

Macroeconomic Gains from Closing Gender Educational Gaps in Niger

Niger

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ABSTRACT: This paper explores the state of gender equality and education attainment of girls in Niger. It also estimates the macroeconomic gains from reducing gaps in education between boys and girls using a micro-founded general equilibrium model. The analysis shows that Niger has made some progress toward higher educational attainment for girls, but the country still lags far behind other sub-Saharan African countries. The results from the general equilibrium model suggest that closing the gender gaps in education would boost female labor participation, increase income earned by women and improve fiscal outcomes. More importantly, closing the gender gap in years of schooling in each income percentile would boost long-term GDP by 11 percent. These significant economic gains from investing in girls' education will contribute to the achievements of the strategic goals defined under the Programme de Développement Economique et Social (PDES) 2022-26.

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SELECTED ISSUES PAPERS

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MACROECONOMIC GAINS FROM CLOSING GENDER EDUCATIONAL GAPS IN NIGER¹

This paper explores the state of gender equality and education attainment of girls in Niger. It also estimates the macroeconomic gains from reducing gaps in education between boys and girls using a micro-founded general equilibrium model. The analysis shows that Niger has made some progress toward higher educational attainment for girls, but the country still lags far behind other sub-Saharan African countries. The results from the general equilibrium model suggest that closing the gender gaps in education would boost female labor participation, increase income earned by women and improve fiscal outcomes. More importantly, closing the gender gap in years of schooling in each income percentile would boost long-term GDP by 11 percent. These significant economic gains from investing in girls' education will contribute to the achievements of the strategic goals defined under the Programme de Développement Economique et Social (PDES) 2022-26.

A. Introduction

1. Gender equality tends to have a positive impact on governance, stability, and macroeconomic outcomes. There is growing evidence that gender equality is associated with better macroeconomic outcomes at all levels of development, including higher GDP, greater productivity, lower income inequality, and faster economic growth and convergence (IMF 2015, Gonzales and others 2015; Sever, 2022). Lower gender gaps in education and higher female labor force participation have been associated with higher diversification of output and exports, which in turn support economic resilience (Kazandjian and others, 2016). Women are more likely to invest more of their resources into their children, which in turn yields greater school expenditures and higher school enrollment for children (Aguirre and others 2012). Other studies have shown that gender gaps contribute to instability and fragility, and poor governance (Caprioli, 2005; Branisa and others, 2013).

2. Cognizant of the importance of gender equality, the Nigerien authorities have placed strategies to close gender gaps at the heart of the new development plan. They adopted a new National Gender Policy aiming by 2027 to build, with all the stakeholders, a country without discrimination, where men and women, girls and boys have the same opportunities to participate in its development and enjoy the benefits of its growth. Female education is a major priority as the authorities plan to build 100 boarding schools for girls by 2025 and close the gender gaps in primary and secondary education enrollment by 2026 (Table 1).

¹ Prepared By Rasmane Ouedraogo (Resident Representative) and Diego Gomes (SPR).

Table 1. Niger: Projected Gender Indicators Under the PDES 2022-26

	Reference year	Reference index	2022	2023	2024	2025	2026	Difference (end-period-reference year), in %
Girls/boys parity index: gross primary enrollment rate	2020-21	0.87	0.94	0.96	0.98	1	1	14.9
Girls/boys parity index: gross secondary lower school enrollment rate	2018-2019	0.83	0.9	0.92	0.94	0.96	1	20.5
Girls/boys parity index: gross secondary higher school enrollment rate	2018-2019	0.6	0.8	0.85	0.9	1	1	66.7
Share of girls enrolled in industrial sector trainings (%)	2017-2018	17.85	18.2	18.5	18.8	19.1	19.4	8.7
Gender inequality index (UNDP)	2019	0.642	0.627	0.622	0.616	0.611	0.606	-5.6
Gender development index (UNDP)	2019	0.724	0.745	0.754	0.763	0.77	0.778	7.5
Child marriage rate (%)	2021	64.9	57.92	50.94	43.96	36.98	30	-53.8
Gender score, Mo Ibrahim	2019	47.5	47.9	48.2	48.6	48.9	50.4	6.1
Female activity rate (%)	2020	60.6	63.3	63.9	66	69	72	18.8
Share of businesses run by women (%)	2021	18	20	22	24	26	28	55.6
Share of women ministers (%)	2021	15.15	17.6	20.6	29.4	32.4	32.4	113.9
Share of women in senior positions (%)	2020	19.13	21.2	27	29	30	30	56.8
Share of gender-sensitive investment projects and programs (%)	2019	35.5	40	45	47	50	55	54.9
Share of gender units producing annual reports on gender analysis (%)	2021	0	50	100	100	100	100	

Source: Niger's authorities and IMF Staff calculations

3. Against this background, this paper examines the state of gender development and estimates the macroeconomic gains from implementing policies to promote gender equality in Niger. First, the level of gender development and education attainment are benchmarked against three groups of countries, namely sub-Saharan Africa, the WAEMU, and the Sahel r. Second, a simulation is performed on the economic, social, and financial benefits of closing gender gaps in education using a micro-founded general equilibrium model. Finally, we provide an overview of ongoing government initiatives and policy recommendations.

B. Stylized Facts

4. Gender development in Niger stands out as one of the lowest in sub-Saharan Africa.

The United Nations Gender Development Index (GDI) measures gender inequalities in achievement in three basic dimensions of human development: i) *health*, measured by female and male life expectancy at birth; ii) children's *education*, measured by female and male expected years of schooling for children; iii) *adult education* measured by female and male mean years of schooling for adults ages 25 years and older. It shows that, when aggregating these categories, Niger performs worse than the average in Sub-Saharan Africa, WAEMU countries, or even the peers in the Sahel region (Figure 1, Panel A).

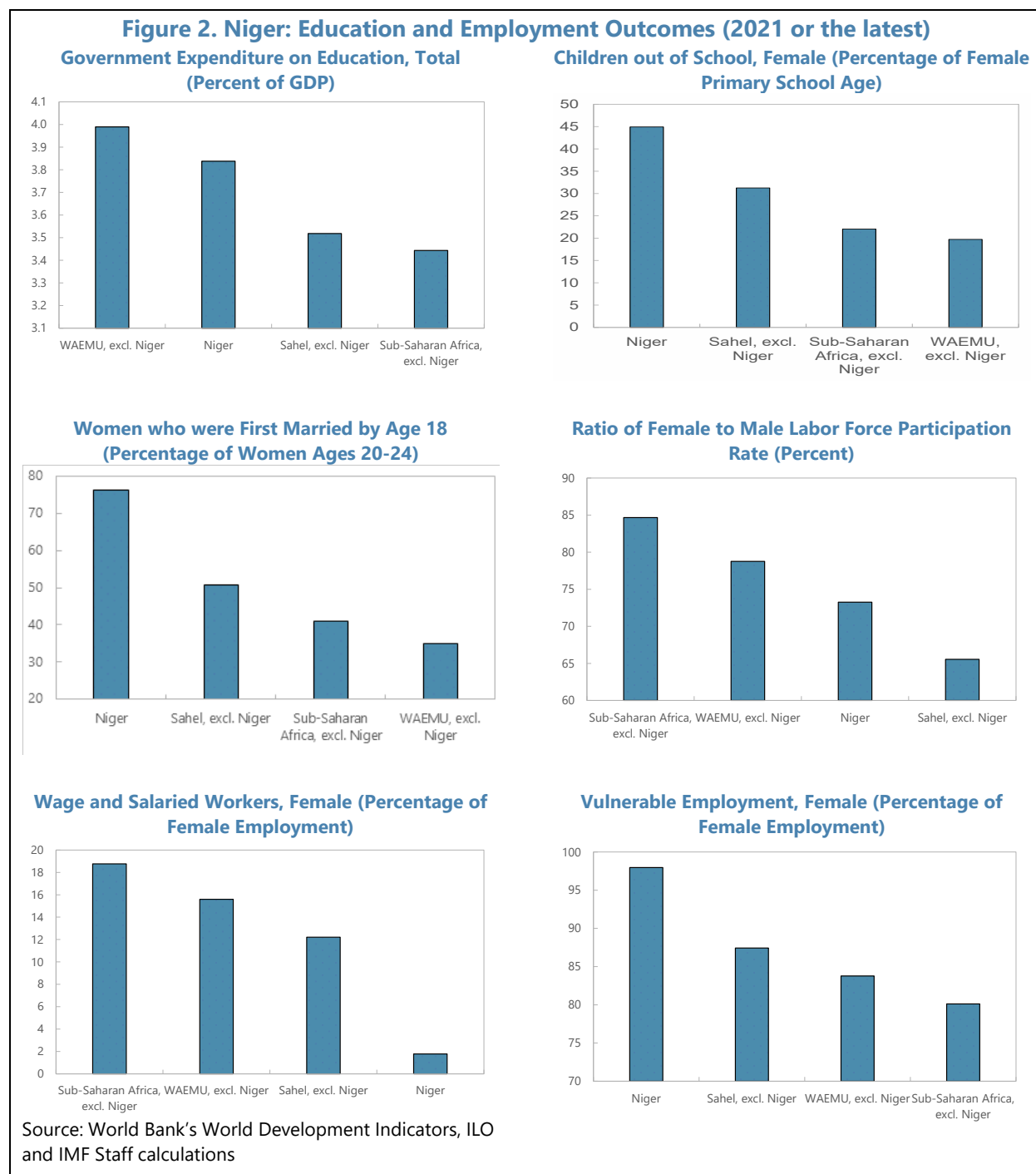
5. This underperformance is due to lower education attainment in Niger. Looking at the different components of the GDI, Figure 1 shows that Niger performs well in terms of life expectancy at birth compared to peers but is behind on education indicators. The average year of schooling is only 1.7 and 2.8 for females and males in Niger, respectively, against 5.1 and 6.9 years in sub-Saharan Africa and 2.5 and 4.6 years in the WAEMU region. The disparities are also large when it comes to the expected years of schooling, which measures the number of years of schooling that a child of school entrance age can expect to receive if the current age-specific enrollment rates persist throughout the child's life.



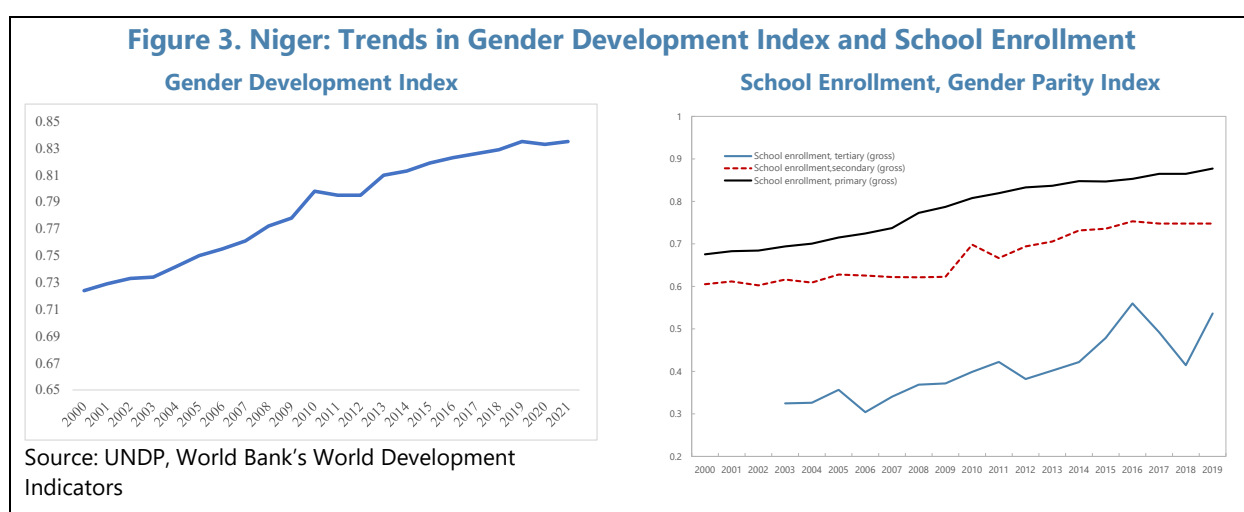
6. Girls' elevated school drop-out and child marriage rates are significant constraints to gender equality. At 3.8 percent of GDP in 2020, government spending on education is commendable (Figure 2). While slightly below the WAEMU average of around 4 percent of GDP, Niger's education spending is above the average in sub-Saharan Africa (3.4 percent of GDP) and the Sahel region (3.5 percent of GDP). However, this relatively high education spending is poorly translated into better education outcomes for women due to elevated school drop-out and early child marriage rates. Figure 2 shows that around 45 percent of girls drop-out of primary school in Niger, compared to 20 percent in the WAEMU region and 22 percent in Sub-Saharan Africa. In addition, more than 75 percent of women get married by age 18 in Niger, against 35 percent for the peers in the WAEMU region and 41 percent in sub-Saharan Africa.

7. As a consequence, Nigerien women are more likely to work in unpaid and vulnerable jobs. Although the ratio of female to male labor force participation is better in Niger than the average in the Sahel region, Niger lags significantly behind its peers in terms of share of wage and

salaries female workers, and vulnerable employment (Figure 2). At 1.8 percent, the share of wage and salaried female workers is 10 and 9 times less than the average in Sub-Saharan Africa and the WAEMU region, respectively. Conversely, the share of vulnerable employment (mostly unpaid family workers and own-account workers) for women is very high in Niger (around 98 percent) compared to its peers (80 percent in sub-Saharan Africa and 84 percent in the WAEMU region).



8. However, there are encouraging signs for Nigerien women that both the Gender Development Indicator and the Gender Parity Index of school enrollment have been improving (Figure 3). The Gender Development Index has increased by over 15 percent between 2000 and 2021. Gaps in school enrollment have also been shrinking but challenges remain, particularly on tertiary education. Over the past two decades, the Gender Parity Index in primary education enrollment has improved by around 30 percent, against 24 percent for secondary education enrollment. These improvements stem from the free education until adopted in 2011 and the adoption of the gender strategy in 2009 to boost girls' education. While the Gender Parity Index in tertiary education enrollment has recorded the strongest increase (65 percent), it remains very low compared to the indices of primary and secondary education.

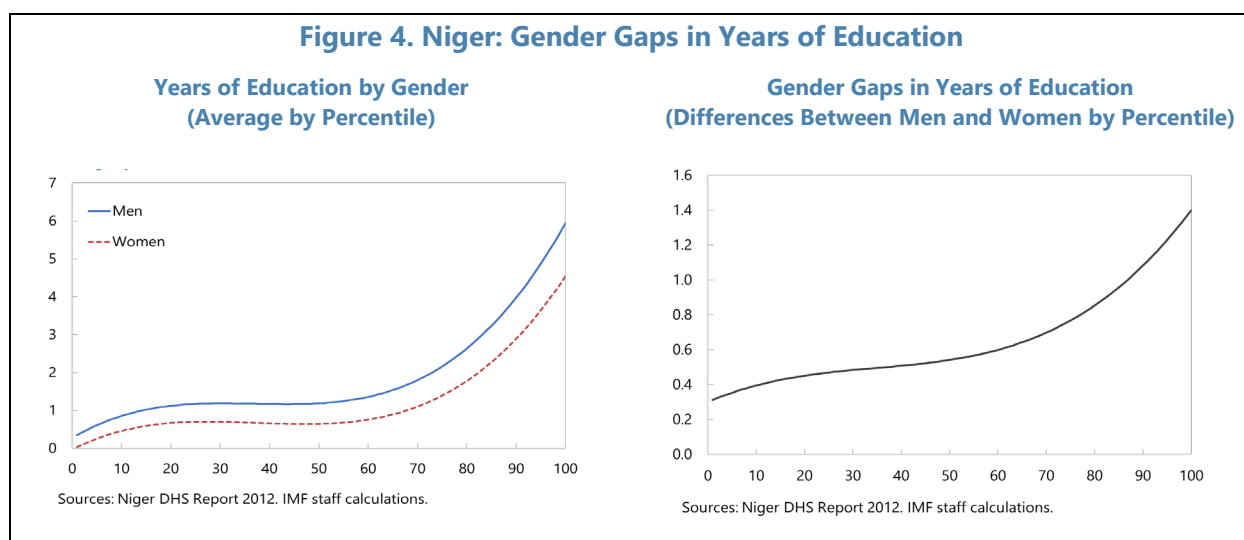


C. Macroeconomic Gains of Reducing Gender Gaps in Education

9. The aforementioned gender disparities in education undoubtedly pose significant development challenges and have macroeconomic implications. In this section we quantify the impact of closing education gaps between girls and boys in a microfounded, lifecycle, dynamic general equilibrium model, in which individuals differ by gender, skills, age, and access to financial markets. This framework has been applied to previous IMF country work in several EMDEs, including Argentina (IMF, 2017), Iran (IMF, 2018), Nigeria (IMF, 2019a), Lao P.D.R. (IMF, 2019b), Senegal (Malta, Martinez, and Tavares, 2019), and Kenya (IMF, 2021). We calibrate the model to match key variables of Niger's economy in 2018, such as the formal sector's share of GDP, government expenditures as a percentage of GDP, government expenditures on education as a percentage of GDP, the Gini index of household income, and female labor force participation rate, among others. We considered 2018 as the benchmark year due to the availability of microdata for Niger, notably from the 2018 vintage of the *Enquête Harmonisée sur le Conditions de Vie des Ménages*.

10. A full and technical description of the model can be found in Malta, Martinez, and Tavares (2019), but here we briefly describe its main features. In each life period, households (comprised of a man and a woman) make decisions about the consumption of goods and services produced in formal and informal sectors, while decisions on labor supply are made separately by men and women. Men decide the number of hours worked in the formal and/or informal sectors, while women decide first if they participate to labor market and, if they do, how many hours to work in the formal and/or informal sectors. Households incur a utility cost when women participate in the labor market. This cost comes from the need to coordinate multiple household activities (for example, home production, child/elderly care, and other unpaid work) as well as comply with laws and social norms that create barriers for women to work outside the household. Everyone has a human capital that is determined by their initial skills and years of education but also evolves endogenously through on-the-job experience. Production in the formal sector uses capital and labor as inputs, while the informal sector production uses only labor. Women suffer wage discrimination when working in any of the sectors (they receive a lower wage for hour worked). Households pay taxes on the goods and services purchased from the formal sector, and on the income earned from working in the formal sector. Corporate revenues in the formal sector are taxed as well. The government collects taxes on formal consumption, formal labor income, and formal corporate revenues, and spends them on public consumption, public education, and transfers.

11. We simulate a public policy that increases education spending to include more girls in schools so that the number of years of education of boys and girls within the same income percentile is equalized. This is motivated by the fact that in Niger, despite having a very low overall level of education, men have more years of education than women at every income percentile (Figure 4, Panel A). These differences, on average, range from slightly more than 0.3 additional years for men at the lower end of the distribution to roughly 1.4 additional years at the upper end (Figure 4, Panel B). Also, the gender gap in educational attainment grows monotonically across the income spectrum, suggesting that gender inequality in human capital formation rises with income.



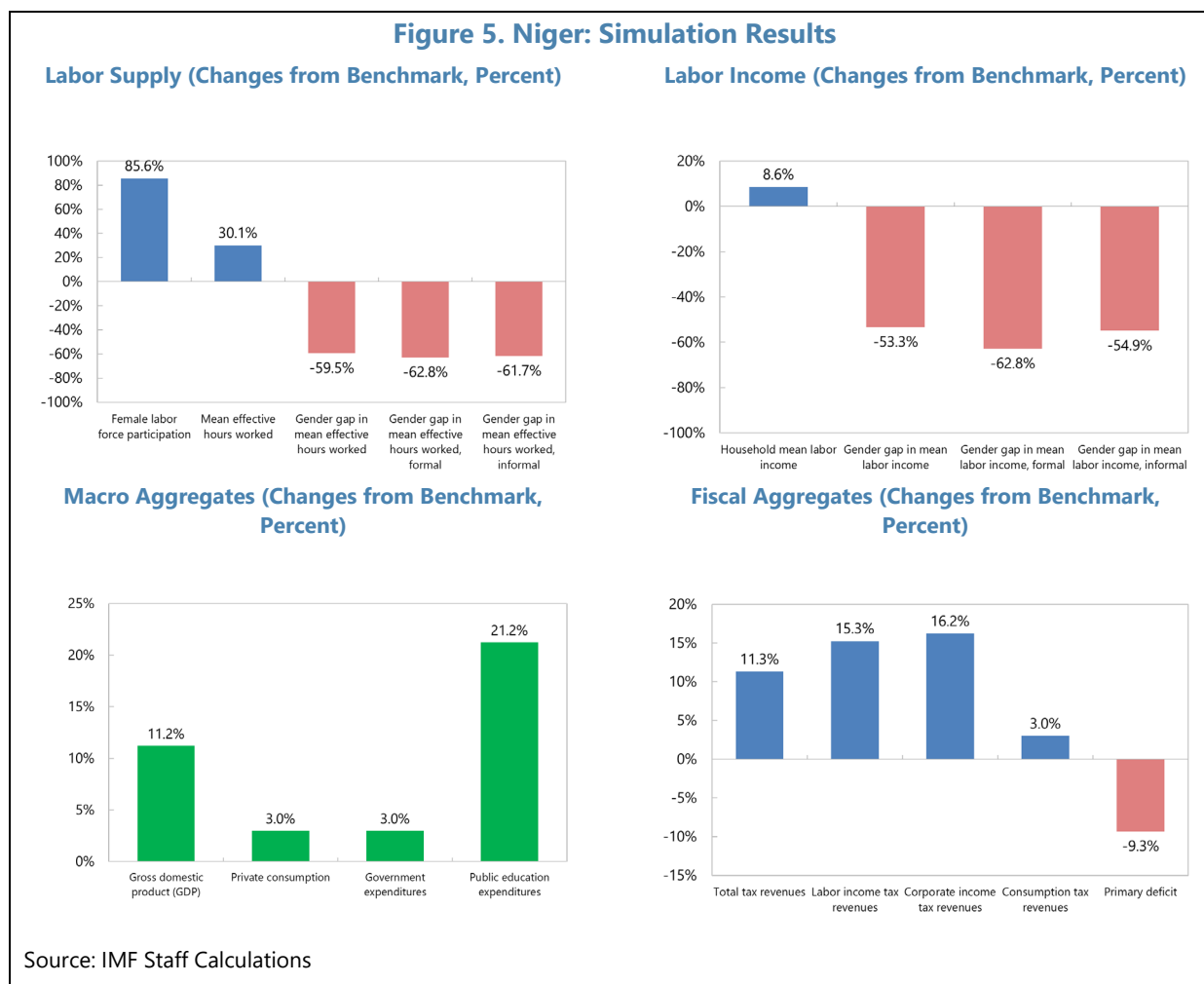
12. Raising girls' education to the same level as boys' triggers a series of positive effects on the economy. The main findings of the policy simulation are presented in Figure 5. Women enter adulthood with more education and thus a larger stock of human capital. As a result, they benefit from higher labor-market returns to education as well as higher returns to experience if they choose to work. Therefore, the incentives for women to enter the labor force and work more hours increase. According to the model, the new policy is expected to increase female labor force participation by 85.6 percent (Figure 5, Panel A).² Working women begin to supply more hours to the labor market, which, combined with their higher level of human capital, increases mean effective hours worked by 30.1 percent.³ The overall gender gap in mean effective hours worked, as measured by the male-to-female ratio, goes down by 59.5 percent. The same is true for the hours gender gaps in formal and informal labor markets, which have shrunk by 62.8 and 61.7 percent, respectively. Working women are better compensated in the labor market due to their higher level of human capital and higher supply of work hours, which contributes to increased household income and closing the income gap between men and women. Household mean labor income goes up by 8.6 percent, and the overall gender gap in mean labor income, as measured by the male-to-female ratio, goes down by 53.3 percent (Figure 5, Panel B). The same is observed individually in the formal and informal labor markets, with gap reductions of 62.8 and 54.9 percent, respectively.

13. These labor market developments have macroeconomic and fiscal implications. Total economic output, as measured by GDP, rises by 11.2 percent, owing primarily to the increase in effective hours worked (Figure 5, Panel C). Higher labor income enables households to consume more, resulting in a 3% increase in aggregate private consumption. On the other hand, to implement the new education policy, the government must increase its public education spending by 21.2 percent, raising total government spending by 3 percent. Such increase in education spending would imply budget reallocation and efficiency improvement. However, increased labor income, consumption, and production result in increased tax collection, which can be used to fund these additional fiscal outlays. Revenues from taxes on labor income, corporate income, and consumption grow by 15.3, 16.2, and 3 percent, respectively (Figure 5, Panel D). As a result, total tax revenue increases by 11.3 percent, providing more than enough resources to cover the new education expenditures, implying a 9.3 percent reduction in the primary deficit.

² The sharp increase in female labor force participation is due to Niger's extremely low level of human capital combined with the model's embedded human capital theory. The model assumes that the initial stock of human capital is concave in years of education. As a result, when human capital levels are low, additional levels of education produce significantly greater human capital changes than when human capital levels are high. Then, through the lens of the model, these changes create a significant incentive for women to participate due to the significant increase in labor market returns from human capital.

³ Effective hours worked are regular hours worked adjusted for human capital levels. This is the relevant labor input concept for assessing variations in production.

Figure 5. Niger: Simulation Results



D. Policy Recommendations

14. This paper has shown that reducing gender inequality in education could boost economic growth in Niger. Therefore, addressing gender inequity in the country is not only compelling for social reasons, but it also makes economic sense. As the new National Development Plan is being rolled out, the authorities of Niger should accelerate the implementation of ongoing and envisaged projects and strategies to improve educational attainment for girls, especially by:

- **Building adequate school infrastructure.** The major government initiative in this area is the construction of boarding school for girls, with the goal of building 100 schools by 2025. Given the strong commitments from partners following the pledges at the Education Summit in New York in September 2022, the government should enhance its absorptive capacity through good governance and aid management capacity building measures to ensure that the financial resources are disbursed on a timely manner.
- **Designing investments to improve the quality of education:** another major government initiative is to replace the 36,000 classrooms made of precarious materials with solid materials

and strengthen its permanent teaching staff. These two projects will help improve access to education and teaching quality. Given the relatively high costs of the two projects, an improvement in the efficiency of education spending and budget reallocation will be needed.⁴

- **Putting in place programs to keep girls in school:** while the boarding schools for girls aim to keep girls longer in school, the envisaged 100 schools will not be enough to enroll all school-age girls and cover the entire national territory. Other interventions could be designed to reduce the opportunity and out-of-pocket costs of girls' education through cash transfers. Providing targeted financial incentives to girls or families directly would help delay age at marriage and also enable girls who dropped out to return to school.

15. Emphasis should also be placed on policies to expand economic opportunities for girls.

Under the National Development Plan, the authorities committed to empower and strengthen women's access to the labor market and resilience to shocks by (i) creating decent and sustainable job opportunities for women and young girls; (ii) strengthening the skills of women and young girls; (iii) providing support for the improvement of working conditions in the informal sector where women and young girls are strongly represented; (iv) promoting female entrepreneurship in all sectors of activity. The focus to provide employment opportunities could help increase earnings for women as well as savings, and therefore provides incentives for parents to send their girls to school. In addition, the Government will ensure compliance with elective and nominative quotas and will take measures to improve the regulatory and legal framework for preventing and responding to gender-based violence. Specific measures and programs need to be adopted to implement these commitments.

16. To increase accountability and effectiveness of the programs to improve gender equality, the authorities could consider adopting gender-responsive budgeting. Gender budgeting is an important mechanism for ensuring accountability in how gender policy commitments are translated into the national budget. It provides the basis for more evidence-based decision-making – vital for ensuring that public finances are effectively used to meet real needs, bridge current gaps and curb continued inequalities.

⁴ For more information on policies to improve the efficiency of education spending, see the selected issues paper on the efficiency of social spending in Niger.

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