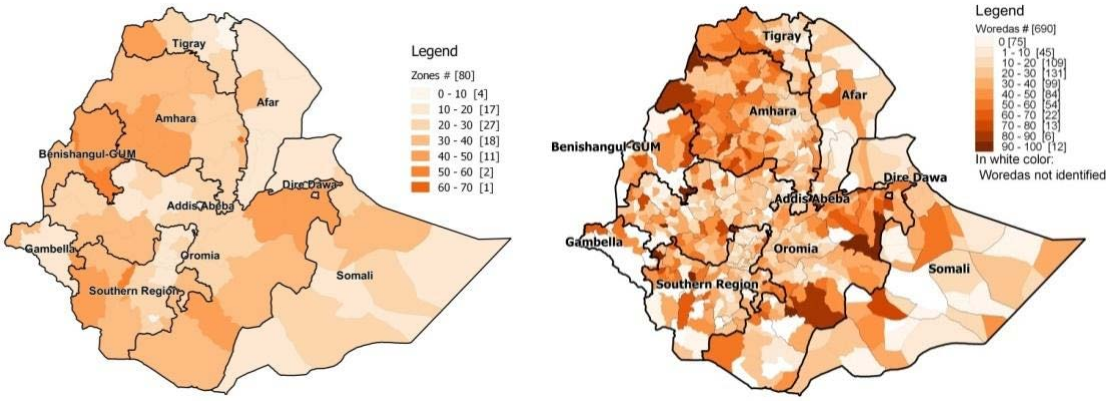
GEOGRAPHIC PROFILE OF CHILD MARRIAGE

39. **There are also differences in the prevalence of child marriage according to geographic areas which can be exploited when considering interventions to end child marriage.** These differences can be measured finely using census data. While measurement of child marriage and early childbirths at the national or regional level is best conducted with DHS surveys, the surveys cannot be used due to their limited sample size to assess the extent of child marriage according to precise geographic locations, especially at the level of municipalities. This type of measurement can however be conducted using census data or in some countries a large survey, acknowledging that measures of child marriage obtained with census data or large surveys tend to be lower than with DHS surveys because what is available in the census or a large survey is only the marital status of girls, not their first age at marriage. Still, differences in measures based on marital status at age 17 are likely to mirror differences in the prevalence of child marriage (as measured through the age at first marriage/union) by geographic areas. With census data, estimates can be obtained

for rather small areas since the whole population is included, so that survey sample sizes are not (or less of with a large survey) an issue. Maps of the prevalence of child marriage as measured through marital status at age 17 are provided at the level of states in Figure 2.6 using data from the 2007 census. This information can be useful to target programs or interventions to geographic areas with high prevalence.

Figure 2.6: Prevalence of Child Marriage in Ethiopia by Age 17 according to Census Data

(1) **Zones** **(2) Woredas**



Source: Male and Wodon (2017a).

CHAPTER 3
IMPACTS ON FERTILITY AND POPULATION GROWTH

Child marriage contributes to women both having children earlier and having more children over their lifetime than if they had married later. In turn, the effects of child marriage on fertility have implications for population growth, economic welfare, and state budgets, for example for education. This chapter documents the impact of child marriage and early childbirths on total fertility and population growth, as well as some of the economic costs associated with those effects. (For details on estimation methodologies and how results should be interpreted as order of magnitudes as opposed to precise estimates, please refer to Annex 1.)

"What is the use of having lots of children? When we have lots of children we can't raise them properly. But what if I had two or three children, I would be able to raise them properly. I would be able to fulfill all their needs and even I could send them to private school, even if they fail national exam. But now because we have too many children we couldn't send them to private college when they fail national exam. So, when they fail, they will go to the city to work as a maid. Having lots of children is a very bad thing. It affecting us now… Now I regret… I was very young so I didn't know this." (ICRW, 2017)

"There is proverb which explains the risks/disadvantages of early marriage. It says: 'Ijjoollummaatti yoo heeruman dhalti nama dararti/miiti' – which roughly translated means, 'For a girl, being married early and undergoing child bearing endangers her'. There are many risks: divorce, health problems, fistula, difficulty during pregnancy and child delivery, social problems with her relatives and families, and economic challenges" (Jones et al., 2016).

IMPACT OF CHILD MARRIAGE ON TOTAL FERTILITY

40. Child marriage contributes to higher total fertility as women marrying earlier tend to both have children earlier and more children over their lifetime than if they had married later. The factors leading to fertility are complex, as illustrated in Bongaart's model. The analysis of the impact of child marriage on total fertility, which is defined here as the number of live births that women are (statistically) expected to have over their lifetime, was implemented for this study by Onagoruwa and Wodon (2017a), it goes a bit further than work conducted in the field so far. The analysis not only estimates the marginal impact of child marriage on total fertility, but it also considers what total fertility would be if child marriage were to be eliminated. The analysis is based on detailed regressions as well as simulations based on the results from the regression analysis[6]. Because we consider the number of children that

[6] The term "total fertility" is defined as the number of live births that a woman has over her lifetime. This definition is needed for individual-level econometric work in order to measure the marginal impact of child marriage on fertility. By contrast traditional "total fertility rates" are population-level statistics. Our definition of "total fertility" is thus similar, but not exactly the same as "total fertility rates" traditionally measured. The econometric analysis is conducted for women ages 35-49 for

women have towards the end of their reproductive life, we account implicitly for desired fertility and substitution effects in the timing of birth when delaying marriage. Table 3.1 provides the main results for Ethiopia and other countries for comparison purposes. The first three columns show the marginal impact of marrying before 18 on the number of children that women have over their lifetime. While effects have been computed for marrying at ages 17, 16, 15, 14, or 13 and under, in comparison to marrying at age 18 or later, the impacts are shown only for girls marrying at age 13 and age 17 in order to reduce the size of the table. The estimates represent percentage increases in lifetime live births due to early marriage at a particular age after controlling for a wide range of other individual and household characteristics that affect fertility.

41. **In Ethiopia as in other countries, the impact at the margin of child marriage on total fertility tends to be large.** In table 3.1, the estimate for Ethiopia of 23.9 for marrying at age 13 means that on average, after controlling for other factors affecting fertility, marrying at age 13 increases the number of children that women are expected to have over their lifetime by 23.9 percent in comparison to marrying at age 18 or later. If a girl in Ethiopia marries at age 17, this increase on average lifetime total fertility by 12.9 percent in comparison to marrying at 18 or later. Typically and as expected, estimates suggest larger impacts for girls marrying earlier (this can be seen by comparing in table 3.1 the estimates for the impact of marrying at 13 versus 17). The next column indicates whether the effects being observed are statistically significant, and if so, at what level. All effects shown in the table are statistically significant and the observed marginal impacts are large for all countries, including in Ethiopia.

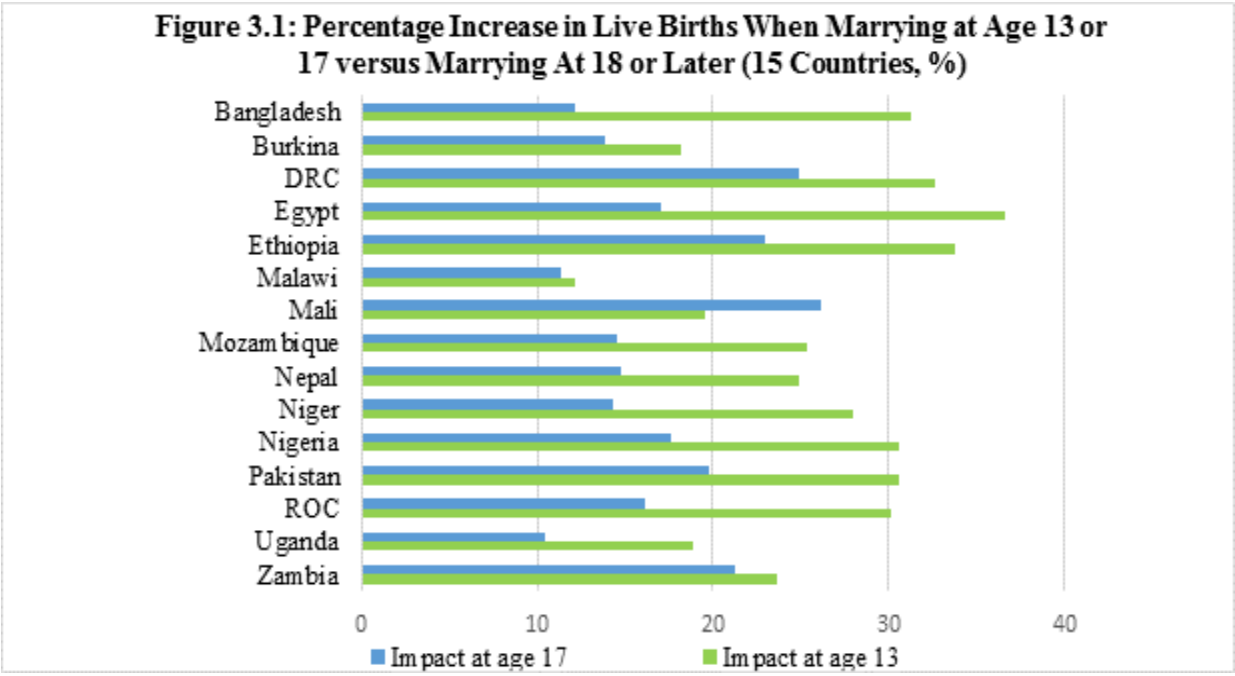
sample size considerations ((this may underestimate total fertility somewhat, as women may still have children after the age of 35). More details on the methodology are available in Onagoruwa and Wodon (2017a).

Table 3.1: Marginal and National Impacts of Child Marriage on Total Fertility

	Marginal impacts on total fertility when marrying early			National impacts on fertility rates for the country of ending child marriage			
	Impact of marrying at 13 (%)	Impact of marrying at 17 (%)	Stat. Sign. (p)	Predicted Total Fertility	Predicted w/o Child Marriage	Absolute Difference	Reduction in Total Fertility (%)
Bangladesh	31.3	12.2	<0.01	3.92	3.22	0.70	18%
Burkina	18.2	13.9	<0.01	6.34	5.79	0.55	9%
D.Rp. Congo	32.6	24.9	<0.01	6.14	5.51	0.63	10%
Egypt	36.6	17.1	<0.01	3.67	3.42	0.25	7%
Ethiopia	**23.9**	**12.9**	**<0.01**	**5.96**	**5.18**	**0.78**	**13%**
Malawi	12.2	11.3	<0.01	6.10	5.62	0.48	8%
Mali	19.5	26.1	<0.01	5.62	5.05	0.57	10%
Mozambique	25.3	14.5	<0.01	5.26	4.86	0.40	8%
Nepal	24.9	14.8	<0.01	4.00	3.55	0.45	11%
Niger	28.0	14.3	<0.01	7.40	6.30	1.10	15%
Nigeria	30.6	17.6	<0.01	5.98	5.26	0.72	12%
Pakistan	30.6	19.8	<0.01	5.29	4.76	0.53	10%
Rep. of Congo	30.1	16.1	<0.01	4.69	4.34	0.35	7%
Uganda	18.9	10.4	<0.01	6.87	6.31	0.56	8%
Zambia	23.6	21.3	<0.01	5.92	5.33	0.59	10%
Average	25.8	16.5	-	5.54	4.97	0.58	10%

Source: Onagoruwa and Wodon (2017a). Data source: DHS.

Figure 3.1: Percentage Increase in Live Births When Marrying at Age 13 or 17 versus Marrying At 18 or Later (15 Countries, %)



Source: Onagoruwa and Wodon (2017a). For consistency with the global study on the economic costs of child marriage, estimates for Ethiopia are based on the 2011 DHS. Estimates for Ethiopia for 2016 are provided in Table 3.1 and are a bit lower.

42. **If child marriage were eliminated in Ethiopia, this would reduce total fertility on average by 0.78 live births, the equivalent of a reduction of 13 percent versus current values.** Results from the regression analysis can be used to simulate the potential impact of ending child marriage on total fertility. The last four columns in table 3.1 provide results from simulations of total fertility at the national level that would result from ending child marriage. The predicted values for total fertility are the expected number of live births per woman under current conditions. The predicted values without (w/o) child marriage are the expected number of live births per woman if child marriage were to be eliminated. Note that both predictions are for all women on average, including those marrying before age 18 and those marrying later. The difference between the two columns captures the reduction in total fertility that would result from ending child marriage. These differences are large. In Ethiopia, total fertility under current conditions is estimated – on the basis of the regression analysis – at 5.96 live births per woman using the 2016 DHS. If child marriage were eliminated, this would be reduced to 5.18 live births per woman. The reduction of 0.78 live births is equivalent to a reduction in total fertility of about 13 percent from current conditions. In general, the reductions in total fertility from ending child marriage tend to be higher in countries with a higher prevalence of child marriage simply because when a higher share of women marry as children, the marginal impact of ending child marriage on total fertility affect more women. In terms of numbers of births, the impact for Ethiopia is larger than the average for the 15 countries included in the analysis. Clearly, eliminating child marriage would speed up Ethiopia's transition to lower fertility rates.

43. **Child marriage has a large impact on fertility in part because contraceptive use remains low, but in turn, modern contraceptive use may be affected by child marriage.** If contraceptive use were higher in countries with a high prevalence of child marriage, the impact of marrying early on fertility might be lower, as women would be able to manage their fertility better. In addition, child marriage itself may affect contraceptive use. To test whether this is the case in Ethiopia and a few other countries, regression analysis is used with the latest DHS data. Results are provided in table 3.2. The top rows provide estimates of the impact at the margin of child marriage on modern contraceptive use. For Ethiopia, two coefficients are statistically significant, indicating that marrying (very) early contributes to lower contraceptive use later in life, and there could be an additional indirect impact through education. Similar findings were obtained by John et al. (2017).

Table 3.2: Marginal Impact of Child Marriage on the Use of Modern Contraception

	Married at 12/less	Married at 13	Married at 14	Married at 15	Married at 16	Married at 17
Bangladesh	NS	NS	-0.03	NS	NS	NS
Burkina Faso	0.08	NS	0.03	NS	0.03	0.03
Dem. R. Congo	-0.04	NS	NS	NS	NS	NS
Dominican	NS	NS	NS	NS	NS	0.07
Egypt	NS	-0.07	NS	NS	NS	NS
Ethiopia	**-0.06**	**NS**	**-0.05**	**NS**	**NS**	**NS**
Malawi	-0.12	NS	-0.05	NS	NS	NS
Mali	NS	-0.04	NS	NS	NS	NS
Mozambique	-0.03	NS	NS	NS	NS	NS
Nepal	0.14	NS	0.05	0.06	0.04	0.05
Niger	-0.08	-0.03	-0.03	NS	NS	NS
Nigeria	-0.01	NS	NS	NS	NS	NS
Pakistan	NS	0.09	0.06	0.04	NS	NS
Rep. Congo	NS	NS	NS	NS	-0.06	NS
Uganda	NS	NS	NS	NS	NS	NS
Zambia	NS	NS	-0.07	NS	NS	NS

Source: Onagoruwa and Wodon (2017b). Data source: DHS.
Note: NS = Not statistically significant at the 10 percent level.

44. Inequitable gender norms contribute to higher fertility for women in Ethiopia and more so for child brides whose agency to assert their reproductive preferences is further diminished. Qualitative findings indicate that some women were coerced to become pregnant by their husbands. They related their inability to resist the demands of bearing children against their will to their young age and lack of financial independence. One woman recounts how she conceived against her wish: *"Once, I was using family planning and it was the pills, then he [her husband] burned all the pills. He commanded me to stop using those things and he told me that I couldn't go anywhere for four days and he told me he wanted to have more kids. He didn't go anywhere for those four days; he didn't even go out to buy khat. He was asking people to bring him everything he needed at home. What do I tell you…? I didn't know what to think and I was worried and depressed. I think it was at that time that I got pregnant with my third child who is 15 or 16 now. I became pregnant again."* (ICRW, 2017)

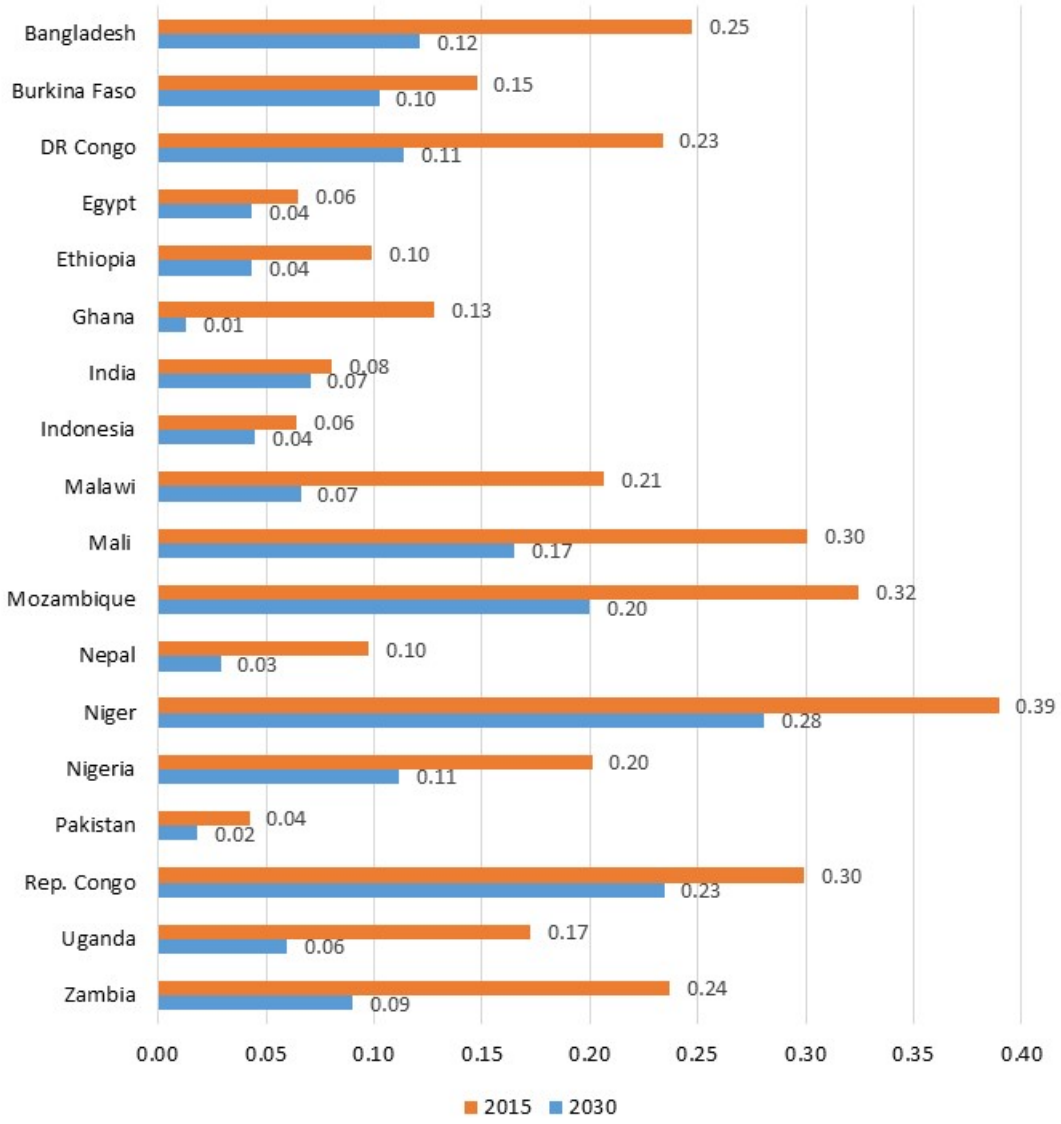
IMPACT OF CHILD MARRIAGE AND EARLY CHILDBIRTHS ON POPULATION GROWTH

45. Through its impact on total fertility, child marriage may contribute to higher population growth. In some contexts, high population growth may threaten long-term prosperity and exacerbate competition for access to scarce resources. High population growth may also weaken the ability of governments to provide basic services of quality to their population, among others in the areas of education, health, nutrition, and infrastructure. This section considers the extent to which child marriage as well as early childbirths contribute to high population growth in Ethiopia. The analysis is based on Wodon and Yedan (2017a). Comparisons with other countries are provided for additional perspective.

46. **Simulation tools can be used to assess the reduction in population growth that would result from ending child marriage and early childbirths. However,** many factors affect the relationship between child marriage, early childbirths, and population growth. As already mentioned, if a country has a high prevalence of child marriage and early childbirths, the impact of ending child marriage and early childbirths on total fertility and population growth is likely to be larger than otherwise. But this impact may change over time as it depends among other factors on the structure of the population and age-specific fertility rates that may also change over time for other reasons. Even if the attention is focused on child marriage and early childbirths, the prevalence of both is likely to decline in the future, and therefore so should the part of population growth that is due to child marriage and early childbirths. Given that the purpose for the analysis is to assess how ending child marriage and early childbirths could affect population growth over time, business-as-usual counterfactual scenarios must be specified carefully. The simulations are based on a parametrization of demographic projection tools (DemProj and FamPlan) using data from the most recent DHS surveys as well as other data (for details, see Wodon and Yedan, 2017a). It should be noted that the simulations assume no displacement over time in fertility which could take place due to desired fertility. Thereby the analysis may lead to slight overestimation of impacts on population growth.

47. **In Ethiopia, ending child marriage and early childbirths would reduce population growth by close to 0.1 percentage points under current conditions.** The simulation analysis is conducted for Ethiopia and 17 other countries for the purpose of international comparisons. Figure 3.2 provides the main results. In Ethiopia, if child marriage and early childbirths were ended starting in 2014 (this start date for the simulations is related to data availability), the rate of population growth could be reduced by 0.10 percentage points in 2015 and 0.04 percentage points in 2030. In a few other countries, the reduction would be larger in absolute terms, in part because the prevalence of child marriage as well as fertility rates are also higher. The reason for the reduction over time of the impact on population growth in virtually all countries lies in assumptions based on recent DHS data on trends in other variables. As conditions in the counterfactual scenario are expected to improve, including in terms of the prevalence of child marriage and early pregnancy, the impact of ending child marriage and early childbirths is smaller in 2030 than 2015. A distinction can also be made (not shown on the Figure) between ending all child marriages and early childbirths versus ending only child marriages, which would result in some early childbirths still taking place. The adjustment factor is based on the share of early childbirths due to child marriage as discussed above. Finally, note that over time, the annual reductions in population growth are cumulative. The reduction in the population of many countries by the year 2030 from ending child marriage and early childbirths is far from negligible. In Ethiopia, the population by 2030 could be 1.02 percent smaller if child marriage and early childbirths had been eliminated starting in 2015. This has implications in terms of its implications for both standards of living and the provision of public services.

Figure 3.2: Reducation in Population Growth rate from Ending Child Marriage and Early Childbirths



Source: Wodon and Yedan (2017a)

WELFARE BENEFITS FROM REDUCED POPULATION GROWTH

48. **The link between population growth and development is getting renewed attention among policy makers under the broader concept of the demographic dividend.** At the World Bank, the 2015-2016 Global Monitoring Report was devoted to the demographic dividend (World Bank, 2015), and so was a major report completed for the Africa region (Canning et al., 2015). In January 2017, the Africa Union organized a key meeting in Addis Ababa on harnessing the demographic dividend for the realization of Sustainable Development Goals. These are just a few examples of the recognition of the importance of demography for development as well as growth.

As a country in the earlier stages of the demographic transition, Ethiopia is well placed to take advantage of the demographic dividend, though first must reduce fertility – which eliminating child marriage can play a major role in.

Box 3.1: The Demographic Dividend

While different definitions of the demographic dividend have been proposed in the literature, the term is commonly associated with the improvements in standards of living and accelerated economic growth that can result when a developing country achieves a population structure that is favorable in terms of economic growth thanks to a reduction in birth (and death) rates that is followed after a short period by rapid fertility decline. As a result, the share of the population of working age individuals increases sharply for a period of time, which tends to generate faster economic growth. In addition, with lower dependency ratios, households are better able to support themselves and invest among others in education, nutrition, and health (or human capital broadly conceived). These investments in turn may lead younger generations to be better educated and more productive in adulthood. This demographic and human capital transition may help reduce poverty rates dramatically. Ending child marriage should help reduce population growth and improve education in countries where fertility rates remain high, thereby helping to usher in the demographic dividend.

49. **Cross-country analyses demonstrate a one-to-one relationship between population growth and growth in GDP per capita.** Growth in GDP per capita is mathematically the difference between GDP growth and population growth. This relationship holds not only as an accounting identity, but also when estimating the correlates of economic growth using cross-country panel data. For example, it has been demonstrated that demographic change has been an important factor contributing to the Asian miracle (Bloom and Williamson, 1998; Bloom and Finlay, 2008). By contrast, demography has contributed to Africa lagging behind (Bloom and Sachs, 1998; Bloom et al., 2007), although there are now opportunities for this to change (Canning et al., 2015).

50. **The relationship between economic and population growth can be used to assess benefits from a reduction in population growth from ending child marriage and early childbirths.** Regression analysis suggests that controlling for other variables including population growth, child marriage does not have a direct impact on growth in GDP per capita (Nayihouba and Wodon, 2017a). However, child marriage does affect growth in GDP per capita through its impact on population growth. Following Wodon (2017b), a simple way to measure the welfare benefits that could accrue from ending child marriage and early childbirths consists in comparing the level of GDP per capita that countries would achieve between now and 2030 with and without child marriage and early childbirths. The comparison is based on estimates of the impact of child marriage and early childbirth on population growth presented above[7]. Under simplifying assumptions, the measure of the welfare benefits

[7] Assume for simplicity that GDP does not change between 2015 and 2030 if child marriage and early childbirths are eliminated. Between 2015 and 2030 there is essentially no negative impact on

from ending child marriage and early childbirths is based on the transfer that would have to be provided to a population in order to reach the level of GDP per capita that could have been reached if child marriage and early childbirths had been eliminated. This transfer is the product of a country's population times GDP per capita times the impact of child marriage on population growth[8].

51. **In Ethiopia, the welfare benefits that would be reaped through lower population growth from ending child marriage reach $4.9 billion per year in 2030.** The benefits are valued at $117 million in 2015 and $4.9 billion in 2030. The significant increase in the benefits stems from the fact that the impact of child marriage and early childbirths on population growth is cumulative. That is, each year the gains become larger because the cumulative reduction in population growth keeps growing from one year to the next. In addition, as standards of living (GDP per capita) improve, the valuations also become larger. The combined effect is a 42-fold increase in the welfare benefits of ending child marriage between 2015 and 2030. These are annual welfare benefits that would continue to increase in the future.

52. **By 2030, the estimated value of these benefits through reduced population growth would amount to half of net development assistance.** Another way to illustrate the magnitude of these welfare benefits is to compare them with net Official Development Assistance (ODA) which consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies. The agencies included are the members of the Development Assistance Committee (DAC), multilateral institutions, and non-DAC countries. Net ODA includes loans with a grant element of at least 25 percent. Net ODA in Ethiopia has ranged in recent years from six to 12 percent of Gross National Income. This suggests that by 2030, eliminating child marriage and early childbirths would result in a benefit equivalent to up to one-fifth of the net ODA received by Ethiopia each year since GDP per capita would have increased by 1.02 percent with lower population growth.

---

the labor force from ending child marriage and early childbirths in 2015 simply because none of the children who would have been born in a business as usual scenario would have reached adulthood and would be working. After 2030, there would be a small negative impact on the labor force from ending child marriage and early childbirths and this impact would progressively increase over time, but it would remain fairly modest for many years. So the gains in GDP capita that would arise simply from reducing population growth can be measured without worrying too much in first approximation about changes in GDP. In fact, GDP may increase, for example through better education for girls and higher future lifetime earnings and possibly investments. Yet for simplicity these benefits are not included (they are discussed in chapter 6).

[8] Consider a country with 100 million people and GDP per capita of US$ 10,000 in purchasing power parity in a given year. The size of the economy is one trillion dollars. If ending child marriage and early childbirths leads to a reduction in the population for that year of three percent versus a counterfactual business as usual scenario, then GDP per capita would have been three percent higher if child marriage and early childbirths had been eliminated. The transfer needed to keep the population as well off is three percent of one trillion dollars ($ 30 billion).

EDUCATION BUDGET SAVINGS FROM REDUCED POPULATION GROWTH

53. **Another economic benefit from reduced population growth is the reduced pressure for state budgets to provide services to the population.** The reduction in population growth from ending child marriage and early childbirths is most significant for young cohorts, with major implications for state budgets in areas such as education and health. As an illustration, consider the results of simulations for education. In the first few years after the elimination of child marriage and early childbirths, there is no impact on the size of new cohorts entering school. However, soon thereafter there is a reduction of the size of the cohorts for primary school. This pattern is observed with a lag for secondary schools as well.

54. **By reducing the size of cohorts, ending child marriage and early childbirth would provide significant savings for the education budget of Ethiopia.** In order to estimate those savings, a number of assumptions are needed. First, trends in enrollment and completion rates by grade must be assumed over time. Second, assumptions are needed about the efficiency of the education system, for example in terms of repetition rates, since efficiency affects costs of delivery for given outcomes. Third, assumptions are needed about recurrent unit costs of delivery at various levels of schooling, and how these may change over time with economic growth and improvements in standards of living. Again, this is rather complex since unit costs depend on a large number of parameters, including teacher salaries and pupil-teacher ratios by level of schooling. Fourth, assumptions are needed about likely needs for capital investments, including for the construction of schools and classrooms to accommodate a growing student population. Fifth, other factors may also play a role, such as changes in the market share of public schools at various education levels in comparison to private schools. These many assumptions call for using simulation models.

55. **A costing model prepared for the 2015 Education for All (EFA) Global Monitoring Report can be used for measuring potential savings from smaller cohorts of students.** The model was commissioned by UNESCO in order to assess the cost of achieving universal school enrollment by 2030 at the preschool, primary, and secondary levels (Wils, 2015). The EFA costing model was developed to estimate total costs and external finance needs to reach full primary and secondary education in low- and lower-middle income countries. The model is parametrized for 82 countries. It projects pupils, literacy, costs, and public education budgets by level, up to the upper secondary level. The projection horizon is to 2030, in line with the Sustainable Development Goals. Projections of pupils are based on parameters for their progressions through grades and cycles over time in order to reach universal enrollment and completion by 2030. Repetition, promotion, and transition rates are assumed to converge towards user-set target levels[9].

[9] Cost estimations are provided by considering unit costs based on the level of teacher salaries and pupil-teacher ratios, with additional parameters for material costs as a share of recurrent costs and investment costs for classrooms. Convergence assumptions lead countries to gradually move towards an average class size and a level of teacher salaries corresponding to their level of economic development. Details are available in Wils (2015). Three reasons led to the choice of this model as counterfactual. The first is practicality: the UNESCO team has made available the

56. In Ethiopia, simulations suggest that by 2030 cost savings could reach annually $288 million in relation to the cost of achieving universal secondary education. Using the UNESCO model, in the baseline scenario public spending for education increases four-fold in real terms from 2012 to 2030 due to both population growth and the progressively higher enrollment assumed to be able to reach universal enrollment and completion by 2030. This could be an overestimation versus what is likely to happen, but it corresponds to the estimated cost of achieving universal education. Next, child marriage and early childbirths are assumed to be eliminated in 2012. In the first four years for the simulations, there is no budget savings from ending child marriage and early childbirths because newborn children are still too young to enroll in school. After that initial period, the savings as a share of the budget to reach universal education increase over the years. Two main factors play a role in this increase. First, with every additional year the reduction in the number of students to be enrolled due to ending child marriage and early childbirths becomes larger. Second, as children progress through the grades and cycles, the savings per child/student become larger since unit costs tend to be higher at higher levels of schooling. By 2030, the savings account for more than five percent of the budget needed to achieve universal education. For the whole period (2012 to 2030), the savings amount US $1.7 billion. By 2030, annual savings are estimated at $288 million.

57. It should be noted on the other hand that ending child marriage would entail a cost for households and the government if some of the girls who are able to delay marriage are also able to pursue their education further. If girls who do not marry early pursue their education further, this would entail costs for both families (out-of-pocket and opportunity costs) and the government (given that many girls would attend public secondary schools). These additional costs would offset some of the benefits from the reduction in the size of future cohorts of students thanks to lower population growth.

simulation tool used to estimate the cost of reaching universal education; using this tool simplifies greatly the simulations. The second is comparability: the same approach is used for estimating needs in all countries included in the UNESCO analysis, which brings some level of comparability in results between countries. The third is replicability: the availability of the UNESCO simulation tool make it easier for others to replicate the analysis or carry their own.

CHAPTER 4
IMPACTS ON HEALTH, NUTRITION, AND VIOLENCE

Child marriage and early childbirths can have dramatic health consequences for the girls who marry early. Child marriage may increase the risk of exposure to sexually transmitted infections, including HIV/AIDS. It may also be associated with lower psychological well-being. Deliveries at a young age lead to higher risks of complications such as obstructed or prolonged labor, as well as fistula, which may contribute to higher maternal morbidity and mortality rates. Early childbirths also have health complications for the children born of young mothers. The focus in this chapter is on three types of impacts: the impact of child marriage through early childbirth on the risk of maternal mortality; the impact of early childbirths on the risk of mortality and stunting for children born of young mothers; and the impact of child marriage on the risk of intimate partner violence, which can itself lead to health consequences for women and children. (For details on estimation methodologies and how results should be interpreted as order of magnitudes as opposed to precise estimates, please refer to Annex 1.)

"After finishing their high school, it is difficult for girls to find any job, let alone joining colleges/universities. They return to their parent's home and they become burden. They stay with their parents for some time and then they escape to towns and engaged in prostitution, since they do not have the chance of being married within their community. Abandoning child marriage in this community, thus, means forcing our female children to engage in prostitution and lead difficult life..., which further expose them to HIV/AIDS and other health risks" (Save the Children, 2011).

"I was depressed and cried all the time… How do you think it feels to be forced into a marriage and a life with someone you didn't choose or know?" (ICRW, 2017)

CHILD MARRIAGE, EARLY CHILDBIRTHS, AND HEALTH

58. Child marriage and early childbirths may be associated with higher health risks for girls having children early. Deliveries at a young age may lead to higher risks of complications such as obstructed or prolonged labor as well as fistula. This may contribute to higher maternal morbidity and mortality rates (Xu et al. 2003; Nove et al., 2014), although actual empirical tests of the impact of early childbirths on maternal mortality controlling for socio-economic and other characteristics are rare. Other potential health effects include risks of malnutrition, isolation, and depression for young brides (Nour 2009; Le Strat et al. 2011), and possibly higher rates of suicide (Khanna et al., 2013); Gage, 2013). In addition, young brides may not be able to negotiate sexual and reproductive behaviors within households. As a result, they have increased exposure leading to sexually transmitted infections (UNFPA 2013; Walker et al. 2013), and are less likely to use modern contraception, which in turn can lead to

higher rates of unintended pregnancies, abortion, and insufficient birth spacing (Kaye et al. 2004; Raj 2010; UNFPA 2013). Many of these issues are interrelated.

59. **Deliveries by young mothers also carry risks for their children.** Children born of young mothers tend to have higher risks of under-five malnutrition and mortality than children born of older mothers (e.g., Raj and Boehmer, 2013; Raj et al., 2014; Fall et al., 2015; Degarege et al., 2015). Part of the reason is that some young mothers may simply not yet be ready to give birth. When mothers are poorly nourished, this may put their children at higher risk of intrauterine growth restriction (Sawant and Venkat, 2013). These effects have implications for the children not only as they grow up, but also in adulthood. In the case of stunting for example, research suggests a loss in productivity of two percent or more for each percent loss in adult height (Caulfield et al. 2006, Strauss and Thomas 1998), with similar results observed for micronutrient deficiencies. Horton and Steckel (2013) estimate that undernutrition may lead to a loss of one tenth of Gross Domestic Product in sub-Saharan Africa and Asia due to lost productivity.

60. **By weakening conditions for early childhood development, child marriage and early childbirths may have additional negative impacts on young children.** Early childhood is critical for a child's development (Nelson, 2000; Shonkoff, et al., 2012). Poor conditions early in life affect brain development and capabilities, with lasting consequences in adulthood (Black et al., 2016). To the extent that child marriage affects domestic violence and mental health for young women, this may generate spillover effects for children. In harsh conditions, toxic stress responses on the part of children can have damaging effects on learning, behavior, and health later in life (Duvvury et al. 2013; UNICEF 2014). There is evidence that when children are exposed to domestic violence in utero, they tend on average to have worse health at birth and increased mortality rates (Aizer, 2011). Violence at home may also affect schooling (Anand et al. 2012) as well as increase the risk of future violence in adulthood (Kishor and Johnson 2004).

POTENTIAL IMPACT OF EARLY CHILDBIRTHS ON MATERNAL MORTALITY

61. **Estimating the impact of child marriage and early childbirths on maternal mortality ratios is difficult due to limitations in controlling for other factors.** There is evidence that girls giving birth at a very early age may be at higher risks of maternal mortality, and the qualitative work conducted in Ethiopia for this study points to such risks. A woman who married at 16 gave birth to her first child that same year. She explained: *"There was a problem when I gave birth to my second child. She was so big in the in the stomach and it was a difficult pregnancy at the time… They were planning to operate on me but the child was pushed out by force and my womb was ruptured in the delivery. It was a very difficult moment for me…"* At the same time, estimating the impact of child marriage on maternal mortality ratio is difficult. Datasets from Demographic and Health Surveys typically used to measure maternal mortality ratios do not provide data on the characteristics of mothers who died. This makes it difficult to isolate the impact of age at delivery versus confounding factors such as the socio-economic background of women giving births or their geographic location,

including proximity to health centers. For example, a higher rate of maternal mortality among young mothers could be due to the fact that many of the mothers giving birth at a young age tend to be poor and live proportionately more in areas located further away from health facilities. Therefore, simple comparisons of maternal mortality rates by age group may not indicate that early childbirths, and thereby indirectly child marriage, are themselves some of the causes of potentially higher rates of maternal mortality among young mothers.

62. **While across countries maternal mortality is higher among young mothers, this is not the case in all countries, and it may depend on the age considered.** In a recent study, Nove et al. (2014) estimate maternal mortality ratios for women aged 15–19 years in a large sample of countries. They compare these ratios to the ratios observed for women in other five-year age groups. Their results are displayed in table 4.1 for the core set of countries considered in this study. Estimates are adjusted to take into account under-reporting of maternal deaths, and deaths during pregnancy from non-maternal causes. Across 144 countries and territories, Nove et al. (2014) find a slightly increased risk of mortality in adolescents (260 per 100,000) as compared to women aged 20–24 years (190 per 100,000), but the confidence intervals for both estimates overlap significantly. There is also a lot of heterogeneity between countries. The authors conclude that excess mortality risks for adolescent mothers are smaller than often believed, but still present. For Ethiopia, their estimates indicate a higher risk of maternal mortality among girls aged 15-19 years than for those 20-24 years old. If very young mothers (i.e., under 15 years of age) were considered, differences in maternal mortality ratios would probably be even larger.

Table 4.1: Maternal Mortality Ratios by Age Bracket

	Surveys	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Bangladesh	2007–10	93	180	270	680	860	660	2,300
Burkina Faso	2003–10	330	430	330	460	570	760	2,500
D. R. Congo	2002–06	350	370	720	790	450	3,400	3,500
Egypt	2000–09	18	27	40	65	120	180	360
Ethiopia	**2003–10**	**760**	**610**	**610**	**1,200**	**2,300**	**2,400**	**4,500**
Malawi	2003–10	240	260	710	1,200	3,200	4,300	5,700
Mali	1999–06	720	580	910	720	1,000	2,100	8,000
Mozambique	2004–11	520	560	910	880	1,200	1,800	2,300
Nepal	1999–06	390	230	190	850	780	2,400	0
Niger	1996–06	600	650	830	770	1,200	2,900	7,300
Nigeria	2001–08	780	720	770	1,300	1,900	2,400	1,900
Pakistan	2003–06	220	190	200	200	520	690	400
Rep. Congo	1998–05	550	580	800	740	1,700	2,300	510
Uganda	2004–11	400	330	640	1,100	1,800	3,200	5,300
Zambia	2000–07	150	300	630	1,300	1,600	1,600	4,000

Source: Nove et al. (2014). Data source: DHS and other data.

63. **Considering desired fertility, ending child marriage and early childbirths may not necessarily reduce maternal mortality ratios substantially.** The estimates presented in table 4.1 for the 15 core comparator countries included in this study do not suggest systematically higher levels of maternal mortality among mothers ages 15-19 in comparison to mothers ages 20-24, even if the estimates are higher in Ethiopia. If data were available for younger age groups, a larger difference could be

observed between mothers younger than 18, or even 15, and mothers ages 18-22. Such data are however not readily available, and in some countries estimations could be complex due to small sample sizes. It is important to note also that basic statistical comparisons of maternal mortality ratios such as those in table 4.1 do not imply causality since they do not control for other factors that affect maternal mortality. Levels of maternal mortality could be higher among young mothers due to (on average) less access to health care and lower socio-economic status among girls giving birth earlier. In addition, if early childbirths were delayed, while this would have many benefits as documented in this study, it would not necessarily reduce maternal mortality ratios, because it could lead some women to have more children later at ages where maternal mortality ratios are higher. Overall, while avoiding pregnancy at a young age is desirable, it does not necessarily follow that ending early childbirths would result in a decrease in maternal mortality ratios at the national level. Further simulation analysis would be needed to establish a stronger link between ending early childbirths and reducing maternal mortality ratios.

IMPACT OF EARLY CHILDBIRTHS ON UNDER-FIVE MORTALITY AND STUNTING

64. **The analysis in this section focuses on the impact of early childbirths on under-five mortality and stunting.** It proceeds in two steps. The first step consists of estimating the marginal impacts of early childbirths on the risks of mortality and stunting, and the national rates of under-five mortality and stunting that would result from ending all early childbirths. This is done using the latest available Demographic and Health Survey. The second step consists of measuring economic benefits from improved survival and reduced stunting for young children.

Box 4.1: Stunting as the Preferred Indicator of Under-five Malnutrition

A child is underweight if s/he has a weight more than two standard deviations below the reference median weight for the child's age. A child is wasted if s/he has a weight to height ratio more than two standard deviations below the median weight for height for the reference population. A child is stunted if s/he has a height more than two standard deviations below the median reference height for that age. If a child on any of these measures is below three standard deviations of the norm, s/he is severely underweight, wasted, or stunted. Among the three measures, stunting and wasting tend to be used the most. Stunting often results from persistent insufficient nutrient intake and infections. It may lead to delayed motor development and poor cognitive skills that can affect school performance as well as productivity and earnings later in life. Wasting tends to result more from acute food shortage or disease and may lead to death. For this study, stunting is the appropriate measure, given its impact on earnings potential in adulthood.

65. **At the margin, the impact of early childbirths on both under-five mortality is large, but the impact on stunting is not statistically significant in Ethiopia.** The analysis was carried by Onagoruwa and Wodon (2017c, 2017d). Controlling for a wide range of other factors, when a child is born of a mother younger than 18, the risk of under-five mortality increases by 3.6 percentage points in Ethiopia. The risk of under-five stunting increases by 13.0 percentage points and this effect is also statistically

significant. The impacts at the national level are smaller because relatively few children are born of mothers younger than 18 at the time of their birth (most children are born of older mothers). Nationally, the reduction in stunting that would result from ending all early childbirths is estimated at 0.43 percentage points. For under-five mortality, the reduction is estimated at -0.15 percentage points. Said differently, given prevailing rates of under-five mortality, for every 100 children who die before the age of five in Ethiopia, three can be said to die directly because of an early childbirth. For stunting, one in 100 children can be said to be stunted directly because of early childbearing. It is important to note that the reductions in the rates of under-five mortality and malnutrition are not driven by fewer births due to the elimination of early childbirths. They are due to higher health risks when children are born of young mothers.

Table 4.2: Increase in Under-five Mortality and Malnutrition Due to Early Childbirth

	Marginal impact (%)	Statistical significance (p)	National impact (%)	National reduction vs. baseline
	Under-five mortality			
Bangladesh	0.1	NS	-	-
Burkina	6.0	<0.01	0.30	3.4%
D. Rep. Congo	3.9	<0.01	0.24	3.4%
Egypt	0.9	NS	-	-
Ethiopia	**3.6**	**<0.05**	**0.15**	**2.8%**
Malawi	1.4	NS	-	-
Mali	6.9	<0.01	0.61	8.7%
Mozambique	4.8	<0.01	0.48	6.9%
Nepal	2.0	NS	-	-
Niger	3.0	<0.05	0.22	2.7%
Nigeria	4.8	<0.01	0.34	4.0%
Pakistan	4.6	NS	-	-
Rep. of Congo	1.6	NS	-	-
Uganda	4.7	<0.05	0.27	4.1%
Zambia	3.4	<0.01	0.27	5.0%
	Under-five stunting			
Bangladesh	5.2	<0.05	0.75	1.8%
Burkina	1.6	NS	-	-
D. Rep. Congo	7.2	<0.05	0.32	0.7%
Egypt	7.5	<0.05	0.17	0.8%
Ethiopia	**13.0**	**<0.05**	**0.43**	**1.3%**
Malawi	-4.4	NS	-	-
Mali	10.3	<0.01	0.74	1.9%
Mozambique	7.8	<0.01	0.57	1.3%
Nepal	9.5	<0.10	0.64	1.6%
Niger	6.9	<0.10	0.45	1.0%
Nigeria	4.3	<0.05	0.44	1.2%
Pakistan	-1.0	NS	-	-
Rep. of Congo	6.8	NS	-	-
Uganda	22.0	<0.01	1.03	3.1%
Zambia	4.7	<0.10	0.25	0.6%

Source: Onagoruwa and Wodon (2017c, 2017d).
Note: NS = Not statistically significant at the 10 percent level.

66. **The second step in the analysis consists of valuing lives lost due to under-five mortality as well as earnings losses associated with stunting.** For the children and their families, the cost of lives lost are not primarily economic, and the same is true for stunting. At the same time, when considering the economic rationale for ending child marriage, providing an economic valuation of the impact of child marriage on under-five mortality and stunting through early childbirths is useful. There is no unique way to conduct the analysis, but the assumptions are as follows:

    - *Cost of lives lost:* One of several approaches used in the literature consists in valuing a child's life in terms of GDP per capita, acknowledging that this implicitly values a life in a poorer country at a much lower value than in a richer country. For example, in a study on nutrition (Shekhar et al., 2016) value lives at the discounted stream of future GDP per capita in adult life. This approach is followed here, but

with some modifications.

- *Cost of stunting:* Research suggests that stunted children are likely to have lower earnings in adulthood. In a study for Guatemala, per capita consumption in adulthood were reduced by 21 percent if they were stunted (Hoddinott, 2013). Estimates of losses in wages in other studies have been of a similar order of magnitude. Therefore the benefits from avoiding stunting are based on expected future GDP per capita multiplied by the approximate share of wages in GDP and the share of wages lost due to stunting. This approach was used by Shekhar et al. (2016) and is used here with a few modifications in order to better account for individual countries' likely growth path (see Wodon, 2017c).
- *Discount rates:* Discount rates are used to value future incomes. The choice of discount rate affects the valuations, and it is good practice to conduct estimations for multiple discount rates. Using a discount rate of five percent is common practice, so this is the rate used for results shown here, but both lower and higher discount rates have been used in the background work.

67. **In Ethiopia, the benefits from ending child marriage and early childbirths through reductions in under-five mortality and stunting are substantial.** As shown in table 4.3, with a discount rate of five percent, the economic benefits from reduced deaths among children are estimated at $0.9 billion in 2015 and $2.5 billion in 2030 in purchasing power parity terms. The benefits from reduced stunting are estimated at $0.2 billion in 2015 and $0.5 billion in 2030 in purchasing power parity terms. The increase over time is due to higher valuations for each life saved due to rising GDP per capita resulting from economic growth. The reasons for lower benefits associated with the reduction in stunting in comparison to the reduction in mortality in virtually all countries are simple. While the number of children avoiding stunting is higher than the number of children surviving past age five, two parameters reduce the valuation of the benefits from avoiding stunting. These are the share of wages in GDP and the loss in per capita consumption due to stunting, with the same parameters used for various countries. As a result the valuation for each child of the benefits from avoiding stunting is only at about one tenth of the valuation of a life saved. Note as mentioned above that all estimates are sensitive to the choice of the discount rate. A higher discount rate would reduce the benefits, while a lower discount rate would increase them.

Table 4.3: Benefits from the Reduction in Under-five Malnutrition and Stunting

	2016	2030
Benefits from the reduction in under-five mortality	$0.9 billion (PPP)	$2.5 billion (PPP)
Benefits from the reduction in under-five stunting	$0.2 billion (PPP)	$0.5 billion (PPP)

Source: Wodon (2017c).
Note: PPP = Purchasing Power Parity. Discount rate at 5 percent.

IMPACT OF CHILD MARRIAGE ON INTIMATE PARTNER VIOLENCE

68. **Child marriage may be associated with higher risks of intimate partner violence (IPV).** Multiple studies have suggested that child marriage may increase risks of IPV (Clark et al. 2006; Carbone-Lopez, 2006; Solotaroff and Pande, 2014; Le et al., 2014). In turn, the health implications of these impacts can be serious (Campbell 2002; Lamb

and Peterson 2012; World Health Organization 2014), as can be their cost implications for women and households (Duvvury et al. 2004; Centers for Disease Control and Prevention 2003; Snow-Jones 2006; Morrison and Orlando 2004; Bott et al. 2005). In a recent paper, Kidman (2016) finds that after adjusting for socio-demographic characteristics, child marriage remains associated with higher risks of IPV in many but not all countries. The type of violence affected was also not the same between countries. What emerges from the qualitative work conducted for this study in Ethiopia is that the most common form of intimate partner violence appears to be marital rape, especially during the early years of marriage: *"It used to be so painful for me when we had intercourse. But I couldn't tell that to anyone. And when I refused he used to beat me, splash water on me, put a rock on me and he waited till I get tired and took me afterwards… I wished I was dead"* (ICRW, 2017)

69. Analysis suggests that in Ethiopia, marrying very early has an impact on IPV. In order to assess the potential reduction in IPV that could be achieved by ending child marriage, Savadogo and Wodon (2017b) use DHS data for eight sub-Saharan countries. For Ethiopia and Niger, given that the module on violence was not included in the latest DHS, the analysis is based on the EICM surveys implemented for this project (Steinhaus et al., 2017; John et al., 2017; see annex 2 on the survey). The intensity of IPV is captured through an index taking values between zero (no violence at all) and 100 (worst cases of violence). While an alternative approach could have been used to consider different types of IPV separately, the results for the purpose of this report are not very different when doing so. The benefit of an overall index is that it provides a single summary measure of IPV as well as the impact of child marriage on that measure. For more detailed work on IPV, it is however recommended to also consider different types of IPV separately. Note also that we are measuring reported lifetime IPV, not actual IPV. DHS surveys are presumed to underreport IPV. On the other hand, since we measure lifetime IPV, a (probably small) part of the impact of child marriage may be related to the fact that child brides may have been married for longer. Table 4.4 provides estimates of the impact at the margin of child marriage on the IPV index after controlling for other variables also likely to affect IPV. The analysis is conducted for all married women in the sample, as well as for married women ages 18-24. In some countries, when marrying at 15 or earlier, the impacts are statistically significant. This is less the case when marrying later. In many countries the magnitude of the effects is however not necessarily large given that the index takes on values between zero and 100. In Ethiopia, there is an effect in the whole sample when marrying very early.

Table 4.4: Impact of Child Marriage on Intimate Partner Violence, Women Ages

	Married women ages 15-49			Married women ages 18-24		
	Married at 15 or less	Married at 16	Married at 17	Married at 15 or less	Married at 16	Married at 17
Burkina Faso	0.77	NS	NS	1.78	NS	NS
Dem. Rep. of Congo	NS	NS	NS	-	-	-
Ethiopia	**2.39**	**NS**	**NS**	**NS**	**NS**	**NS**
Malawi	1.42	NS	NS	NS	NS	NS
Mali	1.04	NS	NS	NS	NS	NS
Mozambique	NS	NS	NS	2.14	0.70	NS
Niger	NS	NS	NS	NS	NS	NS
Nigeria	0.73	0.73	1.23	NS	0.89	NS
Uganda	6.34	5.87	NS	12.13	10.16	NS
Zambia	1.14	NS	NS	3.89	NS	NS
Pooled data set	0.56	NS	NS	1.70	1.54	1.25

Source: Savadogo and Wodon (2017b); see Steinhaus et al. (2017) for Niger and John et al. (2017) for Ethiopia. Estimates for the Democratic Republic of Congo not provided for married women ages 18 to 24 due to small sample size to run the regression analysis for that bracket.
Note: NS = Not statistically significant at the 10 percent level.

70. **At the national level, while ending child marriage would help reduce IPV, the magnitude of the impacts depends on the country being considered.** The next step in the analysis consists of estimating the difference in the IPV index that would result at the national level from ending child marriage. The results are provided in table 4.5. In some countries, such as Nigeria and Uganda (which are the two outliers), the effect of ending child marriage on the base line value of the IPV index is sizable (note that baseline values are at the lower range of the interval because few women are subjected to extreme forms of violence when the index takes values close to 100). In the other countries as well as in the pooled sample, the effects tend to be smaller. This suggests that while in some countries ending child marriage could make a major difference in reducing IPV, this is not necessarily the case in all. Note that in three countries, the simulated effects at the national level are zero because the coefficients for the child marriage variables in the regressions for factors affecting IPV are not statistically significant. Estimates for Ethiopia suggest a significant impact when considering the whole sample. There may also be indirect effects through the impact of child marriage on girls' educational attainment and the reduction in IPV often observed for women with a higher level of education.

Table 4.5: Simulated Changes in National IPV Indices from Ending Child Marriage

	Absolute change from base		Percentage change from base (%)	
	All women ages 15-49	Women ages 18-24	All women ages 15-49	Women ages 18-24
Burkina Faso	-0.18	-0.20	-7.33	-10.26
Democratic Republic of Congo	0.00	0.00	0.00	0.00
Ethiopia	**-0.92**	**0.00**	**-10.37**	**0.00**
Malawi	-0.35	-0.37	-4.78	-5.58
Mali	-0.37	-0.46	-5.49	-6.89
Mozambique	0.00	0.00	0.00	0.00
Niger	0.00	0.00	0.00	0.00
Nigeria	-0.46	-0.56	-12.57	-18.70
Uganda	-2.63	-2.47	-18.04	-20.84
Zambia	-0.23	-0.22	-2.81	-3.29
Pooled	-0.17	-0.18	-5.83	-3.36

Source: Savadogo and Wodon (2017b); see John et al. (2017) for Ethiopia and Niger.

CHAPTER 5
IMPACTS ON EDUCATION, LABOR, AND EARNINGS

Child marriage and early childbirths may also have substantial impacts on the ability of adolescent girls to go to school. In some countries, there is evidence of almost a binary choice of either going to school or getting married early. This chapter uses two different approaches for assessing the impact of child marriage on schooling and educational attainment for girls. In addition, the impact of child marriage on earnings and productivity in adulthood is also estimated on the basis of wage regressions. Issues related to household consumption and food security are also discussed. (For details on estimation methodologies and how results should be interpreted as order of magnitudes as opposed to precise estimates, please refer to Annex 1.)

"Early marriage is not good for girls, since it causes them to stop their education… For them, it is good to be educated, and if you are educated you will have a good job and salary. … Families should give their children some spare time, so that they have some time to study. Moreover, it would be good if parents could advise their children instead of punishing them" (Boyden et al., 2013).

"I have seen people who are educated but have no job and some with education and jobs, but it is good to have education even if you don't have a job. If I went to school, I believe that I would have a better life and I would not have been married at that age, probably not even now. And I would not have to work as a servant if I had an education so that is why I think that way" (ICRW, 2017).

CHILD MARRIAGE, EARLY CHILDBIRTHS, AND EDUCATION FOR GIRLS

71. **Child marriage reduces education prospects for girls, and conversely better education and employment opportunities for girls may reduce the likelihood of marrying early.** This is why Brown (2012) suggests looking at 'tipping-point' policies in education for ending child marriage, including programs to reduce the cost for girls to transition to secondary school. At the same time, relatively few studies have attempted to carefully measure the impact of child marriage on education. The main difficulty is that the decision by a girl (or her parents) to marry early and possibly drop out of school are often jointly determined. Child marriage may, for example, depend on a girl's education prospects, whatever the mechanisms affecting those prospects are[10]. Put simply, the fact that for many girls, the options in some countries are to

[10] Education prospects are influenced by traditional gender roles and expectations, particularly in countries without mandatory education requirements. They may also be affected by a girl's academic skills and interests. For example, girls who may be weaker academically could face smaller negative effects (for example in terms of future earnings) from not pursuing their education and thereby may have lower incentives to continue to study as compared to girls who are academically stronger. These girls may be more willing to marry early or their parents may be more inclined to have them marry early. Girls less interested in pursuing their education for other reasons may also marry earlier and might have dropped out of school in the absence of marriage.

continue formal schooling or to marry, but not both, implies that causality between marriage and schooling goes both ways. There is also a risk (as with any estimation) of omitted variable bias. For example, poor education quality may lead to both dropout and child marriage. A lack of appropriate sanitation facilities for menstruating girls at school may impede their continuing education. As one woman in interviews conducted for this study explained*: "There were no desks in the class at that time. We were learning under a eucalyptus tree; sitting on the stones and the area was dirty; the school was not well organized there were not enough teachers at the school… and they [her family] were discouraging me telling me not waste my time with such a school. I dropped out the class then I got into the life of marriage…."* (ICRW, 2017) Cultural practices may also play a role and not be observed in surveys. Secondary schools are often less accessible geographically to girls. Transportation to and from school may cost money that the girls or their families don't have. It may also take them out of the perceived safety of their communities, as they transit through unfamiliar villages and towns, something parents may not approve of (Nanda et al., 2015). If such factors lead to both child marriage and lower educational attainment and are not controlled for (because data are not available in surveys), there is a risk of omitted variable bias. The impact of child marriage on attainment could be overestimated without proper controls, but what can be done depends on the data available in surveys[11].

72. A first approach to assessing the impact of child marriage and early childbirths on educational attainment consists in looking at responses to questions on why girls dropped out of school. Two approaches have been used in the literature to try to assess the impact of child marriage on education. The first approach consists of relying on the reasons mentioned by parents in surveys for why their children have dropped out of school. The share of drop-outs that appear to be due to child marriage or early pregnancies can then be computed. Using data from the late 1990s for Burkina Faso, Cameroon, Côte d'Ivoire, Guinea, and Togo, Lloyd and Mensch (2008) find that for girls aged 15 to 24, child marriage and early pregnancies directly account for between 5 percent and 33 percent of drop-outs, depending on the country. Using similar data for Nigeria for 2006, Nguyen and Wodon (2017b) find that child marriage (and to a lower extent pregnancies) account for 15 percent to 20 percent of drop-outs at the secondary level, which is broadly of the same order of magnitude. In addition, they show that if child marriage and early pregnancies could be eliminated, this could potentially reduce the gender gap in education by about half.

73. A second approach relies on regression techniques with instrumental variables to measure the impact at the margin of child marriage on girls' education. The objective of using instrumental variables is to find variables that affect the decision to

[11] In much of South Asia and parts of Africa, social norms around age at marriage and expected gender role of a girl as wife/mother are likely to have a more significant role in determining the decision (most often by the parents, not the girl) to marry than her educational prospects. But this does not mean that in the absence of child marriage, educational attainment would automatically increase – or as importantly, that higher educational attainment would have among others a large effect on future earnings, because the same social norms that led to child marriage may also constrain employment opportunities later in life, even in the absence of child marriage.

marry, but not education outcomes conditionally on the decision to marry in order to control for bi-directional causality (endogeneity)[12]. Field and Ambrus (2009) used variation in the timing of menarche (puberty) as the instrumental variable for the age at first marriage, given that in many cultural and religious traditions, including in Bangladesh, girls often are not allowed to marry before reaching puberty. They found that each additional year of delay in the age of marriage increases schooling by 0.22 year and the likelihood by literacy of 5.6 percentage points. Nguyen and Wodon (2017a) use the contemporaneous and past prevalence of child marriage in the area where a girl lives as instruments, and also find that in Africa each year of early marriage reduces the probability of literacy by 5.6 percentage points, and the probability of secondary school completion by 6.5 points, with the impact on the probability of having at least some secondary education being slightly larger.

39. **Ideally, both approaches should be used for triangulation and robustness tests, but it is also important to recognize that effects may vary within a country.** For Uganda, Wodon et al. (2016) use both approaches and find that child marriage has a large impact on secondary educational attainment with both the statistical approach based on the perceptions of both parents (as well as principals), and the econometric approach on the correlates of attainment. At the same time, it must be recognized that national estimates may mask heterogeneity at the local level. This emerges from an analysis for three rural and majority Muslim villages in Burkina Faso by Gemignani and Wodon (2017). In one village the inability to afford school is the main issue for households not sending girls to secondary school. But in the other two villages, apart from the affordability issues, the interactions between gender roles, faith, and culture play a fundamental role in limiting girls' education opportunities. There is a widespread perception in those two villages that adolescent girls should simply not go to public secondary schools. This heterogeneity also suggests that the desire to marry girls may lead to drop-outs in these two villages, while drop-out for economic reasons may in some cases lead to marriage at a young age in the first village.

IMPACT OF CHILD MARRIAGE AND EARLY CHILDBIRTHS ON GIRLS' EDUCATION

74. In Ethiopia, survey data on parental perceptions about the reasons for dropping out suggest that child marriage plays a role for girls. Using data from the 2015 Ethiopia LSMS, table 5.1 provides data on the share of children aged 12–17 who dropped out of school for various reasons. While lack of interest and economic reasons (including opportunity costs) are one of the main factor leading girls to drop out, other issues matter as well. The issue of marital obligations is cited as the main reason to drop out for 12 percent of girls. This may be an underestimation given that domestic obligation and lack of interest to study further, whether on the child or parents' side, may mask a desire to marry, or have a daughter get married. Note that early pregnancies are not included as a modality for responses, which tends to underestimate the role of child marriage and early childbirths.

---

[12] Some authors rely on matching techniques to estimate the impact of child marriage on educational attainment (e.g., Sakellariou and Zheng 2014), but those techniques do not correct for endogeneity and may be overestimating impacts. They also tend to treat all girls marrying early similarly independently of the actual age at marriage.

Table 5.1: Reasons for Not Being in School, Ages 12-17 (%)

	Girls	Boys
Had enough schooling	4.05	2.31
Awaiting admission	0.76	0.97
No school / lack of time	0.07	0.07
No time / no interest	27.88	37.34
Lack of money	10.68	19.22
Marital obligation	11.81	2.74
Sickness	8.25	5.96
Disability	0.00	0.62
Separation of parents	1.28	3.79
Death of parents	2.65	2.64
Too old to attend	0.04	0.3
Domestic obligation	21.04	12.46
Other Specify	11.50	11.59
All	100.00	100.00

Source: Wodon et al. (2017b).

75. Qualitative data confirm that multiple factors lead girls to drop out or never enroll. Cost, whether out-of-pocket or through the need to help at home (opportunity costs) remain serious obstacles to schooling. In addition, marriage and pregnancies are also at play, as the data in tables 5.1 and the following quote illustrates: *"There are at least two reasons for stopping education. The first one is when they score small mark in the school. Here they think as they can't be success through education. Therefore they lose moral to learn. The second one is wish to get marriage. As their age is enough for marriage they start thinking about boyfriends and stop thinking about education"* (Jones et al., 2016). In some cases partners are supportive of girls continuing with school after marriage, but they often find it extremely difficult to cope with the demands of their marriage and school work, and hence often drop out. For others, though, going back to school was not an option*: "I told him [husband] I wanted to go school after I got married but he refused and he didn't allow me… he told me that in the rural area it's not allowed for a woman to go for school after she gets married and taking care of a home and going to school at the same time is difficult"* (ICRW, 2017).

76. A typology of adolescent girls according to their marriage and schooling status may be useful to assess the size of various potential target groups for interventions. The typology was suggested by Perlman et al. (2017) for Niger. It outlines the type of programs that could be helpful for adolescent girls in Ethiopia to continue to learn, whether in school or out of school (see annex 4). The typology considers four target groups, with the age groups defined depending on the data available in surveys. In Ethiopia, as shown in table 5.2, the age groups are: (1) Girls ages 15-16 still in school and not married; (2) Girls ages 15-16 out of school but not yet married; (3) Girls ages 17-19 still in school and not married; and (4) Married girls out of school. These four target groups are not exhaustive of the population of girls ages 15-19, but they stem from the fact that in many countries few girls not in school and older than 16 are not married, and even fewer girls of any age who have married are in school; therefore those two groups are omitted from the typology (but in practice could benefit from some of the programs targeted to the other groups). Table 5.2

provides an assessment of the size of each of the four main groups nationally in Ethiopia. The statistics are in percentage terms as a share of all girls ages 15-19. The results suggest that in Ethiopia, after a certain age, quite a few girls may both be not in school and not married. But clearly, once a girl is married, it is often difficult for her to remain in school, whatever her age. This type of typology could be adapted further for Ethiopia, but the basic point is that the needs of various target groups are different, and using typologies of this type can be helpful for thinking about interventions.

Table 5.2: Population Shares of Four Target Groups among Girls Ages 15-19 (%)

	Ethiopia
Target groups	
In school, not married, ages 15-16	29.1
In school, not married, ages 17-19	24.6
Out of school, not married, ages 15-16	10.5
Married, not in school, any age	20.4
Other groups	
Out of school, not married 17-19 years	13.2
Married and in school, any age	2.3
Total	100.00

Source: Male and Wodon (2017a).

77. **Econometric analysis using instrumental variables also suggests that child marriage has a negative effect on schooling and educational attainment.** With the 2011 DHS the impact of child marriage on secondary education enrollment is large and statistically significant, but the impact for secondary school completion is not statistically significant in Ethiopia. With the 2016 DHS the impact on secondary school completion is however statistically significant. Summary estimates are provided in table 5.3 for the 2011 DHS as an illustration. Clearly, the younger a girl marries, the larger the negative effects on the probability of secondary schooling. The estimates for Ethiopia are on the low side especially for the impact of child marriage on secondary school enrollment and completion in comparison to other countries. Given the data provided above on the reasons for dropping out of school for adolescent girls, it nevertheless does seem likely that there is a negative effect of child marriage on completion even though statistically the effects in table 5.3 are not significant. In simulation for wage earnings, estimates for the Africa region in table 5.3 are used.

Table 5.3: Impact of Child Marriage on Girls' Educational Attainment

	Ethiopia Estimates (2011)		**Sub-Saharan Africa Estimates**	
	Secondary Enrollment	Secondary Completion	Secondary Enrollment	Secondary Completion
Married at 17	-0.035	NS	-0.046	-0.046
Married at 16	-0.069	NS	-0.087	-0.078
Married at 15	-0.103	NS	-0.125	-0.099
Married at 14	-0.135	NS	-0.158	-0.112
Married at 13	-0.166	NS	-0.186	-0.119
Married at 12 or earlier	-0.196	NS	-0.211	-0.123

Source: Nguyen and Wodon (2017a, b).
Note: NS = Not statistically significant at the 10 percent level.

78. **The fact that child marriage curtails a girl's education can have a number of consequences, including for her children.** One such consequence is related to lifetime earnings. But beyond the importance of schooling to acquire knowledge and improve lifetime earnings, it is also essential to develop social skills and networks, with girls marrying early potentially missing on those opportunities (UNICEF 2014). A better education for mothers is also essential for their children, with clear impacts on early childhood development (Denboba et al., 2014). As mentioned in chapter 4, child marriage affects under-five malnutrition and mortality by contributing to early childbirths. A mother's educational attainment also has large impacts on child health (Smith and Haddad 2014). There are also intergenerational effects at work, with girls of mothers who married early possibly being less likely to complete secondary education themselves.

79. **Importantly, estimates also suggest that increasing girls' education is probably one of the best ways to avoid child marriage.** A recent review of the literature by Kalamar et al. (2016) suggests that interventions to promote education, including cash transfers, school vouchers, free school uniforms, reductions in school fees, teacher training, and life skills curricula, are among the most likely to help. In some cases the evidence is mixed, but in many cases such interventions are found to reduce child marriage, or at least increase the age at first marriage. This is also underscored under the tipping point approach suggested by Brown (2012). Estimates of the impact of education on child marriage using the same instrumental variables methodology as that used to measure the impact of child marriage on education suggest in most countries that keeping girls in school may indeed have a large beneficial effect. In Ethiopia, each year of secondary education leads to a reduction in the likelihood of marrying as a child of five percent (Wodon and Yedan, 2017c).

IMPACT OF CHILD MARRIAGE ON LABOR FORCE PARTICIPATION

80. **The relationship between child marriage and labor force participation is complex.** Child marriage leads to lower educational attainment and higher fertility. These are often cited factors affecting women's labor force participation and the nature of their employment. Yet while in some countries a higher education is associated with a higher likelihood of working (in part due to higher opportunity costs of not working), in other countries this is not the case. Specifically, in middle income countries, secondary and post-secondary education is often associated with higher participation in the labor force (Cameron et al. 2001; Mammen and Paxson 2000). But in low income countries where labor markets tend to be informal and many women must work simply for the household to survive, impacts may be less salient. In comparison to broader gender roles that affect labor force participation, child marriage itself may not have a large direct impact on whether women work or not and the type of job held, even if there may be indirect effects at work.

81. **Indirect effects of child marriage on labor force participation may work through several channels, but they may not necessarily be large.** Women who marry early may have lower agency, limiting their bargaining power in the households, including and possibly with regards to the decision to enter labor force. Through its impact on educational attainment, child marriage may affect labor force participation by reducing the opportunity cost of not working. In addition, through higher fertility and thereby a

higher domestic workload, child marriage may affect the number of hours worked by women, although not necessarily whether they work or not and the type of job held. Note that in some cases, the direct and indirect (through fertility and educational attainment) effects of marriage may work in opposite directions, thereby compensating each other. Overall, the impact of child marriage on labor force participation may be positive or negative, and small or large depending on the country or community. Assessing the direction and magnitude of the impact must be done empirically.

82. **Regression analysis with Demographic and Health Surveys suggests in many cases that controlling for other factors, child marriage may not affect labor force participation much.** Table 5.4 provides estimates of the marginal impact of child marriage on labor force participation controlling for other factors that could affect labor force participation using the 2011 DHS. In most countries (Bangladesh is an exception), marrying as a child versus marrying later appears to increase the likelihood of labor force participation as an adult. The same is true when considering work with payments in cash. In other words, reducing child marriage could lead (in terms of direct effect) to a reduction instead of an increase in women's labor force participation, including in terms of work with cash earnings. In the case of Ethiopia, the direct impact of child marriage on the likelihood of labor force participation is not statistically significant. Child marriage also affects other variables, including the number of children women have and their education level. These various indirect effects matter, especially in the case of educational attainment. In many countries in table 5.4, the regression results suggest that a secondary education is associated with a higher likelihood of working in comparison to having no education at all, as well as a higher likelihood of being paid in cash. Therefore, through its effect on educational attainment, child marriage may reduce labor force participation. Given the multiple effects at work, the question is which type of effect matters most, and whether marrying early makes any difference.

Table 5.4: Impacts of Child Marriage on Labor Force Participation

	Marginal impacts		Simulated total impacts of ending child marriage			
			Labor force participation		Work with cash earnings	
	Labor force participation	Work with cash earnings	Women marrying early	All women	Women marrying early	All women
Burkina Faso	NS	0.0442	-0.75	-0.32	-2.27	-0.98
Bangladesh	-0.0136	-0.0142	3.54	1.80	-1.43	-0.73
DRC	0.0454	NS	-1.16	-0.37	0.59	0.19
Egypt	NS	NS	1.10	0.24	1.55	0.34
Ethiopia	**NS**	**NS**	**0.83**	**0.45**	**0.91**	**0.50**
Malawi	0.0250	0.0262	-1.29	-0.21	-1.36	-0.22
Mali	0.0484	0.0401	-3.50	-1.93	-4.03	-2.22
Mozambique	0.0592	NS	-2.81	-1.09	0.27	0.11
Nepal	0.0391	NS	-1.84	-0.57	0.89	0.27
Niger	NS	NS	0.23	0.17	0.12	0.09
Nigeria	0.0504	0.0201	-3.08	-1.61	0.13	0.07
Pakistan	0.0284	0.0249	-1.85	-0.80	-1.31	-0.57
Rep. Congo	0.0238	NS	-1.46	-0.68	0.46	0.21
Uganda	NS	NS	1.23	0.20	2.96	0.49
Zambia	NS	0.0357	1.04	0.24	-2.92	-0.68

Source: Savadogo and Wodon (2017a).
Note: NS = Not statistically significant at the 10 percent level.

83. **Simulations based on the regression results suggest that the combined direct and indirect impacts of child marriage on labor force participation and the type of job held are small.** In order to simulate the overall effect of child marriage on the likelihood of labor force participation and the type of job held, three different effects are taken into account. First, child marriage may have direct effects on the likelihood of work, as shown in table 5.4. Second, child marriage may have indirect effects on labor force participation through its effect on women's fertility. Third, child marriage may affect labor force participation through its impact on educational attainment. Table 5.4 provides estimates of the overall effects for the women who married early, as well as for women as a whole (these effects are smaller given that only some women married early, and for those who did not, no effects are simulated). The overall effects tend to be small. In Ethiopia, ending child marriage could result in a small increase in labor force participation nationally for women of 0.45 percentage points, and there could be a similar increase in the likelihood of working with positive earnings of 0.50 points. Note that increases in labor force participation across countries are from different bases since in some countries labor force participation by women is high while in others it is low.

IMPACT OF CHILD MARRIAGE ON EARNINGS AND PRODUCTIVITY

84. **By reducing educational attainment for girls, child marriage curtails their earnings.** Savadogo and Wodon (2017b) estimate the potential gains in expected earnings and productivity that could result from ending child marriage through two channels: lower fertility, and higher educational attainment. The approach consists of

running wage regressions, and simulating earnings with lower fertility and higher education using a parametrization taking into account the impact of child marriage on both fertility (and thereby household structure) and educational attainment. Table 5.5 provides the main results from the estimations. In all countries, the gains in earnings from ending child marriage are positive, as expected. When considering only the women who marry early, the gains in earnings associated with ending child marriage range from 1.44 percent to 15.60 percent of baseline yearly earning spending on the country. For Ethiopia, these gains are significant at 9.3 percent. Most of the gains come from a better education level for some of the women who marry early if they are assumed to marry later, as opposed to the impact of child marriage on fertility. When considering all women – those who did not marry early as well as those who did, the impact as a share of women's total earnings is smaller since only some of the women marry early and thereby have some likelihood of gains. The gains in earnings or expected productivity for women as a whole range from 0.49 percent to 4.58 percent of base earnings depending on the country (4.4 percent for Ethiopia). Finally, when including men as well (whose earnings are not affected), the gains in the population's earnings range from 0.17 percent to 1.68 percent of the wage bill (1.5 percent for Ethiopia).

85. **In Ethiopia, ending child marriage could generate $1.6 billion (purchasing power parity) per year in additional earnings and productivity.** The impact in percentage terms of ending child marriage on the earnings of women who married early tends to be on par in Ethiopia with the effects observed in several other countries. The impact on women as a whole and all workers tends to be large because many women marry early. As shown in table 5.5, if child marriage were ended, this could generate $1.6 billion (in purchasing power parity) in additional earnings and productivity annually. These gains would increase over time as the economy and population grow. As discussed in background work, the valuation of the benefits is based on a share of national consumption, which leads to a slightly higher estimate than would b the case with a share of labor earnings. At the same time, since no multiplier effects are considered as would be the case with a general equilibrium model, this seems to be a reasonable middle point (Savadogo and Wodon, 2017b).

86. **As mentioned in chapter 3, ending child marriage would entail costs for households and governments due to higher educational attainment for girls, but these costs would be small in comparison to expected benefits.** For households, both out-of-pocket and opportunity costs would need to be absorbed if girls are able to pursue their education further. For governments, budget allocations would need to be provided in order to be able to absorb a higher number of girls in public secondary schools. At the same time, the magnitude of these costs would typically be small in comparison to the expected benefits from better educational attainment for girls, including through higher expected labor earnings in adulthood.

Table 5.5: Gains in Earnings/Productivity from Ending Child Marriage (%)

	Women who married early	All women (married early or not)	All women and men	Cost (US$ million in 2015)
Bangladesh	11.85	4.58	1.23	4769.8
Burkina Faso	7.45	3.66	1.13	178.5
DRC	2.66	0.99	0.44	168.9
Egypt	9.20	1.50	0.38	2892.9
Ethiopia	**9.29**	**4.39**	**1.50**	**1581.4**
Malawi	10.10	3.03	1.61	167.4
Mali	9.73	4.40	1.00	174.8
Mozambique	15.60	4.02	1.68	374.9
Nepal	12.70	4.30	1.41	710.6
Niger	4.23	3.03	1.61	188.4
Nigeria	7.97	3.31	0.98	7607.7
Pakistan	13.28	3.21	0.88	6299.9
Republic of Congo	4.48	0.52	0.17	19.1
Uganda	14.48	3.28	1.03	513.9
Zambia	1.44	0.49	0.24	68.2

Source: Savadogo and Wodon (2017b).

87. **The estimations assume no direct impact of child marriage on earnings controlling for education and other variables, an assumption that is validated by other datasets.** The estimations reported in table 5.5 are based on the I2D2 databases which does not include variables measuring early childbirths and child marriage. Therefore, the simulations assume implicitly no direct impact of child marriage on earnings controlling for education and other variables included in the wage regressions. Said differently, the impacts on earnings documented in table 5.5 result from the impact of child marriage on educational attainment for girls, and to a lower extent on the impact of child marriage on fertility and household size as well as the number of children in the household. This is a limit of the analysis, but other datasets tend to support this assumption. For example, analysis is carried for Niger and Nepal using existing large scale nationally representative living standards measurement surveys that have information on child marriage (in is the case of Nepal, see Wodon and Yedan, 2017e) and early childbirths (as in the case of Niger, see Nayihouba and Wodon, 2017b). Regression analysis suggests that in most cases, controlling for other variables including education, the fact that a woman married as a child or had a child early does not have a statistically significant impact on her earnings, considering both hourly and monthly or yearly earnings. Data are not available for Ethiopia to conduct the same test, but the evidence available for other countries suggests that the negative impact of child marriage on earnings for women comes mainly from its impact on educational attainment for girls.

IMPACT OF CHILD MARRIAGE ON HOUSEHOLD WELFARE

88. **In most cases, child marriage also does not seem to have a direct impact on household welfare measures after controlling for education and fertility.** Again, while national surveys for Ethiopia do not have information on child marriage and early childbirths, data from existing living standards measurement surveys for Niger and Nepal suggest that by and large, after controlling for other factors, child marriage or early childbirths do not affect household total consumption as well as food consumption very much (see Wodon and Yedan, 2017f for Nepal, and Nayihouba and Wodon, 2017c for Niger). The same is often observed for other measures of well-being such as perceptions of food security, perceptions of poverty, and assets level. There are however indirect effects of child marriage at work through fertility (a higher number of children in the household is associated with higher levels of poverty) and through girls' education (when mothers are less educated, household welfare is often reduced at the margin). These effects are probably due in large part to the negative impact of child marriage on earnings and productivity, as documented in the previous section.

89. **In addition, a lack of education for girls due in part to child marriage may have other negative effects on productivity and investments.** If young brides are seen by their husbands as unable to make financial decisions for the household, this may reduce their ability to do so (World Bank 2012; Haddad et al. 1997). Lack of earnings may also have a negative effect on social capital and networks, further reducing earnings potential (Duflo 2011). In turn, lack of earnings for women in the household may reduce household investments in human capital, for example in terms of investing in education and health care for children (Hoddinott and Haddad 1995; Bussolo et al. 2011, Backiny-Yeta and Wodon 2010). Lack of resources for women may also reduce agricultural productivity (World Bank and ONE 2014).

INTERGENERATIONAL IMPACT OF CHILD MARRIAGE ON EDUCATION

90. **Through the educational attainment of mothers, child marriage has a negative impact on the educational attainment of the children of women married as children.** Apart from curtailing girls' education, child marriage may also affect the education of their children. Educating their children is an important aspiration of parents as this quote illustrates: *"I would not want my daughter to live this life. I am raising my children alone, doing this work… I want them to go to school and find good work"* (ICRW, 2017). Both direct and indirect effects could be at work in terms of the impact of child marriage on the education of the children of child brides. Controlling for other factors, child marriage could have a direct negative effect on the education of the children of mothers who marry early. When observed in other countries such as Niger and Nepal using large living standards measurement with information on child marriage or early childbirths, these effects are not always statistically significant, and they tend to be limited. However, indirectly, by curtailing the education of girls, child marriage does affect the education of the children of girls marrying early, and this is the case in Ethiopia as well as in many other countries. This is because a mother's educational attainment is one of the factors that affect her children's educational attainment (the same could probably be said for learning).

CHAPTER 6
SELECTED OTHER IMPACTS

Apart from the impacts discussed in previous chapters, child marriage may have a wide range of other impacts on the girls marrying early, their children, and their communities. This chapters considers among others the impacts of child marriage on women's decision-making ability, perceptions related to individual well-being and communications within the household, land ownership, knowledge of HIV/AIDS, and birth registrations. (For details on estimation methodologies and how results should be interpreted as order of magnitudes as opposed to precise estimates, please refer to Annex 1.)

"My parents' decision was binding but I had no interest in getting married. Even though I wanted to refuse, my voice was not heard. They simply wanted the marriage for the sake of cultural satisfaction. In our culture, if parents marry off their children while they are alive, they get respect from society and satisfaction. Preparing a marriage feast is among the key life events that almost all rural families want to experience" (Jones et al., 2016).

"I would not have been able to refuse marriage because I had to obey my parents' will. I couldn't disobey their order. I didn't do anything, just remained silent. Because they are the ones who decide" (ICRW, 2017).

IMPACT OF CHILD MARRIAGE ON WOMEN'S DECISION-MAKING

91. Child marriage may be associated with losses in agency and decision-making for women later in life. As noted among others by Parsons et al. (2015), child brides are often vulnerable—they are young, often poorly educated, and from disadvantaged socio-economic backgrounds. When they marry early, they may fall even more under the control of their husband and in-laws than would be the case if they had married later. This may limit their aspirations, as well as agency (Klugman et al., 2014), possibly limiting their decision-making ability, including in regard to access to health care during pregnancy and delivery. According to Kabeer (2008), a woman's capacity for choice depends on agency, access to resources, and past achievements. Child marriage clearly has an impact on resources, for example by contributing to girls' premature school drop-out and future limitations on learning. Child marriage also affects past achievements (as well as capabilities), as is the case when a lower level of education reduces the types of employment that women have access to. Finally, child marriage may also affect agency if it reduces girls and women's decision-making ability in the household. However, the magnitude of these effects is not necessarily clear.

92. Econometric analysis suggests that in Ethiopia, child marriage does not have a large direct negative impact on decision-making ability, but it may have an indirect impact through lower educational attainment. Onagoruwa and Wodon (2017e) analyze the correlates of an index of agency or decision-making for women constructed using data from DHS surveys. The index is created through principal

component analysis. The variables included in the index are of four types. First, women currently married are asked in the surveys about who makes decisions in the household in four areas: health care, household purchases, visits to friends and relatives, and the use of the husband's earnings. For each question, women may typically respond according to four modalities: they alone make decisions, they make decisions with the husband/partner, the husband makes decisions alone, or another person makes the decisions (or the husband has no earnings for the question pertaining to use of earnings). Second, women are also asked if they can refuse to have sex with their husband and if they can request their husband to use a condom when having sex. In addition, women respond to four different circumstances assessing if a husband is justified in beating their wife in those instances: if the wife goes out without telling her husband, if she neglects her children, if she argues with her husband, or if she refuses to have sex with him. Finally, women are asked whether getting their husband's permission to get medical help for themselves is a major problem or not. The index takes a value between zero and 100 after normalization. While an alternative approach could have been used to consider different types of decision-making separately, the results for the purpose of this report are not very different when doing so. The benefit of an overall index is that it provides a single summary measure of decision-making ability as well as the impact of child marriage on that measure. For more detailed work on decision-making, it is however recommended to also consider different types of decision-making separately. Table 6.1 provides the main results in terms of the marginal effects of child marriage as well as education on the index. The interpretation of the coefficients is in terms of gains/losses in the indices. The marginal impact of child marriage is statistically significant for only about a third of the countries, and in Ethiopia the effect is not statistically significant with the 2011 DHS (with the 2016 DHS, there is a statistically significant effect but with the opposite sign of what is expected). By contrast, effects through education tend to be larger as well as statistically significant in most countries. Therefore, in Ethiopia not directly but indirectly (through its impact on educational attainment), child marriage appears to have a quite a significant negative impact on decision-making ability. The estimates for the 2011 DHS are shown in the table. The results obtained with DHS data are confirmed when conducting the same analysis using the same approach with the EICM survey collected for this project. Note finally also that the marginal impacts of child marriage across countries do not change very much when considering young women (and thereby focusing on the first few years after marriage) or all women in the survey samples.

Table 6.1: Impact of Child Marriage and Education on Decision-Making Ability

	Child marriage	Education (vs. none)		
		Primary	Secondary	Post-secondary
Bangladesh	NS	NS	2.971	5.725
Burkina Faso	-1.551	2.495	8.727	15.48
DRC	NS	1.918	4.345	15.37
Egypt	NS	1.370	7.800	11.61
Ethiopia	**NS**	**5.664**	**11.88**	**21.61**
Malawi	NS	NS	2.443	3.310
Mali	-2.226	NS	6.819	15.58
Mozambique	NS	1.595	4.068	4.160
Nepal	NS	NS	0.362	0.333
Niger	NS	NS	3.785	20.44
Nigeria	-1.128	1.500	3.007	6.388
Pakistan	2.041	4.827	8.028	11.19
Rep. of Congo	NS	4.861	9.097	14.26
Uganda	NS	NS	4.186	13.73
Zambia	-1.222	NS	5.622	11.37

Source: Onagoruwa and Wodon (2017e).
Note: NS = Not statistically significant at the 10 percent level.

IMPACT OF CHILD MARRIAGE ON INDIVIDUAL PERCEPTIONS

93. **Marrying very early may have a negative impact on women's psychological well-being and quality of communications between spouses.** The EICM survey asks questions on psychological well-being for women, covering domains such as anxiety, depression, self-control, vitality, positive well-being and general health. Following the approach used for decision-making, an index is again created to capture psychological well-being, and scaled from a 0 to 100. Regression analysis indicates that after controlling for other variables, marriage at age 12 or earlier has a direct negative impact on psychological well-being (table 6.3). Similarly, very early marriage has a direct negative impact on the quality of the spousal communication within the household. While impacts are statistically significant when marrying very early, they affect only a small share of girls marrying s children as most early marriages in Ethiopia take place after age 12. This implies that effects are the national level are very small,

Table 6.3: Impact of Child Marriage on Subjective Perceptions

	Individual Psychological Well-being	Communications within the Household
Married at 12 and below	-4.80	-4.35
Married at 15	NS	NS
Married at 17	NS	NS

Source: John et al. (2017)
Note: NS = Not statistically significant at the 10 percent level.

IMPACT OF CHILD MARRIAGE ON LAND OWNERSHIP

94. **Child marriage could affect productivity through its potential impact on land ownership for women; however, when there seems to be an impact, it tends to be positive.** Limited work has been conducted on the relationship between child

marriage and land ownership, so it is not clear whether such a relationship would be expected. DHS surveys do provide data not on the amount of land owned by women, but whether they own land by themselves, jointly with their husband or partner, or under both types of ownership. Regression analysis with the 2011 DHS is used to measure the potential impact of child marriage at the margin of land ownership controlling for other factors that may affect ownership. Different regressions are used for the various categories of ownership: alone, jointly, both, and all types of ownership combined. Table 6.3 provides the results. The interpretation of the coefficients is in terms of percentage point gains in the likelihood of ownership. For Ethiopia, the coefficient of 0.0240 suggests that marrying early actually increases the likelihood of land ownership alone by 2.4 percentage point for women in comparison to marrying later. Some other effects are not statistically significant, but the effect for all forms of ownership combined is also statistically significant and larger at four percentage points. In most countries, when the effects are statistically significant, they tend to be positive (the exception is Mali). While further research is needed to better understand the effects at work, there does not seem to be a negative effect of child marriage on land ownership. There are however limits to the analysis of land ownership that can be conducted, especially with DHS data[13].

Table 6.3: Impact of Child Marriage on Land Ownership by Category of Ownership

	Ownership alone	Joint ownership	Both types of ownership	All types combined
Burkina Faso	0.0218	NS	0.0043	0.0349
DRC	0.0100	NS	NS	NS
Egypt	NS	NS	NS	NS
Ethiopia	**0.0240**	**NS**	**NS**	**0.0427**
Mali	-0.0121	NS	NS	NS
Mozambique	0.0111	NS	NS	0.0320
Nepal	0.0145	NS	NS	0.0157
Niger	0.0185	0.0180	NS	0.0439
Nigeria	0.0097	NS	NS	0.0144
Pakistan	NS	0.0049	NS	NS
Rep. Congo	0.0121	0.0150	NS	0.0310
Uganda	0.0258	NS	NS	NS
Zambia	NS	NS	NS	0.0305

Source: Savadogo and Wodon (2017c).
Note: NS = Not statistically significant at the 10 percent level.

[13] The positive impact of marrying early on land ownership may seem surprising since land ownership is often associated with agency for women, and child marriage is often associated with a loss in agency. Various factors could be at work. It could be that marrying early brings benefits for women in terms of bride price paid at the time of marriage which may contribute to higher land ownership. It may be that girls who marry early live in settings that are more traditional, leading to more women to be working the land, and possibly owning the land, than if there were engaged in other types of occupation. These and other facts may not be controlled for sufficiently in the regression, but what the results suggest is that marrying early may not lead to a loss in land ownership, at least when land ownership is measured as a yes/no variable.

IMPACT OF CHILD MARRIAGE ON WOMEN'S KNOWLEDGE OF HIV/AIDS

95. **Child marriage may also have a direct or indirect impact on other forms of knowledge than the knowledge acquired mostly through school.** An example is that of knowledge related to HIV/AIDS. Onagoruwa and Wodon (2017f) analyze the correlates of an index of women's knowledge about HIV/AIDS. The index is created through principal component analysis using a range of questions available in DHS surveys such as responses from women on whether they agree or disagree with statements regarding HIV/AIDS preventive measures, transmission modes and symptoms. Specifically, the index accounts for responses to questions related to: the risk of getting HIV can be reduced by abstaining from sexual intercourse; the risk of getting HIV can be reduced by always using a condom when having sexual intercourse; the risk of getting HIV can be reduced by restricting sexual intercourse to one faithful partner; HIV can be transmitted by mosquito bites; HIV can be transmitted by sharing food with an infected person; a healthy-looking person can have HIV; HIV can be transmitted by witchcraft or supernatural means; HIV infected persons can live longer with drugs; HIV can be transmitted during pregnancy; HIV can be transmitted during delivery; HIV can be transmitted through breastfeeding; HIV can be transmitted by sharing sharp materials; HIV can be transmitted through unsafe blood transfusion; HIV can be transmitted by using unsterilized needle or syringe; and HIV can be transmitted by touching an infected person. The values of the index are normalized to take a value between zero and 100.

96. **In Ethiopia, child marriage does not appear to have a direct impact on knowledge of HIV/AIDS, but it has an indirect impact through education.** Table 6.4 provides the main results of the regression analysis using for Ethiopia the 2011 DHS (results are similar with the 2016 DHS). The coefficient estimates suggest that the marginal direct impact of child marriage is statistically significant for only about a third of the countries, and not in the case of Ethiopia. But as mentioned in the previous chapter, child marriage has an impact on educational attainment, and educational attainment in turn has an impact on knowledge of HIV/AIDS, including in Ethiopia. Therefore, indirectly (through its impact on educational attainment), child marriage does appear to have a negative impact on knowledge related to HIV/AIDS, although the indirect impact that could be attributed to child marriage through education tends to be small overall.

Table 6.4: Impact of Child Marriage and Education on Knowledge of HIV/AIDS

	Child marriage	Education (vs. none)		
		Primary	Secondary	Post-secondary
Bangladesh	NS	14.50	32.59	37.76
Burkina	NS	NS	4.06	6.32
DRC	NS	NS	7.32	8.52
Egypt	-5.45	NS	26.99	44.86
Ethiopia	**NS**	**6.67**	**7.29**	**5.29**
Malawi	NS	2.38	4.11	4.09
Mali	NS	NS	11.00	6.17
Mozambique	-2.55	3.17	4.32	5.46
Nepal	NS	14.95	23.89	26.83
Niger	NS	8.00	12.14	19.94
Nigeria	NS	5.51	7.06	9.27
Pakistan	2.70	10.24	29.86	46.52
Rep. of Congo	-2.65	8.58	12.79	17.39
Uganda	NS	NS	4.91	4.17
Zambia	NS	5.02	6.85	9.13

Source: Onagoruwa and Wodon (2017f).
Note: NS = Not statistically significant at the 10 percent level.

IMPACT ON CHILD MARRIAGE ON BIRTH REGISTRATIONS

97. **Legislation related to the minimum age at marriage could potentially provide disincentives for registering births, but this does not appear to be the case.** When mothers have children below the minimum legal age for marriage, legislation aimed at delaying the age at marriage could potentially lead to lower birth registration rates if women are fearful that having a child at a young suggests that marriage took place before the minimum legal age. Whether such disincentives are at work depends on the context of each country, and whether the legal minimum age for marriage is actually enforced, which is rarely the case in many countries. Still, it is useful to use household survey to test whether such effects may be at work. As shown in table 6.5, the impact of child marriage on birth registration is not statistically significant in the set of countries for which Demographic and Health Surveys have information on birth registrations and/or certificates. In Ethiopia, the data are not available, but based on the experience of other countries it is likely that the effect of child marriage on birth registrations would also not be statistically significant or large.

Table 6.4: Impact of Child Marriage on Birth Registrations

	Observed share (%)	Impact of child marriage
Burkina Faso	76.9	NS
Democratic Republic of Congo	24.6	NS
Egypt	99.4	-
Mozambique	47.9	NS
Nepal	42.3	NS
Niger	63.9	NS
Nigeria	29.8	NS
Republic of Congo	90.8	NS
Uganda	29.9	NS
Zambia	11.3	NS

Source: Onagoruwa and Wodon (2017g).
Note: In Egypt, virtually all children are registered, so that the regression analysis does not apply.

CHAPTER 7
CONCLUSION

To provide new evidence and inspire greater commitments towards ending child marriage, this study has estimated the impacts of the practice and its economic costs in Ethiopia. The study looked at five domains of impacts: (i) fertility and population growth; (ii) health, nutrition, and violence; (iii) educational attainment; (iv) labor force participation, earnings, and productivity; and (v) decision-making and other areas. The results of the analysis indicate that child marriage has a wide range of negative impacts on girls, their children, families, communities, and Ethiopia's society and economy at large.

98. **In many domains, the negative impacts of child marriage and early childbirths are large.** Table 7.1 summarizes the main findings from the study. The largest impacts of child marriage are related to fertility and population growth, education and earnings, and the health of the children born of young mothers. As noted in Wodon (2017a), these impacts are all closely related in terms of their timing in the life of adolescent girls. Particularly when use of modern contraception is low, child marriage leads to early childbirths, which increases health risks for mothers and the children born of young mothers. The timing of child marriages and early childbirths conflicts with the ability of girls to continue their education, which depresses earnings in adulthood. All those effects are at work at the time of marriage or soon after. By contrast, impacts in other domains – from violence to labour force participation and decision-making, are observed throughout a woman's life and depend on many other factors than whether girls marry early. For example, intimate partner violence and a lack of decision-making ability are the result, at least in part, of widespread gender inequality. Child marriage contributes to perpetuating gender inequality, but delaying marriage by a few years may not be sufficient on its own to fundamentally change gender roles and social norms. This is probably why in those areas, while ending child marriage may help, impacts tend to be smaller and in some cases are not statistically significant.

99. **Even when the direct impacts of child marriage and early childbirths are not statistically significant, they may still be detrimental through their indirect impact on girls' education.** In table 7.1, a number of direct impacts of child marriage and early childbirths are not found to be statistically significant or large. For example, after controlling for other variables including a woman's education level, child marriage may not be associated directly with a loss in decision-making ability or a reduction in knowledge of HIV/AIDS. Based on the experience of other countries it is also probably not associated with a reduction in the rate of birth registrations for young children. At the same time, in those areas, higher educational attainment for women tends to have a beneficial impact. Therefore, through its impact on girl's educational attainment, child marriage is likely to have a negative effect indirectly in those areas as well.

Table 7.1: Impacts of Child Marriage (CM) and Early Childbirths (ECBs) in Ethiopia

Fertility and Population Growth
Ending CM could reduce the total fertility rate by 13% nationally
Ending CM could reduce the share of girls having a child before age 18 by about four fifths
Ending CM could increase national use of modern contraceptives by one percentage point
Ending CM and ECBs would reduce population growth by 0.1 percentage point
Health, Nutrition, and Violence
Ending ECBs would reduce under-five mortality by 0.15 percentage point
Ending ECBs would reduce under-five stunting by 0.43 percentage point
Marrying very early is associated directly with higher risks of intimate partner violence for women
The impact of ending CM on maternal mortality and morbidity is not fully clear
Educational Attainment
CM is cited as the reason for dropping out of secondary school for at least one in ten girls
CM reduces the likelihood of secondary school enrolment and completion
Each year of secondary school education reduces the risk of CM by six percentage points
Work, Earnings, and Welfare
Through education, CM reduces women's earnings in adulthood by 9%
Ending CM could increase national earnings by 1.5%
CM affects consumption and food adequacy through household size and educational attainment
Decision-making and Other Impacts
CM is typically not directly associated with a loss in decision-making ability
Marrying very early (at age 12 or earlier) is associated with a loss in psychological wellbeing
CM is not directly associated with a reduction in women's knowledge of HIV/AIDS in adulthood
CM is probably not associated with a reduction in the rate of birth registrations for young children

Sources: See the references provided in this study.

100. The economic costs associated with the impacts of child marriage and early childbirths are very large. Tentative estimates of the costs associated with the impacts of child marriage, or equivalently estimates of the benefits from ending child marriage (and in some cases early childbirths) are provided in table 7.2. These are annual estimates of costs or benefits from ending child marriage as of 2015. The estimates should not be considered as precise given that they depend on (1) econometric estimates of impacts that have themselves standard errors and (2) a range of assumptions for costing that could be debated. Still, they provide an order of magnitude of the potential costs of child marriage. By far, the largest economic cost of child marriage is the welfare loss associated with population growth. By reducing the annual rate of population growth, ending child marriage and associated childbirths could lead to welfare benefits of $4.9 billion (in purchasing power parity terms) by the year 2030. Substantial additional economic benefits would result from reductions in under-five mortality and stunting rates, valued at respectively $2.5 billion and $0.5 billion by 2030 with a five percent discount rate.

Table 7.2: Order of Magnitude of the Benefits from Ending Child Marriage – Selected Estimates

	Annual Benefit in 2015	Annual Benefit in 2030
Welfare benefit from reduced population growth	$0.1 billion	$4.9 billion
Benefit from reduced under-five mortality	$0.9 billion	$2.5 billion
Benefit from reduced under-five stunting	$0.2 billion	$0.5 billion

Sources: See the references provided in this study.

101. In addition to cost estimates related to changes in population growth and child health that would result from ending child marriage, the study provides cost estimates for a few other impacts. These estimates are calculated for budget savings to government education budgets that would result from slower population growth and from increased earnings gains for women, if child marriage were ended. As with the estimates discussed above, these figures should be considered tentative given that they are based on statistical estimations which have standard errors as well as costing assumptions.

- Budget savings from lower fertility and population growth: Budget savings can be reaped from lower population growth. For the provision of public education, savings could reach up to $288 million in current US dollars by 2030 if universal secondary education were achieved by then. While this is an upper bound estimate of potential savings, the estimates are substantial. When considering the elimination only of child marriage (as opposed to child marriages and early childbirths), the estimates would be a bit smaller.

- Education and earnings: The costs related to earnings losses for women married as children are also high. These costs are related for the most part to the fact that child marriage curtails the educational attainment of some of the girls who marry early, and higher educational attainment leads to higher lifetime earnings. The gains in earnings and productivity that would have been observed if women had not married early in the past are estimated at $1.6 billion in 2015. These gains would increase over time due to population growth and higher standards of living and wages.

102. By demonstrating the economic impacts of child marriage, this study provides further evidence to support ending child marriage. Child marriage is widely considered as a violation of girls' human rights. It curtails the opportunities provided to girls and their children. The evidence of the negative impacts of the practice on a wide range of outcomes is clear, and this study demonstrates that the practice has large economic costs as well. Ethiopia, where child marriage prevalence rates remain high, has supported efforts to end child marriage in recent years. Interventions being developed, tested, and implemented in the country, including with the support of World Bank, UNFPA, UNICEF and others have the potential to make a significant difference. Even as these experiences will generate evidence that can be used for adaptation and scale up, it is clear that the country would benefit from increased support for such interventions and broader policies to end child marriage.

ANNEX 1
METHODOLOGICAL NOTE

103. The results provided in this study rely on a number of methodological assumptions that have limits. The methodology used for the estimations, as well as the links between the various components of the analysis are explained in Wodon (2017a). The aim of this study is to estimate the impacts of child marriage on a wide range of development outcomes and the economic costs associated with some of these impacts. Caveats are needed in terms of both what "impact" means in this study, and how the economic costs associated with impacts are computed.

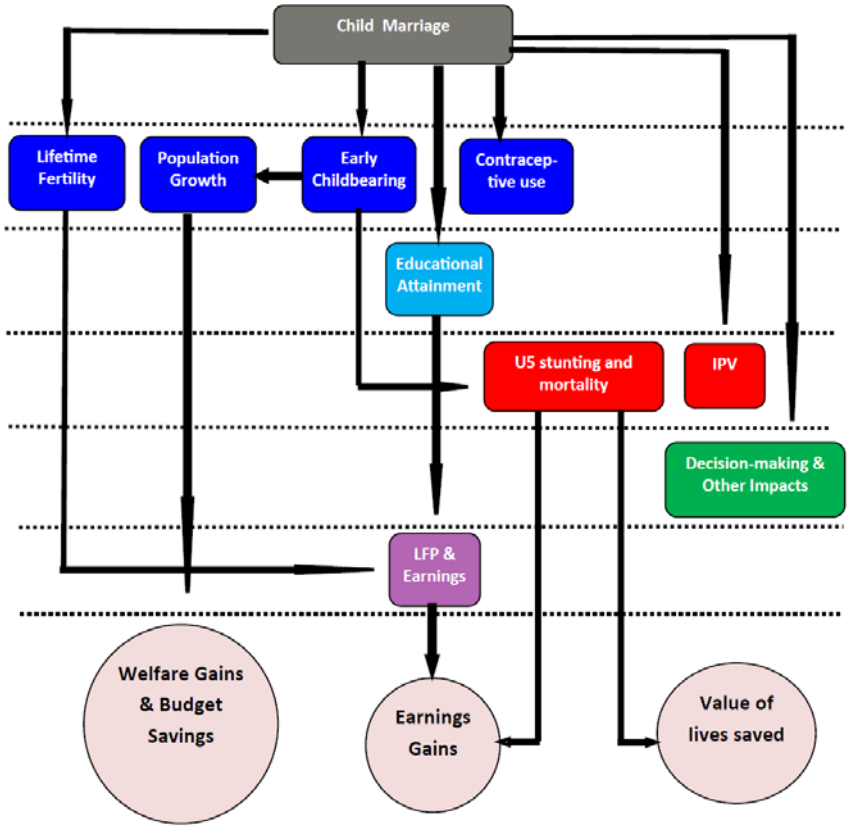
104. The term "impact" is used loosely and for simplicity, but one must be careful about not necessarily inferring causality. Estimates of impacts in this study are typically obtained through careful regression analysis aiming to isolate the potential impact of child marriage or early childbirths on various outcomes controlling for other factors affecting those outcomes. In the literature, this approach is known as "association studies". What is measured is a statistical association between child marriage or early childbirths and outcomes. This is not necessarily an impact as could be observed with a randomized control trial. Since child marriage cannot be randomized, the study must rely on regression analysis to estimate likely impacts, but there are always risks of bias in the measures of likely impacts.

105. The estimation of the economic impacts of child marriage considers both direct and indirect effects. Estimates of impacts are based on regression analysis. By direct effect, we simply mean the coefficient estimate for the child marriage variable as an explanatory variable in a regression setting (in some cases, such as under-five mortality and malnutrition, the direct effect refers to the coefficient estimate for an early childbirth, namely a birth to a mother younger than 18 at the time of the birth of the child). By indirect effect, we mean the coefficient estimate of another explanatory variable in the regression analysis that could itself be affected by child marriage or early childbearing. A good example is that of the educational attainment of a woman or mother. To illustrate, child marriage may not be considered as having a direct effect on knowledge of HIV/AIDS if the coefficient for the child marriage variable in that regression is not statistically significant. But child marriage may still have an indirect effect on knowledge of HIV/AIDS given that (1) child marriage tends to reduce on average the educational attainment of child brides, and (2) educational attainment tends to be associated in regression analysis with better knowledge about HIV/AIDS. In the case of education, given endogeneity between educational attainment and child marriage (as discussed below), the distinction between direct and indirect effects is not full proof, but it is still useful to discuss pathways through which child marriage may have impacts.

106. The estimation of some several impacts and costs is undertaken in a sequential manner. As mentioned in the introduction, this study looks at five domains of impacts of child marriage: (i) fertility and population growth; (ii) health, nutrition, and violence; (iii) educational attainment; (iv) labor force participation, earnings, and

productivity; and (v) decision-making and other areas. For some of these impacts, the economic costs associated with the impacts are estimated. The conceptual framework for the study was provided in Figure 1 in the introduction. In practice, a large number of estimations are needed for the analysis. The most important estimations are displayed in Figure A1.1. In that Figure, the five domains of impacts are highlighted in different colors, while the main cost estimates are listed at the bottom of the Figure. In a number of cases, multiple estimations are needed in order to obtain cost estimates. For example, in order to measure the impact of child marriage on earnings for women, we must first estimate the impact of child marriage on total fertility, since the number of children that women have may affect their labor force participation, Next, we must estimate the impact of child marriage on educational attainment for child brides, since educational attainment affect the level of earnings that women are expected to have. More details on the estimations are provided in Wodon (2017a).

Figure A1.1: Principal Estimations for the Measures of Impacts and Costs



Source: Wodon (2017a).

107. **Two main types of bias could be at work in the regression analysis. The first risk is that of omitted variable bias.** The first type of bias is related to the risk of omitted variables that have an impact on the dependent variables. Omitted variables lead coefficient estimates to be biased. Typically, for the estimation of the relationship between child marriage or early childbirths and various outcomes, one would expect omitted variables to lead to an overestimation of the impact of child marriage or early

childbirths on these outcomes, which would in turn lead to overestimating costs. This is because child marriage or early childbirths variables may capture broader gender effects at work. To the extent feasible, the use of variables estimated at the level of communities in the specification of the regressions mitigates the risk of omitted variable bias, but not perfectly.

108. The second risk is that of endogeneity, especially for the relationship between child marriage and educational attainment for girls. Endogeneity is at work when two variables influence each other. For example, child marriage depends on a girls' education prospects, but in turn her education prospects depend on whether she marries as a child or not. Said differently, the decision to marry or go to school are jointly determined. As is the case for omitted variables, endogeneity may lead to bias (most likely an overestimation) in estimated impacts and costs. In order to deal with the issue of endogeneity, instrumental variables can be used, but such variables are not always easy to find. The econometric analysis of the relationship between education and child marriage in this study relies on instrumental variables. Still, despite care in the specification of the regressions, it could still be that the impact of child marriage on education outcomes are overestimated.

109. While the two types of bias in the regression analysis may lead to overestimating impacts and costs, the fact that the discussion focuses mostly on direct impacts may lead to underestimation of impacts and costs. For most impacts, the analysis focuses only on the direct impact of child marriage on outcomes controlling for other independent variables included in the regression analysis. This implies that indirect impacts of child marriage, including through the education of girls, are in most cases not factored in the assessment of impacts (the exception is the analysis of wages that incorporates indirect impacts). Possibly, the risk of overestimating direct impacts in the regression analysis due to omitted variables bias and in some cases endogeneity is compensated by the fact that for most estimations, potential indirect impacts and associated costs are not factored in.

110. Based on measures of likely impacts, costs associated with some of the likely impacts are computed. These costs are based on a number of assumptions that could be debated, so they only represent an order of magnitude of potential costs, as opposed to precise estimations. For example, some estimations factor in discount rates. These discount rates are somewhat arbitrary, and as shown in the case of the monetary valuation of the impacts of child marriage on under-five mortality and stunting, changing the discount rate can have a large impact on the cost estimates. Other assumptions, including in terms of expected growth rates in GDP per capita and trends in population growth, could also be debated.

111. Keeping these caveats in mind, the study provides orders of magnitude of impacts and associated costs, as opposed to precise estimations. While the study makes a strong case that child marriage and early childbirths have a wide range of negative impacts, the estimates of impacts and costs are approximate only.

ANNEX 2
DATA SOURCES

112. The primary data sources for much of the analysis in this study are Demographic and Health Surveys (DHS). The DHS surveys have four important advantages for the analysis of the impact of child marriage on various outcomes:

- The surveys are available for many countries. This makes it feasible to assess the impact of child marriage on knowledge or more precisely decision-making ability in different contexts.
- The surveys have been vetted extensively over many years in terms of questionnaire design and data collection, thus ensuring high quality data.
- Because estimations are conducted for many countries with comparable data, the statistical risk across countries of mistaken conclusions about the impact of child marriage is significantly reduced in comparison to conclusions that would be based on analysis for a few countries only.
- The surveys are publicly available, so other researchers can conduct similar analyses not only for the countries included in this brief but also for many other countries; this can provide additional validation of the main results.

113. In addition to DHS surveys, the study relies on a rich array of existing datasets and for some estimations on new data collected for the study. Table A2.1 provides the data sources used for the various parts of the analysis, focusing on the quantitative estimations. Beyond the 2011 and 2016 DHS for Ethiopia, the study also relies on the Ethiopia LSMS for 2015 and the World Bank's I2D2 database which includes surveys with earnings data for Ethiopia. Finally, for a few of the indicators such as psychological well-being, the analysis relies on the Economic Impacts of Child Marriage (EICM) survey implemented by ICRW. The EICM study surveyed 4,149 ever married women in the age ranges of 18-45 years and their household heads across nine regions and one town administration of Ethiopia.

114. In a few cases, analytical results are based on the use of simulation tools parametrized with survey data. DemProj and FamPlan (parametrized using DHS data) are used for simulating future population growth in the absence of child marriage and early childbirths. Separately, for the estimation of education budget savings from the reduction in population growth, a UNESCO model providing estimates of the cost of achieving universal secondary education is used.

Table A2.1: Data Sources Used for the Quantitative Analysis by Chapter/Section

Topic	Primary Data Sources
Chapter II – Child marriage and Early Childbirths	
Extent of Child Marriage and Early Childbirths	2011 & 2016 DHS
Share of Early Childbirths Likely Due to Child Marriage	2011 & 2016 DHS
Factors Leading to Child Marriage and Early Childbirths	2011 & 2016 DHS
Profile of Child Marriage by Level of Wealth	2011 & 2016 DHS
Geographic Profile of Child Marriage	2007 Census
Chapter III – Impacts on fertility and Population Growth	
Impact of Child Marriage on Total Fertility	2011 & 2016 DHS
Impact of Child Marriage and Early Childbirths on Population Growth	DemProj/FamPlan
Welfare Benefits from Reduced Population Growth	Macro data
Education Budget Savings from Reduced Population Growth	UNESCO Model
Chapter IV – Impacts on Health, Nutrition and Violence	
Child Marriage, Early Childbirths, and Health	NA
Impact of Early Childbirths on Maternal Health	2011 DHS
Impact of Early Childbirths on Under-five Mortality and Stunting	2011 & 2016 DHS
Impact of Child Marriage on Intimate Partner Violence	2016 EICM
Chapter V – Impacts on Education, Labor, and Earnings	
Child Marriage, Early Childbirths, and Education for Girls	NA
Impact of Child Marriage and Early Childbirths on Girls' Education	2011 & 2016 DHS & 2015 LSMS
Impact of Child Marriage on Labor Force Participation	2011 DHS
Impact of Child Marriage on Earnings and Productivity	I2D2
Intergenerational Impact of Child Marriage on Education	2015 LSMS
Chapter VI – Selected Other Impacts	
Impact of Child Marriage on Women's Decision Making	2011 & 2016 DHS & 2016 EICM
Impact of Child Marriage on Land Ownership	2011 DHS
Impact of Child Marriage on Women's Knowledge of HIV-AIDS	2011 & 2016 DHS
Impact of Child Marriage on Birth Registrations	Based on other countries

Source: Wodon (2017a).
Note: NA indicates that the section of the report does not rely on empirical data extensively

120. For additional qualitative insights, apart from relying on results from a number of publishes studies, fieldwork was conducted in one urban and one rural sites. The ICRW team conducted with JaRco Consulting 32 in-depth interviews with women ages 18-24 and 25-45 who married before the age of 18 and had been married for at least 5 years (details are provided in ICRW, 2017). In addition, eight participatory focus group discussions were held with mothers and fathers who had daughters between the ages of 8 and 17. Together, these provided both detailed accounts of individual experiences and broader normative perceptions of the economic impact and costs of child marriage.

ANNEX 3
CORE SET OF COUNTRIES FOR THE ESTIMATIONS

115. Apart from estimates for Ethiopia, this study provides estimates for 14 other countries for comparison purposes and to draw inferences at the global level. For comparison purposes, when assessing the impact of child marriage on multiple outcomes in various settings, it is useful to estimate impacts for multiple countries since these impacts are not necessarily the same in different countries. Estimates for multiple countries are also needed in practice in order to be able to infer potential impacts at the global level through extrapolation.

116. The core countries chosen for the estimations represent a wide variety of settings, including in terms of the prevalence of child marriage. Table A3.1 lists the 15 countries included in the analysis. The sample includes three South Asian countries (Bangladesh, Nepal, and Pakistan), one country from the Middle East (Egypt), six countries from West and Central Africa (Burkina Faso, Democratic Republic of Congo, Mali, Niger, Nigeria, Republic of Congo), and five countries from East and Southern Africa (Ethiopia, Malawi, Mozambique, Uganda, and Zambia). For all countries, the main surveys used for estimations (Demographic and Health Surveys) were implemented in 2010 or later and the results are based on the latest DHS survey available at the time of the analysis. Priority was given to countries with a relatively high prevalence of child marriage and early childbirths, but some of the countries such as Egypt have a much lower prevalence. In addition, demand at the World Bank for the analysis to be conducted in particular countries as part of on-going policy dialogue was also taken into account in the choice of the core countries for the estimations. Overall, while the countries are not a representative sample of the world as a whole, they represent quite diverse settings in regions of the world where the prevalence of early childbirth is high (sub-Saharan Africa and South Asia).

Table 3: List of Countries and DHS Data for the Main Estimations

Country	DHS survey year	Country	DHS survey year	Country	DHS survey year
Bangladesh	2011	Malawi	2010	Nigeria	2013
Burkina	2010	Mali	2012-13	Pakistan	2012-13
DR Congo	2013-14	Mozambique	2011	Rep. Congo	2011-12
Egypt	2014	Nepal	2011	Uganda	2011
Ethiopia	2011 & 2016	Niger	2012	Zambia	2013-14

Source: Wodon (2017a).

ANNEX 4
STRATEGIES TO END CHILD MARRIAGE

117. While this report is about the economic and human rationale for ending child marriage, and not how to implement strategies to do so, pointers on how to end the practice can be provided from the literature. As noted in Perlman et al. (2017), a useful starting point for thinking of potential interventions to end child marriage is to summarize findings from reviews of the literature on successful interventions. Malhotra et al. (2013) identify five types of strategies utilized to prevent or delay early marriage: (1) Empowering girls with information, skills, and support networks; (2) Educating and mobilizing parents and community members; (3) Enhancing the accessibility and quality of formal schooling for girls; (4) Offering economic support and incentives for girls and their families; and (5) Fostering an enabling legal and policy framework. Examples of programs related to each of these five areas are provided in table A4.1 (a few programs have been added on top of the programs identified by Malhotra et al., 2013). Not all of these interventions are necessarily applicable or should be considered as priorities for Ethiopia, but the list is a good start to consider options.

(1) *Empowering girls.* Many of the interventions reviewed by Malhotra et al. (2013) aimed to empower girls with information, skills and support networks. The idea is to help girls know themselves, their context, and their options by providing them with valuable information and training in a "safe space" environment while also reducing their isolation. The interventions mentioned in table A4.1 could be – and have been - considered in Ethiopia, including life skills training, vocational and livelihoods skills training, mentored learning spaces to facilitate the acquisition of core academic skills, and safe spaces that allow girls to connect and socialize outside the home.

(2) *Engaging parents and communities.* Programs aiming to empower girls are typically implemented together with efforts to engage parents and communities so that an "enabling environment" is created and the stigma associated with delaying marriage is reduced. The interventions in this group aim to change social norms and reduce the pressure to marry early. Engaging parents and communities is also important to mitigate any potential unintended negative consequences of girls' participation in the programs. A number of programs have found that such activities are useful when introducing a new program for girls. At the same time however, such type of community engagement alone rarely has impact. Rather it is the concrete and tangible benefits of the girls programming that facilitates change.

(3) *Improving the quality of formal schooling and education opportunities for girls.* This is a challenge in many countries where many girls drop out of secondary school in part because of concerns about quality. Unless schools improve, become affordable, and provide credible alternatives to early marriage for the girls most at risk, hoping that schooling will work as a mechanism to reduce early marriage may not work as well as expected. It is therefore important to improve the quality of education systems.

(4) *Providing incentives and economic support.* The issue of the opportunity costs and out-of-pocket costs associated with schooling are major issues for girls not to pursue their education. Education in public schools is in principle free until junior secondary, but costs remain for households. Various incentives such as conditional cash transfers could help in making sure that girls do pursue their secondary education. Economic support through microfinance and other programs fostering employment also holds promise.

(5) *Enacting laws and policies.* Finally, in some countries enacting laws to prevent marriage before the age of 18 should be part of the enabling environment to eliminate the practice. In many countries such laws already exist, but they may not have the desired effect if not accompanied by mechanisms to enforce or accompany laws with appropriate complementary interventions. This means that multi-strategy approaches that combine laws with raising awareness among national decision-makers and local leaders of the importance to eliminate early marriage are more likely to be successful.

Table A4.1: Potential Strategies to Prevent Child Marriage

Strategy	Types of Programs
Empowering girls	- Life skills training - Vocational and livelihoods skills training - Information, education, comm. campaigns - Mentored learning spaces to facilitate acquisition of core academic skills - Safe spaces that allow girls to connect and socialize outside the home
Engaging parents and communities	- One-on-one meetings with parents, community and religious leaders to gain support - Group/community education on consequences of/alternatives to early marriage - Parental/adult committees/forums on life skills and SRH curricula - Information, education, comm. campaigns - Public announcements/pledges by leaders
Improving formal schooling and education opportunities for girls	- Preparing, training and supporting girls for enrolment/re-enrolment in school - Raising the quality of instruction in formal school to improve learning - Improving curriculum/training teachers on life skills, SRH, gender sensitivity - Building schools, improving facilities and hiring female teachers - Providing remedial education including through after-school programs
Providing incentives and economic support	- Incentives (cash, scholarships, fee subsidies, uniforms, supplies) to remain in school - Microfinance and related training to support income generation by adolescent girls
Enacting laws and policies	- Legal minimum age of marriage at 18 - Advocacy for new policies and enforcement of existing laws/policies. - Raising awareness about the negative consequences of early marriage

Source: Perlman et al. (2017), adapted from Malhotra et al. (2013).

118. More recent reviews of interventions with high quality evidence for their impacts on child marriage suggests that interventions related to education should be priorities. A first review was conducted by Kalamar et al. (2016). It confirms that interventions to promote education, including cash transfers, school

vouchers, free school uniforms, reductions in school fees, teacher training, and life skills curricula, are most likely to help. In some cases the evidence is mixed, but in most cases interventions are found to reduce child marriage, or at least increase the age at first marriage. The importance of incentives for girls' education in delaying the age at marriage is confirmed by the review by Botea et al. (2017). This is also underscored under the tipping point approach suggested by Brown (2012).

119. In practice, it is necessary to adapt interventions to the particular context that prevails in any country. A simple typology provided by Perlman et al. (2017) originally for Niger outlines the type of programs that could be helpful for adolescent girls – both married and not married. The typology considers four target groups whose needs differ in some respects: (1) Girls ages 10-15 still in school and not married; (2) Girls ages 10-16 out of school but not yet married; (3) Girls ages 16-19 still in school and not married; and (4) Married girls out of school. A menu of potential interventions is suggested in table A4.2 is to tailor specific programs to the needs of these key groups of adolescent girls.

(1) The first two groups of girls are still in school. Most parents regard formal education as an acceptable alternative to early marriage. But the cost of schooling (out of pocket and opportunity costs) is high for households in poverty. In addition, low quality of education in rural schools does not encourage parents to invest in their daughters' education. In order to improve school quality, a focus on literacy and numeracy skills acquisition should be a priority for girls ages 10-15. In addition, cash transfers or other programs to help offset the cost of schooling are needed. Finally, girls in that group also need life skills training. Similarly, for girls in school ages 16-19, schooling must provide value. This can be achieved by focusing more on preparing girls for the formal labor market positions such as those held by teachers and nurses. This would help not only those girls, but adolescent girls more generally by providing role models to show to communities that women can get such jobs if well educated. Several interventions for girls ages 10-15 also apply to this group.

(2) For girls out of school, the interventions listed in table A4.2 differ depending on whether they are married or not. For girls not yet married, the key is again to provide a viable alternative to marriage. Programs should focus on building financial literacy, microenterprise skills, enhancing access to savings and expanding economic opportunities. Life skills should also be emphasized through 'safe space clubs' together with financial incentives to attend. These programs should look almost like schooling to achieve some of the protective status against early marriage provided by formal education. This could be done by providing uniforms resembling those worn by schoolgirls, and ensuring that the clubs meet at least three times a week for several hours. Finally, for girls already married, programs could also offer financial literacy, microenterprise skills, and access to savings groups, as well as life skills, including a focus on knowledge about reproductive health, but in a culturally sensitive way to promote birth spacing and the use of contraception.

Table A4.2: Interventions for Adolescent Girls by Target Groups - Some Examples

Target Group	Objective	Interventions
	In School	
Ages 10-15	Remaining in school	Economic incentives to remain in school
	Learning in school	Basic literacy and numeracy curriculum
	Acquiring life skills	Life skills programs through safe spaces
Ages 16-19	Remaining in school	Economic incentives to remain in school
	Learning in school	Skills for formal employment curriculum
	Acquiring life skills	Life skills programs through safe spaces
	Out of School	
Not married	Providing incentives	Economic incentives to enroll in training
10-16	Providing training	Broad livelihood/entrepreneurship training
	Providing financing	Access to a savings group
	Ensuring literacy/numeracy	Remedial education for literacy/numeracy
	Acquiring life skills	Life skills programs through safe spaces
Married	Providing training	Training for home-based enterprises
All ages	Providing financing	Access to a savings group
	Ensuring literacy/numeracy	Remedial education for literacy/numeracy
	Acquiring life skills	Life skills programs through safe spaces
	Mentoring younger girls	Married girls serving as cascading mentors.

Source: Perlman et al. (2017).

REFERENCES

Aizer, A. 2011, Poverty, Violence and Health: The Impact of Domestic Violence during Pregnancy on Newborn Health, *Journal of Human Resources*, 46(3): 518–538.

Akpan, E. O. 2003. Early Marriage in Eastern Nigeria and the Health Consequences of Vesico-Vaginal Fistulae (VVF) among Young Mothers. *Gender and Development* 11(2): 70-76.

Amin, S., and A. Bajracharya. 2011. *Costs of Marriage—Marriage Transactions in the Developing World*. New York: Population Council.

Asadullah, M. N., A. Alim, F. Khatoon, and N. Chaudhury. 2016, Maternal Early Marriage and Cognitive Skills Development: An Intergenerational Analysis, WIDER Conference on Human Development and Growth, Helsinki.

Backiny-Yetna, P., and Q. Wodon. 2010. Gender Labor Income Shares and Human Capital Investment in the Republic of Congo. In *Gender Disparities in Africa's Labor Markets,* edited by J. S. Arbache, A. Kolev, and E. Filipiak. Washington, DC: World Bank.

Baird, S., E. Chirwa, C. McIntosh and B. Ozler. 2010. The Short-Term Impacts of a Schooling Conditional Cash Transfer Program on the Sexual Behavior of Young Women, *Health Economics* 19: 55–68.

Baird, S., C. McIntosh, and B. Ozler. 2011. Cash or Condition: Evidence from a Randomized Cash Transfer Program, *Quarterly Journal of Economics* 126(4): 1709-53.

Barageine, J. K., E. Faxelid, J. K. Byamugisha, and B. Rubenson. 2016. 'As a Man I Felt Small': A Qualitative Study of Ugandan Men's Experiences of Living with a Wife Suffering from Obstetric Fistula. *Culture, Health and Sexuality*, 18:4, 481-494.

Black, M. M., S. P. Walker, L. C. H. Fernald, C. T. Andersen, A. M. DiGirolamo, C. Lu, D. C. McCoy, G. Fink, Y. R. Shawar, J. Shiffman, A. E. Devercelli, Q. T. Wodon, E. Vargas-Baron, and S. Grantham-McGregor. 2016, Early Childhood Development Coming of Age: Science through the Life Course, *The Lancet*, forthcoming.

Bloom, D. E. and J. G. Williamson. 1998. Demographic transitions and economic miracles in emerging Asia, *World Bank Economic Review* 12(3): 419-55

Bloom D.E., and J. E. Finlay. 2008. Demographic Change and Economic Growth in Asia, PGDA Working Paper No. 41, September 2008.

Bloom, D. E., and J. E. Sachs. 1998. Geography, Demography, and Economic Growth in Africa, *Brookings Papers on Economic Activity*, 2: 207-95.

Bloom, D. E., D. Canning, G. Fink, and J. E. Finlay. 2007. Realizing the Demographic Dividend: Is Africa any different?, Program on the Global Demography of Aging Working Paper No. 23, Boston, MA: Harvard University.

Botea, I., S. Chakravarty, S. Haddock, and Q. Wodon. 2017. Interventions Improving Sexual and Reproductive Health Outcomes and Delaying Child Marriage and

Childbearing for Adolescent Girls, *Ending Child Marriage Notes Series*, World Bank, Washington, DC, 18 p.

Bott, S., A. R. Morrison, and M. Ellsberg. 2005. *Preventing and Responding to Gender-Based Violence in Middle and Low-Income Countries: A Global Review and Analysis.* Washington, DC: World Bank.

Boyden, J., A. Pankhurst and Y. Tafere. 2013. Harmful Traditional Practices and Child Protection: Contested Understandings and Practices of Female Child Marriage and Circumcision in Ethiopia. London: Young Lives.

Brown, G. 2012. *Out of Wedlock, Into School: Combating Early Marriage through Education*. London: The Office of Gordon and Sarah Brown.

Bussolo, M., I. Fofana, J. C. Parra, and Q. Wodon. 2011, Exports and Labor Income by Gender: A Social Accounting Matrix Analysis for Senegal, in M. Bussolo and R. E. De Hoyos, editors, *Gender Aspects of the Trade and Poverty Nexus: A Macro-Micro Approach*, World Bank and Palgrave Macmillan, Washington, DC.

Calimoutou, E., Y.Liu, and B.Mbu. 2016. *Compendium of International and National Legal Frameworks on Child Marriage.* Washington, DC: The World Bank.

Calimoutou, E. and Q. Wodon. 2017. Legal and Institutional Aspects of Child Marriage in Nigeria, *HNP Knowledge Brief*. Washington, DC: The World Bank.

Campbell, J. C. 2002. Health Consequences of Intimate Partner Violence. *The Lancet* 359(9314): 1331-6.

Canning, D., S. Raja, and A. S. Yazbeck. 2015. *Africa's Demographic Transition Dividend or Disaster?*, Washington, DC: The World Bank.

Carbone-Lopez, K., C. Kruttschnitt, and R. Macmillan. 2006. Patterns of Intimate Partner Violence and their Associations with Physical Health, Psychological Distress, and Substance Use. *Public Health Rep* 121(4): 382.

Centers for Disease Control and Prevention. 2003. *Costs of Intimate Partner Violence against Women in the United States*. Atlanta: CDC.

Chen, X. K., Wen, S. W., Fleming, N., Demissie, K., Rhoads, G. G. and Walker, M. 2007. Teenage pregnancy and adverse birth outcomes: a large population based retrospective cohort study. *International Journal of Epidemiology*, 36(2): 368-373.

Chibber, K. S., and S. Krishnan. 2011. Confronting Intimate Partner Violence, A Global Health Care Priority. *Mt Sinai Journal of Medicine* 78(3): 449-57.

Clark, S. 2004. Early Marriage and HIV Risks in Sub-Saharan Africa. *Studies in Family Planning* 35(3): 149-160.

Clark, S., J. Bruce, and A. Dude. 2006. Protecting Young Women from HIV/AIDS: The Case against Child and Adolescent Marriage. *International Family Planning Perspectives* 32(2): 79-88.

Coudouel, A., J. Hentschel, and Q. Wodon. 2002. Poverty Measurement and Analysis, in J. Klugman, editor, *A Sourcebook for Poverty Reduction Strategies, Volume 1: Core Techniques and Cross-Cutting Issues,* World Bank, Washington, DC.

Degarege, D., A. Degarege, and A. Animut. 2015. Undernutrition and associated risk factors among school age children in Addis Ababa, Ethiopia, *BMC Public Health*, 15: 375.

Denboba, A., R. K. Sayre, Q. Wodon, L. Elder, L. Rawlings, and J. Lombardi. 2014. *Stepping up Early Childhood Development: Investing in Young Children with High Returns*, Washington, DC: The World Bank.

Dixon-Mueller, R. 2008. How Young Is Too Young? Comparative Perspectives on Adolescent Sexual, Marital, and Reproductive Transitions. *Studies in Family Planning* 39(4): 247-62.

Duflo, E. 2011. *Women's Empowerment and Economic Development*. Cambridge: National Bureau of Economic Research.

Duvvury, N., A. Callan, P. Carney, and S. Raghavendra. 2013. *Intimate Partner Violence: Economic Costs and Implications for Growth and Development*. Washington, DC: World Bank.

Duvvury, N., C. Grown, and J. Redner. 2004. *Costs of Intimate Partner Violence at the Household and Community Levels: An Operational Framework for Developing Countries*. Washington, DC: International Center for Research on Women.

Duvvury, N., H. M. Nguyen, and P. Carney. 2012. *Estimating the Cost of Domestic Violence against Women in Viet Nam*. New York: UN Women.

Edmeades, J., R. Hayes, and G. Gaynair. 2014. *Improving the Lives of Married, Adolescent Girls in Amhara, Ethiopia*. Washington, DC: International Center for Research on Women.

Elborgh-Woytek, K., M. Newiak, K. Kochhar et al. 2013. *Women, Work, and the Economy: Macroeconomic Gains from Gender Equity*. Washington, DC: International Monetary Fund.

Erulkar, A. S., and M. Bello. 2007. The Experience of Married Adolescent Girls in Northern Nigeria. Abuja: Population Council.

Erulkar, A. S., and E. Muthengi. 2007. *Evaluation of Berhane Hewan: A Pilot Progam To Promote Education and Delay Marriage in Rural Ethiopia*. New York: UNFPA.

Erulkar, A. S., and E. Muthengi. 2009. Evaluation of Berhane Hewan: A Program to Delay Early Marriage in Rural Ethiopia. *International Perspective on Sexual Reproductive Health* 35(1): 6-14.

Fall, C.H., H. S. Sachdev, C. Osmond, M. C. Restrepo-Mendez, C. Victora, R. Martorell, A. D. Stein, S. Sinha, S., N. Tandon, L. Adair, and I. Bas. 2015, Association between maternal age at childbirth and child and adult outcomes in the offspring: a prospective study in five low-income and middle-income countries, *The Lancet Global Health* 3(7): 366-77.

Family Care International, International Center for Research on Women, and KEMRI/CDC Research and Public Health Collaboration. 2014. *A Price Too High to Bear: The Costs of Maternal Mortality to Families and Communities*, New York; Nairobi; Washington, DC: Family Care International, KEMRI/CDC Research and Public Health

Collaboration; International Center for Research on Women.

Field, E. and A. Ambrus. 2008. Early Marriage, Age of Menarche, and Female Schooling Attainment in Bangladesh. *Journal of Political Economy* 116(5): 881-930.

Filippi, V., R. Ganaba, R. F. Baggaley, T. Marshall, K. T. Storeng, I. Sombi, et al. 2007. Health of Women after Severe Obstetric Complications in Burkina Faso: A Longitudinal Study. *The Lancet* 370(9595): 1329-37.

Gage, A. 2013. Association of Child Marriage with Suicidal Thoughts and Attempts Among Adolescent Girls in Ethiopia, *Journal of Adolescent Health* 52(5).

Gemignani, R., C. Tsimpo, and Q. Wodon. 2014. Making Quality Care Affordable for the Poor: Faith-inspired Health Facilities in Burkina Faso, *Review of Faith & International Affairs*, 12(1): 30-44.

Gemignani, R., M. Sojo, and Q. Wodon. 2014. What Drives the Choice of Faith-inspired Schools by Households? Qualitative Evidence from Two African Countries, *Review of Faith & International Affairs*, 12(2): 66-76.

Gemignani, R., and Q. Wodon. 2015. Child Marriage and Faith Affiliation in sub-Saharan Africa: Stylized Facts and Heterogeneity. *Review of Faith & International Affairs*, 13(3): 41-47.

Gemignani, R., and Q. Wodon. 2017. Socio-Economic and Religious Factors Leading to Child Marriage in Burkina Faso. Education Global Practice, Washington, DC: The World Bank.

Gielen, A. C., K. A. McDonnell, and P. J. O'Campo. 2002. Intimate Partner Violence, HIV Status, and Sexual Risk Reduction. *AIDS Behavior* 6(2): 107-16.

Godha D., D. R. Hotchkiss, and A. J. Gage. 2013, Association between child marriage and reproductive health outcomes and service utilization: A multi-country study from South Asia, *Journal of Adolescent Health* 52(5): 552-8.

Haddad, L., J. Hoddinott, and H. Alderman. 1997. *Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policy*. Baltimore: The Johns Hopkins University Press.

Hallward-Driemeier, M., and T. Hasan. 2013. *Empowering Women: Legal Rights and Opportunities in Africa*. Africa Development Forum. Washington, DC: World Bank.

Hoddinott, J., H. Alderman, J.R. Behrman, L Haddad and S. Horton. 2013. The economic rationale for investing in stunting reduction, *Maternal and Child Nutrition* 9 (Suppl. 2): 69-82.

Hoddinott, J., J. R. Behrman, J. A. Maluccio, P. Melgar, A. R. Quisumbing, M. Ramirez-Zea, A. D. Stein, K. M. Yount, and R. Martorell. 2013. Adult Consequences of Growth Failure in Early Childhood, *American Journal of Clinical Nutrition* 98(5): 1170-8.

Hoddinott, J. and L. Haddad. 1995. Does Female Income Share Influence Household Expenditures? Evidence from Cote d'Ivoire. *Oxford Bulletin of Economics and Statistics* 57(1): 77-96.

Horton S., and R. Steckel. 2013. Global economic losses attributable to malnutrition 1900-

2000 and projections to 2050, in B. Lomborg, editor, *The Economics of Human Challenges*, Cambridge, U.K.: Cambridge University Press.

ICRW. 2017. Child Marriage in Ethiopia, Nepal, Niger: Insights from Qualitative Data. Washington, DC: International Center for Research on Women. [Tentative title].

ICRW, UNFPA, AusAID, and AFPPD. 2013. *Child Marriage in Southern Asia: Policy Options for Action,* New Delhi, India: International Center for Research on Women.

International Commission on Financing Global Education Opportunity. 2016. *The Learning Generation: Investing in Education for a Changing World*, New York: International Commission on Financing Global Education Opportunity.

International Food Policy Research Institute. 2003. *Household Decisions, Gender, and Development: A Synthesis of Recent Research*. Washington, DC: International Food Policy Research Institute.

Islam, M. K. 2006. *The Costs of Maternal-Newborn Illness and Mortality*. Geneva: World Health Organization.

Jain, S., and K. Kurz. 2007. *New Insights on Preventing Child Marriage: A Global Analysis of Factors and Programs*. Washington, DC: ICRW.

Kalamar, A. M., S. Lee-Rife, and M. J. Hindin. 2016. Interventions to Prevent Child Marriage among Young People in Low- and Middle-Income Countries: A Systematic Review of the Published and Gray Literature, *Journal of Adolescent Health* 59: S16-S21.

Kamal, S. M. 2012. Decline in child marriage and changes in its effect on reproductive outcomes in Bangladesh, *Journal of Health, Population and Nutrition*, 30(3): 317-30.

Kamal S. M., and C. H. Hassan. 2013. Child marriage and its association with adverse reproductive outcomes for women in Bangladesh, *Asia-Pacific Journal of Public Health* 27(2).

Khanna, T., R. Verma, and E. Weiss. 2013. *Child Marriage in South Asia: Realities, Responses and the Way Forward*. Bangkok: UNFPA Asia Pacific Regional Office.

Kidman, R. 2016. Child marriage and intimate partner violence: a comparative study of 34 countries. *International Journal of Epidemiology*, doi: 10.1093/ije/dyw225.

Kishor, S., and K. Johnson. 2004. *Profiling Domestic Violence: A Multi-Country Study*, Calverton: ORC Macro.

Klugman, J., L. Hanmer, S. Twigg, T. Hasan, and J. McCleary-Sills. 2014. *Voice and Agency: Empowering Women and Girls for Shared Prosperity*. Washington, DC: The World Bank.

Koblinsky, M., M. E. Chowdhury, A. Moran, and C. Ronsmans. 2012. Maternal Morbidity and Disability and their Consequences: Neglected Agenda in Maternal Health. *Journal of Health, Population, and Nutrition* 30(2): 124.

Lamb, S., and Z. D. Peterson. 2012. Adolescent Girls' Sexual Empowerment: Two Feminists Explore the Concept. *Sex Roles* (11-12): 703-712.

Le, M. T. H., T. D. Tran, H. T. Nguyen, and J. Fisher. 2014. Early Marriage and Intimate Partner Violence among Adolescents and Young Adults in Viet Nam, *Journal of Interpersonal Violence*, 29(5): 889-910.

Le Strat, Y., C. Dubertret, B. Le Foll. 2011. Child Marriage in the United States and Its Association With Mental Health in Women. *Pediatrics* 128(3): 524-30.

Lloyd, C. B., and B. S. Mensch. 2008. Marriage and Childbirth as Factors in Dropping Out from School: An Analysis of DHS Data from sub-Saharan Africa. *Population Studies* 62(1): 1-13.

Male, C., and Q. Wodon. 2017a. Child marriage and Early Childbirth: Trend and Profile for 25 Countries. Education Global Practice. Washington, DC: The World Bank.

Malhotra, A., A. Warner, A. McGonagle, S. Lee-Rife. 2011. *Solutions to End Child Marriage What the Evidence Shows*. Washington, DC: International Center for Research on Women.

Mammen, K., and C. Paxson. 2000. Women's work and economic development. *Journal of Economic Perspectives* 14(4): 141-64.

Morrison, A., and M.B. Orlando. 2004. *The Costs and Impacts of Gender-based Violence in Developing Countries: Methodological Considerations and New Evidence*. Washington, DC: World Bank.

Nanda, P., P. Das, N. Datta, S. Lamba, E. 2015. Making Change with Cash? Evaluation of a Conditional Cash Transfer Program to Improve the Status of Girls in Northern India, Research Brief, Washington, DC: International Center for Research on Women.

Nasrullah, M., R. Zakar, M. Z. Zakar, and A. Krämer. 2014. Girl-child marriage and its association with morbidity and mortality of children under 5 years of age in a nationally-representative sample of Pakistan, *The Journal of Pediatrics* 164(3): 639-46.

National Research Council, National Institute of Medicine. 2005. *Growing Up Global: The Changing Transitions to Adulthood in Developing Countries*. Washington, DC: The National Academies Press.

Nayihouba, A., and Q. Wodon. 2017a. Child Marriage and Economic Growth. Education Global Practice. Washington, DC: The World Bank.

Nayihouba, A., and Q. Wodon. 2017b. Early Childbirths and Women's Wages in Niger. Education Global Practice. Washington, DC: The World Bank.

Nayihouba, A., and Q. Wodon. 2017c. Early Childbirths and Household Welfare in Niger: Consumption, Poverty, and Food Security. Education Global Practice. Washington, DC: The World Bank.

Nelson, C. A. 2000. The neurobiological bases of early intervention, in J. P. Shonkoff and S.J. Meisels, editors, *Handbook of early childhood intervention*, second edition, Cambridge, MA: Cambridge University Press.

Nguyen, M. C., and Q. Wodon. 2012. Measuring Child Marriage. *Economics Bulletin*, 32(1): 398-411.

Nguyen, M. C., and Q. Wodon. 2015. Global and Regional Trends in Child Marriage. *Review of Faith and International Affairs*, 13(3): 6-11.

Nguyen, M. C., and Q. Wodon. 2017a. Early Marriage, Pregnancies, and the Gender Gap in Educational attainment: An Analysis Based on the Reasons for Dropping out of School in Nigeria. Education Global Practice. Washington, DC: The World Bank.

Nguyen, M. C., and Q. Wodon. 2017b. Impact of Child Marriage on Literacy and Educational attainment in sub-Saharan Africa. Education Global Practice. Washington, DC: The World Bank.

Nour, N. W. 2006. Health Consequences of Early marriage in Africa. *Emerging Infectious Diseases* 12(11): 1644-9.

Nove, A., Z. Matthews, S. Neal, and A. V. Camacho. 2014. Maternal mortality in adolescents compared with women of other ages: evidence from 144 countries, *The Lancet Global Health* 2(3): 155-64.

Olaide, A. A., G. E. Adeyemi, and C. Dauda. 2011. Child Marriage and Maternal Health Risks among Young Mothers in Gombi, Adamawa State, Nigeria: Implications for Mortality, Entitlements and Freedoms. Paper presented at The Sixth African Population Conference, Ouagadougou, Burkina Faso.

Olivier, J., and Q. Wodon. 2015. Religion, Reproductive Health, and Sexual Behavior in Ghana: Why Statistics from Large Surveys Don't Tell the Whole Story. *Review of Faith & International Affairs*, 13 (2): 64-73.

Onagoruwa. A. O. and Q. Wodon. 2017a. Impact of Child Marriage on Total Fertility across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Onagoruwa. A. O. and Q. Wodon. 2017b. Impact of Child Marriage on Modern Contraceptive Use across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Onagoruwa. A. O. and Q. Wodon. 2017c. Impact of Early childbirth on Under-five Mortality across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Onagoruwa. A. O. and Q. Wodon. 2017d. Impact of Early childbirth on Under-five Malnutrition across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Onagoruwa. A. O. and Q. Wodon. 2017e. Impact of Child Marriage on Women's Decision-Making Ability across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Onagoruwa. A. O. and Q. Wodon. 2017f. Impact of Child Marriage on Women's Knowledge of HIV-AIDS across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Onagoruwa. A. O. and Q. Wodon. 2017g. Impact of Child Marriage on the Registration of Children at Birth across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Onagoruwa. A. O. and Q. Wodon. 2017h. Polygamy and Child Marriage across Multiple

Countries. Education Global Practice. Washington, DC: The World Bank.

Palermo, T. and A. Peterman. 2009. Are female orphans at risk for early marriage, sexual debut and teen pregnancy? Evidence from sub-Saharan Africa, *Studies in Family Planning* 40(2): 101-112.

Parsons, J., J. Edmeades, A. Kes, S. Petroni, M. Sexton, and Q. Wodon. 2015. Economic Impacts of Child Marriage: A Review of the Literature, *Review of Faith and International Affairs*, 13(3): 12-22.

Perlman, D., F. Adamu, M. Mandara, O. Abiola, D. Cao, and M. Potts. 2016. Pathways to Choice: Delaying Age of Marriage through Girls' Education in Northern Nigeria, in S. Dworkin, M. Gandhi, and P. Passano, editors. *Women's Empowerment and Global Health: A Twenty-First-Century Agenda*. Berkeley: University of California Press.

Perlman, D., F. Adamu, and Q. Wodon, editors. 2017. *Vulnerability of Adolescent Girls in Niger: Insights from Quantitative and Qualitative Research.* Education Global Practice. Washington, DC: The World Bank.

Prettitore, P. 2015. Family Law Reform, Gender Equality, and Underage Marriage: A View from Morocco and Jordan, *Review of Faith and International Affairs*, 13(3): 32-40.

Raj, A. 2010. When the Mother is a Child: The Impact of Child Marriage on the Health and Human Rights of Girls. *Archives of Disease in Childhood* 95(11): 931-5.

Raj, A., N. Saggurti D. Balaiah, and J. G. Silverman. 2009. Prevalence of child marriage and its effect on fertility and fertility-control outcomes of young women in India: A cross-sectional, observational study, *The Lancet* 373(9678): 1883-9.

Raj, A., and U. Boehmer. 2013. Girl child marriage and its association with national rates of HIV, maternal health, and infant mortality across 97 countries, *Violence against women* 19(4): 536-51.

Raj, A., L. McDougal, and M. L. Rusch. 2014. Effects of young maternal age and short interpregnancy interval on infant mortality in South Asia, *International journal of Gynaecology and Obstetrics* 124(1): 86-7.

Ravallion, M., and Q. Wodon. 2000. Does Child Labor Displace Schooling? Evidence on Behavioral Responses to an Enrollment Subsidy. *Economic Journal*, 2000, 110: C158-75.

Rivers, D., and Q. H. Vuong. 1988. Limited Information Estimators and Exogeneity Tests for Simultaneous Probit Models, *Journal of Econometrics* 39: 347-366.

Sakellariou, C., and F. Zheng. 2014. Early marriage and education outcomes of Indonesian women. Unpublished mimeo. School of Humanities and Social Sciences, Nanyang Technological University.

Santhya, K.G., N. Haberland, and A.J. Singh. 2006. *'She Knew Only When the Garland was Put Around her Neck': Findings from an Exploratory Study on Early Marriage in Rajasthan*. New Delhi: Population Council.

Santhya, K.G. 2011. Early marriage and sexual and reproductive health vulnerabilities of

young women: a synthesis of recent evidence from developing countries, *Current Opinion in Obstetrics and Gynecology* 23(5): 334-9.

Santhya, K., U. Ram, R. Acharya, S. J. Jejeebhoy, et al. 2010. Associations between early marriage and young women's marital and reproductive health outcomes: Evidence from India. *International Perspectives on Sexual and Reproductive Health* 36(3): 132-9.

Savadogo. A. and Q. Wodon. 2017a. Impact of Child Marriage on Women's Labor Force Participation across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Savadogo. A. and Q. Wodon. 2017b. Impact of Child Marriage on Women's Earnings across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Savadogo, A. and Q. Wodon. 2017d. Impact of Child Marriage on Land Ownership across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Savadogo, A. and Q. Wodon. 2017e. Impact of Child Marriage on Intimate Partner Violence across Multiple Countries. Education Global Practice. Washington, DC: The World Bank.

Save the Children. 2011. Child Marriage in North Gondar Zone of Amhara Regional State, Ethiopia: A baseline study conducted in six Woredas of North Gondar Zone, Addis Ababa: Save the Children.

Sawant, L. D. and Venkat, S. 2013. Comparative Analysis of Normal versus Fetal Growth Restriction in Pregnancy: The Significance of Maternal Body Mass Index, Nutritional Status, Anemia, and Ultrasonography Screening. International Journal of Reproductive Medicine Article ID 671954, 6 pages.

Schlecht, J., E. Rowley, and J. Babiryec, 2013. Early Relationships and Marriage in Conflict and Post-conflict Settings: Vulnerability of Youth in Uganda. *Reproductive Health Matters* 21(41): 234–242.

Shekar, M., Kakietek, J., Dayton Eberwein, J., and Walters, D. 2016. *An Investment Framework for Nutrition: Reaching the Global Targets for Stunting, Anemia, Breastfeeding, and Wasting*, Washington, DC: The World Bank.

Sinha, N., and J. Yoong. 2009. *Long-Term Financial Incentives and Investment in Daughters: Evidence from Conditional Cash Transfers in North India*. Policy Research Working Paper No. 4860. Washington, DC: World Bank.

Shonkoff, J., L. Richter, J. van der Gaag, and Z. Bhutta. 2012. An integrated scientific framework for child survival and early childhood development, *Pediatrics* 129(2): 460-72.

Smith, L., and L. Haddad. 2015. Reducing Child Undernutrition: Past Drivers and Priorities for the Post-MDG Era. *World Development* 68: 180-204.

Snow-Jones, A., J. Dienemann, J. Schollenberger, J. Kub, P. O'Campo, A. Carlson Gielen et al. 2006. Long-term Costs of Intimate Partner Violence in a Sample of Female HMO Enrollees. *Women's Health Issues* 16(5): 252-61.

Solotaroff, J.L., and R.P. Pande. 2014. *Violence against Women and Girls: Lessons from South Asia*. Washington, DC: World Bank.

Steinhaus, M., et al. 2017. Child Marriage and Intimate Partner Violence in Niger and Ethiopia. Washington, DC: International Center for Research on Women. [Tentative title].

Storeng, K.T., R.F. Baggaley, R. Ganaba, F. Ouattara, M.S. Akoum, and V. Filippi. 2008. Paying the Price: The Cost and Consequences of Emergency Obstetric Care in Burkina Faso. *Social Science & Medicine* 66(3): 545-57.

Strauss, J. and D. Thomas. 1998. Heath, Nutrition and Economic Development, *Journal of Economic Literature* 36(1): 766-817.

UNFPA. 2012. *Marrying Too Young: End Child Marriage*. New York: UNFPA.

UNICEF. 2001. *Early Marriage: Child Spouses*. Innocenti Digest No. 7. Florence: Innocenti Research Center.

UNICEF. 2005. E*arly Marriage: A Harmful Traditional Practice, A Statistical Exploration*. New York: UNICEF.

UNICEF. 2014. *Ending Child Marriage: Progress and Prospects*. New York: UNICEF.

Jones, N., B. Tefera, G. Emirie, B. Gebre, K. Berhanu, E. Presler-Marshall, D. Walker, T. Gupta and G. Plank. 2016. One Size Does Not Fit All: The Patterning and Drivers of Child Marriage in Ethiopia's Hotspot Districts. Addis Ababa: UNICEF.

Vogelstein R. 2013. *Ending Child Marriage: How Elevating the Status of Girls Advances U.S. Foreign Policy Objectives*. New York: Council on Foreign Relations.

Walker, J.-A. 2015. Engaging Islamic Opinion Leaders on Child Marriage: Preliminary Results from Pilot Projects in Nigeria, *Review of Faith and International Affairs*, 13(3): 48-58.

Walker, J. A., S. Mukisa, Y. Hashim, and H. Ismail. 2013. *Mapping Early Marriage in West Africa*. New York: Ford Foundation.

Warner, A., K. Stoebenau, and A.M. Glinski. 2014. *More Power to Her: How Empowering Girls Can Help End Child Marriage*. Washington, DC: International Center for Research on Women.

WHO. 2014a. *Health for the World's Adolescents, a Second Chance in the Second Decade*. Geneva: WHO.

WHO. 2014b. *Understanding and Addressing Violence against Women: Health Consequences*. Geneva: WHO.

Wils, A. 2015. Reaching education targets in low and lower-middle income countries: Costs and finance gaps to 2030, background paper prepared for the UNESCO Education for All Global Monitoring Report, Paris: UNESCO.

Wodon, Q. 2000. Low Income Energy Assistance and Disconnection in France. *Applied Economics Letters*, 7: 775-79.

Wodon, Q., 2015a. Child Marriage, Family Law, and Religion: Introduction to the Fall 2015

Issue. *Review of Faith & International Affairs*, 13(3): 1-5.

Wodon, Q. 2015b. Islamic Law, Women's Rights, and State Law: The Cases of Female Genital Cutting and Child Marriage, *Review of Faith and International Affairs*, 13(3): 81-91.

Wodon, Q. 2015c. *The Economics of Faith-based Service Delivery: Education and Health in sub-Saharan Africa*, New York: Palgrave Macmillan.

Wodon, Q. Early Childhood Development in the Context of the Family: The Case of Child Marriage. *Journal of Human Development and Capabilities*, 17(4): 590-98.

Wodon, Q. 2017a. Estimating the Economic Impacts and Costs of Child Marriage Globally: Methodology and Principal Results. Education Global Practice. Washington, DC: The World Bank.

Wodon, Q. 2017b. Early Childbirths and Maternal Mortality. Education Global Practice. Washington, DC: The World Bank.

Wodon, Q. 2017c. Global Welfare Cost of Child Marriage Due to Population Growth. Education Global Practice. Washington, DC: The World Bank.

Wodon, Q. 2017d. Global Cost of Under-five Mortality and Malnutrition Due to Child Marriage. Education Global Practice. Washington, DC: The World Bank.

Wodon, Q. 2017e. Education Budget Savings from Ending Child Marriage and Early Childbirths: The Case of Nigeria. Education Global Practice. Washington, DC: The World Bank.

Wodon, Q., J. Edmeades, N. John, A. Kes, C. Male, A. Onagoruwa, S. Petroni, and A. Savagodo. 2015. Economic Impacts of Child Marriage: Preliminary findings from analyses of existing data, Economic Impacts of Child Marriage Research Brief, ICRW and The World Bank, Washington, DC.

Wodon, Q., C. Male, and A. Onagoruwa. 2017. A Simple Approach to Measuring the Share of Early Childbirths Likely Due to Child Marriage in Developing Countries. Education Global Practice. Washingtin, DC: The World Bank.

Wodon, Q., M. C. Nguyen, and C. Tsimpo. 2016. Child Marriage, Education, and Agency in Uganda, *Feminist Economist*, 22(1): 54-79.

Wodon, Q., and A. Yedan. 2017a. Impact of Child Marriage and Early Childbirths on Population Growth. Education Global Practice. Washington, DC: The World Bank.

Wodon, Q., and A. Yedan. 2017b. Intergenerational Impact of Child Marriage on the Education of the Girls Marrying Early. Education Global Practice. Washington, DC: The World Bank.

Wodon, Q., and A. Yedan. 2017c. Impact of Secondary Education Enrollment on Child Marriage: Estimates for 15 Countries. Education Global Practice. Washington, DC: The World Bank.

Wodon, Q., and A. Yedan. 2017d. Child Marriage and Women's Wages in Nepal. Education Global Practice. Washington, DC: The World Bank.

Wodon, Q., and A. Yedan. 2017e. Child Marriage and Household Welfare in Nepal: Consumption, Poverty, and Food Security. Education Global Practice. Washington, DC: The World Bank.

Women's Refugee Commission. 2016. *A Girl No More: The Changing Norms of Child Marriage in Conflict.* New York: Women's Refugee Commission.

World Bank. 2012. *World Development Report 2012: Gender Equality and Development*. Washington, DC: World Bank.

World Bank. 2015, *Global Monitoring Report 2015/16: Development Goals in an Era of Demographic Change*, Washington, DC: The World Bank.

World Bank. 2016, *Women, Business, and the Law*, Washington, DC: The World Bank.

World Bank and ONE. 2014. *Leveling the Field: Improving Opportunities for Women Farmers in Africa*. Washington, DC: The World Bank; ONE.

World Health Organization (WHO), UNODC, and UNDP. 2014. *Global Status Report on Violence Prevention*, Geneva: World health Organization.

Xu, K., D.B. Evans, K. Kawabata, R. Zeramdini, J. Klavus, and C.J. Murray. 2003. Household Catastrophic Health Expenditure: A Multicountry Analysis. *The Lancet* 362(9378): 111-7.

Ye, F., H. Wang, D. Huntington, H. Zhou, Y. Li, F. You et al. 2012. The Immediate Economic Impact of Maternal Deaths on Rural Chinese Households. *PLoS One* 7(6): e38467.