

ECONOMIC IMPACTS OF GENDER INEQUALITY IN NIGER

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Macroeconomics & Trade and Investments Global Practice
Gender Innovation Lab
Education Global Practice

Africa Region

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Executive Summary



1. **Reducing gender inequality could increase per capita GDP by more than a fourth in Niger by 2030.** These significant economic gains would be generated by enabling women to have the same earnings as men, and by reducing fertility, also reduce population growth. Investing in girls' education and reducing child marriage are critical to achieving these objectives, as are investments in raising women's participation in the labor force and their productivity at work. While the estimates of the gains presented in this study are only meant to provide orders of magnitude, they suggest that achieving gender equality could yield major benefits and should be a top priority for the Government.
2. **To deepen the debate over gender inequality and its own policy agenda, the Government of Niger requested a study to: (i) document patterns of gender inequality; (ii) assess the economic impacts of those patterns; and (iii) suggest policy options for the Government to achieve gender equality.** The study is timely given the renewal of emphasis by the World Bank on gender issues and investments in human capital as well as the importance of this theme in the Country Partnership Framework (CPF) for Niger.
3. **To analyze patterns of gender inequality, the study follows a life cycle approach, looking first at gender inequality for adolescent girls and then at adult women.** Five impacts of gender inequality are considered: (i) child marriage and educational attainment; (ii) health and nutrition; (iii) fertility and population growth; (iv) labor force participation and productivity; and (v) agency, including decision-making and the risk of gender-based violence (GBV).

Patterns of gender inequality start to be severe in adolescence as girls drop out of school, marry, and have children at a young age.

4. **Despite some progress toward higher educational attainment, girls in Niger continue to fare poorly in terms of the completion of primary and secondary school in comparison with boys.** In 2016, the primary completion rate is estimated at only 26.5 percent for girls aged 15-18 versus 41.4 percent for boys, while for lower secondary, completion rates are estimated at 6.2 percent for girls aged 18-20 versus 15.6 percent for boys. For upper secondary, completion rates also remain extremely low, at 2.4 percent among girls aged 21-24 versus 6.5 percent for boys. Niger lags substantially behind other West and Central African countries on those measures.
5. **Child marriage and early childbearing are major issues for adolescent girls.** On average, across the 21 countries in West and Central Africa (WCA), the prevalence of child marriage has decreased by 8.0 percentage points in two and a half decades. Yet in Niger, there has been very little decline, with three in four girls still married before 18, as was the case more than two decades ago. Almost one in two girls still has her first child before the age of 18, while across the region, the proportion is just under one third. Trends for early childbearing in Niger are even more concerning than those observed for child marriage as there are indications that prevalence may have increased over time. Analysis of the timing of first marriage and first delivery for women suggests that early childbearing is due for the most part to child marriage.

6. **While multiple factors lead girls to drop out of school prematurely, the role of child marriage should not be underestimated.** Factors leading girls to drop out of school include low levels of parental education, poor learning outcomes, cost, failure in primary school completion exams, lack of nearby secondary schools, the fact that some girls never enroll in school or enroll too late, and demands made on first daughters at home. In addition, there is a strong negative relationship between child marriage and educational attainment for girls in Niger and more generally across Western and Central African countries. Completion rates for lower secondary school and the child marriage prevalence rate are strongly correlated across countries, pointing to the important role of schooling to secondary level in ending child marriage. In Niger itself, econometric and statistical evidence suggests that child marriage does reduce educational attainment, as discussed in a companion study to this report (Wodon et al. 2018). Based on this evidence, universal secondary completion for girls would dramatically reduce the prevalence of child marriage and early childbearing.

Gender inequality also affects adult women both at home and at work. At home, it leads to (among other outcomes) higher fertility, poor health outcomes for young children, and lower decision-making ability for women in the household. At work, gender inequality leads to women being less likely to join the labor force, working fewer hours for pay, and being less productive when they do work.

7. **At home, the impacts of gender inequality on adult women include high population growth, poor health outcomes for young children, and low levels of decision-making ability for women.** In home settings, gender inequality leads, among other consequences, to higher fertility, which is not only the main reason for the high population growth in Niger but also affects children's health outcomes when girls give birth very early in life, both of which help perpetuate inequalities in future generations. Practices related to gender inequality, such as low educational attainment for girls and child marriage, also affect women's decision-making abilities later in life. This is shown by the following estimates:
- a. **Total fertility** (toward the end of women's reproductive life) could be reduced from 7.48 to 6.15 children per woman, which under current conditions would lead to a reduction in population growth of 0.49 percentage points. The largest share (80 percent) of the reduction in fertility and associated effects on population growth comes from the impact of child marriage on total fertility.
 - b. **The expected under-five mortality rate would** be reduced from 8.1 to 6.4 percent, a fall of 1.7 percentage points.
 - c. **The expected under-five stunting rate** would be reduced from 43.1 to 39.8 percent, a drop of 3.4 percentage points.
 - d. **Decision-making ability** for women within households would increase substantially (by about one fifth) under simulations of gender equality.
8. **At work, the impact of gender inequality relates to differences in earnings (broadly conceived), productivity, and access to jobs between men and women.** Women are less likely to join the labor force and work for pay. Even when they do work, they are more likely to work part-time or in the informal sector. Time use constraints, including the burden of domestic chores, also play a role in constraining women's ability to work. All this leads to substantial gender gaps in earnings and productivity, which in turn decrease women's bargaining power and voice as well as their ability to manage their productive work. Three areas are discussed in this study: productivity in agriculture, entrepreneurship, and productivity in the skilled and urban sectors (manufacturing and services).
- a. **Plots owned by women yield 20 percent less per hectare than those managed by men.** Agriculture is the largest sector in Niger's economy, accounting for 75 percent of total employment and 41 percent of GDP. The main factors correlated with gender inequality in productivity include: (i) lack of access to labor for women (female-managed plots benefit from 16 percent fewer hired labor days than do male-managed plots); and (ii) lower use of productivity-enhancing inputs and techniques (female-managed plots have a lower incidence of intercropping, use of irrigation, pesticide and use of fertilizer than do male-managed plots).
 - b. **Enterprises owned by women show 61 percent lower profits than those owned by men.** Even after accounting for regional differences, owner characteristics, and enterprise inputs, female-owned

enterprise's profits remain lower than those of male-owned enterprises. Gender gaps in profits are highest in textile manufacturing, wholesale and retail trade, and vehicle repair. Low levels of foundational skills and formality increase the gender gap. Unlike in agriculture, a driver of the gender gap in profits is low levels of numeracy among female business owners. Women also face constraints in hiring labor or using family labor.

- c. **Gaps are also large for wage earners.** The gender gap in earnings is estimated at 29 percent when comparing similar male and female workers. In addition to gaps in educational attainment, occupational segregation (the unequal distribution of female and male workers across positions and firm types) emerges as another important driver of the gender gap in wage earnings.
9. **Apart from these factors leading to lower productivity and earnings for women, an inadequate legal framework also contributes to inequality at work.** Legal barriers to women's employment and entrepreneurship persist. Niger's performance is below the average for Sub-Saharan Africa in six of seven areas scored in the Women, Business, and the Law database, as shown in Table 0.1 Out of a maximum score of 100 per area, Niger scores an average of 46 versus an average of 59 for Sub-Saharan countries and an average of 66 for all 181 countries in the database.

Table 0.1: Assessment of Niger's legal framework for women, business, and the law

Indicator	Niger	Africa	Global
Accessing institutions: Legal capacity, agency, and freedom of movement	64	87	91
Using property: Legal ability to manage, control, and inherit property	50	76	83
Getting a job: Restrictions on employment and parental leave policies	57	61	67
Providing incentives to work: Laws on childcare and personal income tax	60	55	66
Going to court: Ease and affordability of accessing justice	50	67	68
Building credit: Access to finance and inclusiveness of credit reporting systems	0	19	30
Protecting women from violence: Sexual harassment and domestic violence	40	46	54
Average score: All seven areas equally weighted	46	59	66

Source: Women, Business and the Law 2018.

Economic gains associated with gender equality are significant, running into billions of dollars. Using two different analytical approaches shows that per capita GDP could increase by up to a third thanks to both higher earnings and lower population growth.

10. **Per capita GDP could increase by almost one third under conditions of gender equality.** The study assesses economic gains from gender equality using two approaches: comparative statics, and a Computable General Equilibrium (CGE) model. Note that estimates should not be considered precise because they depend on econometric estimates of the impacts of gender inequality in multiple areas that have themselves standard errors and a range of assumptions for costing that are debatable. Nevertheless, while based on different assumptions (see Box 0.1), the two approaches reach similar conclusions, as shown in Table 0.2 Per capita GDP depends on GDP (the numerator) and population (the denominator). In an ideal "frontier" scenario, under gender equality, GDP could increase by about one fourth under gender equality, while population size could decrease by 7 to 10 percent depending on the assumptions used. This would generate a gain in per capita GDP of almost one third. Although these results are based on optimistic scenarios, they do indicate potential gains under an ideal situation. For the comparative statics analysis, in a more realistic, yet still ambitious catching up scenario whereby Niger would match the current performance of other Sub-Saharan countries in terms of gender equality, GDP could increase by 7.8 percent, and the population of Niger could be reduced by 3.6 percent by 2030. This would generate a total gain in per capita GDP of about 11.4 percent, which would still be large.

Table 0.2: Comparison of gains in per capita GDP under two approaches

	Comparative Statics	CGE model
Ideal Frontier scenario		
Gains in earnings	23% of GDP	22% of GDP
Reduction in population size	-7% by 2030	-10% by 2030
Change in per capita GDP	30%	32%
Catching-up scenario		
Gains in earnings	7.8% of GDP	NA
Reduction in population size	-3.6% by 2030	NA
Change in per capita GDP	11.4%	NA

Box 0.1: Limitations of Methodologies for Estimating the Cost of Gender Inequality

Cost estimations rely on two approaches. The first approach is comparative statics, which uses microeconomic approaches and household surveys to look at benefits from ending gender inequality. In this approach, ending gender inequality includes, among others: (i) ending child marriage; (ii) enabling girls and women to have the same educational attainment as boys and men; and (iii) increasing the decision-making ability of women within the household. This in turn generates other gains, including in women's earnings, household income, and household wealth as well as lower fertility. The second approach is based on a macroeconomic Computable General Equilibrium (CGE) model. Simulations for gender inequality entail a change in fertility and thereby the demographic structure of the population, various levels of gains in educational attainment depending on the simulation, gains in productivity for women (depending on the sector of activity), and a higher rate of labor force participation for women. While both approaches generate similar results, this does not imply that the results should not be treated with caution and considered tentative.

Estimating potential gains from gender inequality is notoriously difficult. Consider the case of gains in earnings. The comparative statics approach used in this study implicitly assumes that labor markets would be able to absorb a larger supply of women, some of whom would also be better educated. However, the estimation does not consider potential effects on men of rising labor force participation or higher educational attainment for women. Men's earnings may decrease if women are better educated and have access to the same employment opportunities as men, resulting in reductions in the occupational segregation by gender that has traditionally led to higher earnings for men. Moreover, earnings from women currently in the labor force could be affected by the entry into the labor market of more women. Since estimates do not account for potential general equilibrium effects of gender equality on both men and women, they could be considered an upper bound to the gains that could be achieved in practice.

- The comparative statics approach highlights large gains from both higher earnings and lower population growth as well as additional potential gains.** Under the "ideal" scenario, losses in earnings, estimated at 23 percent of GDP as shown in Table 0.2, are valued at US\$4.6 billion in 2016 (first year of the simulations) at purchasing power parity (PPP). These reach US\$9.8 billion in 2030 assuming a rate of growth in per capita GDP of 2 percent per year in real terms and based on the country's expected female population 2030. The value associated with the reduction in population growth is smaller in the first year of the simulations, at US\$73 million (PPP). However, reductions in the annual population growth rate versus the counterfactual population growth rate under business-as-usual conditions are observed every year. As these reductions are cumulative from year to year, the gains become progressively larger and lead to a reduction in the population by 2030 of about 7 percent as compared to a business-as-usual scenario, as indicated in Table 0.3 In the catching-up scenario, estimates are based on the gains Niger could achieve if the country was able to perform at the level seen today in the Sub-Saharan region in terms of gender equality. This reflects more realistic—though still challenging—goals. Gains in earnings are just over a third of what could be achieved under perfect inequality, and gains from reduced population growth are just above half of what the perfect gender inequality scenario suggests. At the start of the simulations, gains in earnings are much larger than gains from lower population growth. However, over time, gains from lower population growth increase much faster than those from higher earnings.

Table 0.3: Summary of comparative statics results on the cost of gender inequality

	Annual Benefit circa 2015	Annual Benefit in 2030
Ideal Frontier Scenario (PPP unless otherwise specified)		
Losses in productivity		
Earnings loss for women	US\$4.6 billion	US\$9.8 billion
Losses due to population growth		
Welfare cost	US\$73 million	US\$2.1 billion
Catching Up Scenario (PPP unless otherwise specified)		
Losses in productivity		
Earnings loss for women	US\$1.6 billion	US\$3.4 billion
Losses due to population growth		
Welfare cost	US\$39 million	US\$1.1 billion

Note: Estimates for education budget savings are an upper bound, and actual savings are likely to be lower.

12. **Apart from gains from higher earnings and lower population growth, other gains would also be achieved from achieving gender equality.** Three such gains are highlighted here. First, gender equality would lead to a reduction in under-five mortality and stunting as well as savings in the provision of basic services by the Government. These gains are smaller but far from negligible. In the education sector, ending child marriage and early childbirths could result in savings for the Government of US\$410 million (at current value) by 2030 under the ideal scenario, in which the country would achieve universal secondary education by then. Under the catching-up scenario, corresponding gains are not computed because achieving universal secondary education would essentially end child marriage, which is one of the conditions for perfect gender inequality (therefore measuring only gains from a partial reduction in child marriage is not coherent with the assumptions used for modeling). Finally, the report estimates that reductions in under-five mortality and stunting that would result from perfect gender equality could be valued together at US\$169 million (PPP) in 2015 and US\$308 million (PPP) by 2030. (Note that gains from a catching-up scenario were not computed due to the many methodological assumptions necessary to do so for proper region-wide comparisons.)
13. **Using the CGE approach, gains are of similar magnitude thanks to higher earnings (thanks in turn to higher educational attainment and higher productivity) and lower population growth.** The CGE approach addresses gender inequalities from the angles of: (i) human capital, and (ii) productivity and labor participation. The scenarios contemplate a reduction in gender inequality associated with policy options initiated in 2018 as a path toward gender parity. With respect to human capital, the scenarios include making a major push toward something close to universal education and reduced fertility. With respect to productivity and labor participation, the simulations include increases in: (i) women labor force participation; (ii) productivity on agricultural land owned by women; and (iii) productivity of women working in the manufacturing and services sectors. Each scenario is compared to a baseline projection under business-as-usual conditions. The CGE includes scenarios with and without costs of policy implementation aimed at achieving such benefits.¹
- a. **The largest gains (in education and lower fertility) are from the demographic transition and higher productivity.** Dramatically expanding educational attainment together with a reduction in fertility would generate a gain of the order of 12.6 percent of GDP by 2030. The reduction in population growth is an additional gain not shown in Table 0.4 but mentioned earlier in Table 0.4. By contrast, simply raising the educational attainment of girls to the level observed for boys generates much smaller gains. Indeed, considering the low level of universal educational attainment in Niger, the benefits of closing the existing education gender gap are relatively small.

¹ Details of the methodology are provided in the dedicated chapter on the CGE.

- b. **Gains in female labor participation and productivity for women also generate substantial gains in GDP.** Reducing existing gender gaps in labor market outcomes would generate an increase in GDP of 8.9 percent compared to the baseline by 2030. This estimate includes gains from reducing gaps in: (i) female labor force participation without an increase in productivity (increase of 5.7 percent in GDP); (ii) productivity of agricultural land for women (increase of 0.9 percent in GDP); and (iii) labor productivity in the non-agricultural sector for women (increase of 2.4 percent of GDP). Note that including costs in the simulation would reduce the order of magnitude of these estimates only slightly.

Table 0.4: Summary of CGE results on cost of gender inequality

	Ideal Scenario Gains (in %) by 2030
Universal education and reduced fertility	12.6
Increased labor force participation and productivity	8.9
Increased land productivity	0.8
Increase in female labor force participation	5.7
Increase in productivity in urban sectors	2.4
Total	21.5

Source: Authors' calculations.

14. **Niger has made commendable steps toward reducing gender gaps.** At the international level, Niger has ratified most international conventions on human rights in general and those that promote equal opportunities for men and women in particular. Niger's Constitution recognizes the same rights for men and women for access to services and resources, while other laws and regulations also grant equal rights to men and women. Furthermore, after setting up the Ministry for the Promotion of Women and the Protection of Children, the Government created the Directorate of Women's Economic Empowerment in the same ministry to implement strategic objectives related to women empowerment. Niger's efforts to promote gender equality are further explored in Box 0.2.

Box 0.2: Niger's Efforts to Promote Gender Equality

At the international level, Niger has ratified international conventions promoting equal opportunities for men and women, including the Convention on the Elimination of Discrimination Against Women (CEDAW) and the 2004 optional protocol on violence against women.

At the regional and sub-regional levels, important commitments have been made by Niger. Those include (but they are not limited to): (i) the charter of the African Union, which states that it is the State's responsibility to "ensure the elimination of all discrimination against women and ensure the protection of women's rights as stated in international declarations and conventions;" (ii) Supplementary Bill A/SA.02/05/15 and its roadmap on equal rights for women and men for sustainable development in the ECOWAS region adopted on May 19, 2015 in Accra; and (iii) WAEMU's Common Gender Policy adopted in March 2016. This regional and sub-regional context offers Niger real opportunities for achieving gender equity.

Niger's Constitution recognizes the same rights for men and women with regards to access to services and resources. For example, Article 10 of the Constitution of November 25, 2010 states that "All Nigerien citizens are born and remain free and equal in rights and duties." In its Article 22, it states that: "(i) The State shall ensure the elimination of any form of discrimination against women, girls, or persons with disabilities; (ii) Public policies in all fields shall ensure women's full participation in national development; and (iii) The State shall take measures to combat violence against women and children in public and private life."

In addition to the Constitution, other laws and regulations grant equal rights to men and women. In May 2011, the National Charter for the Improvement of the Image of Women in the Media was signed. In 2000, Niger adopted Bill no. 2000-008 instituting on a transitional basis a quota system of 10 percent in elected positions and 25 percent in the Government and other public services. This law was revised in 2014, raising the quota

for elected positions from 10 to 15 percent. Currently, the law requires that 15 percent of representatives in Parliament and local government be women. Though the representation of women in decision-making bodies remains low, the political participation of women has made good progress in recent years. For example, in the 2016 legislative elections, 27 women were elected as MPs out of 171, representing 15.8 percent. Article 5 of Bill no. 2012-45 of 2012 prohibits discrimination based on sex, age, race, religion, disability, or HIV/AIDS status by employers. Finally, in December 2017, Niger adopted a decree aimed at keeping girls in school longer with a view to delaying marriage and childbearing, and a forceful campaign for its implementation is underway.

At the institutional level, remarkable progress has been made toward gender equality. After setting up the Ministry of Gender, the Government created the Directorate of Women's Economic Empowerment in the same ministry to implement strategic objectives related to women empowerment. In addition in its desire to ensure equity and social justice, Niger's Decree no.2015-524/PRN/MP/PF/PE of October 2, 2015 set up a structure for gender monitoring and analysis called the National Observatory for the Promotion of Gender (ONPG). This unit encourages institutions to pay particular attention to gender statistics and to integrate these into their reports. This institution is of a paramount importance for the control and monitoring of the operationality and effectiveness of the implementation of national, regional, and international commitments in the field of gender. It is autonomous and attached to the Office of the Prime Minister by Decree no. 2017-428/PRN/PM of May 24, 2017.

The promotion of gender equity also features in various programs, strategies, and policies. The Renaissance Act II program of the President of the Republic of Niger emphasizes the elimination of all forms of discrimination against women and girls and their full and effective participation at all political and economic decision-making levels. The equality of men and women also features prominently in the Niger 2035 Strategy for Sustainable Development and Inclusive Growth (SDDCI) and the 2017-2021 Economic and Social Development Plan (PDES). Moreover, Niger adopted updated its National Gender Policy (PNG) in 2017. In adopting this policy, Niger made the decisive commitment to achieve equity and equality between men and women. Finally, at the operational level, Niger implemented programs and strategies such as the Gender and Islam Strategy, the School for Husbands Strategy, the Initiative for Adolescent Girls in Niger, and the implementation of awareness programs for behavioral change. Niger has also set up a dedicated Tradeshow for the Promotion of Female Handicrafts (SAFEM).

Recommendations for addressing gender inequality affecting adolescent girls

15. **Programs and policies designed to empower adolescent girls include ending child marriage, preventing early childbearing, and educating girls.** The mutual relationships between education, child marriage, and childbearing explain why incentives for girls to remain in school or go back to school if they dropped out appear to be among the most effective interventions for delaying the age of first marriage and preventing early childbearing. More specifically, this study reviews three types of programs that can have tangible impacts only when combined, with the following aims: (i) providing life skills and reproductive health knowledge; (ii) expanding economic opportunities; and (iii) keeping girls in school or enabling them to return to school.
 - a. **Safe Space Clubs** can be held in a variety of settings, including schools or community centers. Girls meet regularly, and with the help of adult mentors, are able to discuss a range of issues. They learn life skills, including "soft" or socio-emotional skills such as critical thinking and problem solving, communication, and negotiation. In many cases, Safe Space Clubs are also used to impart "hard" skills such as basic literacy and numeracy or basic business skills.
 - b. **Livelihood programs** are appropriate for girls who dropped out of school and cannot return to school to build skills for income generation. The programs may provide an alternative to early marriage and childbearing. Two groups of interventions can be distinguished: (i) livelihood interventions; and (ii) financial literacy and access to financial services. Impacts on age at first marriage and early childbearing tend to be larger than with life skills or sexual reproductive health (SRH) knowledge alone, though not in all cases.
 - c. **Programs designed to keep girls in school, enable them to return if they dropped out, or directly delay marriage** tend to be the most promising. For example, conditional cash transfers to incentivize girls' education and promote health, which also support families during shocks, have proved effective in improving school outcomes among young people in developing countries and have now been introduced in more than 29 low-income countries worldwide.

16. **In addition, basic conditions must be met for girls to be able to remain in school.** These conditions include: (i) primary education should be free and compulsory; (ii) there is a need for additional infrastructure, including more secondary schools with access to amenities such as water and latrines, possibly with better transportation when the schools are located far from villages in rural areas; (iii) the education system needs to be of higher quality so that students actually learn while in school, which increases the likelihood that families will be willing to make the sacrifices required to keep girls in school; and (4) since girls may be at risk of violence or sexual harassment in school or when going to school, specific interventions to deal with these risks are also needed.

Recommendations for address gender inequality affecting adult women at home and at work

17. **To enable women to hire labor for agricultural work or small businesses, financing and support with childcare could be offered.** Programs providing financing for hiring labor can be beneficial. Moreover, domestic and childcare responsibilities may limit the time women can dedicate to working their plots or in their businesses. Options for removing these constraints include the provision of community-based childcare centers and efforts to engage men as equal partners for domestic responsibilities. Subsidized childcare could also be considered, if this can be kept affordable.
18. **To encourage women to learn about and adopt productivity-enhancing agricultural inputs, extension services should be tailored to their needs.** Cash vouchers or in-kind transfers may ease the financial constraints women face in purchasing inputs. Delivering improved inputs in quantities appropriate to women's (often smaller) plots and with payment schedules accessible to women could also lead to a significant increase in use.
19. **To close the gender gap in entrepreneurship, training combining numeracy skills, business development, and management is a promising policy intervention.** However, these programs need to be customized to fit the needs of Niger's women. There is growing evidence of the importance of psychosocial skills for women entrepreneurs in Africa. For example, in South Africa and Togo, business training programs incorporating psychosocial skills have led women to earn higher profits, with additional benefits for mental health and subjective wellbeing. Creating a One-Stop-Shop for women entrepreneurs may also facilitate formalization as well as and access to information, finance, and markets. It is also important to incentivize a shift from low-earning to higher-earning sectors.
20. **Providing comprehensive support to address women's multifaceted vulnerabilities should have a number of impacts.** A good example is Liberia's Economic Empowerment of Adolescent Girls and Young Women (EPAG). The program provided six months of training in specific job skills in promising sectors or self-employment skills, including business development. It also provided job placement and links to micro-credit as well as life skills training and other services such as childcare and transportation. The project proved cost-effective, albeit with differences depending on what women chose to focus on. Another project, the Sahel Women's Empowerment and Demographic Dividend (SWEDD) project, also aims to provide comprehensive services by offering technical and professional training in non-traditional activities and offering financial support.

1



INTRODUCTION

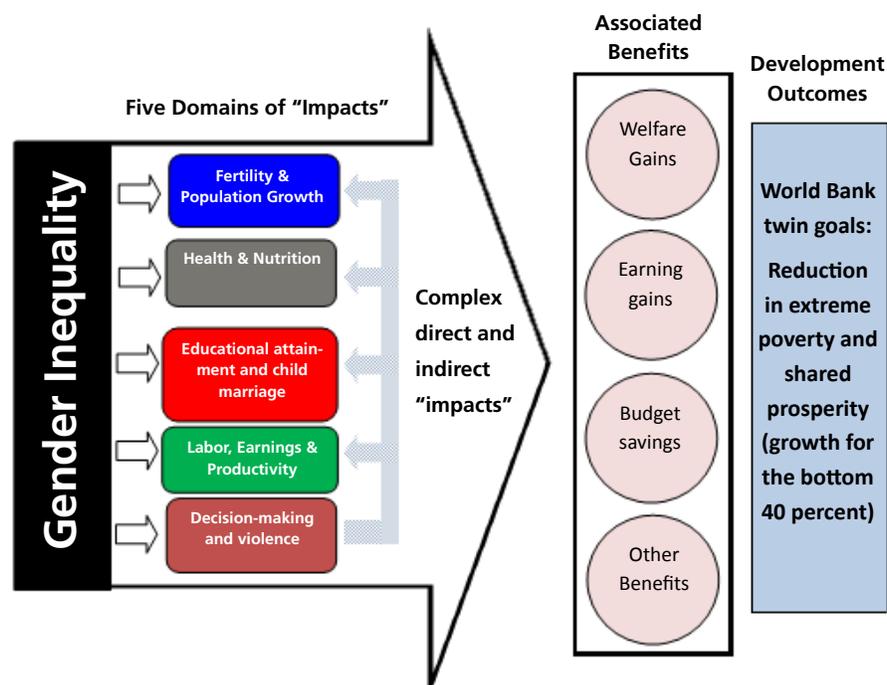
- 1. Gender inequality remains pervasive in Niger. The objective of this study is to: (i) document patterns of gender inequality; (ii) identify the drivers and measure the economic impacts of those patterns; and (iii) suggest policy options for the Government to achieve gender equality.** The study responds to a request from the Government of Niger. In September 2017, the Ministry of Planning and the Prime Minister expressed interest in benefiting from advisory work on the benefits of more gender-inclusive growth. The Government reiterated its interest in this topic during the Annual Meetings in October 2017. Further still, the Government of Niger has stated the importance of gender equality in its second Economic and Social Development Plan for 2017-2021 (PDES II). The overarching goal of the PDES II strategy is to achieve high and inclusive growth over the 2017-2021 period by reducing poverty to 39.8 percent by 2016 and 31.3 percent by 2021 along with average national GDP growth of 7 percent. The PDES II strategy points to the fact that women are disadvantaged in accessing education and reproductive health and that their participation in the economy and decision-making is very low. Moreover, unemployment is higher for women, and social protection for women and children constitutes a major concern for the Government.
- 2. The study is aligned with the World Bank's Gender Strategy and the Country Partnership Framework with Niger.** The World Bank Group emphasizes gender inclusion as an end in itself but also as a critical tool toward development effectiveness. At the center of this agenda is Sustainable Development Goal (SDG) 5, or the achievement of gender equality and empowerment for all women and girls.
 - **World Bank Gender strategy:** The Gender Strategy focuses on four pillars: (i) improving human endowments, including health, education, and social protection; (ii) removing constraints on more and better jobs; (iii) removing barriers to women's ownership and control of assets; and (iv) enhancing women's agency and engaging men and boys. Gender equality is also central to the World Bank Group's goals of ending extreme poverty and boosting shared prosperity in a sustainable manner.
 - **Country Partnership Framework:** In Niger, the World Bank acting through IDA18 will support a mix of policy and investment lending, with the focus on creating economic opportunities in agriculture and social safety nets targeting women and young people. These investments will in turn expand female decision-making. As educational opportunities and labor market outcomes for women improve, the opportunity cost of marriage and childbearing should increase, leading to a decline in fertility. Conversely, as women's fertility falls and age at marriage increases, girls and women may be able to dedicate more time to income-generating activities. The study also aligns with the new Country Partnership Framework (CPF) for Niger, which focuses on women's empowerment, arguing that the business-as-usual approach is no longer an option. The overarching goal of the CPF in Niger is to empower women and girls in order to bring down the unsustainable rate of population growth, thus tackling one of the root causes of fragility, conflict, and violence in the country and increasing the chances of other development policies succeeding. In the medium term, reduced demographic pressure is expected to free up scarce public resources for services such as health and education and enable women's and girls' empowerment in a self-sustaining virtuous circle. For example, the CPF supports a citizen-centered approach that boosts female agency and involves citizens more directly in the design and delivery of publicly-funded goods and services.

3. **This introductory chapter provides the conceptual framework for the study and presents the content of each chapter.** The study follows a life cycle approach, looking at the various dimensions of gender inequalities starting with adolescent girls and then adult women.
- **Part 1: Adolescent girls.** While gender inequality affects girls at a very young age, it clearly emerges as a major issue in adolescence as girls drop out of school prematurely, get married as children (before the age of 18), and often have their first child before that age as well. Chapter 2 looks at trends in these areas and at the factors that lead to these outcomes for adolescent girls. Chapter 3 discusses the policies that could be implemented to promote gender equality through investments in adolescent girls through three types of programs: (i) programs providing life skills and reproductive health knowledge; (ii) programs expanding economic opportunities; and (iii) programs keeping girls in school or enabling them to return to school.
 - **Part 2: Adult women.** Low educational attainment for girls, child marriage, and early childbearing in adolescence have consequences for women's fertility, access to healthcare, their children's health and nutrition, intimate partner violence (IPV), and agency. Moreover, lack of productivity-increasing inputs, occupational segregation, and other factors dampen the returns women derive from income-generating activities. Chapters 4 and 5 document those issues. Chapter 6 details the GCE simulations conducted to assess the benefits of reduced gender inequality. It also discusses the results based on the comparative statics estimation with a view to illustrating what Niger could aspire to in comparison to the performance on gender equality of the Sub-Saharan region overall. Policies designed to improve opportunities for adult women are discussed in Chapter 7. Finally, Chapter 8 concludes the study and presents the matrix summarizing the recommendations made to achieve progress toward gender parity.

CONCEPTUAL FRAMEWORK

4. **The study relies on a conceptual framework developed for a global study by the World Bank of the cost of gender inequality.** Despite progress in education, health, and other areas over the last two decades, girls and women in Niger still face lower opportunities than boys and men in their households, in markets, and in institutions. The negative effects of gender inequality add up over the life cycle and carry forward to future generations. Building on recent work at the World Bank on the economic impacts of child marriage, low educational attainment for girls, and the economic cost of gender inequality globally, the conceptual framework for this study is shown in Figure 1.1.²
- **Domains of impacts:** Five domains of impacts of gender inequality are considered: (i) fertility and population growth; (ii) health and nutrition; (iii) child marriage and educational attainment; (iv) labor force participation and earnings; and (v) agency, including decision-making and the risk of GBV. Gaps in each domain are estimated using regression analysis with data from household surveys.
 - **Types of costs and benefits:** Selected costs associated with the impacts of gender inequality in various domains are estimated. For example, the benefits from achieving gender equality include: (i) higher growth in per capita GDP; (ii) lesser budgetary needs as a result of lower population; and (iii) higher labor earnings as a result of better health and less stunting in childhood and for women in adulthood as a result of more years of education. Although this list of benefits is by no means exhaustive, it includes some of the largest benefits that can be expected. Estimations are conducted using both comparative statics and a computable general equilibrium (CGE) model.
 - **Development outcomes:** The benefits from gender equality for girls and women have implications at the national level. Gender equality will reduce poverty by raising standards of living through higher per capita GDP thanks to lower population growth and higher earnings for women. Since girls and women from disadvantaged socioeconomic backgrounds are most affected by gender inequality, greater gender equality will also boost shared prosperity through higher growth in incomes for the bottom 40 percent of the population in terms of standards of living. While estimates of impacts on poverty, inequality, and shared prosperity are not discussed in this study, such impacts are clearly present.

² Wodon (2017); Wodon and de la Brière (2018).

Figure 1.1: Conceptual Framework

Source: Wodon and de la Brière (2018).

METHODOLOGY FOR ESTIMATING THE COST OF GENDER INEQUALITY

5. Conceptually, the economic costs related to gender inequality can be grouped into losses due to lower productivity and losses due to higher population growth. Losses in GDP can themselves be categorized in two categories: losses in current earnings for the population, and expected losses in earnings for future generations. Similarly, losses from population growth can be categorized in two categories: welfare losses, and higher costs of providing services. While other costs could be considered, the study will focus on those four categories.

- Losses in current earnings for the adult population: Gender inequality leads women to be less productive and earn less in adulthood than men. Therefore, potential gains in GDP from gender equality can be estimated by computing how much women would earn if they had the same earnings as men, assuming no loss in earnings for men. Back-of-the-envelope estimates are based on the potential increase in earnings from gender equality and the labor share in GDP. In addition, available data for Niger can be used to measure potential gains in various types of earnings. Three main types of earnings are considered: agricultural production, earnings from self-employment or entrepreneurship, and wage earnings.
- Expected losses in earnings for future generations: Gender equality has implications for future generations of workers. For example, this report shows that in Niger, early childbearing leads to an increase in the risk of under-five mortality and stunting for the children of mothers younger than 18 at the time of birth. Valuations can be provided for these losses, for example in the case of stunting, by relying on estimates of expected losses in earnings in adulthood when children are stunted. Because a smaller share of the population is affected, these losses tend to be much smaller than those related to current earnings for women, but they are still substantial.
- Welfare losses from high population growth: Gender inequality also contributes to high population growth. For example, girls marrying as children tend to have children earlier as well as more children over their lifetime. This leads to higher fertility rates and higher population growth. For any level of GDP, higher population growth tends to reduce per capita GDP, thus entailing welfare losses for the population in terms of standards of living.

- **Higher cost of providing services:** Higher population growth due to gender inequality also leads to higher costs for the Government in providing services. For example, when fertility rates are high, cohorts of new students entering primary school at age 6 are also large. If fertility rates were reduced through gender equality, this would reduce the number of children—and future adults—requiring basic education, health, infrastructure, and other services.
6. **The study relies on two different approaches for estimating the economic costs associated with gender inequality.** One way to estimate the economic costs of gender inequality is to consider separately the denominator and the numerator of per capita GDP, namely losses in GDP and losses due to population growth. This is done under a comparative statics approach. The second approach relies on a computable general equilibrium (CGE) model, using scenarios contemplating a path toward gender parity but not systematically closing the gaps entirely. The scenario is calibrated to represent the structure of the Nigerien economy and includes key agents in the economy. Some of the simulations also factor in the costs of policy interventions aiming to achieve such benefits. The advantage of the CGE approach is that it captures the impacts of policies through the supply and demand sides of the economy as well as the complex interactions through which reduced gender inequality would impact the Nigerien economy.

2



GENDER INEQUALITY IN ADOLESCENCE: GIRLS' EDUCATION, CHILD MARRIAGE, AND EARLY CHILDBEARING

1. **Gender inequality in Niger becomes severe in adolescence as girls are more likely to drop out of school than boys, marry as children, and have their first child before the age of 18.** Gender inequality is pervasive and is related to deep-seated social norms that assign different roles to men and women. It is likely that gender inequality affects girls early on, well before they reach puberty, for example in terms of the domestic chores they are expected to fulfill. However, gender inequality becomes especially visible and consequential during adolescence. Today, girls continue to fare poorly in terms of educational attainment in comparison to boys, including for the completion of primary school. This is in part because three girls in four marry before the age of 18, and one in two has a first child before that age. Multiple factors contribute to girls dropping out of school prematurely and to the perpetuation of child marriage and early childbearing, with little progress made over time. All three phenomena are closely linked, and the objective of this chapter is to document them.
2. **This chapter has two aims: (i) documenting trends in education, child marriage, and early childbearing for adolescent girls; and (ii) discussing the relationships between low educational attainment for girls, child marriage, and early childbearing as well as their drivers.** The chapter builds in part on a companion study of the economic impacts of child marriage in Niger (Wodon et al. 2018). This analysis is based on both quantitative and qualitative data. The qualitative analysis is especially helpful in better understanding the multiple constraints faced by girls as well as their parents. This understanding in turn informs the discussion of policy options provided in the next chapter.

TRENDS IN EDUCATIONAL ATTAINMENT, CHILD MARRIAGE, AND EARLY CHILDBEARING

3. **This chapter looks at trends in educational attainment, child marriage, and early childbearing for girls.** It compares Niger with 21 of the 25 countries in West and Central Africa using various sources, including the latest Demographic and Health Survey (DHS), the ENISED surveys, and Multiple Indicators Cluster Surveys (MICS) when a recent DHS is not available.³
4. **Niger has made some progress toward higher educational attainment for girls, but the country still lags far behind other West and Central African countries.** Table 2.1 provides trends in educational attainment for girls as measured through the shares of girls of various ages completing primary, lower secondary, and upper secondary education. Educational attainment for girls is compared to that for boys, and gender ratios are

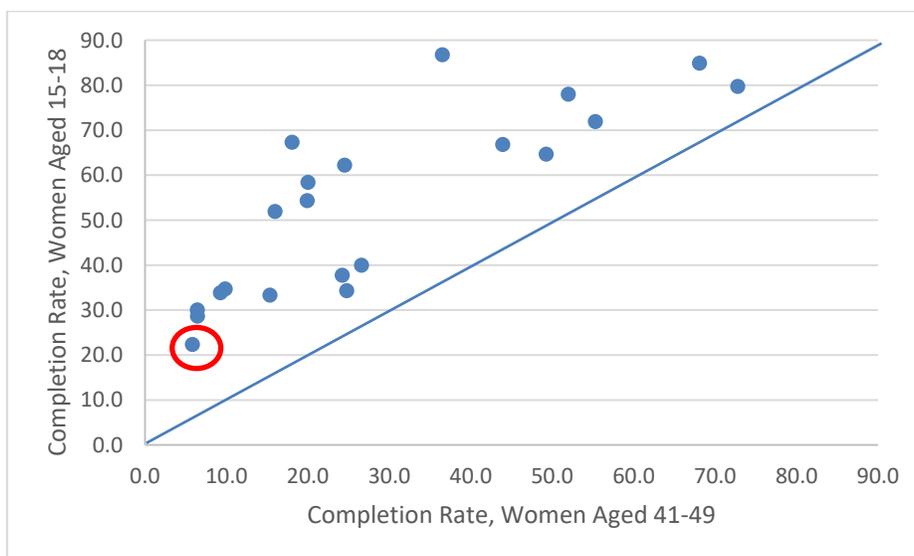
³ For Niger, given that the 2017 DHS is not yet available, the 2011 report was used along with the 2016 ENISED survey. For all countries, the years of implementation for the latest publicly available surveys range from 2010 for Burkina Faso and the Central African Republic to 2016 for Senegal. No publicly available DHS or MICS is available for Cape Verde, Saint Helena, and Equatorial Guinea, and the survey available for Mauritania is old, dating back to 2000.

provided for both Niger and West and Central Africa.⁴ Thanks in part to the Education for All (EFA) initiative, there has been major progress at primary level in Niger and throughout the region (Figure 2.1). All countries are above the diagonal, suggesting progress (the distance between each point and the diagonal being the progress achieved). Nevertheless, Niger still lags substantially behind, as identified by the red dot in the figure. More specifically:

- In Niger, using estimates from the 2016 ENISED survey (which are higher than estimates from the 2011 DHS at primary level for expected progress), the primary completion rate reached 26.5 percent for girls aged 15-18 versus 41.4 percent for boys. For lower secondary education, completion rates reached only 6.2 percent for girls aged 18-20 versus 15.6 percent for boys. For upper secondary, completion rates remain extremely low as well, at 2.4 percent for girls aged 21-24 versus 6.5 percent for boys. While these statistics indicate progress over time, girls continue to have substantially lower completion rates than boys.
- Compared to West and Central Africa, Niger shows smaller reductions in gender gaps and in absolute gains in completion rates. For the 21 countries taken together, not accounting for differences in population sizes, the average increase in the primary completion rate between the youngest and oldest age groups is 24.0 percentage points. At lower secondary level, the average increase in completion rates is 13.6 percentage points. Finally, at upper secondary level, completion rates rose from 5.6 percent for women aged 41-19 to 13.9 percent for women aged 21-24, a gain of 8.3 percentage points. For Niger however, gains at the upper secondary level are smaller in absolute terms than at the primary level.

On average, primary completion rates increased by 24 percentage points in the region when comparing adolescent girls to older women. However, gains have been smaller at higher levels of schooling. In Niger, gains at all levels of schooling have been slower to materialize than in other countries.

Figure 2.1: Primary school completion for girls by age in WCA countries (%)



Source: Adapted from Male and Wodon (2018).

Note: Niger data from 2011 DHS data for comparability purposes.

⁴ The first age group in the table for primary education consists of girls aged 15-18, an older age group than the normal age for primary completion. This is to account for the possibility of girls starting school late or repeating grades. Similarly, the first age group for the analysis of completion rates for lower secondary school (defined as three years of secondary education) is women aged 18-20, and women aged 21-24 for the completion of upper secondary school.

Table 2.1: Share of individuals completing various levels of schooling (%)

	Comparative Educational Attainment by Gender				
	Primary Completed by Age Group (%)				
	15-18	19-22	23-30	31-40	41-49
Niger DHS 2011: Girls	22.3	13.7	7.2	7.1	5.8
Niger DHS 2011: Boys	32.3	30.1	18.4	13.5	13.9
Gender ratio	69.0	45.5	39.1	52.6	41.7
Niger ENISED 2016: Girls	26.5	17.3	8.6	7.6	8.2
Niger ENISED 2016: Boys	41.4	33.6	22.7	16.7	16.7
Gender ratio	63.9	51.5	38.1	45.6	48.8
West & Central Africa: Girls	53.4	51.0	39.5	32.4	28.8
West & Central Africa: Boys	59.0	65.0	56.8	49.7	48.2
Gender ratio	90.5	78.5	69.5	65.2	59.8
	Lower Secondary Completed by Age Group (%)				
	18-20	21-24	25-30	31-40	41-49
Niger DHS 2011: Girls	7.1	7.9	3.3	4.1	3.2
Niger DHS 2011: Boys	15.9	18.1	8.3	8.4	9.6
Gender ratio	44.7	43.6	39.8	48.8	33.3
Niger ENISED 2016: Girls	6.2	7.2	2.7	3.1	3.8
Niger ENISED 2016: Boys	15.6	15.1	9.1	5.8	6.5
Gender ratio	39.7	47.4	29.9	52.6	58.5
West & Central Africa: Girls	29.6	32.5	23.4	18.7	15.9
West & Central Africa: Boys	38.9	47.5	39.2	33.9	33.1
Gender ratio	76.1	68.4	59.7	55.2	48.0
	Upper Secondary Completed by Age Group (%)				
	21-24	25-30	31-40	41-49	
Niger DHS 2011: Girls	1.4	1.0	1.0	1.0	
Niger DHS 2011: Boys	4.0	2.5	3.8	4.7	
Gender ratio	35.0	40.0	26.3	21.3	
Niger ENISED 2016: Girls	2.4	1.0	1.2	1.6	
Niger ENISED 2016: Boys	6.5	3.9	2.6	3.4	
Gender ratio	37.2	26.2	45.0	48.4	
West & Central Africa: Girls	13.7	11.2	7.8	5.5	
West & Central Africa: Boys	20.3	20.8	17.4	16.0	
Gender ratio	67.5	53.8	44.8	34.4	

Source: Adapted from Male and Wodon (2018).

Note: Regional averages are based on 21 countries and are not weighted by the countries' population size.

5. **Child marriage and early childbearing have not decreased substantially over time in Niger.** Child marriage is defined as living in a union, whether formal or informal, before the age of 18. Early childbearing is defined as having a first child before 18. Again, comparisons between Niger and West and Central Africa are instructive.

- **Child marriage:** In West and Central Africa, the share of girls aged 18-22 who married as children ranges from 17.2 percent in Ghana to 76.8 percent in Niger (2011 DHS). On average across the 21 countries in the region, the average prevalence of child marriage between the cohorts of women aged 18-22 and those aged 41-49 decreased by 8.0 percentage points over about two and a half decades (Table 2.2). In Niger, three in four girls still marry before 18, as was the case more than two decades ago (Figure 2.2).

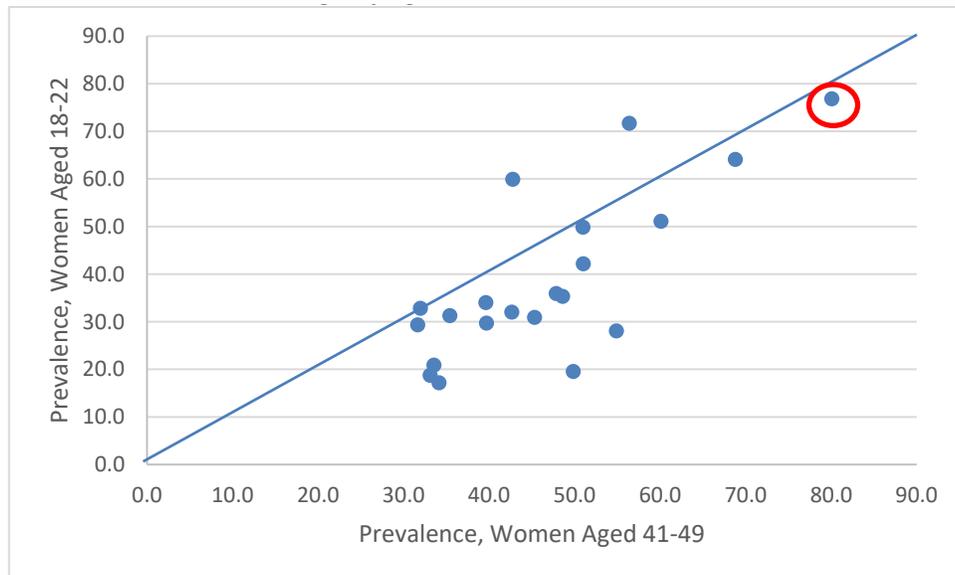
- **Early childbearing:** Trends for early childbearing in Niger are even more concerning than those observed for child marriage. In fact, there are indications that prevalence of the practice may have increased over time (2016 ENISED). Almost one in two girls still has her first child before the age of 18, while in the region, the proportion is just under one third. While there has been a slight decline over time in early childbearing in the region, this has not materialized in Niger. The fact that early childbearing remains prevalent is not surprising since (as discussed below) most cases of early childbearing are likely due to child marriage, in Niger as elsewhere.

Table 2.2: Trends in child marriage and early childbearing (by age group)

	Aged 18-22	Aged 23-30	Aged 31-40	Aged 41-49
Child marriage				
Niger DHS 2011	76.8	76.1	76.6	80.1
Niger ENISED 2016	74.7	74.2	70.0	70.3
West & Central Africa	38.6	42.7	43.8	46.6
Early childbearing				
Niger DHS 2011	47.1	47.4	42.7	37.2
Niger ENISED 2016	49.8	47.3	34.1	32.4
West & Central Africa	30.4	32.4	32.6	34.1

Source: Adapted from Male and Wodon (2018).

Figure 2.2: Prevalence of child marriage by age in WCA countries (%)



Source: Adapted from Male and Wodon (2018).

Note: Niger is highlighted by a red circle (2011 DHS data).

Box 2.1: Measuring Educational Attainment, Child Marriage, and Early Childbearing Over Time

Trends over time for educational attainment, child marriage, and early childbearing can be analyzed in two different ways using household surveys. One approach is to rely on the latest survey for each country and look at differences in measurements by age group. The other approach consists in looking at trends for the same age group across different surveys over time. In this chapter, the first approach is used. The advantages of this approach are that: (i) it relies on a unique survey and sample for the analysis, which ensures additional coherence; (ii) it relies on recent surveys, which may be of better quality than older surveys; and (iii) it permits the analysis of changes over time even when only one survey is available. The potential disadvantage of the first approach is that there may be recall errors for older women in terms of when they got married for the first time or of their educational attainment. However, those risks may not be high given the importance of first marriage, an event that this is not easily forgotten, and the fact that most people tend to remember at what level of schooling they dropped out of school.

As regards the measurement of educational attainment, both surveys and administrative data from education management information systems can be used. Because administrative data do not include information on child marriage, for consistency and comparisons with data on girls' education, we rely for the estimation on surveys. For child marriage, the share of girls marrying before 18 is reported (higher order measures of child marriage inspired by the poverty literature are available from the authors). In some studies, the prevalence of child marriage is estimated for women aged 20 to 24. Here, the analysis is carried out for women aged 18 to 22. This tracks the conditions prevailing in the countries in question more closely at the time of the survey. The same age group is used to measure trends in early childbearing (first child before age 18).

6. **The negative relationship between child marriage and educational attainment for girls is strong across Western and Central African countries.** Figure 2.3 shows that the completion rate for lower secondary school and the child marriage prevalence rate are strongly correlated, pointing to the important role of schooling to secondary level in ending child marriage, as noted in the literature and as discussed in an accompanying Child Marriage Study.⁵ Figure 2.3 also suggests that as secondary schooling rates rise, their marginal impact on child marriage may fall. This may be because it is often more difficult to reach conclusion (ending as opposed to reducing child marriage) in this area as in many others of development policy.

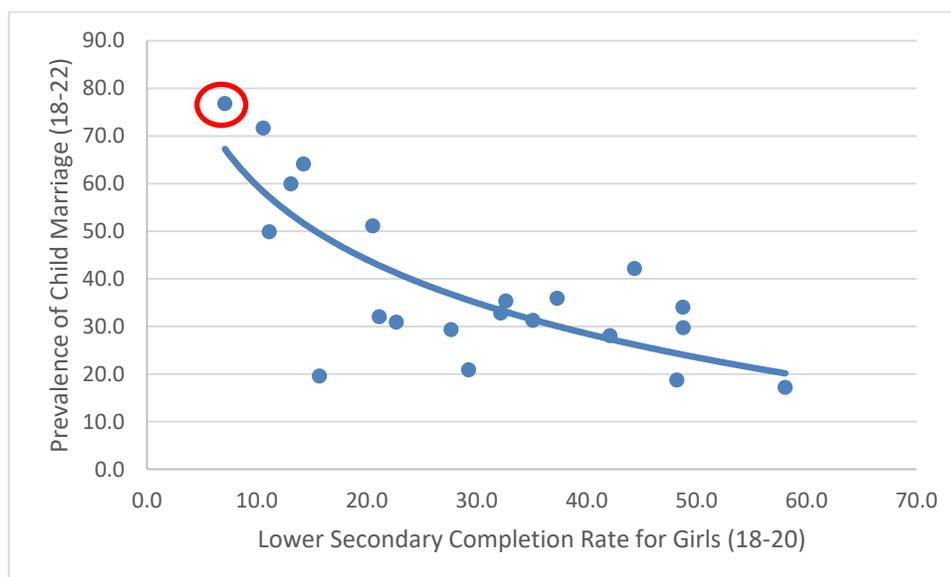
On average, across the 21 countries in West and Central Africa, the prevalence of child marriage has decreased by 8.0 percentage points in two and a half decades. However, in Niger, there has been very little decline, with similar findings for early childbearing.

IMPACTS BETWEEN EDUCATION, CHILD MARRIAGE, AND EARLY CHILDBEARING IN NIGER

7. **A typology of adolescent girls according to their marriage and schooling status suggests that in Niger, after 16 years of age, girls as well as parents must choose between marriage and schooling.** Table 2.3 provides measures of four categories of girls in Maradi Department (where the qualitative work leading to the typology was conducted) and for Niger overall.⁶ The results suggest that after a certain age, girls must choose between marriage and schooling. In addition, once a girl marries, it is very difficult for her to remain in school. Put simply, the fact that for many girls in Niger the options are to continue schooling or marry but not both implies that causality between marriage and schooling goes both ways. Child marriage reduces education prospects for girls, and conversely, better education and employment opportunities for girls reduce the likelihood of marrying early.

⁵ The correlation is strong, with the logarithmic trend line through the scatter plot accounting for almost 60 percent of the variance in the prevalence of child marriage across countries.

⁶ The typology considers four groups of girls: (i) aged 10-15 still in school and not married; (ii) aged 10-16 out of school but not yet married; (iii) aged 16-19 still in school and not married; and (iv) out of school and married. Although these four target groups are not exhaustive of the population of girls aged 10-19, they stem from the fact that very 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, hence those two groups are omitted (Perlman et al. 2017).

Figure 2.3: Educational attainment and child marriage in WCA countries (%)

Source: Male and Wodon (2018).

Note: Niger is highlighted by red circle (2011 DHS data).

Table 2.3: Population shares of four target groups among girls aged 10-19 (%)⁷

	Maradi Department	Niger
Target groups		
In school, not married, age 10-15	28.9	29.6
In school, not married, age 16-19	1.8	3.2
Out of school, not married, age 10-16	43.6	40.6
Married, not in school, any age	23.9	22.4
Other groups		
Out of school, not married age 17-19	1.0	2.8
Married and in school, any age	0.9	1.4
Total	100.0	100.0

Source: Perlman et al. (2017).

Data source: DHS.

8. **The causality between early child marriage and schooling has been documented and supported by strong sets of evidence using two main approaches.** The first approach consists in looking at responses to questions about why girls dropped out of school. The analysis relies on reasons mentioned by parents in surveys for why their children dropped out of school. The share of drop-outs that appears to be due to child marriage or early pregnancies can then be computed. In Niger, survey data on parental perceptions about the reasons for daughters dropping out suggest that child marriage and early childbirths play an important role (Table 2.4). Failing an exam is the main reason for dropping out, but marriage comes next. This holds true whether or not one considers girls and women who completed primary education. Marriage is especially mentioned in rural areas, and as expected is mentioned more often by women who completed primary education (since girls dropping out earlier may have been too young to marry). The same findings were corroborated in other countries (Burkina Faso, Cameroon, Guinea, Togo), where in the 1990s, between 5 and 33 percent of drop outs were accounted for by child marriage for girls aged 15-24.

⁷ Statistics are in percentage terms as a share of all girls aged 10-19.

Table 2.4: Reasons for girls aged 15-24 dropping out of school (%)

	Primary completed			Primary not completed		
	All	Rural	Urban	All	Rural	Urban
Too old or too young	11.57	11.92	10.97	8.73	9.68	6.10
(Enough) schooling completed	8.03	7.02	9.76	7.82	6.60	11.20
No school or too far away	0.99	1.57	0.00	2.34	3.19	0.00
Family did not want more schooling	6.88	7.92	5.10	10.16	13.12	1.97
Cost too high	1.31	2.08	0.00	0.36	0.00	1.35
Prefers to work	3.07	1.08	6.48	2.20	0.58	6.66
Agricultural work	0.41	0.65	0.00	1.06	1.07	1.03
Domestic work	1.29	0.59	2.49	6.89	3.30	16.83
Pregnancy	0.92	1.00	0.78	0.00	0.00	0.00
Marriage	22.55	29.18	11.22	14.35	17.32	6.13
Schooling not adapted	3.05	1.84	5.11	3.58	4.01	2.40
Not useful or of no interest	2.46	2.42	2.51	4.91	4.55	5.91
Illness or disability	0.50	0.14	1.12	1.55	0.99	3.09
Failure at exam	35.90	31.18	43.98	30.44	28.57	35.61
No employment prospect from schooling	0.18	0.00	0.48	1.44	1.96	0.00
Other	0.88	1.40	0.00	4.17	5.06	1.71
All	100.0	100.0	100.0	100.0	100.0	100.0

Source: Perlman et al. (2018a,b); 2016 ENISED.

9. **The second approach relies on regression techniques to provide evidence of the significant impact of child marriage on girls' education.** This is fairly widely documented.⁸ For Niger, child marriage does not seem to have a statistically significant effect on enrolling in or completing secondary education (Table 2.5), but it does affect primary school completion, with each year of early marriage reducing that probability by 4.5 percentage points. In other countries, the impact on primary education completion is typically not statistically significant as opposed to the impact on secondary education. These findings are corroborated by a comparison with estimates for Sub-Saharan Africa and Niger using a pooled dataset for many countries. The difference for Niger is likely to be due to the fact that options for girls to pursue their secondary education are limited in large swathes of the country.

Table 2.5: Impact of child marriage on girls' educational attainment

	Niger			Sub-Saharan Africa	
	Primary Completion	Secondary Enrollment	Secondary Completion	Secondary Enrollment	Secondary Completion
Married at 17	-0.045	NS	NS	-0.046	-0.046
Married at 16	-0.091	NS	NS	-0.087	-0.078
Married at 15	-0.138	NS	NS	-0.125	-0.099
Married at 14	-0.185	NS	NS	-0.158	-0.112
Married at 13	-0.231	NS	NS	-0.186	-0.119
Married at 12 or earlier	-0.276	NS	NS	-0.211	-0.123

Source: Perlman et al. (2018a,b). For Sub-Saharan Africa, see Nguyen and Wodon (2017).

Note: NS = Not statistically significant at the 10 percent level.

Data source: DHS 2011.

⁸ Field and Ambrus (2009) used variation in the timing of menarche (puberty) as the instrumental variable for age at first marriage in Bangladesh, given that in many cultural and religious traditions, girls are often not allowed to marry before reaching puberty, while Nguyen and Wodon (2017) used the contemporaneous and past prevalence of child marriage in areas where girls live as measures for Africa.

10. **Importantly, estimates also suggest that increasing girls' education is probably one of the best ways to avoid child marriage.** Estimates of the impact of education on child marriage using the same instrumental variables as those used to measure the impact of child marriage on education suggest that keeping girls in school may have a large beneficial effect on delaying child marriage as each year of secondary education may reduce the likelihood of marrying as a child by up to 10 percentage points.⁹ This is also underscored under the tipping point approach suggested by Brown (2012).
11. **Finally, analysis of the timing of first marriage and first delivery for women suggests that early childbearing is due for the most part to child marriage, including in Niger.** The approach used to reach the estimates is explained in Box 2.2. For Niger, estimates suggest that approximately three fourths of early childbirths may be due to child marriage. While these estimates could be on the low side for a country such as Niger and may be affected by how the variables are measured in the DHS as compared to existing practice in the country, 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 on reducing early childbirths for children and early childbearing for mothers.¹⁰

Box 2.2: 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 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 early childbirth. An intermediate estimate could use a threshold of six months instead of nine months for the comparison of the timing of first birth and first marriage. Since a girl or woman does not know for sure that she is pregnant, possible pregnancy may not affect the decision to marry. In addition, in some countries, even in traditional contexts, cohabitation and sexual activity are permitted before 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 et al. (2017).

ANALYSIS OF FACTORS LEADING TO LOW EDUCATIONAL ATTAINMENT FOR GIRLS

12. **A regression analysis using data from the 2014 Living Standards Measurement Survey (LSMS) provides insights into some of the factors that lead to gender inequality in adolescence.** For example, looking at school enrollment or completion of specific levels of schooling, Oaxaca decompositions show that the household head having completed primary or secondary school, compared to no school is correlated with a larger gender gap in school attendance. Moreover, returns to a household having a higher number of employed individuals in the household as well as the household having suffered an economic shock are lower for girls' education outcomes when compared to boys'. This highlights the pervasive impact of gender norms on girls' education, leading households to make systematically different education-related decisions depending on the gender of their child. In addition, perceptions of the quality of schools and the ability to choose between different schools at local level may also matter, as may the composition of the household and the burden imposed on

⁹ Wodon and Yedan 2017c.

¹⁰ At the margin, ending child marriage entails behavioral responses that 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. However, the basic statistics provided in Table 2.3 do suggest that even if such behavioral responses were to be observed in some cases, it remains likely that ending child marriage should lead to a major reduction in early childbirths in most countries, including in Niger. However, it is important to note that ending child marriage would not be sufficient to avoid all early pregnancies and childbirths. Providing adolescents with access to comprehensive sexual education and adolescent-friendly reproductive health information and services are critical to ensuring that adolescents do not face unintended pregnancies, especially outside of marriage.

girls by domestic chores, which limit the time they have to go to school or study. Oaxaca decompositions also suggest some differences in the role of various factors in leading boys and girls to drop out. For example, greater distance to school may affect girls more because of the risk for them to be sexually harassed on the way to school. While these types of findings tend to be observed in other Sahelian countries, it is useful to complement such analysis by findings from qualitative work.

13. Qualitative data provide insights into the obstacles faced by girls wishing to remain in school beyond primary level.

The qualitative work for this study was conducted in Maradi, but probably has broader validity for the country. Seven main obstacles are at play in girls' education: (i) poor learning outcomes and cost; (ii) failure in primary school completion exams; (iii) lack of nearby secondary schools; (iv) forced withdrawal of married adolescents; (v) never enrolling in school or enrolling too late; (vi) influence of relatives; and (vii) demands on first daughters (Perlman et al. 2018).

Several factors lead girls to drop out of school: poor learning outcomes and cost, failure in primary school completion exams, lack of nearby secondary school, forced withdrawal of married adolescents, enrolling in school too late, influence of relatives, and demands on first daughters.

- *Poor learning outcomes and cost.* Rural government schools are so poor in quality and resources that many children graduate from primary school without having learned to read. Nigerien schools do not charge tuition, but parents complain that the investment in uniforms, school security, travel, lunches, and the opportunity costs of losing their daughters' labor are hardly worth the poor learning outcomes they observe.
- *Failure in primary school completion exams.* Another barrier to girls' education in rural Niger is the rule whereby students can only take the primary school completion exam twice. If they fail twice, they are ineligible to continue in public education. As was clear from Table 2.4 above, failing an exam is a key reason why girls do not continue their education. Many parents said that after their daughters failed the exam both times, they felt they had little choice but to begin looking for a suitable suitor.
- *Lack of nearby secondary schools.* Few rural communities have their own secondary school, and there are no government boarding schools serving the communities under study. Parents must send their children to nearby towns and cover the costs of travel as well as room and board. Students stay with relatives or friends, and parents are reluctant to leave their daughters without what they consider proper oversight.
- *Forced withdrawal of married adolescents.* Qualitative insights on child marriage will be discussed below, but once a girl is married, she is likely to be expelled from public school. Husbands show little interest in supporting their adolescent wife's education, especially if they must enroll in a private school. This is an expense they cannot afford. Conversely, the fear of not being allowed to withdraw their daughters from school at the time of marriage is a complaint of some parents.
- *Never enrolling in school or enrolling too late.* Some families in the qualitative study never enrolled any of their girls in school. This does not necessarily mean that boys are preferred to girls. Often, the parents did not have educational opportunities themselves. Yet in some cases, it may be the result of gender bias. In other cases, in rural Maradi, teachers refuse to enroll children considered too old, i.e., eight years of age.
- *Influence of relatives.* Extended family members can also influence parents over the value of girls' education. Several parents said that they began their children's education after relatives from the city convinced them of its importance. Interestingly, in some families, the parents send some of their children to a government school and others to an Islamic school. "A man told me that if all his children are in school, then the house chores will be left undone," one researcher wrote in her field notes. "He said that Islamic school doesn't stop a girl from helping her mother. His oldest two girls are in Islamic school, and the younger ones are in the government primary school. 'If my daughters in Islamic school don't become prominent and help us when we get old, I'm hoping that the ones in the Western school will do so.'" Many Islamic schools in Niger offer classes in both religious and secular topics, and class schedules are adapted to the daily and seasonal cycles of village life.

"I dropped out of school because one of my teachers beat me. After staying at home and doing nothing, I wanted to go back. My teacher told me it was too late. He said that at ten, I was too old to enroll. It hurts when I see my classmates going to school every day and I am home going nowhere."

- *Demands on first daughters.* Schooling decisions may not be taken for each child independently but may depend on household composition and on the activities of siblings. Being the first daughter may lessen a girl's chances of going to school. Some girls aged 7 to 9 attend adult education classes. When asked why they were not enrolled in primary school, they explained that as the oldest daughter, they were needed at home during the day to help their mothers with household chores, caring for their younger siblings, and going out hawking. They said they are often held to a higher standard of discipline than her younger brothers and sisters who go to school. With the exception of foster daughters, girls hawk for their biological mother. If a man has two or more wives, there may be multiple first daughters in the family.

Demands on the first daughter are generally heavy. She not only helps with household chores, cares for her siblings, and hawks (sells in markets), but she is also often held to a higher standard of discipline than her younger brothers and sisters.

QUALITATIVE ANALYSIS OF FACTORS LEADING TO CHILD MARRIAGE AND EARLY CHILDBEARING

14. **Qualitative work also helps us better understand why child marriage and early childbearing remain so entrenched.** Perlman et al. (2017) suggest that parents may see marriage and dropping out of school (when a secondary school is available, which is not always the case) as a way to keep their daughters safe. Menarche and the development of secondary sexual characteristics are seen by girls and parents as key factors in determining readiness for marriage. If she is not enrolled in school—due to disinterest, failing the primary school completion exam, or lack of income to pay for school fees—most parents would prefer to see their daughter married than idle. This is especially true if she has seen to have suitors or is perceived by her parents to be flirting with boys.

“Age is not a criteria for girls’ marriage. But there is no tradition that says a girl must be married at a particular age. We judge a girl ready when her mother notices that she is menstruating and her breasts have developed.”

15. **Lack of employment opportunities for girls and weaknesses in education provision also contribute to early marriage and childbearing.** In the Maradi study, girls were shown to have few career choices outside of marriage and child rearing. Being a successful wife and mother is a life path to which almost all girls aspire. The lack of meaningful social and economic alternatives makes it difficult for girls and their families to envision viable alternatives to early marriage and childbearing. In addition, as discussed above, weaknesses in the provision of education also play a role. The fact that schools are of poor quality, 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.
16. **Most child marriages are a reflection of the absence of viable alternatives, particularly for girls.** Women in Hausa communities have the right to own and control their income and property, but they typically work within their compound or that of friends. They do not work outside the home and rely on their daughters to bring raw materials for their handicrafts from the market and to sell finished goods door to door or in markets. This practice for daughters to sell goods outside of the home for their mother is called “hawking.” Hawking brings benefits in terms of households’ livelihoods, but it also brings risks. Girls may have to stay out late, at the risk of being sexually harassed or subject to physical violence. This further contributes to pressures to marry early because when girls reach puberty, parents encourage early marriage to reduce the risk of sexual activity outside of marriage related to hawking. Child marriage is thus part of a broader system of social norms and economic activity that seems to make sense to parents given the conditions that prevail in rural areas. The broader system of social norms and economic activity thus incentivizes marriage at a very young age.
17. **In most societies, including in Niger, polygamy tends to be statistically associated with child marriage.** Data from DHS surveys suggest that the share of women who marry early tends to be higher in polygamous households as compared to monogamous households. There is also anecdotal qualitative evidence that polygamy is related to child marriage, at least when husbands take on an additional, younger wife. While

additional research would be needed to establish relationships after controlling for a range of other factors affecting child marriage, basic statistics suggest that there may indeed be a link. This appears to be the case in Niger.

18. **Finally, while poverty and vulnerability contribute to gender inequality, gender inequality also contributes to poverty.** Early marriage leads girls to have children earlier as well as more children over their lifetime, which may reduce per capita consumption by adults (or equivalent) in the household, thereby increasing the likelihood of the household being poor. Girls marrying early often have to leave school, especially when this involves moving to the new husband's hometown. In addition, a lower education level is likely to curtail girls' 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 socioeconomic backgrounds as well as girls from rural areas or regions that lag economically are much more likely to marry early or to have their first child before reaching 18 compared to 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 countries. The same can typically be said of early childbirths.

CONCLUSION

19. **Gender inequality in adolescence is pervasive. This is clear when we consider the issues of child marriage, early childbearing, and low educational attainment for girls.** These three issues are closely related. They all affect each other. In Niger, child marriage is likely the cause of most instances of early childbearing. In some cases, early childbearing may lead to child marriage, but this is less likely. In addition, the line of causality between child marriage and early childbearing on the one hand and girls' educational attainment on the other goes both ways. Child marriage and early childbearing have a negative effect on educational attainment. Conversely, keeping girls in school reduces the risk of child marriage and early childbearing.
20. **These mutual relationships are the reason why incentives for girls to remain in school or go back to school if they dropped out appear to be among the most effective interventions for delaying the age of first marriage and prevent early childbearing.** In fact, achieving universal secondary completion for girls could dramatically reduce the prevalence of child marriage and early childbearing. On the other hand, while ending child marriage and early childbearing would help improve girls' educational attainment, this would not be sufficient by itself to ensure universal secondary completion. In the next chapter, policy options for tackling the issues of child marriage, early childbearing, and low educational attainment for girls are discussed based on lessons learned from international experience.

3

PROGRAMS AND POLICIES FOR EMPOWERING ADOLESCENT GIRLS: LESSONS FROM INTERNATIONAL EXPERIENCE



1. **As gender inequality becomes severe in adolescence, this is the best time to invest in a cost-effective way in order to achieve gender equality.** There are three main reasons why investing in adolescent girls tends to be more cost-effective than programs targeting older women in trying to achieve gender equality. First, earlier investments tend to bear fruits for longer as they may have effects that persist throughout a woman's life after the intervention. If a girl completes her secondary education, this generates benefits for many years to come. Second, the cost of interventions in adolescence, or in some cases even earlier, tends to be lower than the cost of interventions implemented later in life. Third, at a formative age, interventions may be more successful in influencing values and behaviors. Later in life, it may become more difficult for girls and women to fully benefit from new opportunities provided to them. This does not mean that new opportunities should be provided to women in adulthood, and examples of such interventions are provided in the second part of this study. But adolescence is a crucial time during which investments in girls should be made.
2. **This chapter has two aims: (i) suggesting policy options for tackling the issues of low educational attainment, child marriage, and early childbearing for girls; and (ii) providing an illustration of a program making a difference in Hausa communities in Nigeria (See Annex).** Relying on a review of the literature, the chapter first suggests options for tackling the issues of low educational attainment, child marriage, and early childbearing for girls. The focus is on three types of programs: (i) programs providing life skills and reproductive health knowledge; (ii) programs expanding economic opportunities; and (iii) programs keeping girls in school or enabling them to return to school. Next, to provide a more concrete illustration of how such programs work, a case study is conducted for a program implemented in Hausa communities in Nigeria. This program was selected because these communities have many characteristics that are similar to those of rural communities in Niger. While more detailed work would be needed to specify which options might work best in Niger, international experience suggests that investing in adolescent girls to improve educational attainment and ending child marriage and early childbearing does work.

POLICY OPTIONS FOR IMPROVING OPPORTUNITIES FOR ADOLESCENT GIRLS

3. **Ending child marriage, preventing early childbearing, and educating girls requires specific interventions.** Beyond laws, life skills, and sexual reproductive health knowledge, economic opportunities and incentives for schooling are also needed. As discussed in Box 3.1, countries need to promulgate appropriate laws, especially in the case of child marriage. But laws and more generally strategies to empower girls as well as information and mobilization campaigns to tackle gender inequities are not likely to be enough by themselves. Specific

targeted interventions designed to empower girls are needed to ensure that they have appropriate life skills and reproductive health knowledge. Economic incentives are also needed for girls to remain in school, go back to school if they dropped out, or expand their livelihood opportunities if they cannot go back to school and thus delay marriage and childbearing. While the literature on these interventions is too extensive to be reviewed comprehensively here, subsets of this literature can be synthesized. Building on a recent review by Botea et al. (2017), this section focuses on three types of interventions for adolescent girls: (i) programs providing life skills and reproductive health knowledge; (ii) programs expanding economic opportunities; and (iii) programs keeping girls in school or enabling them to return to school.

Box 3.1: Child Marriage Laws Are Needed but Not Sufficient

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 such full and informed consent. This is one of the reasons why the age of 18 is recommended as the minimum age for marriage. In Niger, however, the Civil Code sets the minimum legal age for statutory marriage at 15 for women and 18 for men. In addition, the Mandel Decree of July 13, 1939 sets the minimum legal age for customary marriage at 14 for girls and 16 for boys. As discussed in Wodon, Tavares et al. (2017), such exceptions allowing girls to be married early should be avoided. But beyond laws, specific interventions are also needed as child marriage continues to be prevalent in many countries despite having adopted laws banning the practice.

4. **The focus on these three types of interventions stems from a body of evidence showing that they can have positive impacts.** Each of these three types of programs is hypothesized to potentially delay marriage and childbearing and increase educational attainment in different ways. In other words, they have different “theories of change” (see Box 3.2). Close to 40 such interventions are reviewed by Botea et al. (2017). To be included in the review, interventions had to fulfill the following selection criteria: (i) target girls aged 10-19 either exclusively or as part of a broader target group; (ii) provide life skills and sexual and reproductive health (SRH) knowledge, economic opportunities, or education opportunities; (iii) demonstrate results in terms of improving the health of young women, especially SRH, or delay marriage or childbearing; and (iv) have been tested in a developing country, usually in Sub-Saharan Africa but also in other low-income settings such as Bangladesh or parts of India.
5. **The first category of programs emphasizes the empowerment of girls by providing life skills and reproductive health knowledge.** The typical intervention is that of a Safe Space Club for adolescent girls. These clubs are delivery platforms for convening girls under a trusted adult mentor at a specific time and place. The approach was pioneered by Building Resources Across Communities (BRAC), an NGO based in Bangladesh, and population councils in Africa and Latin America. These clubs have proven effective when implemented well. By combining socializing, fun, and access to mentors, the clubs are attractive for girls to attend. From there, other services are delivered. Clubs can be held in a variety of settings, including schools or community centers. Girls meet regularly and are able with the help of the mentors to discuss a range of issues, including those related to SRH. They learn life skills, including “soft” or socio-emotional skills such as critical thinking and problem solving as well as communication and negotiation skills (used, for example, within the household). One of the objectives is often to boost girls’ self-awareness and self-esteem so that they can explore and fulfill their own aspirations. In many cases, Safe Space Clubs are also used to impart “hard” skills such as basic literacy and numeracy or basic business skills.

Without other interventions, safe space programs may not be sufficient to delay marriage and childbearing or improve schooling. Yet they achieve important intermediary outcomes related, among others, to aspirations, self-esteem, confidence, and SRH knowledge.

Box 3.2: Theories of Change for Interventions Targeting Adolescent Girls

Life skills and SRH knowledge: By increasing knowledge and awareness, life skills can increase young women's perceived risk of becoming pregnant at an early age and the desire to avoid early pregnancies (through family planning). Through these channels, life skills may lead to better health outcomes for the girls and their children. By increasing girls' confidence and self-esteem, life skills may also raise their aspirations. With higher aspirations, girls may have a greater desire to delay marriage and childbearing. Finally, life skills can increase young women's communication and decision-making skills, leading to increased abilities to negotiate their preference for delayed marriage and childbearing. However, while life skills and SRH knowledge may empower girls, they may not be sufficient to delay marriage and childbearing if social norms curtailing agency for girls are not also addressed.

Life skills together with economic opportunities: Programs increasing young women's earning potential may increase their ability to plan and make marriage and childbearing decisions in three ways. First, the ability to make an economic contribution expands the role of women beyond sex and reproduction. This can increase their desire to limit or space childbearing. The transformation of girls from economic liabilities into assets in the eyes of their societies and families can also alleviate external pressures on girls to marry or have children early. Second, the loss of earnings associated with childrearing is an opportunity cost that may increase women's desire to exercise reproductive and thus limit or space births. Third, a young woman's increased earnings may improve her bargaining power within the household and allow her to effectively exercise reproductive control by negotiating a delay in sexual initiation or marriage as well as the terms of sexual activity, including the use of contraceptives. Creating income-generating opportunities for women can therefore contribute to female empowerment beyond the economic realm by widening personal choice and control over SRH outcomes.

Incentives for schooling or delayed marriage: In many communities, the economic, cultural, and social environment does not provide viable alternatives to marriage for adolescent girls. Once girls drop out of school, possibly because of poor quality or high cost, it may be difficult for parents not to get their daughter married. In those communities, improving the provision of quality and affordable primary and secondary education may be one of the best ways to delay marriage and childbearing as parents often see schooling as a viable alternative to marriage for their daughters. Incentives and programs to keep girls in school may also lead to tipping points in communities, where more and more girls remain in school and are able to delay marriage. Some interventions have also aimed at delaying marriage through financial incentives conditional on not marrying early, with additional schooling often as an additional benefit.

Source: Botea et al. (2017).

6. **These programs have helped improve SRH knowledge and behaviors.** This includes: (i) an increase in girls undergoing HIV testing or counseling; (ii) an increase in the use of modern contraception or other methods of family planning; (iii) a reduction in the desire for practicing female genital mutilation for daughters in countries where the practice is prevalent; (iv) a reduction in the risk of IPV when the program also reaches out to men; (v) an increase in self-esteem; and (vi) gains in specific skills taught during safe space sessions, for example in the areas of financial literacy or basic literacy and numeracy.
7. **Yet without additional interventions related to schooling or employment and livelihoods, it is not clear that safe spaces alone are sufficient to delay marriage and childbearing (though that may not have been a primary goal of these projects).** It is therefore important to consider programs combining safe spaces with livelihood opportunities and incentives to remain in school, usually with larger impacts on age at marriage and childbearing.
8. **The second category of programs combines an emphasis on empowering girls, often through safe spaces, with an additional focus on providing livelihood opportunities.** These programs are appropriate for girls who are not in school. For these girls, building skills for income-generation may provide an alternative to early marriage and childbearing. Two groups of interventions are distinguished: (i) livelihood interventions, and (ii) financial literacy or access to financial services. Impacts on age at marriage and early childbearing tend to be larger than through life skills and SRH knowledge alone, though not in all cases. Given their focus on economic opportunities, these programs often have some success in increasing earnings, employment, or savings. Several of these programs have also succeeded in increasing the use of modern contraceptives and SRH knowledge,

which may help delay childbearing. In some cases, the programs also succeed in delaying age at marriage and reducing teen pregnancies. For example, the BRAC Uganda Empowerment and Livelihoods for Adolescent Girls program: (i) increased the likelihood of engaging in income-generating activities by 32 percent; (ii) increased self-reported routine condom use by those sexually active by 50 percent; (iii) reduced fertility rates by 26 percent; and (iv) reduced reporting of unwanted sex by 76 percent. There were also reductions in teenage pregnancies and child marriage as well as a shift in gender dynamics in the community (Bandiera et al. 2014; Buehren et al. 2016). The message from the review is that adding a livelihood dimension to life skills and SRH knowledge programs may help delay marriage and childbearing, though not in all cases. The focus on economic opportunities may also help ensure regular participation by girls in the programs.

Interventions combining an emphasis on empowering girls, often through Safe Space Clubs, with livelihood opportunities may improve reproductive health outcomes and delay marriage or childbearing. This has been the case in Uganda, though not systematically in other countries. Since these interventions are often the only option available for out-of-school girls, more research is needed to clarify what works and what does not.

Box 3.3: Sahel Women's Empowerment and the Demographic Dividend (SWEDD) Project

The new Sahel Women's Empowerment and Demographic Dividend (SWEDD) project (covering Burkina Faso, Chad, Côte d'Ivoire, Mali, Mauritania, and Niger itself), provides a model for how to address both supply- and demand-side constraints on family planning and reproductive and sexual health. Under sub-component 1.2 of the SWEDD project (Women's and Girls' Empowerment), 19 sub-projects will be implemented across the 6 SWEDD countries. These sub-projects mainly target adolescent girls at high risk for early marriage and early childbearing and support them with age-appropriate and evidence-based interventions.

In Niger, the Government is implementing community safe spaces targeting out-of-school adolescent girls and young women aged 10 to 19 as well as initiatives designed to engage men and boys as partners in promoting women and girls' empowerment through Schools for Husbands and boys' clubs. The project also provides educational incentives for in-school girls through the sub-project titled All Girls in School (*Toutes les Filles à l'École*). This sub-project offers stipends to vulnerable households conditional on the enrollment of adolescent girls in secondary school.

9. **The third set of programs focuses on keeping girls in school, enabling them to return if they dropped out, or directly delaying marriage.** Literature suggests that multiple intervention options are available to keep girls in school and delay marriage.¹¹ In a few cases, evaluations also show that programs providing incentives for schooling often succeed in keeping girls in school and sometimes delaying marriage and childbearing. Some of these programs enable girls who dropped out of school to return.
10. **Conditional cash transfers (CCT) to incentivize girls' education, promote health, and support families during shocks may be effective provided performance requirements are met.** These are often related to school attendance or preventive medicine visits. A significant body of research shows that CCTs are effective in improving school outcomes among children in developing countries, and these have now been introduced in more than 29 low-income countries worldwide. Cash transfer programs and income support also have positive outcomes, such as reduced child labor, increased schooling, and improved childhood nutrition.¹² While not all programs succeed in all areas, the evidence is broadly convincing that in comparison with the other two types of programs reviewed above, those focusing on schooling for girls or in some cases on delaying marriage with financial incentives may be more successful in delaying marriage and childbearing.

Of the three types of interventions reviewed in this study, interventions to promote education, including by reducing out-of-pocket and opportunity costs for schooling, are the most likely to help delay marriage and childbearing.

¹¹ Kalamar et al. (2016).

¹² Randomized experiments in Malawi provided cash transfers that were either conditional on school attendance or unconditional to households with school-age girls (Bastagli et al. 2016).

11. **The interventions mentioned above are not meant to be exhaustive. For example, to improve educational attainment for girls, additional interventions are needed.** The three types of interventions listed above were selected because their evaluations looked at changes in SRH knowledge, child marriage, or early childbearing. In the case of educational attainment, there is a much broader literature on what is needed to achieve gains (see Box 3.4). Basic conditions need to be in place, and these matter hugely, especially in low-income countries such as Niger.

- First, there is a need for additional infrastructure. In Niger, access to lower secondary education remains extremely low in part because there simply are not enough secondary schools. New schools need to provide access to water, latrines, and hygienic facilities, which are important to adolescent girls. In cases where schools cannot be built nearby, providing modes of transportation for girls to go to school is an option.
- Second, the education system needs better curriculum and programs for results. The analysis conducted as part of this study shows that the cost of education is very high in Niger and that performance in achieving quality and inclusion is low. This could be reversed with investments in the education system. For example, merit-based bonuses for schools and teachers through programs-for-results can improve not only school performance but also inclusion provided schools are evaluated on their capacity to enroll and retain students.
- Third, although this has not been extensively discussed, girls may be at risk of violence and sexual harassment in school. There is therefore a need for specific interventions to deal with these risks.

Box 3.4: Improving Educational Attainment and Learning for Girls

Because multiple factors may contribute to gender gaps in educational attainment and learning, the types of interventions that could be implemented to reduce these gaps are multiple. Should distance to schools be reduced, whether by building new schools in remote areas or reducing travel time through modes of transportation? Should scholarships be provided to girls? Should more female teachers be hired? Should the priority be to make separate toilet blocks available for boys and girls? Should more focus be placed on understanding and changing cultural practices? Should pedagogical interventions targeting girls be implemented? The appropriate choice between potential interventions depends on a country's or a community's context. However, reviews of the evidence can help, and such reviews are becoming available thanks to a substantial increase in rigorous impact evaluations in recent years.

One such review is Unterhalter et al. (2014). The review assessed the evidence on the impact of interventions for girls' education focusing on: (i) providing resources (including transfers) and infrastructure; (ii) changing institutions; and (iii) changing norms and including the most marginalized in educational decision-making. The review summarized the impact of different types of interventions on three outcomes: participation, learning, and empowerment. For each type of intervention and category of outcome, the evidence on the likelihood of impact was classified as strong, promising, limited, or needed (i.e., weak). For participation, the evidence on the impact of conditional cash transfers, information about the potential employment returns to education, and the provision of additional schools in underserved and unsafe areas was found to be strong. This was also the case for evidence on interventions related to teacher training, group learning, and measures designed to promote girl-friendly schools as well as learning outside the classroom, for example through tutoring. Several of these interventions (group learning, programs for learning outside the classroom, and scholarships linked to student performance) were also found to have impacts on learning. However, evidence on the impact of interventions on empowerment was generally weaker.

CONCLUSION

12. **To end child marriage and early childbearing and improve educational attainment for girls, basic conditions should be met.** Laws should ban marriage before the age of 18. As regards educational attainment, especially at the secondary level, there is a need for: (i) adequate infrastructure, including schools closer to where students live, separate water, sanitation, and hygiene facilities for girls; (ii) investments designed to improve the quality of education; and (iii) reducing the risk of violence and sexual harassment in school.

13. In addition, based on a review of programs, a three-pronged approach can be recommended, though benefits may be larger with the third type of program.

- **Programs designed to provide life skills and reproductive health knowledge:** These interventions often rely on safe space programs empowering girls through life skills training, better knowledge of sexual and reproductive health, and other skills. These programs have achieved important benefits for girls, not only in terms of knowledge acquired but also through gains in self-esteem and confidence, among others.
- **Programs designed to expand economic opportunities:** Interventions that combine an emphasis on empowering girls, often through safe spaces, with a focus on providing livelihood opportunities have demonstrated some success in increasing earnings for participants as well as employment and savings. In some cases, such programs may also improve reproductive health outcomes and delay marriage or childbearing, though not systematically. In several African countries, there is evidence that such interventions have worked well.
- **Programs to keep girls in school or delay marriage:** Interventions designed to promote education, especially by reducing the opportunity and out-of-pocket costs of schooling through cash transfers, are among the most likely to help delay age at marriage and childbearing. Some of these programs also enable girls who dropped out to return to school. Programs providing financial incentives to girls or families directly to delay marriage may also work.

14. These programs are not mutually exclusive and may complement each other. While some programs work better than others in delaying marriage and childbearing and improving educational attainment for girls, all three categories of programs have benefits. By targeting different groups of girls, for example those in school or with the potential to return to school as well as those who dropped out and may not be able to return, all three categories of programs should be considered when implementing a strategy aiming to improve opportunities for adolescent girls. Another example relates to the need for associating cash transfers with accompanying measures aiming at boosting agency, such as the development of soft skills and promoting knowledge on nutrition and reproductive health.¹³

15. Efforts to achieve gender parity in education and delaying age at marriage and childbearing will require champions willing to sustain government investments through broader grassroots outreach. While social norms will take a long-term vision to change, sensitization campaigns promoting the value of educating girls and delayed childbearing and child marriage can drive such a change. The media, community leaders and community-based organizations could play a key role in changing perceptions about girls' education.

¹³ World Bank (2012), p. 314.

4



GENDER INEQUALITY AT HOME: IMPACTS ON FERTILITY, HEALTH, NUTRITION, AND DECISION-MAKING

1. **While gender inequality may become severe starting in adolescence, it has implications for women throughout their adult life, not only at work but also at home.** In practice, the spheres of home and work are not always easy to delineate and are certainly not independent of each other. For example, the burden of domestic work clearly has major implications for the ability to engage in so-called “productive” work. Still, it is useful for exposition purposes to consider both spheres separately, or at least sequentially. At home, gender inequality leads to (among others) higher fertility and therefore higher population growth. Moreover, children of young and poorly educated mothers often face higher risks of dying by age five, being malnourished, and doing poorly in school. Gender inequality at home also contributes to women facing higher risks of IPV. Fundamentally, gender inequality disempowers women in ways that deprive them of their basic human rights, with negative repercussions for the next generation.
2. **This chapter has two aims: (i) assessing the impacts of gender inequality on outcomes for at-home adult women; and (ii) measuring selected costs associated with these impacts.** The approach is slightly different from that followed in Chapter 2, where a direct comparison between boys and girls was provided. In this chapter, the focus is on estimating the impact of reducing gender inequality on other outcomes, with a special focus on fertility and its implications for population growth, health, and nutrition. In the analysis, reduced gender inequality is proxied using 6 indicators: (i) child marriage is eliminated; (ii) women achieve the same educational level as men; (iii) women’s earnings increase such that households move from the second to the third quintile; (iv) the spousal age gap (the difference in age between wife and husband or partner) is reduced to 5 for women given a current spousal age gap of over 10 years; (v) women are assumed to be involved in most decisions made in the household; and (vi) women do not tolerate wife beating.

IMPACT OF GENDER INEQUALITY ON FERTILITY AND POPULATION GROWTH

3. **The estimated impact of gender inequality on total fertility in Niger is large.** Key results from regression analyses¹⁴ are provided in Table 4.1. Under gender equality as defined above, total fertility would be reduced from 7.48 children per woman toward the end of her reproductive life to 6.15 children. This represents a reduction on average of 1.33 children per woman, or 17.8 percent. The largest share (80 percent) of the reduction comes from the impact of child marriage on total fertility. When women marry early, given low access to modern contraception methods in Niger, this leads them to have children earlier as well as more children over their lifetime. Estimates for Niger suggest that after controlling for other factors affecting fertility, marrying at age 13 leads to an increase in the number of children women are expected to have over

¹⁴ Details of how the regression analysis for the correlates of total fertility was performed are provided in Onagoruwa and Wodon (2018).

their lifetime of 28 percent in comparison to marrying at age 18 or later. If a girl in Niger marries at age 17, this still increases on average lifetime total fertility by 14 percent in comparison to marrying at 18 or later. This increase in total fertility has substantial repercussions for Niger's population growth.

Table 4.1: Impact of gender inequality on total fertility

	Base expected value	Simulated value	Difference	% change
Total fertility	7.48	6.15	1.33	17.78

Source: Onagoruwa and Wodon (2018).

Data: 2011 DHS.

4. **How large is the reduction in total fertility simulated in comparative perspective? One way to answer this question is to compare total fertility rates in Niger with those observed in other developing countries (using a slightly different estimation methodology, resulting in a small difference in the measured rate for Niger compared to Table 4.1).** This is done in Table 4.2 for 15 countries, most of which have relatively high levels of gender inequality including prevalence of child marriage or differences in earnings between men and women. Even after reducing its total fertility rate by 1.3 children under gender inequality, Niger would still have a high total fertility rate in comparison with the 15 countries listed in Table 4.2, for which the average total fertility rate is 5.6 children per women in the 35-49 age bracket.

Table 4.2: Predicted national total fertility in comparator countries under current conditions

	Predicted Total Fertility		Predicted Total Fertility		Predicted Total Fertility
Bangladesh	3.92	Malawi	6.10	Nigeria	5.98
Burkina Faso	6.34	Mali	5.62	Pakistan	5.29
Dem. R. Congo	6.14	Mozambique	5.26	Rep. Congo	4.69
Egypt	3.67	Nepal	4.00	Uganda	6.87
Ethiopia	6.33	Niger	7.40	Zambia	5.92

Source: Adapted from Wodon et al. (2017).

Data source: DHS.

5. **In Niger, ending gender inequality could reduce population growth by 0.49 percentage points under current conditions (Table 4.3).** In Niger, if child marriage and early childbirths ended starting in 2015, the rate of population growth could be reduced by 0.39 percentage points in 2015 and 0.28 percentage points in 2030.¹⁵ Beyond child marriage and early childbirths, when considering ending gender inequality, the estimate of the reduction in population growth is 0.49 percentage points. However, these reductions cumulative, leading to large effects over time. In Niger, the population would be 5.4 percent smaller by 2030 if child marriage and early childbirths had been eliminated beginning in 2015. However, when considering gender inequality more broadly, the reduction in population growth is estimated at close to 6.8 percent. This is a large effect, with important implications for standards of living and the provision of public services, as discussed in the next section.

Table 4.3: Reductions in annual rates of population growth from base with gender inequality

	Child marriage & Early childbirths		Gender inequality	
	2015	2030	2015	2030
Reduction in population growth	-0.39	-0.28	-0.49	-0.35

Source: Adapted from Wodon et al. (2018).

¹⁵ 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 is smaller in 2030 than in 2015.

WELFARE BENEFITS AND BUDGET SAVINGS FROM REDUCED POPULATION GROWTH

6. **The link between population growth and development is receiving renewed attention among policy makers under the broader concept of “demographic dividend,” which refers to growth in an economy due to a change in the age structure of the country’s population brought on by a decline in fertility rates.** Empirically, demographic change has been an important contributing factor in 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), though there are now opportunities for this to change (Canning et al. 2015).
7. **The welfare benefits that would accrue from ending gender inequality are computed by comparing the level of per capita GDP Niger would achieve with and without gender inequality.** Comparisons are first made for child marriage and then scaled up for gender inequality more broadly¹⁶ using the product of a country’s population times per capita GDP times the impact of child marriage or gender inequality on population growth.¹⁷ In Niger, the welfare benefits that could be reaped through lower population growth following ending child marriage are valued at US\$58 million in 2015 and US\$1.7 billion in 2030 (PPP). This rapid increase in these benefits stems from the fact that the impact of child marriage on population growth is cumulative: each year, gains become larger because the reduction in population growth keeps growing from one year to the next. In addition, as standards of living (per capita GDP) improve, valuations also become larger. The combined effect is thus a 29-fold increase in the welfare benefits of ending child marriage between 2015 and 2030. Moreover, these are annual welfare benefits that would continue to increase in the future. When these effects are scaled up to account for the potential impact of gender inequality more generally, the estimates are even higher, as shown in Table 3.4. At the same time, achieving gender inequality is a tall order for any country, let alone Niger. In fact, the scenario just outlined could be considered an ideal “frontier” scenario. Simulations under this scenario should not be conceived as describing a target that could be reached in a matter of a dozen years or so. In Chapter 6, an alternative “catching-up” scenario is considered based on the gains Niger could achieve if its performance was similar to the average performance of the Sub-Saharan region.

Table 4.4: Welfare benefits from lower population growth with gender inequality (US\$ PPP)

	Child marriage & Early childbirths		Gender inequality	
	2015	2030	2015	2030
Ideal frontier scenario	US\$58 million	US\$1.7 billion	US\$73 million	US\$2.1 billion

Source: Adapted from Wodon et al. (2018).

8. **By 2030, the estimated value of the benefits of reduced population growth would amount to more than half of net development assistance.** Net Official Development Assistance (ODA) in Niger has amounted to about 10 to 13 percent of Gross National Income (GNI) over the last two decades. This suggests that by 2030, eliminating child marriage and early childbirths would result in a benefit larger than half of all net ODA received by Niger each year since per capita GDP would increase by 6.8 percent thanks to lower population growth.
9. **Another economic benefit from reduced population growth is reduced pressure on state budgets for providing services to the population.** As an illustration, consider the results of simulations for education. In the first few

¹⁶ Assume for the sake of simplicity that GDP does not change between 2015 and 2030 as child marriage and early childbirths are eliminated. Between 2015 and 2030, there is essentially no negative impact on 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 gradually increase over time but would remain modest for many years. Therefore, gains in per capita GDP that would arise simply from reducing population growth can be measured without undue concern in first approximation about changes in GDP as GDP may increase, for example, through better education for girls and higher future lifetime earnings and possibly investments. However, with simplicity in mind, these benefits are not included here (but are discussed in Chapter 5).

¹⁷ Consider a country with 100 million people and per capita GDP of US\$10,000 (PPP) in a given year. The size of the economy is US\$1 trillion. If ending child marriage and early childbirths leads to a reduction in the population for that year of 3 percent versus a counterfactual business-as-usual scenario, then per capita GDP would have been 3 percent higher if child marriage and early childbirths had been eliminated. The transfer needed to keep the population as well off is therefore 3 percent of US\$1 trillion (US\$30 billion).

years after the elimination of gender inequality, there is no impact on the size of new cohorts entering school. However, soon thereafter, there is a rapid reduction in the size of these cohorts, reaching close to 10 percent for primary school after a decade in Niger as a result of ending child marriage and early childbirths only and more than 12 percent from gender equality. This pattern is also observed for secondary schools, though with a lag, and it carries into tertiary education a few years later. A costing model prepared for the 2015 Education for All (EFA) Global Monitoring Report (Wils 2015) suggests that by 2030, annual cost savings in Niger could reach US\$410 million compared to the cost of achieving universal secondary education, based on estimations for the impact of child marriage and early childbearing by Wodon (2018). Of course, costs associated with reducing gender equality, such as providing education opportunities for adolescent girls, would offset some of the benefits from the reduction in the size of future cohorts of students thanks to lower population growth.

IMPACT OF GENDER INEQUALITY ON HEALTH AND NUTRITION OUTCOMES

10. **Through child marriage and early childbirths, gender inequality may be associated with higher risks for mothers and children.** Deliveries at a young age may lead to higher risks of health complications, contributing to higher maternal morbidity and mortality rates (Xu et al. 2003; Nove et al. 2014; Wodon 2017). Other potential health effects include risks of malnutrition, isolation, and depression for young brides (Nour 2006, Nour 2009; Le Strat et al. 2011) and possibly higher rates of suicide (Khanna et al. 2013). Moreover, children born to young mothers tend to have higher risks of under-five malnutrition and mortality than children born to older mothers (Raj and Boehmer 2013; Raj et al. 2014; Fall et al. 2015; Degarege et al. 2015). These effects have implications for these 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 2 percent or more for each percentage point loss in adult height (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 GDP in Sub-Saharan Africa and Asia due to lost productivity.
11. **By weakening conditions for early childhood development, gender inequality may have additional negative impacts on young children.** Early childhood is critical in 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. 2017). 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 worst health at birth and increased mortality rates (Aizer 2011). Violence at home may also affect schooling as well as increase the risk of future violence in adulthood (Kishor and Johnson 2004).
12. **In the rest of this section, the analysis focuses on the impact of gender inequality on under-five mortality and stunting.** The first step consists in estimating the marginal impacts of gender inequality on the risks of mortality and stunting using regression analysis as well as the national rates of under-five mortality and stunting¹⁸ that would result from ending gender inequality. In addition to the six gender equality proxies outlined above, we now add a seventh: women no longer face difficulties getting permission to access medical help for themselves. This is done using the latest available DHS for Niger. The second step consists in measuring economic benefits from improved survival and reduced stunting for young children in order to put a monetary value on gender inequality in this area.
13. **At the margin, the impact of gender inequality on under-five mortality and stunting is large in Niger, though national impacts are smaller.** Key results are provided in Table 4.5 Under gender equality as defined above, the predicted rate of under-five mortality would be reduced from 8.1 to 6.4 percent, representing a reduction on average of 1.7 percentage points or 21 percent off the baseline value, which is large. Similarly, the predicted under-five stunting rate would be reduced from 43.1 to 39.8 percent, a drop of 3.4 percentage points or 8 percent of the baseline value, which is also large but less so proportionately than for mortality. While in the case of fertility the bulk of the reduction comes from the impact of child marriage, in this case, the impact of child marriage through early childbearing is limited in magnitude even though it is statistically significant for both under-five mortality and stunting. The other factors associated with gender equality also play an important role. Overall, while gender equality would make a difference, it would not end under-five mortality and stunting.

¹⁸ A child is classified as stunted if its height is more than two standard deviations below the median reference height for that age.

Table 4.5: Impact of gender inequality on under-five mortality and stunting

	Base expected value	Simulated value	Difference	% change
Under-five mortality (%)	8.08	6.40	1.68	20.79
Under-five stunting (%)	43.11	39.76	3.35	7.77

Source: Adapted from Wodon et al. (2018).

Data: 2011 DHS.

14. How large is the reduction in total fertility simulated in comparative perspective? As mentioned in the case of total fertility rates, even after reducing under-five mortality and stunting rates thanks to gender equality, Niger would still have comparatively higher rates, for example in comparison with other countries in Sub-Saharan Africa. While gender inequality contributes to under-five mortality and stunting, it is not the main driver of those outcomes.

ECONOMIC BENEFITS FROM REDUCED UNDER-FIVE MORTALITY AND STUNTING

15. In Niger, the benefits from achieving gender equality through reductions in under-five mortality and stunting are substantial. As in the case of fertility, estimates were first computed for the benefits of ending child marriage and then scaled up to the benefits of achieving gender equality more generally. As shown in Table 4.6, with a discount rate of five percent, the economic benefits from reduced deaths among children are estimated at US\$19 million in 2016 and US\$34 million in 2030 (PPP) in the case of ending child marriage. The increase over time is due to higher valuations for each life saved due to rising per capita GDP resulting from economic growth. As regards the reduction in stunting, the benefits are valued at US\$4 million in 2016, rising to US\$8 million in 2030. The reasons for lower benefits associated with the reduction in stunting in comparison to the reduction in mortality is that the valuation for each child of the benefits from avoiding stunting in terms of share of wages in GDP and per capita consumption is only at about one tenth of the valuation of a life saved. By 2030, the benefits reach US\$248 million for under-five mortality and US\$60 million for under-five stunting (PPP). Note that a higher discount rate would reduce the benefits, while a lower discount rate would increase them. Note that estimates of the costs of gender inequality are meant to represent orders of magnitude as opposed to precise values.

Table 4.6: Benefits from the reduction in under-five malnutrition and stunting (\$ PPP)

	Child marriage & Early childbearing		Gender inequality	
	2016	2030	2016	2030
Reduction in under-five mortality	US\$19 million	US\$34 million	US\$139 million	US\$248 million
Reduction in under-five stunting	US\$4 million	US\$8 million	US\$30 million	US\$60 million

Source: Adapted from Wodon et al. (2018).

Data source: Simulations using DHS and costing data.

Note: Discount rate set at 5 percent.

IMPACT OF GENDER INEQUALITY ON DECISION-MAKING ABILITY AND OTHER AREAS

16. As mentioned in Chapter 2, decision-making starts with the question of whether girls have a say in the decision to marry and whom to marry. Evidence from qualitative work is mixed in this respect. Work by Perlman et al. (2018a,b) in Maradi suggests that many girls do not object to marrying early as this is the standard practice in the community. The following is an example of those preferences:

I was already twelve and most of my friends were married. I just knew I was ready too. The boys started coming to the motor park where I hawked to talk with me. Some brought gifts. The next year the number of boys coming to visit me increased, though none of them mentioned marriage until this man from another community came along. He's now my husband. (Perlman et al. 2017)

However, some girls do not want to marry early, yet may be forced to. In those cases, parents can exert a great deal of pressure on their daughters, as the following quote illustrates:

Years ago, a wealthy man gave my neighbor 17,000 CFA francs twice without any reason. My neighbor accepted it happily as poverty was a problem. The next time the wealthy man visited, he told my neighbor he wanted to marry his daughter. My neighbor said his daughter was in school and that he didn't want to marry her out yet. The wealthy man then asked for his money back. My neighbor had nothing to sell and had no wealthy friends or family members to lend him the money. In the end he decided to give his daughter away without her completing her education. We used to face these kinds of problems more often as a result of poverty and ignorance. (Perlman et al. 2018a,b)

17. Apart from the timing of marriage, in some cases, girls have a say in whom to marry, while in others, they may not. Even when they are happy with the choice of groom, they may not have much choice in the matter:

My uncle invited my cousin and asked me in his presence if I loved him. I said yes. He's been my friend for some time and I do love him. But even if I didn't love him, I couldn't have said so and disappoint my family or put them to shame. And even if I'd said no, nothing would have changed because they'd often seen us together and they'd made up their minds. (Perlman et al. 2018a,b)

18. Child marriage and more generally gender inequality can be associated with losses incurred in decision-making later in life. As noted by (among others) Parsons et al. (2015), child brides are often vulnerable, being young, often poorly educated, and from disadvantaged socioeconomic backgrounds. When they marry early, they may fall even further 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 their agency (Klugman et al. 2014), possibly limiting their decision-making ability, including over access to healthcare 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 women have access to. Finally, child marriage may also affect agency if it lowers girls and women's decision-making ability in the household. However, the magnitude of these effects is not always clear.

19. To assess the potential impact of gender inequality on decision-making ability in Niger using DHS data, an index was constructed to capture various types of decision-making. The correlates of this index of agency and decision-making for women were analyzed using data from DHS surveys. The index was created through principal component analysis. The variables included in the index were of four types. First, women currently married were asked in surveys about who makes decisions in the household in four areas: healthcare, household purchases, visits to friends and relatives, and use of the husband's earnings. For each question, women typically respond according to four modalities: they alone make decisions, they make decisions jointly with their husband or partner, the husband makes decisions alone, or another person makes the decisions (or the husband has no earnings). Second, women were also asked if they may refuse to have sex with their husband and if they can request their husband to use a condom when having sex. In addition, women responded to four different circumstances to assess whether a husband is justified in beating his wife in the following 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 were asked whether or not getting their husband's permission to get medical help for themselves is a major problem. The index yields a value between zero and 100 after normalization.¹⁹

¹⁹ While an alternative approach could have been used to consider different types of decision-making separately, the results are not very different when doing so. The benefit of an overall index is that it provides a single summative measure of decision-making ability as well as the impact of child marriage on that measure. However, for more detailed work on decision-making, it is recommended to also consider different types of decision-making separately.

20. **The impact of gender inequality on women’s decision-making ability in Niger is substantial.** While any difference in decision-making ability between men and women could be interpreted as a form of gender inequality, the analysis focuses on the impact of the following factors on the index of decision-making ability for women: (i) child marriage is eliminated; (ii) women are assumed to have the same education as men; (iii) gender inequality is assumed through higher earnings for women (as discussed in Chapter 5) that could lift households in the poorest quintile to the second quintile of wellbeing and households in the second quintile to the third, though this is of course an approximation; (iv) the spousal age gap is reduced to 5 to 9 years for women from a current spousal age gap of over 10 years; and (v) several variables related to women’s decision-making ability in the village or area where they live are assumed to improve (or leave-out-mean variables at the level of the survey’s primary sampling units). Each of these variables may have impacts on decision-making, as measured through a regression analysis. The impact of gender inequality on the index of decision-making ability is obtained by comparing predicted rates under current conditions with the rates predicted under gender equality. Table 4.7 shows the main results. Under gender equality as defined above, the index of decision-making ability for women would increase from 57.7 (out of a maximum value of 100) to 69.1. This represents a gain on average of 11.4 percentage points, or 19.7 percent of the base value of the index.

Table 4.7: Impact of gender inequality on the Women’s Decision-making Ability Index

	Base expected value	Simulated value	Difference	% change
Decision-making (0 to 100)	57.72	69.11	11.39	19.73

Source: Adapted from Wodon et al. (2018).

Data: 2011 DHS.

21. **Beyond decision-making ability, gender inequality is associated with other negative effects for women. A few of those effects can be illustrated in the case of child marriage.** The analysis is based on a companion report to this study of the economic impacts of child marriage (Wodon et al. 2018), with further details available on the methodology used in that report.

CONCLUSION

22. **Overall, the negative impacts of gender inequality on fertility and population growth, health and nutrition, and various forms of agency are large.** Gender inequality was conceptualized in this chapter through a series of characteristics of women, including their education level, whether they married as children or had their first child before 18, and other characteristics such as the gender spouse gap. Two remarks are worth emphasizing. First, as discussed in Chapter 2, there are strong reciprocal relationships between child marriage, early childbearing, and low educational attainment for girls. Second, all three issues as well as other characteristics associated with gender inequality tend, in turn, to have negative impacts—individually or collectively—on a wide range of other outcomes. Clearly, the negative effects of gender inequality are pervasive and widespread. The impacts of gender inequality on women’s earnings are discussed in detail in Chapter 5, while programs and policies for gender equality targeting adult women are discussed in Chapter 7.

5

GENDER INEQUALITY AT WORK: AGRICULTURE, ENTREPRENEURSHIP, WAGES, AND SKILLS



1. **The economic cost associated with gender inequality is related to differences in earnings (broadly conceived) between men and women.** As shown in Chapter 2, girls' average educational attainment remains lower than that of boys in Niger. Together with low educational attainment and a lack of skills, discrimination and social norms shape the terms of female labor force participation such that women are less likely to join the labor force and to work for pay. When they do, they are more likely to work part-time or in the informal sector. Time use constraints for women, including the burden of domestic chores, also play a major role in constraining their ability to work. All this leads to substantial gender gaps in earnings, which in turn decrease women's bargaining power and voice as well as their ability to negotiate their productive work. Gender inequality leads adult women to have fewer opportunities in the labor market than men in various ways. This is the focus of this chapter.
2. **This chapter has two aims: (i) assessing the impacts of gender inequality on outcomes for at-work adult women; and (ii) measuring the costs associated with these impacts.** The chapter starts with a discussion of aggregate estimates of the potential gains from gender equality in labor markets considering the labor share in GDP and the extent to which earnings could increase if women were earning as much as men. Next, the chapter looks in more details at three key sources of income for women and how these compare to men's, namely agricultural productivity, entrepreneurship, and wages. For each of the three sources of income, the factors that lead to differences in earnings between men and women are discussed. Overall, the analysis shows substantial gender gaps in earnings, both in absolute value and when compared with estimates from other Sub-Saharan countries. Our findings point to potential policy and program options for achieving gender equality. These programs and policies are discussed in the next chapter based on international experience.

AGGREGATE COST OF GENDER INEQUALITY AT WORK

3. **Gender inequality leads women to be less productive and earn less in adulthood than men. Estimates in this chapter provide orders of magnitude of the resulting economic losses.** However, these estimates should not be considered precise given that they depend on: (i) econometric estimates of the impacts of gender inequality on earnings that have themselves standard errors since they rely on multiple estimations; and (ii) a range of assumptions for costing that are debatable. Still, the estimates provide an order of magnitude of the potential costs of gender inequality. Apart from comparative statics, an alternative approach is used to obtain estimates of potential gains from gender equality based on the parametrization of a computable general equilibrium (CGE) model.
4. **Estimates of the economic cost to Niger of gender inequality due to lost earnings run into billions of dollars.** Potential gains in GDP from gender equality can be estimated by computing how much women would earn if they had the same earnings as men, assuming no loss of earnings for men. Based on the labor share in earnings by gender estimated by Wodon and de la Brière (2018) for Niger and a large number of other countries, total labor earnings in Niger could increase by 40 percent if women had the same earnings as men. Labor earnings, in turn, accounted over the last decade for about 56 percent of GDP. Thus, GDP could increase by as much as

23 percent ($0.40 \times 0.56 = 0.23$) under gender equality. This simple exercise in comparative statics in steady state probably overestimates potential gains since no general equilibrium effects are accounted for, but it gives an idea of the potential gains that could be achieved under ideal conditions if gender equality in earnings were achieved. Considering the level of per capita GDP and the population of the country in 2016, the potential gains are valued at US\$4.6 billion (PPP) in 2016, as shown in Table 5.1. By 2030, assuming a rate of growth in per capita GDP of 2 percent per year in real terms and based on the expected population of the country by 2030, the losses in earnings for women are estimated at US\$9.8 billion (PPP).

Table 5.1: Economic Costs from Gender Inequality

	Ideal frontier scenario	
	2016	2030
Per capita GDP (PPP)	\$986	\$1,300 (*)
Population	20.7	33.6
Labor share	0.56	0.56
Increase in earnings (%)	0.40	0.40
Gain (\$ billion PPP)	\$4.6 billion	\$9.8 billion

Source: World Bank staff – Government of Niger.

5. **In the next three sections, gender gaps in agriculture, entrepreneurship, and earnings are analyzed in more detail.** The analysis is largely based on data from the 2014 LSMS. For each type of earnings, we first compute simple differences in outcomes between men and women. We then consider a broad range of explanatory variables and report how gender gaps change when comparing men and women, who are similar along these dimensions. We then conduct additional analysis to pinpoint the most important constraints contributing to the gender gap. Program and policy options for reducing existing gender gaps and unlock women’s contribution to the Nigerien economy are discussed in Chapter 7.

GENDER INEQUALITY IN AGRICULTURAL PRODUCTIVITY

6. **Agriculture is the largest sector in Niger’s economy, accounting for 75 percent of total employment and 41 percent of GDP.** Yet, the sector is characterized by very low levels of farm input use and low productivity, measured as the value of harvest per hectare. The analysis identifies several factors linked to low agricultural productivity. Land fragmentation, measured by the number of plots cultivated by each household, is negatively correlated with productivity, as are health shocks experienced by the farmer responsible for managing the plot. Conversely, crop diversification, intercropping, land tenure security, and increased use of non-labor inputs (such as irrigation, fertilizer, and pesticide) as well as labor inputs and farm tools are positively related to productivity.
7. **Agricultural productivity is lower for plots managed by women as compared to those managed by men.** Plots managed by women on average produce 20 percent less per hectare than plots managed by men. After accounting for regional differences, socio-demographic, and agricultural variables,²⁰ the gap increases to 33 percent for female-managed plots. Distance between plot and household is correlated with a higher gender gap. Female-managed plots tend to be further away from the household than male-managed plots. These plots may be of lower quality, or the longer distance to the household may result in less regular or less productive maintenance, with the impact of the latter exacerbated for women due to the mobility constraints they face, particularly in rural areas.
8. **Lack of labor is a critical problem for female farmers, as is lack of productivity-boosting non-labor inputs.** Female-managed plots benefit from 16 percent fewer hired labor days than male-managed plots. Moreover, this lower usage of hired labor is compounded by 58 percent lower usage of unpaid shared farm labor and household labor.

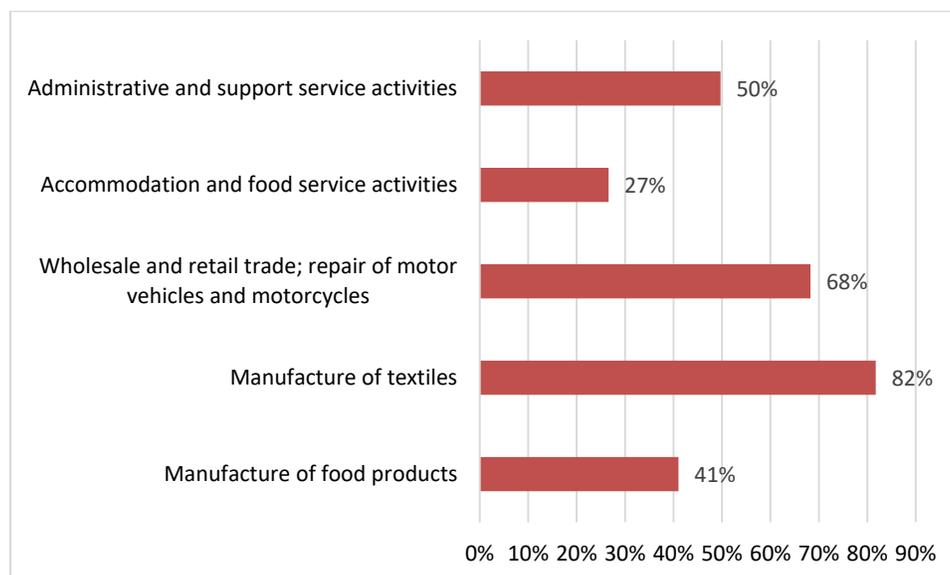
²⁰ Socio-demographic variables include: age (years), marital status, literacy, numeracy, years of schooling, whether the individual had a health incident in the last four weeks, a dummy for non-farm income activity, number of assets, household size, child ratio, and a number of variables included to capture aspects of female empowerment (age and education gap between wife and husband, mother’s education). For their part, agricultural variables include plot size, soil type, plot slope, number of plots managed, number of crops produced, share of fields for which the household has a title, manager’s plot occupation, distance to household (km), manager’s agricultural non-labor input use (intercropping, improved seed, irrigation, fertilizer, pesticide), labor input use (household labor, hired labor), and number of farm tools and equipment.

Female-managed plots have a lower incidence of intercropping, use of irrigation, and pesticide and fertilizer use. Furthermore, not only does lower ownership of farm tools and equipment by the household emerge as key driver of the gender gap, but female-managed plots also observe lower returns on the number of farm tools owned by the household. This may be because they are able to use these less frequently or because they do not have the skills to use them effectively. It is also important to mention that though our analysis focuses on the value of output produced per hectare of land, women's low access to land overall is a critical issue for women's economic empowerment in Niger. Indeed, women manage only 15 percent of plots in the country (ECVEMAS).

GENDER INEQUALITY IN ENTREPRENEURSHIP

9. **Entrepreneurship in the informal sector plays a vital role in generating employment and income for Nigeriens.** Fully 29 percent of the population (23 percent of women) aged 16-64 owns an enterprise.²¹ Overall, entrepreneurs in rural areas who experienced health setbacks earn lower profits. On the other hand, entrepreneurs living in larger households and those with tertiary education earn more. In addition, firms that have access to electricity, are formally registered, and have access to male labor—especially unpaid male household labor—have higher profits.
10. **There is a substantial gap in profits between firms owned by men versus women.** A simple comparison of monthly profits shows that enterprises owned by women have 61 percent lower profits than those owned by men nationally. Regional differences, owner characteristics, and enterprise inputs explain part of the gap; yet even when taking these into account, the monthly profits of female-owned enterprises remain 55 percent lower than those of male-owned enterprises. This gender gap is even larger among entrepreneurs who recorded profits in the past month (i.e., active businesses).
11. **Zooming in on the five business sectors with the greatest number of enterprises,²² the raw gender gaps in profits are highest in the manufacturing of textiles, followed by wholesale and retail trade and vehicle repair (Figure 5.1).** The lowest gap is in accommodation and food service activities. When accounting for regional differences, owner characteristics and enterprise inputs, the gender gap in the textile sector remains high at 62 percent, though the highest gap is observed in administrative and support service activities, while the lowest gap is observed in accommodation and food service activities.

Figure 5.1: Gender gap in firm monthly profit by sector



Source: Authors' calculations using LSMS 2014.

²¹ In addition, 98 percent of business owners overall (97 percent of female business owners) also operate their business. In the rest of our analysis, we consider business ownership as the variable of interest.

²² Other sectors include printing and reproduction of recorded media, furniture manufacturing, repair and installation of machinery and equipment, information and communication, arts and crafts, entertainment and recreation, and other service activities.

12. **Low levels of foundational skills and formality increase the gender gap.** Unlike in agriculture, one of the drivers of the gender gap in profits is low levels of numeracy among female business owners. Male business owners are nearly twice as likely to report being able to do a simple calculation compared to female business owners. Informality (proxied by not having a tax ID) is strongly correlated with an increased gender gap. While having a tax ID is rare among businesses in general (only 1 percent overall), male-owned businesses are nearly 10 times more likely to have one. However, while lower access to electricity does not emerge as a driver of the gender gap in entrepreneurship, female-owned businesses do experience lower returns on electricity access in terms of profits.
13. **Lack of labor to help with the business also emerges as a key driver of lower profits for women.** Specifically, lower levels of unpaid male hours (mostly male household labor) emerge as one of the most robust explanatory variables in our analysis. Moreover, female-owned businesses have significantly lower returns on the number of people in the household and the ratio of children to adults in the household. This may be linked to women's greater role in childcare and household responsibilities, which is likely to restrict their ability to supervise firm labor, thus reducing firm profits.

GENDER INEQUALITY IN EARNINGS

14. **Wages by individuals in the labor force are also a major component of earnings.** Though earnings data include workers in both the formal and the informal sectors, workers reporting earnings data are a select group, having on average eight times more years of education than workers in the above-mentioned sectors. The analysis reveals that in general, earnings are correlated with workers' education, marital status, ratio of dependent children (≤ 16 years) to working adults (17-64 years) within the household, living in rural areas, and job sector. Workers with secondary and tertiary education have higher earnings than those with no formal education. The greater the proportion of dependent children to adults in the household, the lower the earnings. Not surprisingly, workers in rural areas have significantly lower earnings compared to those in urban areas. Earnings in sectors such as crop and animal production, hunting and related service activities, wholesale and retail trade, motor vehicle and motorcycle repair, transportation, and storage are consistently lower than in other sectors such as mining, construction, public administration, human health and social work activities, and arts and crafts.
15. **Women earning a wage income have higher levels of attributes that are predictive of higher earnings.** For example, working women have 9.0 years of education on average versus working men's 7.8. Thus, when looking at the simple difference in earnings, men and women exhibit similar levels, with women on average earning more than men, though this difference is not statistically significant.
16. **Gaps are large among similar wage earners.** When comparing similar wage earners, accounting for the job sector and socioeconomic characteristics,²³ a statistically significant gap of 21 percent to the detriment of women emerges. The gender gap becomes even larger, increasing to 29 percent, when further considering the education level of the wage earner's mother as well as his or her age and education relative to their spouse. This highlights the importance of household dynamics and intergenerational transmission of human capital as determinants of earnings.
17. **Education and occupational segregation emerge as important drivers of the gender gap in earnings.** Years of education are strongly correlated with differences in earnings between men and women. In particular, having secondary or tertiary education is correlated with a lower gender gap compared to having no education or only primary school education. Increasing the share of women with post-primary education would thus be a promising step toward reducing the gender gap in earnings. The analysis also reveals that job sectors that are traditionally male-dominated, such as crop and animal production, hunting and related service activities, wholesale and retail trade, motor vehicle and motorcycle repair, and transportation and storage reduce the gender gap (the comparator sectors include mining, construction, public administration, human health and social work activities, and arts and crafts). Thus, encouraging women to crossover into more remunerative but male-dominated sectors may reduce the gender gap in wages.

²³ The control variables include: socioeconomic characteristics (age, marital status, literacy, numeracy, formal education, child ratio), a rural area dummy, whether the individual has health issues, broad job sectors, and regional dummies.

CONCLUSION

18. **Gender gaps in productivity in Niger are both significant and large by international standards.** The economic costs associated with these gaps runs into billions of dollars. When considering individual sources of income, we observe stark gender gaps across agricultural productivity, entrepreneurship profits, and earnings ranging from 21 to 55 percent. These computed gender gaps are large when compared to other Sub-Saharan countries. As regards agricultural productivity, O'Sullivan et al. (2014) show that national gender gaps in Ethiopia, Malawi, Nigeria, Tanzania, and Uganda are lower than in Niger, ranging from 23 to 33 percent. In a meta-analysis of gender gaps in entrepreneurship profits from Sub-Saharan Africa, Campos and Gassier (2018) find that gender gaps range from 1 percent in Benin to 73 percent in a manufacturing census conducted in Ghana, with an average gap of 24 percent. To the best of our knowledge, no such systematic work has been conducted recently for wage earnings in Sub-Saharan Africa. However, Appleton et al. (1999) find wage gaps of 3 percent in Côte d'Ivoire, 25 percent in Ethiopia, and 33 percent in Uganda.
19. **Despite lower earnings and productivity, women are not worse farmers, entrepreneurs, or workers than men.** Rather, gender differences in labor productivity and earnings are primarily the result of differences in choices of economic activities between men and women, different endowments, and different returns from these endowments due to underlying social and economic constraints, as noted in the World Bank's 2012 World Development Report. Factors holding back women include inadequate access to labor and other productive inputs such as fertilizer and land, occupational segregation, and lower levels of education. In Chapter 7, programs and policy options that could improve opportunities are discussed, with a focus on improving women's access to labor and productive inputs, increasing women's investment in their human capital, and encouraging occupational crossover for women in self or wage employment.

6

SENSITIVITY ANALYSIS FOR THE ESTIMATION OF ECONOMIC BENEFITS FROM GENDER EQUALITY



1. **This chapter provides two robustness tests (sensitivity analysis) for the estimation of benefits from gender inequality obtained through comparative statics in previous chapters.** The first part of the chapter relies on estimations using a computable general equilibrium (CGE) model to measure gains from gender equality. As with comparative statics, the aim is to measure the gains that could be achieved under full equality. The results from the model are broadly similar to those obtained in previous chapters using comparative statics. The second part of the chapter considers less ambitious targets by looking at what might be achieved in Niger if the country were to catch up with the current performance of other African countries.

ESTIMATING BENEFITS WITH A COMPUTABLE GENERAL EQUILIBRIUM MODEL

2. **Using a Computable General Equilibrium model (CGE), this section estimates the economic impact of selected policies designed to reduce gender inequality in selected areas spanning human capital, labor force participation, and productivity.** The scenarios discussed in this section simulate progress toward gender equality by reducing gender gaps in education, gaps in labor participation and productivity, and the impacts of reduced gaps in education combined with lower fertility. The objective is to compare the results obtained with such a model to the simulations based on comparative statics presented in Chapters 4 and 5.

Box 6.1: Computable General Equilibrium Model

The Computable General Equilibrium (CGE) model is calibrated to represent the structure of the Nigerien economy and includes agents such as the Government, the private sector, the labor force, and households. It constructs scenarios that test hypothetical *what-if* assumptions and simulates impacts through the supply and demand sides of the economy, including the incorporation of costs incurred in implementing policy reforms. As a result, the model captures the complex interactions through which gender inclusion would impact the Nigerien economy. On the supply side, for instance, better education for women would translate into more skilled workers in the labor force, which means not only more well-paid jobs for women but also benefits for the private sector. On the demand side, more educated and employed women will make larger contributions to household incomes, and this in turn will shift expenditure toward the education of children, more nutritious food, and better health for the family.

3. **The combined impact of key policies and outcomes would produce a GDP increase of 21.5 percent by 2030.** The scenarios reflect a reduction in gender inequalities associated with some policy options, which offer a path toward gender parity, but not closing them entirely in order to illustrate more realistic assumptions. The CGE model uses an approach that tackles gender inequalities through: (i) human capital; and (ii) productivity and labor participation. Still, even though the gender gaps are not fully closed in the CGE simulations, the simulations should be seen as representing ideal conditions, as was done in Chapters 4 and 5.
4. **With respect to human capital,** reducing existing gender inequalities in education between boys and girls consists in providing a big push to increase the level of educational attainment of girls assuming a much higher increase in boys' performance, a scenario close to universal education, and combining it with reduced fertility.
5. **With respect to productivity and labor participation, reducing existing gender inequalities consists in increasing women labor force participation, increasing the productivity of agricultural land owned by women, and increasing the productivity of women working in the manufacturing and services sectors (Table 6.1).** Each scenario is compared with respect to a baseline projection with no policy action being taken. The gains estimated in the CGE model are of a similar order of magnitude as those of simple comparative statics discussed earlier, although some of the gains would decrease as costs associated with the policies to be implemented are incorporated in the model. The following sections will discuss the various scenarios and assumptions leading to these gains.

Table 6.1: Order of magnitude of GDP gains generated by reduced gender gaps in selected areas related to human capital, productivity and labor participation

	Gains (% increase in GDP by 2030)
Reduced fertility and scenario close to universal education	12.6
Increased labor force participation and productivity	8.9
Increased land productivity	0.8
Increase in female labor force participation	5.7
Increase in productivity in urban sectors	2.4
Total	21.5
Note: Gain from solely equating educational attainment by gender	0.9

Source: Authors' calculations.

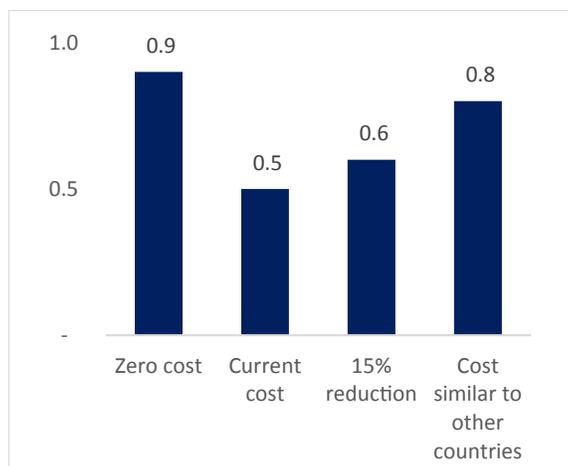
REDUCING THE GENDER GAP IN EDUCATION

6. **This section elaborates on a set of hypothetical scenarios which the existing gender gap in educational attainment between boys and girls closed in 2018:** (i) a hypothetical scenario where the cost of providing additional education is zero; (ii) a scenario with the current cost-per-student structure in primary, secondary, and tertiary education based on the latest estimates for Niger; (iii) a scenario with a fall of 15 percent in cost-per-student for all education levels; and (iv) a scenario with a cost-per-student structure that is similar to that of countries with low per capita income. It is assumed that in the other years, Niger continues with the historical path of low formation of human capital for both women and men.
7. **The impact of achieving gender parity in education is limited because of the initial low overall educational attainment for boys as well as for girls.**²⁴ Closing the gender gap in education under a zero-cost scenario would provide economic gains of 0.9 percent of GDP by 2030. As expected, introducing positive education costs

²⁴ See Chapter 2.

would reduce the GDP gains. Using the current cost-per-student structure in Niger, gains in GDP would remain positive but at a low level, or 0.5 percent of GDP, given that current education spending in Niger is extremely high. Thus, reducing the cost by 15 percent from its current level would increase GDP gains to 0.6 percent, and bringing the cost down to similar levels as in low- and middle-income countries would generate a GDP gain of 0.8 percent.²⁵

Figure 6.1: GDP gains from closing gender gap in education by 2030



Source: World Bank staff estimates.

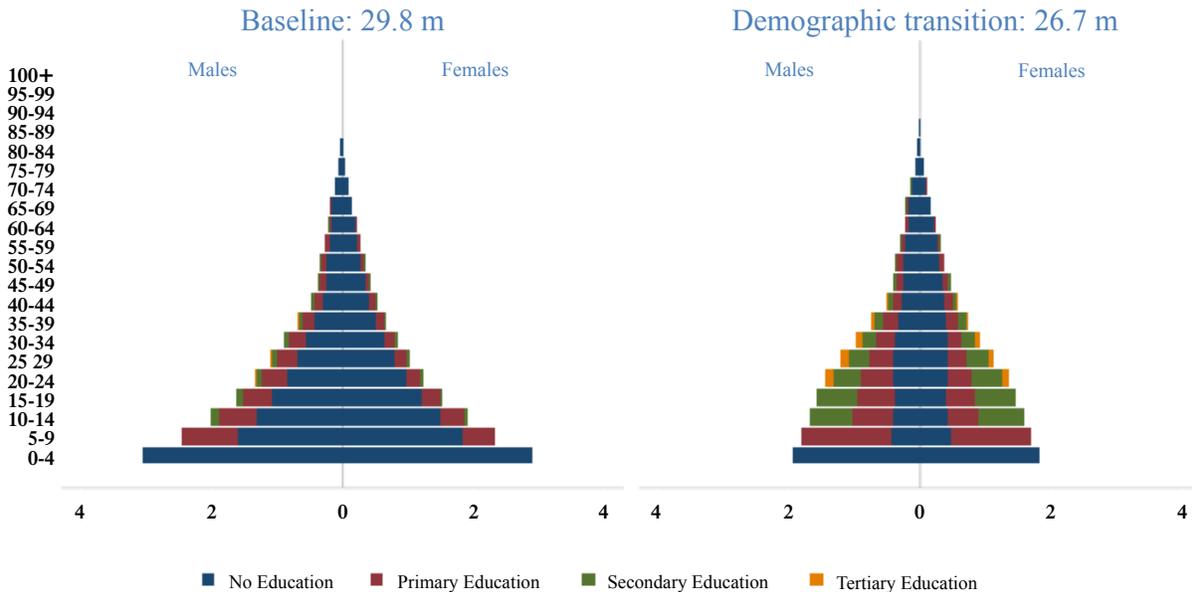
HIGHER EDUCATIONAL ATTAINMENT AND LOWER FERTILITY

8. **Dramatically expanding educational attainment together with a reduction in fertility would generate larger impacts on GDP.**²⁶ Simulations with zero cost indicate that these mechanisms could generate substantial benefits for the economy, in the order of 12.6 percent higher GDP in 2030. The mechanisms consist of accelerated progress toward universal access to education, which results in an increase in human capital and in the proportion of the working-age population.²⁷ More generally, specific year-on-year growth rates are applied to demographic and skill variables in the model, as follows: total population, population aged 15-64, and labor by skills and location. Assumptions stipulate that two thirds of all students in secondary and tertiary education remain full-time students and that there is a 1-to-1 passthrough of educated students to employment. The simulations generate a different population structure in terms of both demographics and education, as shown in Figure 6.2. Among others outcomes, the population would fall by 3.1 million by 2030. However, the benefits of this demographic transition will be higher as the time horizon is longer, with more substantial benefits being reaped in the long term.

²⁵ Source: World Development Indicators; UN Global SDG Database; World Bank Niger Development Trajectories Sheets. Cost comparable to that of countries with similar per capita GNI (obtained from Trajectories Sheet).

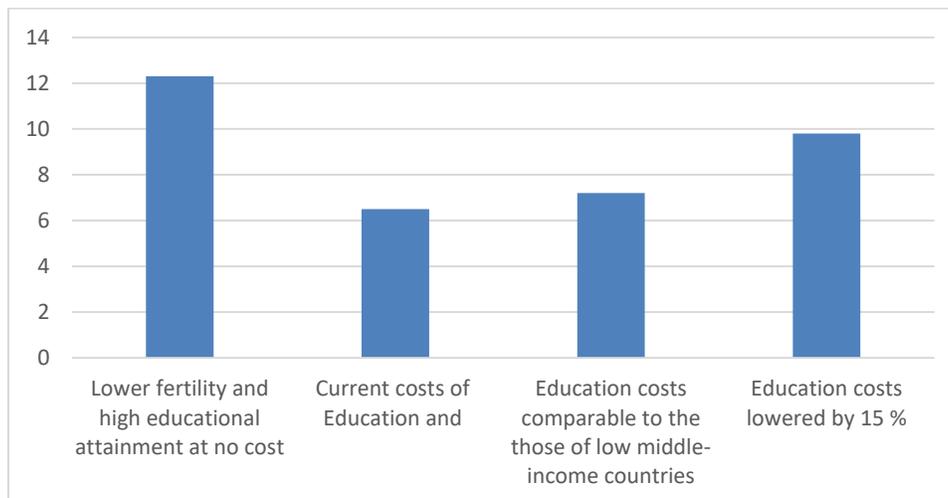
²⁶ The demographic variables in the model follows assumptions used in the Shared Socioeconomic Pathways (SSP), with high educational attainment and low fertility.

²⁷ For the effects of demographic transition in Africa see Ahmed, Cruz, Go, Maliszewska, & Osorio Rodarte, (2014); Drummond, Thakoor, & Yu, (2014); Eastwood & Lipton, (2011); Sachs, (2015). There is also empirical evidence of similar demographic transition boosting growth in East Asia (Bloom, Canning, & Malaney 2000; Bloom & Williamson 1998).

Figure 6.2: Effects of reduced fertility and significant progress toward universal education by 2030

Source: Authors' elaboration using the SSP database in Riahi et al. (2017).

9. **While the gains in GDP under these assumptions are of much greater magnitude, taking into account the costs of providing health and education would lower the benefits.** Costs for the demographic transition would entail increasing the level of health expenditure to that of low- and middle-income countries, while costs for education would include costs for additional students per year as well as education expenditure per student. The assumption for the cost of expanding health services is 2.7 percent of GDP. Based on the four cost simulations of education and the assumption on health expenditure, results indicate that compared to the baseline of zero policy, by 2030, the following would occur: (i) a 6.5 percent GDP increase with the current costs of education; (ii) a 7.2 percent GDP increase assuming that the cost per student in all three levels of education could be reduced by 15 percent; and (iii) a 9.8 percent GDP increase if the costs of education were lowered to the level of low- and middle-income countries.

Figure 6.3: Percentage of GDP gains from a demographic transition and higher educational attainment by 2030

Source: World Bank staff estimates.

INCREASING LABOR FORCE PARTICIPATION AND PRODUCTIVITY OF WOMEN

10. **The next set of simulations consider improvements in labor market outcomes.** These hypothetical simulations reduce gender inequalities in the base year (2018) by: (i) increasing female labor force participation without changing productivity; (ii) increasing productivity of agricultural land and plots owned by women; and (iii) increasing labor productivity in the non-agricultural sector through a productivity increase for women in the manufacturing and service sectors. Evidence obtained from Niger household surveys was used to incorporate these assumptions in the economic model. As in the previous sections, the simulation starts by immediately reducing the gender gaps at zero cost, later incorporating positive costs that will be absorbed by public investments by the Government.
11. **The combination of the three policies impacting labor force participation and the increase in women's productivity indicate that gains in GDP by 2030 would amount to 8.9 percent compared to the baseline with no policy action taken,** with the figure being 8.8 percent if the costs of implementing these policies were to be taken into account (Table 6.2). The only costs considered here are those associated with the increase in land productivity. Costs associated with increases in labor force participation and women's productivity in urban sectors are assumed to be implemented by changes in regulations.
- **The first hypothetical assumption (increasing women labor force participation) generates an increase in GDP of 5.7 percent.** According to the latest Niger ECVMA Household Survey, 4.9 million women were employed in, or 1.4 million less than men. Hence, the simulation contemplates an immediate increase of 12.5 percent in women's labor force participation in each category without any additional increases in productivity.
 - **The second hypothetical assumption, which reduces the agricultural productivity gap between the plots owned by women generates a small gain of 0.8 percent of GDP.²⁸** Women owning plots show 38.4 percent less productive yields than men. While women generate only 12 percent of total agricultural production, they represent 43.2 percent of all agricultural employment. This simulation contemplates an immediate increase in the productivity of land of 16.6 percent given zero cost.²⁹ The gains would be reduced to 0.7 percent with the cost associated with reform implementation to increase land productivity.³⁰
 - **Lastly, the third simulation contemplating an increase in the productivity of the urban manufacturing and service sectors of the economy generates a GDP gain of 2.4 percent.** Based on Nigerien household surveys, excluding mining and agriculture, urban labor accounts for 14 percent of employment, while labor-intensive industries such as manufacturing and services account for 34 percent of urban employment. Women represent 56.4 percent of employment in these industries, and their monthly wages are 40 percent lower than men's. This simulation contemplates an immediate 40 percent increase in the productivity of women in manufacturing and services. Reducing the gender gap in labor productivity in the urban sector would represent an aggregate increase of 7.9 percent in the productivity of urban labor. There would be no increase in labor force productivity in this scenario.

Table 6.2: Percentage of GDP gains generated by reduced inequalities in labor and productivity by 2030

	Gains in GDP
Increased land productivity	0.8
Increase in female labor force participation	2.4
Increase in productivity in urban sectors	5.7
Total	8.9
with costs	8.8

Source: World Bank Staff calculations.

²⁸ The costs associated with this assumption consist in implementing extension services targeting women.

²⁹ Equal to $38.36 \times .4321 = 16.58$ percent.

³⁰ The size of the program is comparable to that of other programs in Niger that promote investments for scaling up climate-smart agriculture and similar to the ratio of government investment and agricultural productivity in Beyene and Engida's (2016) study of Ethiopia.

12. **The results generated by the CGE model provide insights into the impacts of various scenarios—separate or combined—aimed at reducing gender inequality.** The gains from reducing gaps in education are small because Niger starts from a very low level of enrollment and completion rate among both boys and girls. Therefore, achieving universal education is among the country’s top priorities. It also confirms that increasing women labor force participation is more beneficial when accompanied by a shift to high-earning sectors as increasing land productivity for women alone would not result into high gains. Finally, the demographic transition is beneficial for the country and can provide substantial gains when combined with efforts to achieve universal education. The time horizon through 2030 discussed in this study entails that Niger is at an early stage of demographic transition but that in the much longer run, this transition will generate substantial GDP gains. Finally, although the results are different in magnitude from those of comparative statics, both results converge to the same conclusion. However, as in the case of comparative statics, the estimates should not be considered precise given that they depend on econometric estimates of the impacts of gender inequality in multiple areas that have themselves standard errors and a range of assumptions for costing that are debatable.

ALTERNATIVE CATCHING-UP SCENARIO FOR THE LARGER COSTS OF GENDER INEQUALITY

13. **While per capita GDP could increase by almost one third under gender equality, this would represent an ideal scenario that is unlikely to be achieved.** The sensitivity analysis provided along with the CGE model suggests that the results obtained under comparative statics and the CGE model are broadly similar in terms of the gains in GDP that could be achieved under perfect gender equality as well as the reduction in population growth that would generate additional gains in per capita terms. However, perfect gender inequality is unlikely to be achieved. In this section, an alternative catching-up scenario is constructed to show the gains Niger could achieve if it managed to match the current performance of the African region as a whole.
14. **To estimate potential gains in earnings from progress toward gender inequality as opposed to perfect equality, comparisons with Sub-Saharan Africa are used.** The estimates of gains in earnings from gender equality presented in Chapter 5 rely on the assumption that women would earn as much over their lifetime as men without any resulting losses in earnings for men. The key parameter in the computations is the increase in total earnings for women that would result. Under perfect equality, this increase in national earnings is estimated at 40 percent for Niger. Given that labor earnings account for slightly more than half of GDP (56 percent), this generates an increase in GDP of 23 percent under perfect gender equality. The gains for Niger are large in part because the national earnings gains that would result from perfect equality are large too, at 40 percent. In Sub-Saharan Africa as a whole, the earnings gains that could be achieved from perfect inequality are smaller, at 23 percent, because women in other countries earn more than is the case in Niger in comparison with men. This means that simply catching up with the Sub-Saharan average would already generate gains from reduced gender inequality of about 14 percent. Indeed, if Niger were able to increase earnings for women by 14 percent, it would need to increase those earnings from that point on by another 23 percent to reach perfect equality, as is the case for Sub-Saharan Africa ($1.13 \times 1.23 = 1.40$). How large would the gains in earnings for Niger be if it were to simply catch up with the average performance of other Sub-Saharan countries in terms of the relative lifetime earnings of men and women? As shown in Table 6.3, the gains would be valued in 2016 at US\$1.6 billion (PPP) and could increase to US\$3.4 billion by 2030.

Table 6.3: Gains in labor earnings from catching up with Sub-Saharan African countries

	2016	2030
Per capita GDP (PPP)	US\$986	US\$1,300 (*)
Population	20.7	33.6
Labor share	0.56	0.56
Catching-up scenario increase in earnings (%)	0.14	0.14
Gain (US\$ billion PPP)	US\$1.6 billion	US\$3.4 billion

Source: Authors’ estimates.

15. **A similar approach can be used for estimating gains associated with the reduction in fertility that would result from catching up with the regional average.** In the case of simulations for fertility and population growth, comparisons with the Sub-Saharan region as a whole are more complex because the conceptualization of what gender equality entails is not based on a single parameter but rather on a range of parameters as well as initial demographic conditions. Yet to provide a comparative analysis, comparisons can be based on the levels of child marriage observed in Niger and in Sub-Saharan Africa since ending child marriage is by far the main driver of the reduction in fertility simulated under perfect equality. As mentioned in Chapter 2, according to the latest publicly available DHS for Niger, 76.8 percent of girls married as children in 2011, while the 2016 ENISED survey gives this proportion as 74.7 percent. For 2017, the prevalence of child marriage in the Africa region is estimated by Le Nestour et al. (2018) at 35.1 percent. If Niger were to catch up with the region in terms of reducing the prevalence of child marriage from 74.7 percent to 35.1 percent, it would achieve 53 percent of the target under gender equality, which is to end child marriage (zero prevalence). Using this proportion as the benchmark for the catching-up scenario, the reduction in population growth that could be achieved by catching up with the regional average would be 53 percent of the reduction previously estimated in Chapter 4 under perfect equality (see Table 4.2). The catching up scenario would thus generate a reduction in the rate of annual population growth of -0.26 percentage points in 2015 and -0.19 percentage points in 2030. Over 15 years, instead of a cumulative reduction in the size of Niger's population of 6.8 percent by 2030 versus the counterfactual scenario, the reduction in total population from the catching-up scenario is estimated at 3.6 percent.

7

PROGRAMS AND POLICIES FOR EMPOWERING ADULT WOMEN: LESSONS FROM INTERNATIONAL EXPERIENCE



1. **Gender inequality affects women in multiple domains throughout their adult life.** While targeting adolescent girls is a promising avenue for addressing gender inequality early on, effective programs and policies designed to reduce gender inequalities in adulthood are sorely needed. Chapter 4 showed how gender inequality affects fertility and population growth as well as health, nutrition, agency, intimate partner violence (IPV) (among other areas). Chapter 5 documented patterns of gender inequality in earnings by considering agricultural yields, entrepreneurship, and wages. In terms of our estimations of the broad economic costs of gender inequality, improving earnings for women is a clear priority along with reducing fertility and population growth.
2. **This chapter has two aims: (i) suggesting policy options for tackling the issue of gender inequality in adulthood for women; and (ii) providing illustrations of programs that are making a difference in Africa and elsewhere.** Relying on a review of the literature and various sources of data, the chapter considers policies that could help achieve gender inequality. The first section provides a brief assessment of Niger's legal system as it pertains to laws affecting women in labor markets using the most recent data from the World's Bank Women, Business, and the Law program. Next, the chapter considers programs and policies that could improve earnings for women by considering all three types of earnings discussed in Chapter 5. Finally, the chapter discusses programs and policies related to fertility, health, nutrition, and other aspects affecting women and their children. The issue of adult literacy is also considered. Again, while much more detailed work would be needed to specify which options might work best in Niger, international experience suggests that programs designed to improve opportunities for adult women can make a difference not only for them but also for their family and community.

ASSESSING NIGER'S LEGAL FRAMEWORK FOR WOMEN'S EMPLOYMENT

3. **An assessment of laws as they pertain to women's employment, earnings, and other opportunities shows that the legal and regulatory framework works against gender equality in two ways: (i) by imposing restrictions on women's employment and their access to institutions in Niger; and (ii) through an absence of laws banning discrimination based on gender.** The assessment was conducted for Niger and 180 other countries under the Women, Business, and the Law program. The dataset identifies barriers to women's economic participation and encourages reforms to gender-differentiated laws across seven indicators (see Box 7.1 on the data collection methodology). To understand where laws facilitate (or impede) women's economic participation, the Women, Business and the Law 2018 database provides scores for each of the seven indicators. These scores are obtained by calculating an unweighted average of scored questions within that indicator and scaling the result from zero to 100.

Box 7.1: Methodology for Analyzing Women, Business, and the Law Data

Legal data are collected based on responses from local legal experts, including lawyers, judges, academics, and members of civil society organizations working on gender issues. The data and responses are verified against codified sources of national law, such as criminal codes, labor laws, and legislation on violence against women, domestic violence, sexual harassment, gender equality and non-discrimination. The legal data are based on statutory or codified laws and regulations for civil and common law systems as well as case law, which in common law systems consists of law established by judicial decisions in cases that set binding precedents. To ensure comparability between countries with different and plural legal systems, the data are based on the law applicable to the main business city in the country, and customary or religious law is not accounted for unless it has been codified or upheld by binding case law. In some places, customary law may exist in parallel to formal legal regimes and may sometimes differ and even undermine the protections granted to women by the statutory legal system.

4. **Scores for Niger show that despite progress toward gender equality over time, legal barriers to women’s employment and entrepreneurship persist.** Out of a maximum score of 100 per area, Niger scores an average of 46 versus an average of 59 for countries in Sub-Saharan Africa and an average of 66 for all 181 countries in the database. Niger is below the average for Sub-Saharan Africa in six of the seven areas, with the exception of providing incentives to work (though in practice, such incentives apply typically only to formal sector workers, a minority of workers in Niger, especially for women).

- **Accessing institutions:** The Accessing Institutions indicator examines laws governing women’s interactions with public authorities and the private sector to determine where women’s agency and economic activities may be constrained. Limitations on women’s legal capacity or freedom of movement still exist in Niger. Along with only Chad and Guinea-Bissau, legislation still relies on colonial versions of civil laws. For example, married Nigerien women are not allowed to open a bank account without their husband’s permission. As in other economies in Francophone Africa,³¹ Niger has regulations restricting women’s employment, many of them mirroring a 1954 ordinance from the former French West African Federation. According to existing regulations, women in Niger cannot decide whether to get a job or where to live without their husband’s consent or be considered head of household or head of family in the same way as married men.

Access to institutions can also being undermined by the lack of explicit legal or political support for gender equity. For instance, there are no quotas for women on corporate boards or candidate lists in elections for the National Parliament or municipal councils, and women’s political representation is limited (with women accounting for only 17 percent of Members of Parliament according to data from the Intra-Parliamentary Union). Even when formal regulations do not provide specific restrictions for women, customary law tends to penalize them. Customary laws and norms prevailing in many African societies frequently confer rights to land ownership on the head of the household only, who are most often men, following patrilineal custom. Although less prevalent than in the past, patriarchal power relations are deeply rooted in rural society and act as a powerful hindrance on women’s chances to own land. In addition, patriarchal customs are reinforced by the tradition of dowry, whereby a husband pays the bride’s price to his wife’s father, and this payment supports the traditional belief that women are the husband’s “property” since a payment was made for her. This belief drives the customary land tenure rule that prohibits women from owning land independent of their relationship with their father or husband.³²

- **Using property:** The Using Property indicator examines women’s ability to acquire, access, manage and control property regimes. Access to property through these means can both increase women’s financial security and provide them with the necessary collateral to start businesses. Note that the existing legal framework does not provide for valuation of non-monetary contributions in Niger.
- **Getting a job:** Ensuring job-protected leave of adequate length and pay for both parents is critical for a variety of health, economic, and social development outcomes. Though Niger mandates paid maternity

³¹ Benin, Burkina Faso, Cameroon, the Central African Republic, Chad, the Democratic Republic of the Congo, the Republic of the Congo, Côte d’Ivoire, Gabon, Guinea, Madagascar, Mali, Mauritania, and Senegal.

³² Slavchevska, Campos, Brunelli, and Doss (2016).

leave, it is partly paid by the employer at 50 percent of wages. Eliminating barriers that prevent women from working in certain sectors or occupations could also increase labor productivity. While there are no prohibitions for women working during night hours, the Labor Code restricts women from working in jobs deemed hazardous, arduous, or morally or socially inappropriate in the same way as men. Women are also prohibited from holding jobs across various sectors, including agriculture, construction, manufacturing, metalworking, and mining. Finally, women cannot engage in jobs requiring lifting weights above established thresholds.

- **Providing incentives to work:** Governments can facilitate balancing work and family by supporting and incentivizing mothers' ability to return to work after childbirth. Childcare services are not subsidized in Niger, nor are childcare payments tax-deductible. In addition, primary education is not free and compulsory.
- **Going to court:** Access to justice allows people to use the legal system to advocate for their interests and ensure enforcement of the law. Niger enhances women's access to justice by giving their testimony equal weight to men's and mandating legal aid in civil matters. However, small claims procedures or courts and an anti-discrimination commission have not been established.
- **Building credit:** A strong institutional environment is key to expanding access to finance for women-owned businesses. In Niger, neither retailers nor utility companies provide information to credit agencies. Discrimination based on gender and marital status in access to credit is also not prohibited.
- **Protecting women from violence:** The Protecting Women from Violence indicator examines the existence and scope of legislation on violence. In Niger, there is no domestic violence legislation or aggravated penalties for crimes against a spouse or family member. Even though sexual harassment is legally prohibited in employment, there is no legislation protecting girls or women against sexual harassment in education.

Table 7.1: Assessment of Niger's Legal Framework: Women, Business, and the Law

Indicator	Niger	Africa	Global
Accessing institutions: Legal capacity, agency, freedom of movement	64	87	91
Using property: Legal ability to manage, control, and inherit property	50	76	83
Getting a job: Restrictions on employment and parental leave policies	57	61	67
Providing incentives to work: Laws on childcare and personal income tax	60	55	66
Going to court: Ease and affordability of accessing justice	50	67	68
Building credit: Access to finance and inclusiveness of credit reporting systems	0	19	30
Protecting women from violence: Sexual harassment and domestic violence	40	46	54
Average score: All seven areas equally weighted	46	59	66

Source: Women, Business, and the Law 2018.

5. **Several countries have removed legal barriers denying women their rights to access institutions or getting a job, an example that Niger could emulate.** Over the past eight years, progress has been made to remove head-of-household provisions: (i) In 2013, Côte d'Ivoire introduced a reform that allows both spouses to choose the family residence and stop the other from working if they deem it against family interests;³³ (ii) In 2016, the Democratic Republic of the Congo reformed its Family Code to allow married women to sign a contract, get a job, open a bank account, and register a business in the same way as married men, and also removed the obligation; (iii) In Rwanda granted both spouses equal rights to choose the marital home jointly and removed provisions designating the husband as head of household and requiring a married woman to obey her husband.³⁴
6. **Some countries have enacted laws banning discrimination based on gender.** Over recent years, progress has been made in promoting gender equality by explicitly banning discrimination that may otherwise be supported by tradition or customary laws: (i) Angola and the Democratic Republic of Congo introduced reforms that now prohibit discrimination by creditors in financial transactions based on gender; (ii) Guinea prohibited discrimination based on gender and marital status when accessing goods and services, including financial services, and (iii) Zambia prohibited discrimination based on gender and marital status in access to credit.

³³ WBL 2014 Report.

³⁴ WBL 2018 Report.

IMPROVING EARNINGS OPPORTUNITIES FOR WOMEN

7. **As seen in the analysis provided in Chapter 5, factors holding back women include inadequate access to labor and other productive inputs such as fertilizer and land, occupational segregation, and lower levels of education.** Programs and policy options should therefore focus on: (i) improving women's access to labor and productive inputs; (ii) increasing women's investment in their human capital; and (iii) encouraging occupational crossover for women in self- or wage employment. All three areas of focus are discussed in this section.

Improving Women's Access to labor and Productive Inputs

8. **To improve women's access to labor, women could be offered financing to hire labor as well as support for childcare.** Labor is a critical input for achieving economic success in both entrepreneurship and agriculture. Women have the option of hiring labor, entering into labor-sharing agreements, enlisting the help of household members, or providing the labor themselves. Yet in practice, this may be difficult due to a variety of constraints, including an inability to pay the wages of farm workers or cultural norms that lead men in the household to allocate household labor to the detriment of female-operated plots and businesses or hired laborers to work harder for a male supervisor. A possible solution could be to offer women financing for hiring labor. Another would be investment in e-platforms or networks of extension agents designed to help women identify and hire effective labor. Moreover, domestic and childcare responsibilities may limit the time women can dedicate to working their plots or in their businesses or even to pursuing economic opportunities in the first place. This is because of the diminished amount of time they can dedicate to economic activities, which in turn may restrict the continuity of their participation. A promising alternative may be community-based childcare centers and engaging men as equal partners in domestic responsibilities.
9. **To encourage women to learn about and adopt productivity-enhancing agricultural inputs, extension activities should be tailored to women's needs and financing offered to encourage the purchase of inputs.** Cash vouchers or in-kind transfers may ease the financial constraints women face and help them purchase and use more agricultural inputs. Delivering improved inputs in quantities appropriate to women's often smaller plots and with payment schedules accessible to women could also lead to significant increase in use (Duflo, Kremer, and Robinson 2011). However, care needs to be taken in designing these programs if they are to address the constraints Nigerien women face in accessing inputs. Evidence from Mali suggests that even if fertilizer is provided to women farmers for free, it may not necessarily improve farm profits since it increases spending on other complementary inputs (Beaman et al. 2013). Similarly, low uptake of inputs may not necessarily be related to credit constraints but instead reflect low levels of knowledge on how best to use the technologies (Carter, Laajaj, and Yang 2013). The venues in which women receive and learn how to use these productivity-improving inputs could also be made more gender-responsive and more thoughtfully meet women's needs and preferences. How agricultural extension may traditionally be subject to male bias is illustrated by farmer training centers that do not provide separate washing or sleeping accommodations for men and women and do not provide facilities for the care of babies or young children, factors that may prevent women from attending these centers. Second, women's daily workloads may not allow them to be absent from home for residential training as attending even short courses may cause insuperable problems in arranging substitute care for children or the home. Further, extension services are often staffed predominantly by men. When in countries such as the Philippines or Mexico women field staff have been deployed in sufficient numbers and with sufficient resources, they have become effective agents of change among women farmers. Promising extension models tailored to women's needs include farmer field schools with childcare facilities and flexible schedules and mobile phone applications.

Increasing Women's Investment in their Human Capital

10. **Disparities in educational attainment and the skills learned through education are a key driver of the gender gaps we observe, particularly for entrepreneurship and wage earnings.** The UNESCO Institute for Statistics estimates that adult literacy rates in Niger are approximately 23 percent for men and 9 percent for women, implying that 9 women out of 10 are unable to read functionally. Adult literacy programs could be an important tool, though care should be exercised in their development.



Box 7.2: Considerations in Designing Adult Literacy Programs

Aker & Sawyer (2016) argue that adult literacy programs should take the following aspects into consideration: *Ensure that teaching materials are properly sequenced from decoding to automaticity to comprehension.* While this is not very different from learning by children, adults may need to work harder if they are to re-specialize to a new task (i.e., decoding new information).

Provide more practice to “make things stick” (Knowland and Thomas 2014). Given the limits to brain plasticity and the difficulty for adults to re-specialize, activities and practical applications become all the more relevant for adults. This includes making use of different teaching aids to assist with decoding and automaticity as well as group discussions to assist with comprehension and evaluation.

Ensure that the curriculum has a specific focus on metacognitive skills, not just decoding. Metacognitive skills are critical for comprehension, yet difficult to teach, and little research has been conducted on their impact on adult learning.

Recognize the opportunity costs to learning for busy adults. A substantial body of research suggests that drop-out in some countries increases significantly at the age when children can start working. Strategies to address this have included linking social assistance programs with demand for social services such as Conditional Cash Transfers (CCT) and agriculture extension programs. Similar strategies may be required for adults, although more research is needed. The use of technology also shows promise since by, for instance, using mobile phones, learners do not have to be physically present in the classroom. Further, linking learning to goals the adult learners may have (such as learning numeracy skills to be able to operate their mobile phones) can lead to further success.

Ensure that teaching pedagogy is specific to adult learners (i.e., andragogy) rather than a one-size-fits-all approach to education.

11. **More generally, business training, including an increased focus on numeracy skills, business development, and management within specific business training for women may be a promising policy intervention for reducing the gender gap in entrepreneurship.** However, these programs need to be customized to fit the needs of Nigerien women. So far, evidence regarding the efficacy of business training programs targeting small and medium enterprises has been mixed, in particular when training is provided in the absence of startup capital. McKenzie and Woodruff (2013) reviewed several impact evaluations of business training programs (mostly targeted to small firms) and found relatively modest impacts of training on survivorship of existing firms, although they also found some evidence that training programs help prospective owners launch new businesses more quickly. They also found that while existing firm owners tend to implement some of the practices taught in training, the magnitude of these improvements are often modest.
12. **There is growing evidence of the importance of psychosocial skills for women entrepreneurs in Africa.** An entrepreneurship program for women in South Africa found positive impacts on profits and sales six months after training as well as improved motivation and confidence (Botha, Nieman, and Van Vuuren 2006). A program in Togo comparing personal initiative training seeking to foster self-starting, future-oriented, and persistent behavior with managerial training found positive and significant effects on sales and profits of men and women-led micro enterprises (Campos et al. 2017). Studying the impacts of the ILO’s Gender and Enterprise Together training program for low-income female business owners, McKenzie and Puerto (2017) found that after three years, participating women are earning 15 percent higher profits and experience improvements in mental health and subjective well-being.
13. **Providing comprehensive support that addresses women’s multifaceted vulnerabilities also helps improve impacts.** Liberia’s Economic Empowerment of Adolescent Girls and Young Women (EPAG) provided six-month training in job skills targeted to sectors with high demand or business development skills and six-month support for job placement or links to micro-credit depending on the training received as well as other training and

support such as life skills training, small group learning, a business plan competition, mentorship, savings accounts, childcare, and transportation. The project proved to be a cost-effective intervention for women entering the business skills track (where, based on increased earnings, the cost of the intervention could be recovered within three years), though less so for women entering the jobs skills training (Adoho et al. 2014). The SWEDD project profiled in Chapter 3 takes a similar approach. In Niger, the project aims to improve economic opportunities by offering technical and professional training in non-traditional activities and offering financial support such as grants and credit and entrepreneurship training.

Encouraging Occupational Crossover for Women in Self- or Wage Employment

14. **Contextual factors and gender differences in endowments and preferences influence female entrepreneurs and workers' choices of industry.** These factors underlie the fact that women-owned businesses significantly underperform those owned by men, while on average women occupy lower ranks in lower paying sectors than men (Campos and Gassier 2017). As noted above, Niger has legal restrictions that impede women's access to better earning sectors, as women cannot by law work in some areas. Incentivizing women to work in male-dominated sectors and removing legal barriers restricting women's access to opportunities can be an avenue for increasing women's earnings. Women may also not have information about potential returns from different sectors. Campos et al. (2015) and Alibhai, Buehren, and Papineni (2015) show that the majority of women working in female-dominated sectors are not aware that women (and men) in male-dominated sectors tend to earn much higher profits. Hence, women's limited access to information contributes to gender segregation across sectors. A useful policy prescription may be to provide training and information on high earning sectors to women.



Box 7.3: Successful Experiences in Promoting Women's Economic Empowerment

Creches for Informal Workers in Rural India

In India, the NGO Mobile Creches has experimented with different models for providing child-care services for women employed in the informal rural sector and on public works programs. Day-care facilities were set up on public construction sites around New Delhi in partnership with contractors, who provide childcare facilities in addition to sharing other costs. These centers respond to the expectation that women would represent a large proportion of those taking up public work programs, with this figure reaching 80 percent at some sites. Day-care programs include a nutritional component by providing meals during the day and tracking the nutritional status of children over time as well as integrated health services (for example, immunizations and regular doctor visits). Mobile Creches also helped in the creation of both home-based centers and community-based programs by identifying and training local women to provide these services.

Women Entrepreneurship Development Program (WEDP) in Ethiopia

The Women Entrepreneurship Development Project (WEDP) is an IDA lending operation designed to address key constraints on growth-oriented women entrepreneurs in Ethiopia. The program's objective is to increase earnings and employment for women-owned enterprises. As of end-2015 (after two years of project's implementation), more than 3,000 women entrepreneurs took out loans (64% of WEDP borrowers had never taken out a loan before) and over 4,500 participated in business training. Participating female enterprises saw profits grow by 24% and employment by 17%, and loan repayment stands at 99.4%. Data from loan applications indicate that enterprises created around 6,000 new jobs by 2017, the majority of which were for women.

15. **Additional interventions may be needed for specific challenges such as gender-based violence (GBV).** International evidence suggests that prevention programs can help reduce the prevalence of intimate partner violence (IPV) especially when they address the harmful social norms that lead to GBV. The most successful interventions tend to be community-based and have multiple components for working with men, women, leaders, and service providers. There is also promising evidence recommending economic empowerment

interventions for women combined with gender transformative training and engagement for male partners and family members. Lessons can be learned from programs such as SASA! in Uganda, which employs multiple strategies to build a critical mass of engaged community members, leaders, and institutions, including local activism, media and advocacy, communication materials, and training. Results from a three-year randomized controlled trial show: (i) a 52-percent reduction in levels of violence against women; (ii) a 28-percent increase in the share of women and men who believe that it is acceptable for women to refuse sex; and (iii) a 50-percent increase in the share of men and women who believe that physical violence against a partner is unacceptable (Abramsky et al. 2014).

8



CONCLUSION

1. **This study approaches gender inequality from the life cycle angle.** Gender inequalities become inequality traps when disadvantages transfer across generations. Inequalities that emerge in adolescence and early adulthood, a particularly critical time when decisions and choices are made, determine outcomes regarding skills, health, and economic opportunities and have long-lasting effects on women's lives and communities. This illustrates not only the importance of intervening early but also the ways in which the realms of endowments, economic opportunities, and agency are interrelated.
2. **Education and health are among the most important endowments needed to achieve human development as individuals start accumulating them at a young age.** Health starts with accessing nutrition in the womb and remains crucial thereafter for normal anthropometric and brain development in the under-five age set. Education starts at an early age and can help lift barriers and obstacles affecting adolescent girls' lifepath, such as childbearing and early marriage, the main factors accounting for dropping out. Education at an early age is critical to increasing women's voice and participation in societal institutions later in the life cycle, in accessing assets and opportunities, or in allowing the expression of women's voice within households or more broadly within society.
3. **Other factors are also critical to addressing gender inequality at a later stage in women's life cycle, including asset ownership.** All over the world, pervasive and persistent gender differences remain in productivity and earnings across different sectors and jobs. Many women around the world appear to be caught in a productivity trap. They are not worse farmers, entrepreneurs, or workers than men; rather, gender differences in labor productivity and earnings are primarily the result of differences in the economic activities of men and women, different endowments, and uneven access to assets.³⁵ Different patterns of economic activity for women and men also emerge from how markets and formal and informal institutions work and how households respond. Illustrative examples include uneven access to financial services or to land and public services and segregation and legal barriers in accessing opportunities in high-earning sectors.
4. **Agency and decision-making is another critical factor in addressing gender equality.** Agency and autonomous decision-making are limited for women in Niger due to women's lower status and barriers in the legal systems constituting a limiting factor in achieving an autonomous and productive life. Women's limited voice and decision-making starts early in life, primarily with the widespread practice of early marriage, but it also affects adult women due to a lack of regulations specifically addressing domestic violence,³⁶ which is viewed as justified if, for example, women neglect their children. Similarly, there are no provisions in the legislation against sexual harassment in education or the workplace. Thus, it is impossible for women to exercise agency, take full advantage of opportunities, or acquire human endowments under the threat of violence.

³⁵ WDR (2012), p. 198.

³⁶ IFC (2018), *Women, Business and the Law*, p. 120.

5. **Economic gains from reducing or closing gender gaps are significant.** Using 2030 as the reference year for the Sustainable Development Goals (SDG), estimates of GDP gains stemming from closing gender gaps run into billions of dollars. This study assessed economic gains derived from gender equality using two approaches: comparative statics, and a computable general equilibrium (CGE) model. While based on different assumptions, the two approaches reach similar conclusions. GDP could increase by about one fourth under gender equality, while total population could decrease by 7 to 10 percent by 2030 depending on the assumptions used. This would generate gains in per capita GDP of almost one third. While these results are based on optimistic scenarios, they indicate potential gains under an ideal situation.
6. **What could be done to achieve gender equality, and is there a right sequencing of reforms? The study points to the main areas that generate the most substantial gains if gender parity were to be achieved, namely population growth, universal education, and increase in labor force participation.** The recommendations discussed in this study focus mainly on these. Many options complement each other as they span various sectors ranging from programs to enhance women's entrepreneurial skills, amendments to legislation with a view to protecting women and girls against discrimination and violence, promoting universal education, and keeping girls in schools.
7. **The proposed recommendations are not comprehensive but rather points to a menu of options and potential avenues for Niger in all of these areas.** In addition, they require a complex process to be implemented. Success stories are reported that provide ideas and material for dialogue among relevant stakeholders. However, a successful policy in one country may not necessarily transfer to another. The context determines the extent to which case studies from another country are relevant or replicable in Niger. Successful interventions and lessons from other countries must therefore be adapted and attuned to country-specific social circumstances.
8. **In particular, policy design and implementation must be negotiated with key stakeholders, taking into account the policy environment.** Progress toward gender equality consists in a shift toward a new equilibrium, where women have access to more endowments, economic opportunities, and ways to exercise agency. Such changes need to be shaped by interactions between households, markets, and both formal and informal institutions. In addition, each of these interactions affects markets, and both formal and informal institutions in a continuous feedback loop. Policies require trade-offs in allocating resources to competing priorities taking into account given budget constraints and financial and political costs. For instance, improving maternal care and delivery in remote areas may conflict with expanding hospital services for the broader population.
9. **Stakeholders' interests and spheres of influence determine the power dynamics that shape policy reform in relation to trade-offs and costs in the short and long term.** Societal actors play a direct role in shaping the policy and institutional environment by advocating policies, designing interventions, and implementing programs. Individuals can influence government policy through voting and public opinion. Opposition to any given reform may come from societal actors who do not want (or cannot afford) to bear the related costs or prefer a competing agenda. Given multiple and diverging societal actors, coalitions are indispensable for building support and countering resistance from influential interest groups. Because reforms usually create winners and losers, understanding the political realities and tradeoffs that shape incentives for key stakeholders in a program or policy is vital to building coalitions and securing consensus.
10. **Hence, policy changes need to capture the collective aspirations and political will of social actors, thus opening up new opportunities.** When policy formulation and implementation follow cues from ongoing shifts in markets and social norms, convergence and alignment can fuel sustainable change. However, such incremental reforms may not be enough to overcome the path dependence and institutional rigidities that result in persistent gender inequality. Bold government action accompanied by transformative reforms can alter social dynamics and shift countries and societies to a more equitable equilibrium. In these circumstances, policy implementation and enforcement must follow if sustainable behavioral changes are to be generated.
11. **Given potential opposition and the existence of winners and losers, transparent communication must provide clear information and perceptions of change.** Transparency and strategic communication reduce information asymmetries, promote a more effective public debate, and enable the exploration of public policy issues from multiple perspectives. Media exposure can engage stakeholders directly and influence their private beliefs. Popular culture and information campaigns can contribute to changes in social norms, values, or preferences.

12. **Continued effort at enforcement will require champions to sustain government investments and ensure the strong enforcement mechanisms required for behavioral change.** The introduction of transformative change without enabling conditions, such as new legislation and law enforcement, can decouple policy intentions and outcomes, calling into question the sustainability of reform. The risk of reversal, especially if enforcement is relaxed, threatens this new equilibrium. Social norms will take a long-term vision to change and will require perseverance and sustained efforts and attention. Having champions within the Government and among societal actors is critical.
13. **The matrix of recommendations below summarizes some of the potential options for reforms discussed in this report.** The matrix also explicitly links the reform recommendations with the gaps they address and the actors involved in their implementation.

Recommendations	Gap Addressed and Desired Impact (Factors)	Actors and Interests
Increasing female labor force participation and productivity could increase GDP by 8.9% by 2030		
Removing legal barriers against access to institutions and getting jobs by: <ol style="list-style-type: none"> Revising the Civil Code and the Labor Code to remove the various prohibitions for women undermining their decision-making ability and access to various types of work Enacting a law prohibiting discrimination based on gender or marital status in access to credit Enacting laws protecting women from all forms of violence, especially domestic violence and sexual harassment in the workplace (see Annex) Offering prevention programs to help reduce the prevalence of IPV 	Absence of legal protection against violence for women in the workplace and at home	<p>The Government will promote gender equality in employment by removing legal barriers in hiring and subsidizing childcare. NGOs and media will help spread awareness of new legislation.</p> <p>The Government will enact legislation to protect women against violence in workplace. NGOs will offer IPV prevention programs and NGOs and media will help spread awareness of new legislation.</p>
Enhancing women's entrepreneurial skills by: <ol style="list-style-type: none"> Providing training and information to address multifaceted vulnerabilities in women entrepreneurs regarding numeracy skills, psychosocial skills, productive sectors, and business management Creating a One-Stop-Shop for women entrepreneurs that will provide services facilitating formalization, information, and access to finance and markets 	Lower skills and lower access to assets (financial services, information)	The Government will finance, implement, and monitor women entrepreneurship programs across the country as well as the One-Stop-Shops in partnership with the private sector and business development services providers specifically tailored for women
Promoting women's employment and closing the earnings gap by: <ol style="list-style-type: none"> Incentivizing sector shift from low-earning to higher-earning sectors through training and the provision of average wage information on each sector Subsidizing childcare and early education 	<p>Low women's participation rate in the labor force</p> <p>Lower the income gap between men and women in non-agricultural sectors</p>	The private sector and NGOs will play a substantial role in delivering training and business development services matching women's skills and markets
Increasing women's productivity in agriculture by: <ol style="list-style-type: none"> Providing extension services tailored to women's needs Providing direct financing for hiring labor or investment in e-platforms or networks of extension agents designed to help women identify and hire effective labor 	Lower the gap in agricultural productivity	The Government will design and implement a package of subsidies for extension services for women, including financing for hiring labor

GDP benefits from universal education and reduced fertility amounting to 13.5% of GDP by 2030		
<p>Establishing safe spaces to provide:</p> <ul style="list-style-type: none"> (a) Life skills and SRH knowledge in order to promote nutrition and sound reproductive behavior and health (b) Training and outreach on soft skills and elimination of all forms of GBV, including early marriage (c) Economic opportunities for girls not in school aimed at building skills for income-generation, livelihood interventions, financial literacy, and access to financial services (d) Incentives to stay in school or return to school for drop-out girls such as conditional or ear-marked cash transfers promoting school enrolment and completion (e) Media campaigns to promote girls' empowerment and education 	<p>Human development gaps in education (school enrollment and completion) and maternal mortality</p> <p>Early marriage and early childbearing and other forms of systemic GBV against girls</p> <p>Awareness about the need for changing social norms (early childbearing, early marriage, girls' education)</p>	<p>Schools and NGOs, health workers, and traditional birth attendants will partner with the Government in promoting SRH and life skills, especially in rural areas, all of whom will need to be skilled and qualified</p> <p>Traditional and religious leaders will partner with the Government to promote shifts in social norms and behaviors about early marriage and childbearing</p> <p>Schools and NGOs will be the first interface between government programs and families for economic livelihood programs and incentives to stay in school</p> <p>NGOs and media will help raise awareness of gender issues. Men will also be engaged. Media campaigns promoting girls' empowerment and education will be aimed at both genders. This will be accomplished through gender norm sensitization and training or "schools for husbands" and boys' clubs to be implemented in Niger as part of SWEDD.</p>
<p>Protecting adolescent girls through a legal framework by:</p> <ul style="list-style-type: none"> (a) Enacting laws regulating early marriage (b) Enacting laws banning sexual harassment in schools 	<p>Absence of legal protection for girls against early child marriage and violence</p>	<p>The Government will enact legislation for addressing early child marriage and protect girls against violence and lead the agenda by collaborating with gender champions and traditional religious leaders</p>
<p>Promoting universal education by:</p> <ul style="list-style-type: none"> (a) Ensuring that primary and secondary schooling is affordable (including opportunity costs) (b) Providing school infrastructure, including new schools with access to water, latrines, and hygienic facilities or transportation facilities, where needed (c) Improving learning through (among others) better curriculum and incentives for teachers to provide better instruction 	<p>Human development gaps in education (school enrollment and completion)</p>	<p>The Government will provide or coordinate infrastructure provision with schools and communities and take steps to make school affordable</p> <p>The Government will provide or coordinate education reforms, including incentives for teacher performance and better curriculum</p>



METHODOLOGICAL ANNEX ON COMPARATIVE STATICS

1. **The results provided in this study rely on a number of methodological assumptions.** Estimates of the cost of gender inequality using comparative statics in this study are based on: (i) estimates of impacts of gender inequality on various outcomes; and (ii) a valuation for some of these impacts. The term “impact” is used loosely and for simplicity. However, we should not necessarily assume that the term infers causality. Estimates of impacts are typically obtained through regression analysis that aims to isolate the potential impact of variables associated with gender inequality (such as child marriage) on various outcomes while 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 gender inequality and outcomes, an impact that may not be observed through a randomized control trial. Since gender inequality cannot be randomized, the study must rely on regression analysis to estimate likely impacts, even though there is always a risk of bias in the measures of likely impacts.
2. **Based on measures of likely impacts, costs associated with some of the impacts are computed.** Since these costs are based on a number of assumptions that could be debated, they only represent an order of magnitude of potential costs as opposed to precise estimates. The main methodological assumptions for the comparative statics estimates are as follows:
 - **Costs related to earnings:** Estimates are based on a simple multiplicative framework with the gains in earnings equal to $\text{GDP} \times \text{Labor Share} \times \text{Potential Increase in Labor Income from Gender Inequality}$. The labor share accounts for the part of GDP allocated to earnings. The potential increase in labor income from gender inequality is obtained by assuming that women would be able to earn as much over their lifetime as men without any reduction in earnings from men. The methodology used for the estimation of the potential increase in labor income from gender inequality is described in Wodon and de la Brière (2018) and relies on an approach to estimating a country’s human capital wealth as the present value of the future earnings of the labor force.
 - **Costs related to population growth:** A simple way to measure the welfare benefits that could accrue from achieving gender equality and thereby reducing population growth consists of comparing the level of per capita GDP Niger would achieve between now and 2030 with and without gender inequality. The comparison is based on estimates of the impact of gender inequality on population growth. The welfare benefits from gender equality are the transfer that would have to be provided to a population to reach the level of per capita GDP that could have been reached if gender equality had been achieved. This transfer is the product of Niger’s population \times per capita GDP \times the impact of gender inequality on population growth. This follows the approach used in a study of child marriage by Wodon et al. (2018).
 - **Costs related to under-five mortality and stunting:** Gender equality would lead to a reduction in under-five mortality and stunting. For 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

gender inequality, providing an economic valuation of its impact on under-five mortality and stunting is useful. There is no unique way to conduct such an analysis, but the assumptions are as follows. For under-five mortality, following approaches used in the literature and despite the limits of this approach, we value a child's life as the discounted stream of future per capita GDP of the child in adult life. For under-five stunting, 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. Given that in both cases the valuation is based on present values, discounted rates are used to value future incomes (the base discount rate is set at 5 percent). Again, this follows previous work on child marriage by Wodon et al. (2018).

- **Budget savings for education:** By reducing the size of future cohorts, achieving gender equality would provide savings for the education budget of countries. A costing model (Wils 2015) prepared for the 2015 Education for All (EFA) Global Monitoring Report is used to measure potential savings from smaller cohorts of students, with the reduction in the size of future cohorts based on simulated population growth. This follows the approach used in child marriage work by Wodon et al. (2018), as detailed in Wodon (2018).



METHODOLOGICAL ANNEX ON THE NIGER COMPUTABLE GENERAL EQUILIBRIUM MODEL

Applied general equilibrium models can effectively account for the diversity of interactions that operate in economic systems, especially with single macroeconomic policies or structural changes that can have direct or indirect repercussion on different sectors on the economy. Computable general equilibrium (CGE) models are useful in capturing the ex-ante impact of simulated reforms on a variety of macro indicators, including national accounts (GDP growth, consumption, investments, fiscal balance), external accounts (real exchange rate, trade, debt, current account) and industry indicators (output, employment). When linked to external data sources, such models may also capture the distributive effects of a policy. CGEs are an ideal tool for analyzing the complexity of linkages between different markets and sectors. Overall, CGE models can help estimate the economy-wide impact of reforms while identifying winners and losers, e.g., in terms of sectors (agriculture or others) as well as factors (wage earner, capitalists). Arguments for the suitability of a general equilibrium approach in analyzing the macroeconomic effect of a gender-inclusive policy agenda are compelling given that these effects are complex and transmitted through numerous channels.

The Niger model used for this analysis is a single-country CGE model. The Niger CGE model is derived from the general LINKAGE Model (van der Mensbrugge 2011). LINKAGE has a flexible framework and has been applied in numerous developing countries. The model is calibrated on a social accounting matrix (SAM) comprising 43 sectors, 7 factors, and 1 representative household. The Niger CGE model is a recursive dynamic CGE model that explicitly models the year-by-year effects of a particular policy on the economy. The dynamic modeling approach links a sequence of static equilibriums that update period-by-period the macroeconomic variables in the system of accounts (for instance, population, productivity, capital stock, gross domestic production).

METHODOLOGICAL CAVEATS

1. **Our approach carries important caveats related to data availability and economic assumptions inherent to general equilibrium models.** It is important to consider that the model's behavior was not explicitly adapted to address some of the idiosyncratic characteristics of the Nigerien economy and cultural background. Moreover, many of the channels of transmission operate in non-market transactions, which cannot be fully captured in an economic model assuming rational economic agents.
2. **Nevertheless, for the type of policies analyzed in this paper (gender parity in education, increase female labor force participation, and demographic transition), the comprehensive treatment of the economic system allows us to capture within a consistent framework the long-term dynamics and economic benefits of such policies.**
3. **Availability of gender data at the macro level is limited, especially in the social accounting matrix.** Additional data used to inform the magnitude of shocks and their associated costs were obtained from: (i) cross-country databases; and (ii) the Niger household survey.
4. **Additionally, some costs are not fully considered in the modeling framework, including the cost of urbanization and service delivery.** It is well-established that while urbanization can facilitate service delivery, additional infrastructure costs are also associated with the creation of urban environments, rural-urban migration, and the implicit adaptation cost of economic diversification. However, these are not considered here. (See, for

instance, the 2004 World Development Report on service delivery.) In addition, important economic costs for non-market activities are not included in this model, including taking care of children and the elderly as well as all unpaid reproductive work carried out by women.

5. **Lastly, the general equilibrium assumptions used in this model imply that as a result of market clearing mechanisms, all additional labor is absorbed by the economy.** In other words, the economy operates at full employment. This is an important assumption because adjustment is frictionless, hence, implementation costs, mostly occurring in short-term, are not captured in this model.

STATIC AND DYNAMIC MODULES IN THE NIGER CGE MODEL

Static module

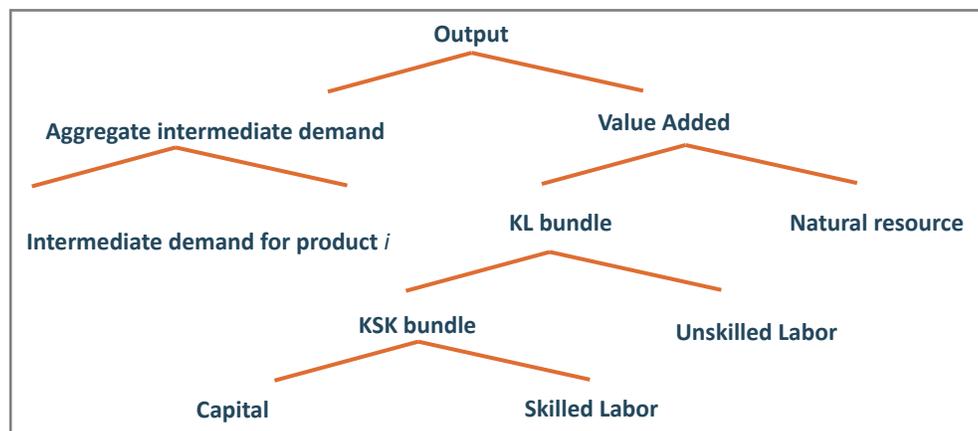
The standard CGE model used draws on the World Bank global model known as LINKAGE (van der Mensbrugge 2011).³⁷ The model was developed from the neoclassical structural modeling approach presented in Dervis et al. (1982).³⁸ The underlying assumptions are mainly those encountered in the standard CGE literature (de Melo and Tarr 1991). Therefore, only four key aspects are laid out in this note: (i) the production function; (ii) the macroeconomic closure assumptions used; (iii) the modeling of household incomes and consumption; and iv) international trade, highlighting substitutability between domestic production and imports as well as the small-country assumption in the treatment of tradable goods (i.e., Niger is a price-taker).

Production function

The model considers an economy with 43 sectors each producing an equal number of commodities. All sectors are assumed to produce under conditions of constant returns to scale and perfect competition, implying that prices equal the marginal cost of output. Producers maximize their profits by minimizing their variable unit cost under the constraint of a multi-level production function. At the top level, output is obtained by combining value added and the intermediate aggregates, following a Leontief production technology. Therefore, any policy affecting a particular sector would affect the sector directly but also the sectors using them as intermediate consumption indirectly.

At the second level, the intermediate aggregates are obtained by combining all products in fixed proportions (Leontief structure), and total value added is obtained by aggregating the primary factors (capital, labor, and natural resources) using a nested structure. First capital and skilled labor are combined into a KSK bundle, then this is combined with unskilled labor (KL bundle). Finally, the KL bundle is combined with the natural resource to produce value added. In agriculture sectors, natural resource refers to land, while in mining sectors, it refers to the extractive resource (e.g., uranium or crude oil). The full structure of production nests is shown in the diagram below.

Nested Production Structure in Niger CGE Model



Source: Authors' elaboration.

³⁷ Interested readers can refer to the model's full set of equations in the cited source.

³⁸ The theoretical framework relies on neoclassical assumptions that assume constant returns to scale (CRS) and perfect competition, where firms maximize profits to determine output supply and factor demands.

Factor markets

Factor markets are assumed to be in perfect competition. The labor market is segmented between skill types and employment characteristics. There are two skill types: (i) unskilled workers with no formal education, less than completed primary or completed primary education but less than post-secondary, and (ii) skilled workers with post-secondary education or higher. There are two locations: urban and rural, which yields four types of workers: (i) skilled urban; (ii) skilled rural; (iii) unskilled urban, and (iv) unskilled rural. Unskilled rural workers are those who work in the agriculture sectors. Each type of labor is perfectly mobile across the different sectors of production. Without wage gaps across sectors, this implies a uniform wage across all sectors. The wage is set according to supply and demand for labor in each segment, while flexible wages clear the markets for the four labor segments.

The capital stock is fixed within each period and is allocated across different sectors according to demand for capital in that sector, while capital flows to sectors with high profitability. In other words, capital is fully mobile across sectors, and the rate of return is the same for all sectors.

Household income and consumption

The model consists of one representative household. Households supply skilled and unskilled labor and receive wages in return. The amount of labor supplied is exogenous to the model. Households also receive incomes and transfers from other agents, including profits from asset holdings. Households use their earnings for consumption, savings, and transfers.

Consumption of a product by a household is determined by a Stone and Geary linear expenditure system (LES) utility function (Geary 1950; Stone 1954).³⁹ This function decomposes consumption of a given product into necessities and discretionary consumption. In this configuration, the allocation of household consumption across products depends on relative price as well as income elasticities (which are commodity-specific in this model).

Macroeconomic closures

Macroeconomic closures determine how macro balances are restored after a shock. Specifically, these closures specify how the model achieves: i) balanced government accounts; ii) macro equilibrium in the capital account, i.e., the investment-savings balance; and iii) macro equilibrium in the accounts with the rest of the world, i.e., external balance. The closure rules adopted in the current version of the Niger model are discussed below.

The government earns revenues mainly through taxation. All tax rates are fixed at base-year levels. The ratios of government current and investment spending are also fixed as shares of real GDP. Hence, government savings (the primary balance) is endogenous and adjusts in response to policies and economic shocks. The gap between demand for government investment and public savings is filled through foreign and domestic borrowing.

As regards the savings-investment balance, we assume savings-driven closure. Aggregate investment, which together with an exogenous rate of depreciation that determines the next period's capital stock, is flexible, thus ensuring that investment cost will equal savings value. The volume of available savings is determined by an exogenous level of foreign savings, endogenous government savings and endogenous household savings. In this context, an increase in government revenues as a result of a new source of tax revenues would be reflected in higher public savings and therefore stimulate current investment and growth.

External balance ensures that the path of foreign liabilities is sustainable. Here, closure is achieved through adjustment to the real exchange rate, while the current account is fixed by the available quantity of foreign savings. To maintain the current account constant, the real exchange rate adjusts domestic prices so as to generate appropriate changes in the volumes of imports and exports demanded. In the context of Niger, the main implication of this closure is that an increase in mining revenues from abroad, for example, will generate an appreciation in the real exchange rate, thus penalizing the competitiveness of the exporting sector. This is a manifestation of the classic "Dutch disease." Conversely, a fall in mining revenues would have the opposite effect.

³⁹ See van der Mensbrugghe (2011) for the functional form used in the model.

International trade

On the import side, this model follows the Armington assumption, whereby there is imperfect substitution among goods originating in different geographical areas.⁴⁰ Import demand results from a nested Constant Elasticity of Substitution (CES) aggregation function that aggregates domestic and imported goods. Export supply is symmetrically modeled as a Constant Elasticity of Transformation (CET) function, with producers allocating their output to domestic or foreign markets according to relative prices.⁴¹

It is important to note that import demand and export supply by Niger do not affect world prices, hence the small-country assumption is used in dealing with the country's international trade with the rest of the world. Therefore, prices for goods and services traded (imported and exported) with the rest of the world are fully exogenous.

DYNAMIC MODULE

The dynamic path follows the neo-classical growth framework (the Solow-Swan growth model),⁴² which implies that the long-run growth rate of the economy, g^y , is determined by three main factors: capital accumulation, labor supply growth, and increases in productivity (in the equation below, λ is the productivity index for labor and capital). The stock of capital is endogenous, while the latter two are exogenously determined.

$$g^y = F\left(\text{population, capital stock, } \lambda_{ip,1}^1 \lambda_{ip,1'}^1 \lambda_{ip,k}^k \lambda_{ip,k}^k\right)$$

Capital accumulation

The capital stock in each period is the sum of depreciated capital from the previous period and new investment. The formulation is as follows:

$$K_{t+1} = K_t(1-d) + INVTOT_t$$

where d is the annual depreciation rate of the capital, and $INVTOT_t$ is the total investment in the current period (t). The capital stock is endogenous since investment is determined by available savings from households, the government, and foreign sources in the previous period. The allocation of capital among sectors depends on the return on capital in each sector.

Labor supply

For each type of labor, the maximum stock of labor available in each period grows exogenously at the growth rate, ρ , of the working age population (aged 15-64). Pathways for education and population were obtained from the Shared Socioeconomic Pathways (SSP) database described in Riahi et al. (2017).

$$LS_{t+1} = LS_t(1 + \rho)$$

Productivity

For the final determinant of growth, the LINKAGE model assumes exogenous technical progress specific to sector and production factors. The change in productivity is derived by a combination of factors, though is also partly judgmental. The equation below shows how the labor productivity index $\lambda_{ip,1}^1$ evolves over time.

$$\lambda_{ip,1}^1 = \left(1 + \gamma^1 + \chi_{ip,1}^1\right) \lambda_{ip,1,-1}^1$$

⁴⁰ See Armington (1969) for details.

⁴¹ Note that this model considers only one trade partner, namely the Rest of the World. However, the model code is flexible enough so that additional trading partners can be added.

⁴² The model was developed independently by Robert Solow and Trevor Swan (see Solow 1956; Swan 1956).

Labor productivity grows thanks to γ^1 , a uniform growth factor applied in all sectors to all types of labor, and a sector- and skill-specific factor, λ . These parameters are exogenous to the model. Thus, in the simulations, the real GDP growth rate differs from the growth rate under the baseline scenario due to the policy or shock being simulated. Specifically, policies or shocks can affect real GDP growth through their effects on the accumulation of labor or capital as well as the sector-specific productivity index for labor ($\lambda_{ip,l}^1$) and capital ($\lambda_{ip,k}^k$).

Baseline dynamics

Before running any simulations in a dynamic framework, it is important to define a reference baseline, e.g., a business-as-usual scenario. Unlike in policy simulations, when defining this baseline scenario, the growth rate of GDP is exogenous (g^y in the equation below, where RGDPMP refers to real GDP in market prices) and is set as equal to growth trends derived from the Macro Poverty Outlook for the early years and the World Economic Outlook for the medium term horizon. This equation is then used to calibrate the γ^1 parameter, i.e., the growth rate of labor productivity. In other words, γ^1 is the channel used to achieve the targeted GDP growth rate. During the simulations, γ^1 is given, and g^y becomes endogenous.

$$RGDPMP_{t+1} = RGDPMP_t(1 + g^y)$$

SECTORS AND FACTORS OF PRODUCTION IN THE NIGER CGE MODEL

Table 8.1 below lists the economic sectors and the production factors in the 2012 Social Accounting Matrix for Niger.

Table 8.1: Economic sectors and production factors in the Niger CGE model

Broad sector	Specific sector
Crops (9)	Rice; Millet, Sorghum; Cowpea; Tomato; Pepper; Potato; Peanut; Other
Livestock (11)	Bovines; Camels; Sheep; Goats; Poultry; Milk production; Manure production; Other livestock; Firewood; Fish; Fishing activities
Extractives (6)	Oil; Uranium; Gold; Stone, sand, and clay; Other extractive; Coke and oil refinement
Manufactures (5)	Food, beverages, and tobacco; Textile and leather; Paper and printing; Pharmaceutical and chemical; Other manufacturing
Services (12)	Electricity, gas, and water; Construction; Trade and vehicle and motorcycle repair; Transportation and storage; Hotels and restaurants; Telecommunications; Financial and insurance; Real estate and business services; Public administration; Education; Human health and social activities; Other activities
Factors of production (7)	Urban skilled labor; Urban unskilled labor; Rural skilled labor; Rural unskilled labor; Natural resources; Land; Capital

Source: Authors' elaboration based on Niger's 2012 Social Accounting Matrix.



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