

# Nigeria: Girls' Education, Child Marriage, and Fertility Rates

Adenike Onagoruwa and Quentin Wodon

March 2023

In Nigeria as in many other sub-Saharan African countries, many women tend to have more children over their lifetime than they would like. This contributes to high fertility rates and high annual rates of population growth. In turn, high population growth makes it more difficult to achieve a demographic transition and, together with other factors, a demographic dividend that can accelerate economic development and generate gains in well-being. Educating girls and ending child marriage can help in providing more agency for women to manage the number of children they have. This can in turn reduce fertility rates and population growth. Analysis suggests that in Nigeria, achieving universal secondary education for girls and ending child marriage could reduce total fertility by one fifth. The analysis relies on data from the last two Demographic and Health Surveys (DHS) for 2013 and 2018 (data from the planned 2023 DHS should be available in 2024).

## High fertility rates contribute to high population growth

As shown in Figure 1, while there has been a decline in fertility rates (the average number of children that women have over their lifetime) for many years in Nigeria, the rates remain high and the decline in fertility rates has not yet translated in substantially lower population growth. Nigeria's population growth rate at 2.4 percent per year in 2021 is slightly below the average for sub-Saharan Africa (2.6 percent per year), but still high, which has implications for the country's ability to reap the benefits from the demographic dividend. At some point the decline in fertility rates will translate into lower annual population growth (especially when the share of women of childbearing age in the population will drop), but for population growth to decline faster, fertility rates would need to fall further as well.

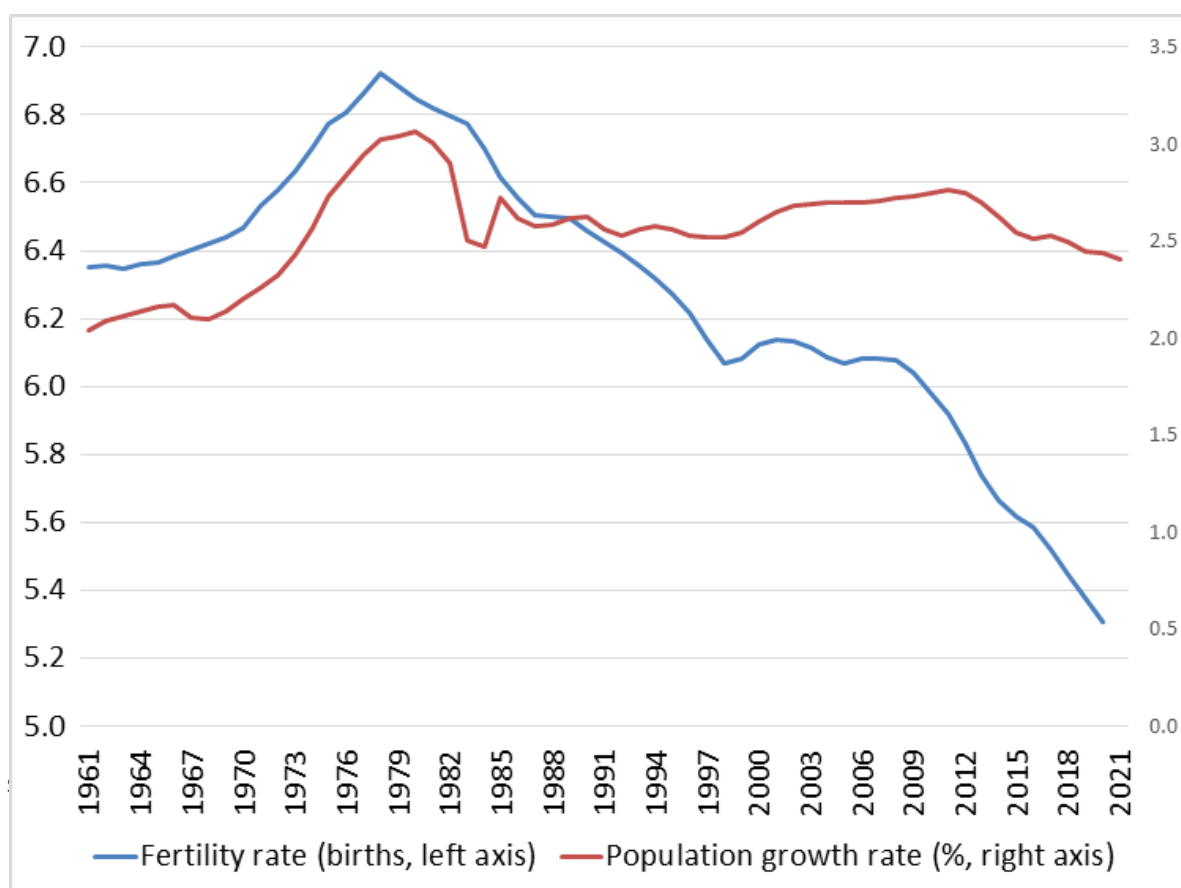


**Background:** This brief was prepared for a KIX Africa 19 Hub national policy dialogue in Nigeria with a focus on data and achieving gender equality in and through education. KIX (Knowledge and Innovation Exchange) Africa 19 contributes to education systems strengthening in African anglophone countries by bridging the gap between research and policy making. With support from the Global Partnership for Education and Canada's International Development Research Center, KIX Africa 19 is managed by UNESCO IICBA.

**Key findings:** Using data from the Demographic and Health Surveys for 2013 and 2018, this brief provides an analysis of the effect of girls' education and child marriage on total fertility.

- The annual rate of population growth remains high in Nigeria at 2.4 percent in 2021, just below the rate for sub-Saharan Africa at 2.6 percent.
- Total fertility rates have decreased over the last few decades, but they remain high, contributing to high population growth given a large share of women of childbearing age.
- High fertility rates and high rates of population growth are delaying Nigeria's demographic transition, limiting the ability to reap the benefits of the demographic dividend.
- Econometric analysis suggests that controlling for other variables affecting total fertility, secondary education for girls reduces total fertility, while child marriage increases total fertility.
- Achieving universal secondary education for girls, which could virtually end child marriage, could reduce total fertility in Nigeria by a fifth. This estimate does not include additional effects through use of modern contraception.
- As discussed in other notes in this series, by enabling women to have the number of children they desire, educating girls and ending child marriage could have large beneficial effects for standards of living and national wealth.

**Figure 1: Fertility rate and rate of population growth (%)**



High fertility rates are due in part to the fact that women lack access to modern contraception. But lack of educational attainment and child marriage also play a role. For example, when girls marry as children, they tend to have children earlier, which leads them to have more children over their lifetime, whether this is their desire or not. Improving girls' educational attainment and reducing child marriage could accelerate Nigeria's demographic transition. This brief considers these potential impacts (the

language of "potential impacts" stems from the fact that the analysis is based on correlations which may not imply causality).

As discussed elsewhere in this series, the economic benefits of a reduction in fertility rates through universal secondary education for girls and the elimination of child marriage could be large by enabling Nigeria to reap the benefits of the demographic dividend (see Box 1).

### **Box 1: Economic Benefits from a Reduction in Fertility Rates**

A simple way to illustrate why a reduction in fertility rates could bring economic benefits is to note that measures such as the gross domestic product (GDP) per capita are based on an aggregate measure of income divided by the country's population. When fertility rates decline, fewer children are born, which reduces population growth. This leads to an immediate reduction in the denominator (population) of the measure of without affecting for some time the numerator (income) since newborns will not be immediately productive. Mechanically, GDP per capita will rise and remain higher for some time. The same applies to measures of wealth, such as a country's national wealth per capita.

There is however more to the story, as the concept of the demographic dividend alludes to. While different definitions of the demographic dividend have been proposed, the term is associated with improvements in standards of living and accelerated economic growth when a country achieves a favorable population structure thanks to a reduction in birth (and death) rates followed by rapid fertility decline. The share of the population of working age individuals increases for a period of time, which generates faster economic growth (see Canning et al., 2015, and World Bank, 2015, as well as Hasan et al., 2019 for Nigeria specifically). In addition, with lower dependency ratios, households are better able to support themselves and invest among others in education, nutrition, and health. These investments in turn may lead younger generations to be better educated and more productive in adulthood. This demographic and human capital transition may help reduce poverty rates substantially. Achieving universal secondary education for girls and ending child marriage facilitates this transition, thereby ushering in the demographic dividend.

## Universal secondary education for girls would reduce total fertility

To assess the potential impact of educational attainment for girls on fertility, regression analysis is conducted using the 2013 and 2018 DHS. The focus is on the number of births that women have over their lifetime. As in Onagoruwa and Wodon (2018), we define “total fertility” as the number of live births that a woman has over her lifetime. This definition is needed for individual-level econometric work to measure the marginal impact of various variables on total fertility. This definition is different from the “total fertility rate” which is a population-level statistic. For sample size reasons, we focus on women between 35 and 49 years of age. Many women continue to have children after age 35, so that the total number of births may be underestimated, but this should not affect too much the estimate of the difference in the total number of births for women with different education levels. A wide range of controls are used in the analysis to try to isolate the specific potential impact of educational attainment on total fertility.

**Table 1: Potential Impact of Educational Attainment on Total Fertility, 2013 and 2018**

	2013	2018
<b>Marginal Impacts (% reduction)</b>		
Primary completed	NS	3
Some secondary	NS	NS
Secondary completed	-12	-12
Higher education	-23	-25
<b>Universal Primary</b>		
Absolute reduction (number of children)	NS	-0.12
Percentage reduction from the base	NS	-2.1
<b>Universal Secondary</b>		
Absolute reduction (number of children)	0.64	0.57
Percentage reduction from the base	10.5	9.7

Source: Authors' estimation.

Table 1 provides the key results. The first part of the Table provides marginal effects. For example, completing secondary education reduces total fertility by 12 percent versus having no education at all in both 2013 and 2018 (this is the interpretation of the coefficient values of -12 in Table 1). Lower levels of education tend to not have a statistically significant impacts (this is denoted by NS in the Table). In the next parts of the Table, simulations are conducted to assess the potential impact on total fertility nationally of achieving respectively universal primary or secondary education. Women who have not achieved

those levels of education are assumed to achieve them. Results are reported only when the corresponding coefficients in the regression are statistically significant. Universal primary education would not make a large difference, but universal secondary education could lead to a reduction in the number of children that women have of 0.64 child per woman in 2013, and 0.57 child per woman in 2018. This is a reduction from base values of 9.7 percent in 2018 and 10.5 percent in 2013. The results are similar in both years, suggesting robustness in the estimations.

## Ending child marriage would also reduce total fertility

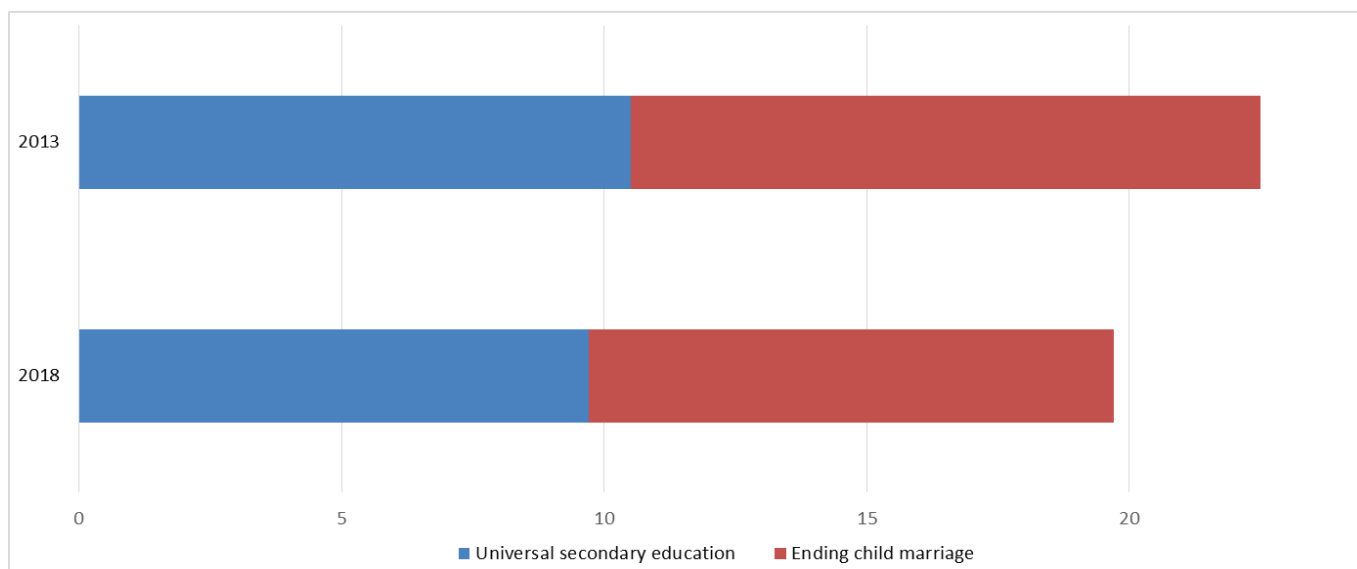
One of the controls in the regression analysis is whether women married before the age of 18, and if so, at what age. As shown in Table 2, women who marry earlier tend to have more children. For example, in 2018, when a girl is married at the age of 12 to 14, this is associated with an increase in the number of children she will have in her lifetime of 24 percent. Marrying at age 17 is still associated with a large increase in total fertility versus marrying later than 18. As was done for educational attainment, simulations can be conducted to assess the potential impact of ending child marriage on total fertility. In the 2018 survey, ending child marriage could lead to a reduction in average total fertility of 0.59 child per woman or 10.0 percent from the base value. The figures are slightly higher for 2013, both because marginal effects are slightly larger with that survey and because the prevalence of child marriage was slightly higher in 2013 than in 2018. Again, the results are similar in both years, suggesting robustness in the estimations.

**Table 2: Potential Impact of Ending Child Marriage on Total Fertility, 2013 and 2018**

	2013	2018
<b>Marginal Impacts (% reduction)</b>		
Marrying at 12	32	24
Marrying at 13	30	24
Marrying at 14	22	24
Marrying at 15	20	20
Marrying at 16	24	21
Marrying at 17	18	19
<b>Ending child marriage</b>		
Absolute reduction (number of children)	0.73	0.59
Percentage reduction from the base	12.0	10.0

Source: Authors' estimation.

**Figure 2: Reduction in total fertility from the base (%)**



Source: Authors' estimations.

### The combined effect could be a reduction in total fertility of a fifth

As argued in other briefs in this series, achieving universal secondary education could virtually eliminate child marriage, as girls tend not to marry in Nigeria when they remain in school until the age of 18. The overall effect on total fertility of universal secondary education for girls, including the effect through the elimination of child marriage, could therefore be a reduction in total fertility of about a fifth, which is rather large (Figure 2). In fact, because of other effects of achieving universal secondary education and ending child marriage, including on modern contraception use (another control in the regression at the community level), the reduction in total fertility could be even larger than shown in Figure 2.

### Takeaways

Nigeria's demographic transition and ability to benefit from the demographic dividend is hampered by high rates of population growth, which are largely due to high fertility rates. Despite a decline over time, fertility rates remain high. Given many women of childbearing age, population growth rates have not yet decreased much. Many Nigerian women today continue to have more children than they would like. Econometric analysis suggests however that achieving universal secondary education for girls, which could also virtually end child marriage, could reduce total fertility by about a fifth from base values. This estimate does not include additional potential effects through higher use of modern contraception. As discussed in other notes in this series, enabling women to have the number of children they

desire through higher educational attainment and the elimination of child marriage could have large beneficial effects for standards of living and national wealth.

### References

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

Hasan, R., B. Loevinsohn, C. Moucheraud, S. A. Ahmed, I. Osorio-Rodarte, E. Suzuki, E. Pradhan, S. Madhavan, S. Troiano, M. Sexton, F. A. Mustapha, O. Odutolu, and O. Okunola. 2019. *Nigeria's Demographic Dividend? Policy Note in Support of Nigeria's ERGP 2017–2020.* Washington, DC: The World Bank.

Onagoruwa, A., and Q. Wodon. 2018. Measuring the Impact of Child Marriage on Total Fertility: A Study for Fifteen Countries, *Journal of Biosocial Science*, 50(5): 626-39.

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

### Disclaimer & Acknowledgment

The analysis in this brief is that of the authors only and need not reflect the views of UNESCO, its Executive Directors, of the countries they represent, nor do they necessarily represent the views of the UNESCO International Institute for Capacity Building in Africa.