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Measuring the Economic Gain of Investing in Girls

The Girl Effect Dividend

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Abstract

Although girls are approximately half the youth population in developing countries, they contribute less than their potential to the economy. The objective of this paper is to quantify the opportunity cost of girls' exclusion from productive employment with the hope that stark figures will lead policymakers to reconsider the current underinvestment in girls. The paper explores the linkages between investing in girls and potential increases in national income by examining three widely prevalent aspects of adolescent girls' lives: early school dropout, teenage pregnancy and joblessness. The countries included in the analysis are: Bangladesh, Brazil, Burundi, China, Ethiopia, India, Kenya, Malawi, Nigeria, Paraguay, Senegal, South Africa, Tanzania, and Uganda. The authors use secondary data to allow for some comparability across countries. They find that investing in girls so that they would complete the next level of education would lead to lifetime earnings of today's cohort of girls that is equivalent to up to 68 percent of annual gross domestic product. When adjusting for ability bias and labor demand elasticities, this figure falls to 54 percent, or 1.5 percent per year. Closing the inactivity rate between girls and boys would increase gross domestic product by up to 5.4 percent, but when accounting for students, male-female wage gaps and labor demand elasticities, the joblessness gap between girls and their male counterparts yields an increase in gross domestic product of up to 1.2 percent in a single year. The cost of adolescent pregnancy as a share of gross domestic could be as high as 30 percent or as low as 1 percent over a girl's lifetime, depending on the assumptions used to calculate the losses.

Measuring the Economic Gain of Investing in Girls: The Girl Effect Dividend[1]

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1. Introduction

Improving the socio-economic outcomes for girls and young women is of central importance, not only to the beneficiaries themselves, but also to their communities and the next generation. Many of the 600 million girls who live in the developing world do not have the opportunity to become fully functioning members of society. Approximately one-quarter of girls in developing countries are not in school (Lloyd 2005) and one-quarter to one-half of girls in developing counties become mothers before age 18 (United Nations Population Fund 2005).

Although girls are half the youth population (aged 15-24) of the developing world, little attention has been given to the specific challenges facing adolescent girls as they develop into adult members of families, the workforce, and society. General statistics and sector-specific studies point to the merits of investing in girls, including lower infant mortality, healthier families (Bicego and Boerma 1993), and greater labor market earnings, but policy often does not explicitly target development opportunities for adolescent girls. This may be due to insufficient understanding of the actual social benefits of investing in adolescent girls.

Most work that considers girls' contribution to economic development or poverty reduction focuses on investments in girls' education and health (see for instance Levine et al. 2008, Lloyd and Young 2009, Temin and Levine 2009). Returns to girls' education in developing countries are substantial, and in most cases they exceed those observed in developed countries and those of boys. A cross country study on the effect of education on average wages (a proxy for productivity) estimates that primary education increases girls' earnings by 5 to 15 percent over their lifetimes, while boys experience a rate of return between 4 and 8 percent (Psacharopoulos and Patrinos 2002).[4] And, for example, returns to female secondary education are 15 to 25 percent higher for women than men in Thailand, Ghana and Cote d'Ivoire (Schultz 2002).

More than 14 million girls ages 15-19 give birth every year (United Nations Population Fund 2005), which puts them at risk. While there is an overall trend of decreasing birth rates for girls, maternal causes kill more 15- to 19-year old girls than any

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[4] This is partly due to greater entry to formal labor markets by educated girls, where earnings exceed informal or home-based work (Malhotra, Grown, and Pande 2003).

other cause (Patton, et al. 2009). The majority of these adolescent pregnancies take place within the context of early marriage (UNICEF 2001). Delaying pregnancies to a more healthy age is not only desirable from a general reproductive health perspective, but it may also lead to more economic and social empowerment of young women who can continue their education or secure a more lucrative job. To the best of our knowledge, there has not been systematic research to measure the opportunity cost of teenage motherhood to economic growth.

Recent work has begun to quantify the potential that human development investments in girls have on GDP growth rates. Hanushek and Woessmann (2007), using cross-sectional regressions for 50 countries, estimate that each additional year of schooling boosts long-run growth by 0.58 percentage points per year. A World Bank study in 1999 demonstrates through data simulation for a selection of 100 countries, that increasing the secondary education of girls by 1% results in annual income increase of 0.3% per capita. Such an increase is substantial for many developing countries. The study concludes that "societies that have a preference for not investing in girls pay a price for it in terms of slower growth and reduced income" (Dollar and Gatti 1999).

Recent empirical work conducted by the World Bank on Latin American and Caribbean countries has broadened this work to consider the importance of a range of youth behaviors on GDP growth. These studies use non-parametric methodologies to quantify the individual and social costs related to risky youth behavior, which includes among others unemployment, early school leaving and adolescent pregnancy (Cunningham et al. 2008, World Bank 2003, 2007). Evidence from Latin America estimates the social cost due to these youth problems equal to 2 percent of GDP annually (Cunningham et al. 2008).

In this paper, we aim to expand the above findings on the linkages between investing in girls and potential increases in national income by broadening the scope of the analysis to include several aspects of adolescent girls' lives in countries across the world. These include early school dropout, teenage pregnancy, and joblessness, defined as the ratio of the number of girls between the age of 15 and 24 who are not in school or in the labor force as a share of the female working age population aged 15-24. Although these issues have been extensively discussed by social development specialists (Levine et

al. 2009), there has been no evaluation to date of the economic costs imposed on societies by the extensive incidence of these negative factors. Such an exercise is important in demonstrating the potential magnitude of economic gains to nations as a result of investing in adolescent girls and ensuring they are on a path to achieve their maximum human potential.

This paper focuses on girls rather than women or boys. Adolescence is the critical period when girls are at a greater risk of many events with irreversible negative consequences – such as child marriage, early pregnancy, or school leaving – that not only impact girls themselves but also the next generation. Girls face specific adversities that make them even more vulnerable than women or than boys. For example household and community-wide perceptions that girls have limited economic value, compared to boys, can result in reduced family desire to keep their daughters in school. Given this, the recommendations presented in this paper highlight actions that countries can take to reap the benefit of investing in their girls.

The rest of the paper is organized as follows: Section 2 presents the conceptual framework and empirical methodology of the paper; Sections 3 through 5 report the cost estimate results for a selection of developing countries and Section 6 concludes.

2.   **Conceptual framework and empirical methodology**

This paper builds on the methodology developed in World Bank (2003) to generate the economic costs of girls' and young women's exclusion in terms of early school dropout, joblessness, and pregnancy.[5] The cost estimates measure the consequences of the depletion of human capital, as young girls who do not develop their potential, or whose human capital is constrained, necessarily limit their productive contribution to the economy. The empirical exercise seeks to quantify the opportunity costs related to this lost productivity. We do not include the losses associated with other aspects of growth such as fewer sick days (Grossman and Kaestner 1997) of more educated workers or lower violence rates among children of adult (rather than teen)

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[5] The definition of youth depends on the sectoral and cultural context under study; for the purposes of this study youth female or girls, as per the United Nations definition, refer to females in the age bracket of 15 to 24. All cost data refer to girls in this age range with the exception of adolescent pregnancy, which refers to girls ages 15 to 19.

mothers (Donohue and Levitt 2001). Also, we do not include the many non-economic factors associated with underinvestment in girls, such as emotional distress from a young girls' violent death, lower health status due to low educational attainment, or losses of cultural assets due to early childbearing-related deaths, due to difficulty in quantifying these costs.

We only estimate the opportunity (economic) cost and do not consider financial costs. The opportunity cost is a measure of "what could have been" if only the additional investment had been made in girls. The financial costs of under-investing in girls' development such as greater health expenditures for teen mothers or payment of higher social benefits to women who did not complete school are not included since these resources exist in the economy and would be redistributed to other uses if not spent on adolescent girls. We do not estimate the value of the alternative use of these resources for two reasons. First, the modeling requirements are quite difficult and the necessary data are scarce.[6] Second, these factors are difficult to quantify in a cross-country setup, as countries differ greatly in their economic and institutional structures. The estimates in this paper take into account the primary impacts of girls' restricted human development and do not incorporate the secondary and intergenerational impacts.

Countries selected for analysis in this paper represent a sample composed on the basis of three considerations. First, they must be developing countries for which sufficient data exist to enable the calculations and estimates to be performed within the timeframe of publishing this study. Second, they must have indicators implying significant vulnerabilities for adolescent girls or validating existing conditions exacerbating adolescent girls' social exclusion (e.g., low school enrollment rates, high rates of early marriage, high prevalence of HIV, gender based violence, or a population distribution skewed toward males thereby suggesting a lower value for girl-children in that society). Third, they must be known to have programs and interventions that are designed to reach vulnerable adolescent girls at risk of early school dropout or adolescent pregnancy and offer them a means of increasing their economic empowerment. Or, they are countries where the institutions are such that these programs would be feasible. We over-sample

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[6] For example, Assunção and Carvalho (2005) estimate the financial costs to under-investment in youth in Brazil. Even in a middle-income country with relatively good data collection, the authors were unable to capture the majority of the financial costs necessary to estimate a meaningful value.

African countries, including all those that the data will permit, but we also attempt to include a few countries from other parts of the developing world. The resulting countries for analysis are: Bangladesh, Brazil, Burundi, China, Ethiopia, India, Kenya, Malawi, Nigeria, Paraguay, Senegal, South Africa, Tanzania, and Uganda.[7] We also carry out the estimates for the United States, United Kingdom, Norway, and Sweden to allow for developed country comparisons.

To allow for cross-country comparisons in the estimates, we use secondary data from sources that use a common methodology to generate their numbers based on each country's primary data. The country-specific data essential for the cost estimation is drawn from official sources including the International Labor Organization's (ILO) Key Indicators of the Labor Market (KILM); the World Bank statistics from the World Development Indicators (WDI), HNPStats and EDStats; and the World Health Organization's Global Health Observatory database. In some cases, we used statistics that were generated differently by country; these are indicated in the methodology discussion below.

a. Methodology for computing the cost of leaving school early

Measuring the loss in potential earnings due to lower educational attainment is done in two steps, in a methodology similar to World Bank (2003) and Chaaban (2007). First, an age earnings profile is created by gender and education level. To calculate the wage for each cell, we adjust the mean national wage for a given country using coefficient estimates from latest national Mincer regressions to evaluate the variation of wages according to education, age and gender.

Second, we sum the total lifetime earnings of having a certain level of educational attainment and subtract from it the total lifetime earnings of having a lower level of education. This gives us the net gain that a country would theoretically enjoy if that girl finished the next level of education. This is done for all children and also disaggregated for males and females.

The equation used to generate the foregone earnings of having a higher degree is the following:

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[7] Due to data limitations, we are not able to include all these countries in every estimation.

$$E_i^s = \sum_t^T \left(\frac{e_t^{s\prime}}{(1+r)^t} \right) - \sum_t^T \left(\frac{e_t^s}{(1+r)^t} \right)$$

where E_i^s is the total lifetime earnings differential for an individual i with education level s who dropped out before achieving a higher educational level s' $= s+1$ for $s=0$, 1, 2 where $s=0$ corresponds to incomplete primary school, $s=1$ corresponds to primary school completed only, $s=2$ corresponds to secondary school completed only, and s'$=3$ corresponds to tertiary education; e are the annual earnings at time t of an individual with s (or s') educational level, t is the age at which this individual begins work and T is the age at which this individual will retire; and r is the discount rate. For simplicity, we assume that T-t for those with a level of education s is equivalent to T-t for those with s' level of education. Finally, to calculate the total lifetime loss in earnings for all girls who were not in school in the observation year, we multiply E_i^s by the number of students in the population who did not go on to continue their education (E_s). We repeat this exercise for each s and sum together to generate the total foregone earnings of the most recent cohort of school leavers (E):

$$E = \sum_{s=0}^{2} E_s$$

As in Cunningham et al. (2008), we use 45 years as the length of the working life, and a 6 percent discount rate.

Assuming that if girls had just completed the next level of education, they would earn the same average wage as those who actually did complete that level of education would over-estimate the productivity gains to education since part of that gap is likely due to a difference in abilities that cannot be attributed to differential education levels.[8] To account for ability bias, we introduce an adjustment to average wages. We use two adjustment factors. First, based on Card (1999), we assume that girls with only s level of education, if they completed $s+1$ years of education, they would earn wages that are 10%

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[8] Numerous studies have shown that those who complete s level of education are less "able" than those who complete $s+1$ level of education due to genetic or social factors that are unobservable to the researcher, but observed and acted upon by the girl, her parents, the school, or others (Card 1999). Thus, we cannot assume that if a girl only had completed one additional level of education, she would be earning the average wage equivalent to the observed wages of girls who actually did complete that level of education. Instead, we need to account for ability bias when assigning average wages of girls with $s+1$ level of education to girls with only s level of education.

less than the average wage for *s+1* graduates at each age throughout their work lives. In other words, when calculating the difference between wages of girls with *s* level of education and those with *s+1* level of education, we adjust downward by 10% the *s+1* wages. Second, based on scarcer research from developing countries, we assume that the less educated girls, when gaining an additional level of education, would earn 20% less than the currently observed average wage for girls with *s+1* level of education.

We make yet another adjustment to account for the possibility that the influx of more educated girls into the labor force will reduce the equilibrium wage for that skills-segment of the labor market. Following on Behar (2004), we use labor demand elasticities of -0.56 to -0.8 for sub-Saharan Africa. Thus, for each 1% increase in the share of the labor force with a higher level of education, we decrease the average wage by 0.56% and 0.8%. For countries in Asia, we draw on Goldar (2008) and apply an elasticity of -0.4. In Latin America and the Caribbean the elasticity is -0.2, as in Fajnzylber and Maloney (2005).

The data come from various sources. The returns to education that are estimated in Mincer equations are drawn from country studies. The average wage is taken from the ILO's KILM database. The number of girls dropping out of each grade level is from the World Bank's EDStats.

To allow for some degree of comparison across countries, we state the final cost as a share of the country's most recent GDP. This also allows us to generate all calculations in local currency but still have comparability ex-post. It adjusts for the size of the economy and, to some degree population, allowing for a better sense of the magnitude of the gain in the context of the country's output. Finally, it better communicates the implications for economic growth than a raw currency amount would. The value of annual GDP is taken from the World Bank's WDI.

b. Methodology for computing the cost of inactivity and joblessness

Following Cunningham and García-Verdú (forthcoming) and Chaaban (2007), the estimate captures the opportunity cost of girls' inactivity and joblessness in regard to lost wages and productivity. The "inactivity rate" is the share of girls age 15-24 who are not working; this includes girls who are both in school and out of school. We consider two

target scenarios: girls have the same inactivity rate as adult women (Target 1) and girls have the same inactivity rate as boys (Target 2).The following equation is used to calculate the cost as foregone output to the economy:

$$Cost = (IR_y - IR*) \times WAP_y \times w_y$$

where IR_y is young girls' inactivity rate; IR^* is the target inactivity rate; WAP_y is the working age population of young females; and w_y is real annual female youth wage. The opportunity cost scenario is where girls' inactivity rates are the same as that of a counterfactual group, where IR* is the counterfactual rate. Thus, $(IR_y - IR^*) \times WAP_y$ gives us the number of additional girls who would be working if girls' inactivity rates were the same as IR*. Since most girls are not searching for jobs, we assume that the lost productivity per year is equivalent to the annual wage of all those girls who "could" be working. *Cost* is then divided by total GDP in order to obtain an estimate of the cost of youth inactivity for males and females as a share of GDP.

Data for the number of female youth labor force participants is drawn from the ILO's KILM database, which projects employment data based on country-specific models. GDP is drawn in current US dollars from the WDI database (World Bank). As there are no cross-country comparable wage data for youth, the methodology relies on using the GDP per labor force participant (PPP adjusted). The computation assumes that the share of wage earnings is 60% of GDP. [9] Since females earn less than males and this ratio differs widely across countries, we introduce three adjustment factors to simulate the gender wage gap: 25%, 50%, and 75% of average wages (based on Saba Arbache, Kolev, and Filipiak, 2010). Further, since youth earn less than adults, we introduce three adjustment factors to the average wage to account for the age wage gap: 50%, 70%, and 90% of average earnings.[10]

The ILO's KILM "inactivity" rates that we use in the above estimates include students, which would lead to an over-estimate of the joblessness issue. A more appropriate estimate would be to generate the foregone output only of those girls who are

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[9] These assumptions are based on cross-country estimates elaborated in Cunningham, and García-Verdú, (forthcoming).

[10] The 70% adjustment factor is based on a comparison of mean youth and adult wages in several Latin American countries (Cunningham et al., 2008).

not working or studying; i.e. the "jobless". We can define the "jobless rate" as the share of girls age 15-24 who are unemployed, not working in labor market activities, and not in school. Thus, the difference between the inactivity rate and the jobless rate is that the former includes students while the latter excludes students.

Unfortunately, no data source provides "joblessness" rates so we estimate them for the purposes of this paper. To purge students from the ILO's KILM inactivity rate, we use EDStats secondary school attendance rates to roughly estimate the percentage of girls 15-24 who are in school.[11] We generate two joblessness rates, under different assumptions. First, we assume that girls age 15 and older are only in upper secondary. We use gross upper secondary school enrollment rates to calculate the number of girls aged 15-24 who are in secondary school and divide by the number by the female population age 15-24. We call this the "lower bound" because it does not account for girls over age 15 who are delayed in school (i.e., in primary or lower secondary). Second, we assume that all girls in upper secondary are 15 and older and that half of the girls in lower secondary are over age 15. We divide this number by the female population, age 15-24 to estimate an "upper bound" since we are likely to be overestimating the number of girls in lower secondary who are over-age. We then subtract the lower bound and the upper bound from the KILM activity rate to get two measures for girls' joblessness rates.[12]

We present the opportunity cost both of girls' inactivity and of girls' joblessness relative to women's and boys' inactivity and joblessness. We use the more precisely measured but less conceptually correct inactivity rate as our base case. Then we present – and compare – the costs when using the less precisely measured but more conceptually correct jobless rates.

As in our calculations for early school leaving, we adjust for labor demand elasticities, assuming that an increase in the number of workers will decrease market wages. In this case, we apply the same elasticities described in the last section.

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[11] The age range 15-24 was chosen due to data availability. Ideally, girls aged 15 should be still pursuing their studies and not working.

[12] It should be noted that females might engage in valuable home-based production activities, and this is not corrected by the ILO's inactivity rates.

It should be noted that the costs only refer to economic opportunity costs related to loss of productivity, and do not capture costs related to emotional distress, risky health behavior and other factors that come with being jobless. These costs are an annual cost, rather than a lifetime cost, as estimated for early school leaving and adolescent pregnancy.

c. Methodology for computing the costs of adolescent pregnancy

Adolescent pregnancy may affect future earnings through various channels. Maynard (1996) argues that adolescent pregnancy in the United States reduces young mothers' future productivity and earnings through higher school dropouts (among other factors). More recent work on US women's earnings by Anderson, Binder, and Krause (2003) identifies a "motherhood tax" that results from less job experience of mothers due to time out of work to attend to childbearing and childrearing responsibilities. Neither of these factors is likely to be as important in developing countries as in the US partly due to early school leaving (unrelated to pregnancy) in many low-skilled countries, fewer safety nets that allow for women to not work for a period, and less structured labor markets (i.e. self-employment) that do not require consistency in job attendance, but they may have some impact. Following World Bank (2003) and Chaaban (2007), we compute the costs linked to adolescent pregnancies as measured through forgone lifetime earnings due to early pregnancies.

We estimate the opportunity cost of adolescent pregnancy using two methodologies, each subscribing to specific transmission mechanisms. First, based on the observation that teen mothers have lower levels of education than girls who delay pregnancy (McCauley and Salter 1995), we compute the opportunity cost by measuring the adolescent mother's foregone annual income due to fewer years of schooling. We assume that if girls had postponed their first birth, they would earn a greater wage at every age throughout their working lives than those girls who did not postpone.

We assume a constant wage gap over their working lives between young mothers and girls who postponed their childbearing. Implicitly, we assume that the slope of the age-earnings profile is the same across groups but the intercept differs by the wage

premium gained by greater levels of education of girls who postponed childbirth.[13] Since wages are not reported separately for adolescent mothers and non-mothers, we use the average adult female expected wage as an earnings proxy for a girl who postponed childbirth and the average female youth expected wage as an earnings proxy for adolescent mothers. Then the difference between average female wage and the average teenage mother wage is a proxy for the "cost" of early childbearing to lifetime economic productivity:[14]

$$I = [(w_F \times Emp_F) - (W_{Yf} \times Emp_{Yf})] \times Yf$$

where I is forgone annual earnings; w_F is mean annual adult female wage; Emp_F is adult female employment rate; w_{Yf} is mean annual youth female wage and Emp_{Yf} is youth female employment rate.

The above costs correspond to the average costs of early pregnancy for one girl in one year. To measure the total cohort cost per year, we multiply the average cost with the number of adolescent births in the observation year (Yf). Assuming these girls will stop working when they are age 60 and these young mothers are age 15—the International Labor Organization's standard age for the beginning of a work life—when they enter the labor market, we multiply the annual cost of the cohort by the years that the cohort will be working, which is 45 (retirement age minus age of first working). Finally, as above, we state the total country costs as a share of current year GDP.

Several sources of data are used. The wage data are those that were derived for the estimates of early school leaving, reported in section a, above. The World Bank's HNPStats was used for incidence of adolescent childbirth, and the World Bank's WDI database was used for GDP values.

While the observed wage gap between teen mothers and other girls persists throughout life, this may be more a factor of differences in innate ability rather than a

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[13] Ideally, we would have replicated the age earnings profiles discussed above in the "education" section and applied the methodology to this section. Unfortunately, our data only allow us to measure earnings by grade level. Since adolescent mothers and non-mothers often differ in education level by only a few years, "grade level" is not sufficiently disaggregated to identify wage differences across groups. Our thanks to one of our referees for the recommendation to explore this methodological approach.

[14] We could control for the labor market dynamic for females, however this varies substantially across countries and would make cross-country comparisons difficult to interpret. Instead, we choose to use a constant change factor and provide comparative statics across countries.

result of early childbearing. To account for this, we use Anderson, et. al. (2003) to adjust for a "motherhood tax," which reduces lifetime wages by 5% (for those with one child) and 10% (for those with two children). This is done primarily for discussion purposes as it draws upon research done in the United States and thus has conclusions that would not apply in a developing country.

Again, it should be noted that these costs are underestimates of the true social costs of adolescent pregnancy since they only measure the losses attributed to lower productivity due to truncated human capital accumulation. The many other implications of early motherhood are summarized in various sources (World Bank 2007, Cunningham et. al. 2008b).

3.   Out of school: The cost of cutting her education short

Among the developing countries in our study, India and China have the lowest dropout rates in both primary and secondary levels, with only 1% of girls not completing primary school and 6% and 25%, respectively, not completing secondary school (Figure 1).   Tanzania and Senegal tell a different story, though, with less than 60% of girls completing primary education. Low secondary completion rates are also observed in the African countries in the sample, with less than 20% of girls in the age range of 15 to 24 completing their secondary education in Burundi, Ethiopia, Senegal, and Uganda, for example. Secondary dropout rates are higher than primary dropout rates in all countries. School dropout rates for girls are higher than those for boys in most developing countries, partly due to reasons outside the girl's control, such as early marriage or cultural norms that prioritize investments in boys (Levine et al. 2009).

The lifetime "costs" of female school dropouts, that can be attributed to lost productive capacity due to under-investment in girls' education, range from nearly 70% of annual GDP in Burundi to a barely noticeable 0.5% of annual GDP in India and China, figures that are comparable to the developed countries in our sample. The last set of bars in Figure 2 shows the costs to Burundi. If primary school dropouts – equal to 27 percent of girls – had just completed primary school before going to work, they would have generated lifetime income equivalent to nearly 25% of Burundi's annual GDP. And if the 88 percent of girls who were not able to complete secondary school had just been able to

do so, their additional lifetime productivity would increase Burundi's GDP by an amount more than 2/3 of their annual GDP. Thus, if each Burundian girl completed the next level of education, the total contribution to productivity over her lifetime could be equivalent to nearly one year of Burundi's GDP, or GDP growth rates would be 2 percentage points higher per year over the next 45 years – the working lifetime of today's girls.

Other African countries in the sample also show significant opportunity cost due to girls' school dropout. If girls in Kenya, Tanzania, Senegal and Uganda had completed primary school alone, their additional output over their lifetimes would be equivalent to 20%, 18%, 14%, and 13% of annual GDP, respectively. And if their more educated sisters completed secondary school, they would contribute 48%, 32%, 24%, and 34% (of annual GDP) more to their economies over their lifetimes, equivalent to an increase in annual GDP growth rates by approximately 0.5% to 1% annually for the next 45 years (Figure 2).

When accounting for ability bias and depressed wages due to an influx of more highly educated workers, we find that in countries where the cost is large in the original calculations, it generally remains large in adjusted calculations. For example, in Burundi, applying a 10% ability bias results in a lifetime cost of secondary school dropout that is equivalent to 61% of annual GDP, as compared to 66% when we do not account for ability bias. In Kenya, applying the most upper-bound measures (a 20% ability bias and an -0.8 labor demand elasticity) shifts the cost of secondary school dropout from 48% to 31%.

It is worth noting that all but one of the permutations with a 20% ability bias resulted in a negative cost for primary school leaving. This is because in all countries in the study except Kenya, the return on primary education versus no education is less than 20%.[15]

The opportunity cost of dropouts does not strictly map to the share of girls who drop out of school. For example, while more than 85% of secondary school-aged girls are not in school in Uganda and Burundi (Figure 1), the implications for Burundi (68% of GDP) are far higher than those of Uganda (34%) (Figure 2). This differential is due to a larger economy in Uganda and thus a lower share of girls' productivity in total GDP

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[15] The sensitivity analysis results are available upon request, from the authors.

values. So while the total income that Uganda foregoes due to school dropout is four times that of Burundi, the losses measured as a share of GDP are lower in the richer Uganda case than in Burundi. Or, while 40% of primary school-aged girls in Senegal do not complete their first level of schooling, as compared to 41% in Tanzania, the costs to primary school dropouts are higher in Tanzania (18%) than in Senegal (14%). Again, this is due to the lower wage share of girls in the Senegalese economy relative to the Tanzanian economy.

Among the Asian countries in the education sample (India and China), the cost to the economy of early school dropouts is negligible, at far less than 1 percent. This is particularly striking in China, where 25% of girls do not complete secondary school (Figure 1) but the costs to the economy are barely a blip in Figure 2. This is clearly due to the low share of girl's wages relative to the enormous economies in both these countries. Unsurprisingly, these findings hold up when we adjust for ability bias and labor demand elasticity. We should not interpret this finding as an argument against investing in girls, though. If we consider the monetary lifetime value of the opportunity cost of secondary school dropout in each country – US$32 billion (PPP adjusted) for China and US$10 billion (PPP adjusted) in India – we see that the costs are quite substantial (Table 1). Supporting these girls may not contribute large amounts to overall GDP, but it will play a significant role in poverty reduction and in secondary effects, which we do not measure in this paper.

Finally, in the nine countries under study, dropping out of secondary school causes higher costs to the economy than dropping out of primary school. This is driven by two effects. First, the share of affected girls is much higher among secondary than primary school-aged populations. Second, the returns to secondary education are much higher than the returns to primary school.

It is important to note that these estimates are an underestimate of the total losses due to early school leaving.[16] While wages capture job productivity, they do not account for other costs of early school leaving such as higher unemployment, inferior health status, and greater involvement in criminal activity.

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[16] We believe that any overestimations have been addressed through the adjustments for ability bias and labor-skills demand elasticities. Table 1 presents the sensitivity analysis.

4.   Out of work: The cost of excluding her from the job market

Up to 85% of girls in our sample countries are inactive (Figure 3). In India, Nigeria and South Africa, more than three quarters of all girls 15-24 are not engaged in paid work and are not looking for work.[17] This compares to 61% in Paraguay, 57% in Brazil and 50% in Bangladesh. At the other end of the spectrum, only a quarter of Ethiopian girls report that they are inactive.

Girls and women have similar inactivity rates in some countries, but very different rates in others. Girls and women in Ethiopia are close to equally inactive, with the difference being 7 percentage points (Figure 4). Nigeria and South Africa are at the opposite extreme: 51% of Nigerian women identify themselves as inactive as compared to 83 percent of girls while 85% of South African girls are inactive compared to 57% of women.

In all developing countries girls have higher inactivity rates than boys (Figure 5). The gap ranges from 36 percentage points in India and 29 in Paraguay to only 5 percentage points in Ethiopia. Regional patterns of gender disparities do not emerge: while India shows the largest disparity, this is followed by Paraguay and then Nigeria.

If young women's inactivity rates were equal to those of adult women, annual GDP growth rates would be up to 5.4 percentage points higher (Figure 6). The highest gains are in Nigeria, where the gap between young and adult women's inactivity rates is 32%, the largest disparity of the countries in our sample. This compares to a loss of 3.9% of annual GDP in South Africa. So while the gap in inactivity rates is only 3 percentage points more in Nigeria than that in South Africa, the actual youth female population in Nigeria is much higher while GDP is lower than in South Africa. The result is a very different impact between these two countries when the cost is presented as a share of annual GDP.

At the other end of the spectrum, the foregone GDP is relatively low in Ethiopia (Figure 6). This is also the country in our sample with the smallest gap in inactivity rates

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[17] These figures are not adjusted for school-going girls. These adjustments are used, and reported, in the estimates of the costs of early school leaving. However, to better understand the summary statistics, it worth noting that approximately 20% of girls age 15-24 are still in school in India and South Africa while only 7% of Nigerian girls who are not working are studying.

between young and adult women (Figure 4). Although the magnitude of the loss is small in terms of GDP growth rates, it is large in terms of foregone earnings. The PPP adjusted annual income loss is equivalent to US$646 million in Ethiopia (Table 2).

If young women had inactivity rates similar to those of young men, annual GDP growth rates would be up to 4.4% higher (Figure 7). Annual GDP growth rates in India, Nigeria, and Paraguay would be 4.4, 3.5, and 3.3 percent higher if girls were as economically active as boys (Figure 7). This is equivalent to almost US$165 billion (PPP adjusted) in India, for example (Table 2). In South Africa, where the gender differential in inactivity rates is small, the gains to greater economic activity of girls is much smaller, though it still exceeds US$3.7 billion.

The gender gap does not always incur higher opportunity cost than the age gap. In Bangladesh, Brazil, India, and Paraguay, the gains are much larger if girls' inactivity rates were more similar to those of boys than of adult women since the gap in inactivity rates is larger between the sexes (within age) than the within-sex between-age gaps. While in the African countries in the sample, if girls had the same (lower) inactivity rates as adult women, the economies would enjoy larger gains than if the goal were to reduce girls' inactivity rates to those of boys.

Accounting for the value of housework does not significantly change these estimates for those countries in which data are available. Data from Brazil and India allow us to adjust the opportunity cost of inactivity estimates to account for the productive value that home-based work generates. Such adjustments to the cost of inactivity include a proxy for the value of home-based production activities for young women. However, this decrease in the cost of inactivity is not considerable. For example, accounting for home-based production decreases the cost of inactivity of Brazil by 14% - thus reducing the losses relative to women's employment from 1.2% to 1.0% of annual GDP - and that of India by 19% (a reduction of the annual GDP figure from 1.6% to 1.3%).

Turning to "joblessness" rates, where we drop students from the inactivity rate, the cost of female youth joblessness – relative to that of adult women – falls to zero or is negative for most of our sample (Figure 6). In every country, adjusting the girls' inactivity rate for the lower-bound school attendance estimate results in joblessness rates

among girls that are lower than those of women and, except in except Ethiopia, Indonesia, Nigeria and Rwanda generate a negative "cost." Adjusting by the "upper bound" creates an even larger negative gap, such that the costs are only positive in Nigeria and Rwanda. In other words, girls are less "jobless" than adult women once we account for school-going girls. Further, when we adjust for wages, where we assume that youth earn 50% of the adult wage, we find that the costs across all developing countries are close to half of those reported in our primary calculations.[18]

For target 2, we find that adjusting inactivity rates for the lower bound for boys and girls, reduces the cost as a share of annual GDP by 0.5 percentage points in Brazil, while it raises it by 0.5 percentage points in Nigeria (Figure 7). At the upper bound, it ranges from -0.6 percentage points in Brazil to 0.7 in Nigeria and Turkey. This accounts for girls' higher secondary school educational attendance than boys in Brazil – thus reducing the gap in the inactivity rate – compared to boys' higher secondary school attendance in Nigeria, where more boys are dropped from the inactivity rate than girls are, thus generating a larger gender jobless gap as compared to the gender inactivity gap. Adjusting separately for wages, where we assume for example that females earn 50% of male wages, the costs as a share of GDP range from -0.2% in Rwanda to 2% in India. This compares to the -0.5% and 4.4% estimates in our original inactivity rate calculations, respectively. Putting it all together using the upper bound joblessness rates, accounting for a 50% male-female wage gap, and incorporating demand elasticities, we find that the cost of girls' joblessness, relative to that of boys', ranges from -0.1% in Rwanda to 1.2% in India. The cost of girls' joblessness in Nigeria, which had the highest inactivity rates (not adjusted for labor demand elasticities or male-female wage gaps) is 1.0%.

The costs of joblessness should be seen as an underestimate of the true overall costs a society pays due to high young women's exclusion from labor markets. Joblessness has many implications that were not taken into consideration in the calculation of the estimated costs on the country's productivity. These costs may include psychological distress costs since the unemployed typically face a loss of self esteem, and

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[18] The point estimates when using different combinations of assumptions on the jobless rate, male-female or adult-youth wage rates, and elasticities of demand are available upon request from the authors.

the foregone opportunity to acquire human capital through on-the-job training and learning (see sources cited in Cunningham et al. 2008). Joblessness also may lead to other risky behaviors to earn money including risky sexual behavior, illegal trade, or underground activities. The costs above exclude the cumulative effects these may have. The costs also exclude the impacts of a continued cycle of intergenerational poverty as a result of girls' failure to reach their full economic potential.

It is important to note that the costs of joblessness seems far lower than the costs of school dropout, but this is largely due to the fact that we are measuring the costs of each behavior over different time frames. While a typical school-leaving behavior in developing countries is one of gradual "dropping out" over a short period, as seen by frequent absenteeism, increasing work (in the market or home) and eventual abandonment, the drop-out decision is typically terminal. Girls will not – and often cannot – return to school later in their lives thereby affecting their entire earnings (productivity) path for the rest of their lives. Thus, we measure foregone earnings over the lifetime. Conversely, women's entry to and exit from the labor market is quite frequent. So the "jobless" behavior is often short term and does not necessarily have lifetime consequences for future productivity.[19] We thus measure joblessness for the year that it is observed rather than aggregating across the girl's lifetimes.

5.   Girls with children: The cost of adolescent pregnancy

Adolescent pregnancy rates are highest in the African countries in our sample but the total number of adolescent pregnancies is greatest in the populous India, Brazil and Bangladesh. For example, for every 1,000 girls age 15-19 in Uganda and Malawi, 148 and 133, respectively, have given birth. This compares to 10 of every 1,000 adolescent girls in China, lower than the US or UK, or 67 of every 1,000 adolescent girls in India (Figure 8). However, nearly four million adolescent girls give birth every year in India and more than half a million in Bangladesh, as compared to 367,000 in Uganda and Malawi combined. China, though the most populous country, has such low adolescent

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[19] While one might argue that being out of the labor force leads to skills obsolescence and, thus, lower earnings later in the work life, the deterioration of skills has not been well documented and is likely to pale next to the actual learning, or the signaling, from completing the next level of education.

pregnancy rates that its total number of births per year only exceeds the combined number of births in Uganda and Malawi by 165,000.

The lifetime opportunity cost related to adolescent pregnancy – measured by the young mother's foregone annual income over her lifetime – ranges from 1 percent of annual GDP in China to 30 percent of annual GDP in Uganda. Malawi and Nigeria also have very high costs, equal to 27%, and 26% of GDP, respectively (Figure 9). Unlike in the education estimates, only China matches the United States, Sweden and Norway for having a small impact of adolescent pregnancy on output. Even the Indian estimates are 12% of annual GDP, which when presented in PPP-adjusted dollars, equals nearly US$400 billion.

The regional differences do not break down as clearly for adolescent pregnancy as they did for education. While the African countries in the sample incur the highest costs, as a share of GDP, up to 30% in Uganda, Bangladesh (11%) shows that Asian countries are missing out by not better supporting their girls and Latin America faces similar challenges with the costs in Paraguay at 12%.

The PPP-adjusted dollar costs tell a slightly different story, where the costs to India are the largest of the sample, followed by Brazil (Table 3). Brazil would have greater productivity equal to more than US$3.5 billion if teen girls delayed pregnancy until their early twenties, while India's productivity would be US$7.7 billion higher. At the other extreme is Malawi, where the costs are US$57.8 million (PPP adjusted) but as a share of GDP the cost is 27%. The differential reflects higher wages in Brazil – nearly ten times those of Malawi. Moreover, a larger population in Brazil, compared to Malawi, results in nearly six times the number of total adolescent births in Brazil in a single year.

The assumptions underlying the estimates are conservative, namely that girls who give birth will truncate their education and the wage gap with women who delay pregnancy will persist over the lifetime. That having been said, when we forego that assumption and instead apply a "motherhood tax," the costs over a lifetime are far lower – in no case more than 2% of GDP in Uganda. The limitations of such an approach is that the "tax" is drawn from literature in the United States, a wage market economy where it is expected that adolescent mothers face a decidedly different reality that those in developing countries. Thus, while we present such an approach to highlight the range of

possibilities, we turn back to our main calculations to get a sense of the magnitude of this issue.

Again, we highlight that these cost estimates are underestimated in the sense that we only consider the lost productivity in the labor market, thus not estimating the costs incurred to women's health, the possible implications for the child's future productivity as indicated by studies that show that children of adolescent mothers have lower school attainment rates, the social costs of unwed adolescent mothers, and so forth. Also, due to data availability, we cannot account mothers under the age of 15 or those who have paid the ultimate price of adolescent pregnancy: the girls who die from its complications.

6.   A better path for girls: Conclusions and policy implications

Social inclusion of adolescent girls that keeps them on a path to achieving their maximum human potential will result in significant economic growth. This paper has presented simple non-parametric methodologies to roughly quantify the costs incurred by societies as a result of the social exclusion of adolescent girls. The estimates are limited to the opportunity costs, which measure the losses in terms of potential productivity gains and income young girls could have achieved if they were employed, if they had delayed pregnancy, or if they had attained higher educational levels. Using secondary data drawn from the International Labour Organization, World Bank, and World Health Organization, we estimate the costs in several African countries (Burundi, Ethiopia, Kenya, Malawi, Nigeria, Senegal, South Africa, Tanzania, and Uganda) and a few Latin American (Brazil and Paraguay), and South Asian (India and Bangladesh) and East Asian (China) countries.

The rough estimates showed that marginal investments in girls can have a substantial impact on GDP growth and well-being. If girls just completed one higher level of education, the total value of productivity generated over the work life of those girls is equivalent to nearly one year's GDP (Burundi), equivalent to GDP growth that is 2 percentage points higher in each year that these more educated girls would be working. The additional growth would be equivalent to more than 25 percent of annual GDP in the other African countries in the sample (except Ethiopia), or an increase in growth rates by one to 0.5 percentage points annually. While girls' contribution to overall output is much

smaller in the large economies of China and India, the total foregone productivity reaches into the billions of dollars. When adjusting these figures for innate ability bias and labor demand elasticities, the point estimates fall by nearly half, but they still show that more educated girls would have significant impacts on overall economic growth.

Girls' joblessness imposes significant annual productivity losses. If girls' inactivity activity were the same as that of women, national economies would grow by 0.8 to 5.4 percentage points annually. However, once accounting for those non-working girls who are in school, the costs fall to zero in most of our sample since adult women are more inactive than adolescent girls. And if girls' and boys' economic activity rates were equal, similar additions to GDP would be observed, while accounting for students only slightly reduces the estimates. Comparing the cost of inactivity to the cost of joblessness, the greatest gains are in India, where the girl-boy employment gap is greatest and, compared to other countries with similar gaps, wages are high.

The lifetime opportunity cost related to adolescent pregnancy – measured by the young mother's foregone annual income over her lifetime – ranges from 1 percent of annual GDP in China to 30 percent of annual GDP in Uganda. Malawi, and Nigeria also have very high costs, equal to 27% and 26%, of GDP. Again, while the measured impacts are small relative to GDP in China the lost productivity value is quite substantial. Assuming a different transmission mechanism – that girls do not abandon school due to pregnancy but instead limit their labor supply time and type of work; i.e. the motherhood tax – the costs for Uganda, for example, fall to 1% of GDP.[20]

Taken together, the benefits are substantial. For example, imagine that all 1.6 million adolescent girls in Kenya completed secondary school and that the 220,098 adolescent mothers were employed instead of falling pregnant so early. The cumulative effect could have added US$3.4 billion on the Kenya's gross income every year. This is equivalent to the entire Kenyan construction sector.

The costs presented in this paper underestimate the true cost of not investing in girls. The costs computed are only economic ones, and they should be seen as a lower bound to the true social costs. The true costs, which include lower health status of the children of these women, lower life expectancy, skill obsolescence of jobless girls, less

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[20] The full set of estimates are available from the authors, upon request.

social empowerment, and so forth (Cunningham et. al. 2008), would increase the cost estimates many-fold.

Policy recommendations to expand investments in girls can be classified into three general areas: investing in girls, counting girls, and advocating for girls.[21]

Invest in girls

Increasing funding for adolescent girls and tracking what it achieves[22] will benefit both today's girls and tomorrow's girls by providing services to today's girls and learning from those experiences to better provide for girls tomorrow. Incentives for school attendance through conditional cash transfers (Schady and Fiszbein 2009) or scholarships (Angrist et. al. 2002) have been shown to keep girls in school are cost effective interventions. While the evidence of success and cost effectiveness in supply-side interventions is much scarcer than demand-side interventions, governments could consider expanding primary school facilities to house secondary school classes, investing in non-formal schooling options to reach the most vulnerable girls, and tracking enrollment, completion rates, and the percentage of girls at grade for age to measure progress (Cunningham et. al. 2008b).

Girls' engagement in the labor market could be enhanced through building marketable skills, facilitating the labor force entry process, and alleviating gender constraints and expectations. Skills could be enhanced be improving the relevance of educational curricula, developing after-school tutoring and mentoring programs, providing financial education programs, and funding internships, apprenticeships and training opportunities to promote girls' transitions to safe and productive livelihoods. Teaching job intermediation skills or providing information for the location of jobs may facilitate the school-to-work transition. And working with families, who may make decisions on behalf of girls, to value the contribution that girls make to the labor market

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[21] A recent global movement to support adolescent girls has defined a set of policy recommendations that are essential, yet feasible, for governments to implement and for the development community to support. The full list of recommendations includes 10 policy actions. For more information, please see: http://www.coalitionforadolescentgirls.org/10_actions. Only those relevant to the analysis in this paper are reported here.

[22] Official Development Assistance figures from 2005-2006 state that 2.17% of total aid ($54.3 billion) list gender equality as the principle objective. Assuming the majority of that aid goes to grown women, less than two cents per aid dollar is directed to girls.

may facilitate their acceptance for their daughters, wives, mothers, and sisters to engage in market work (Cunningham et al 2010).

To invest in girls' health, emerging evidence is finding that unconditional cash transfers can change girls' behaviors (mostly by delayed marriage and childbearing, see Baird et al 2010), but supply-side interventions may also be effective. Re-orienting health delivery systems to provide adolescent girls with services that are accessible, customized, confidential, and nonjudgmental could provide girls with information to make good sexual health choices, better support them to prevent unwanted circumstances, and screen for reproductive and sexual health risks such as domestic violence and unintended pregnancy (Cunningham et. al. 2008b).

Count girls

Providing programs is not sufficient since entry to programs often depends on recognition that girls exist. This requires an effort by governments to register all newborns and provide birth certificates to ensure access to health services and education (Cunningham et al, 2008b). And once the girls (and boys) are older, it is necessary to furnish them with government-issued identification cards so that they may continue to access educational opportunities, jobs, and health services.

To monitor program success, it is necessary to collect data on adolescents and disaggregate it by age and gender to assess whether programs are reaching adolescent girls. By tracking program beneficiaries by age, gender, marital status, location, family income and school enrollment status in all programs and sectors, program managers and governments can better assess whether programs are reaching adolescent girls— especially the most vulnerable. Regularly reporting results will increase accountability, share learning, target solutions, demonstrate success, and catalyze more resources.

Advocate for girls

Finally, governments could better advocate for girls at two levels. First, governments could make the law work better for adolescent girls by repealing laws that discriminate against girls in the workplace, schools, or family and ensure equality of access to health services, education, jobs and earnings, credit, and property ownership.

Second, they could mobilize communities, families, men and boys to support adolescent girls. They could sponsor programs or provide incentives to engage religious and community leaders and head teachers to foster healthier, more supportive communities where girls can create and execute their own solutions (Cunningham et. al. 2008b).

This paper offers a glimpse of what economies are missing when we fail to invest in girls. Even by the most conservative estimates, we see that the economic costs are in the billions. This, of course, is to say nothing of the massive social and intergenerational costs. All told, we can be certain we're missing out on an awful lot. The challenge for policy makers, development experts, donors, corporations, NGOs working on the ground – everyone really – is to intervene before things in a girl's life go sideways. If we manage that, the world will finally realize this tremendous opportunity for change.
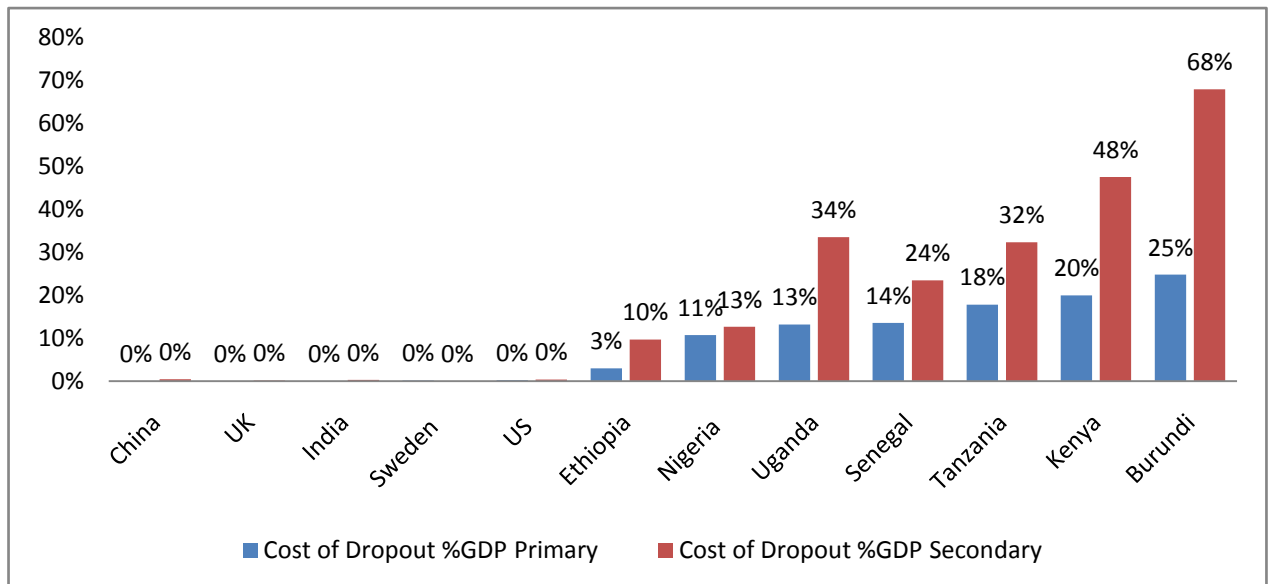
Tables and Figures

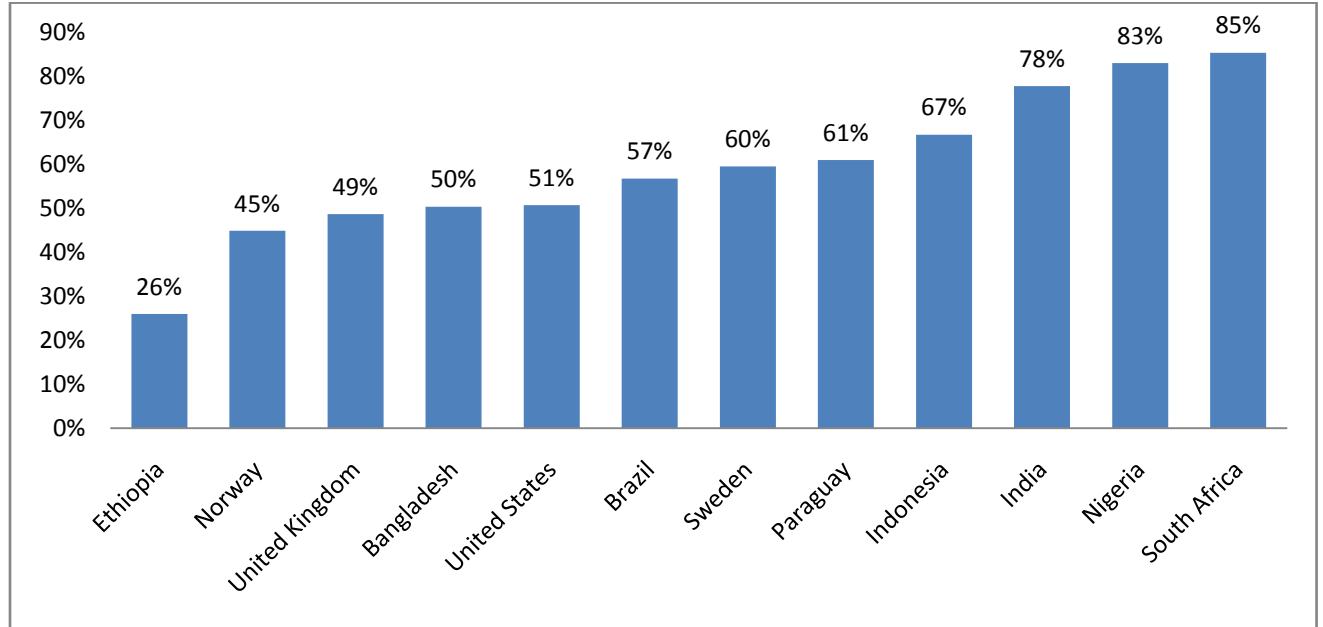Figure 1: Dropout Rates for Primary and Secondary Education, Girls
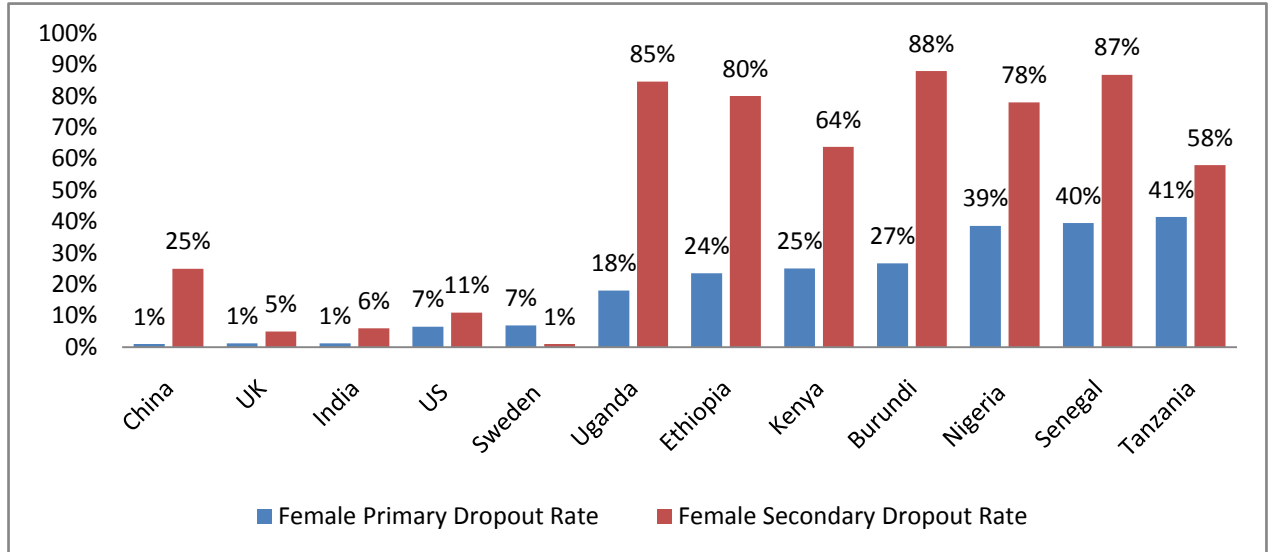
Source: WB EdStats, derived from the variable "net enrollment rates" at the primary and secondary level

Figure 2: Lifetime Cost of Girl Primary and Secondary School Dropout, as % of GDP

Source: Authors' computations based on data from ILO KILM, WDI and WB EdStats

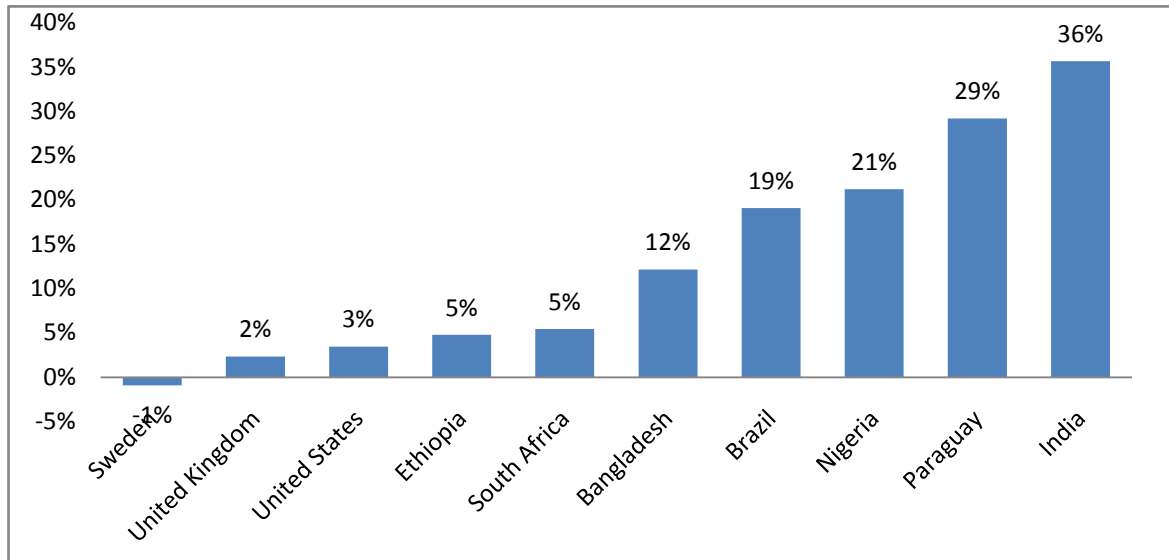Figure 3: Youth Female Inactivity Rates

Source: Authors' computations based on data from ILO and KILM

Figure 4 Difference between the Inactivity Rate of Adolescent Girls and Adult Women (Target 1), in percentage points
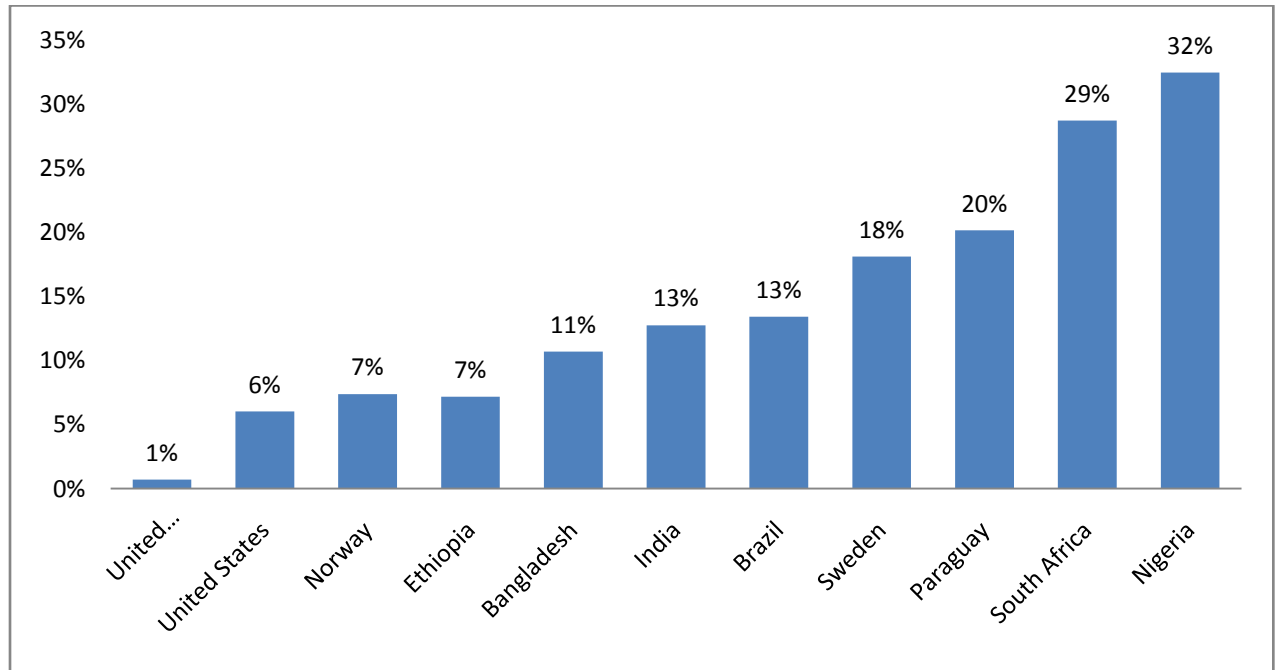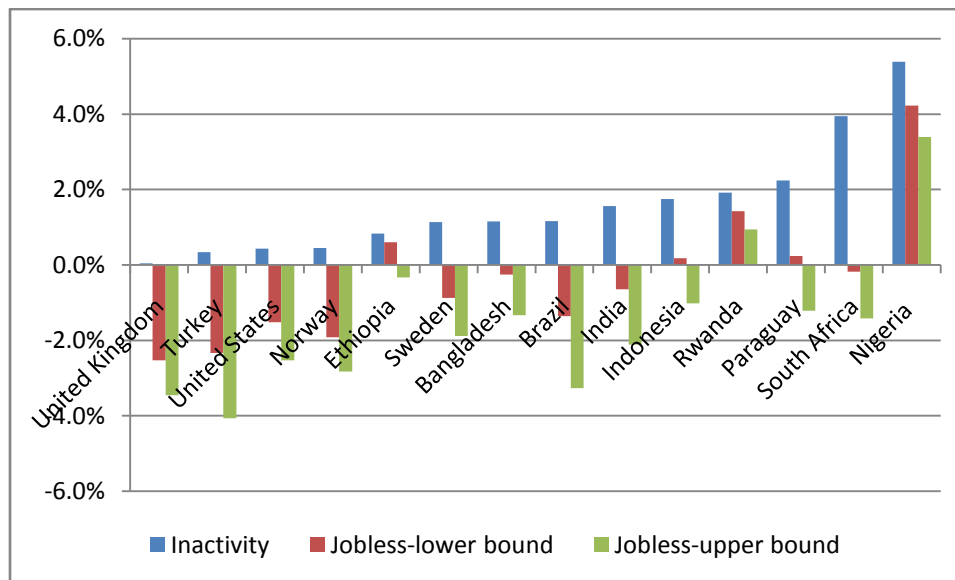

Source: Authors' computations based on data from ILO KILM and WDI

Figure 5: Difference between the Youth Female and Youth Male Inactivity Rates (Target 2), in percentage points

Source: Authors' computations based on data from ILO KILM and WDI

Figure 6: Cost of Girl Inactivity and Joblessness, if Equal to Adult Female Inactivity or Joblessness as % of annual GDP (Target 1)

Note: Jobless-lower bound reduces the inactivity rate by gross upper secondary enrolment rates thereby dropping students . Jobless-upper bound reduces the inactivity rate by gross upper secondary and by partial net lower secondary thereby dropping students.
Source: Authors' computations based on data from ILO KILM and WDI

Figure 7: Cost of Girl Inactivity or Joblessness, relative to Boy's Inactivity or Joblessness Rates, as % of annual GDP (Target 2)
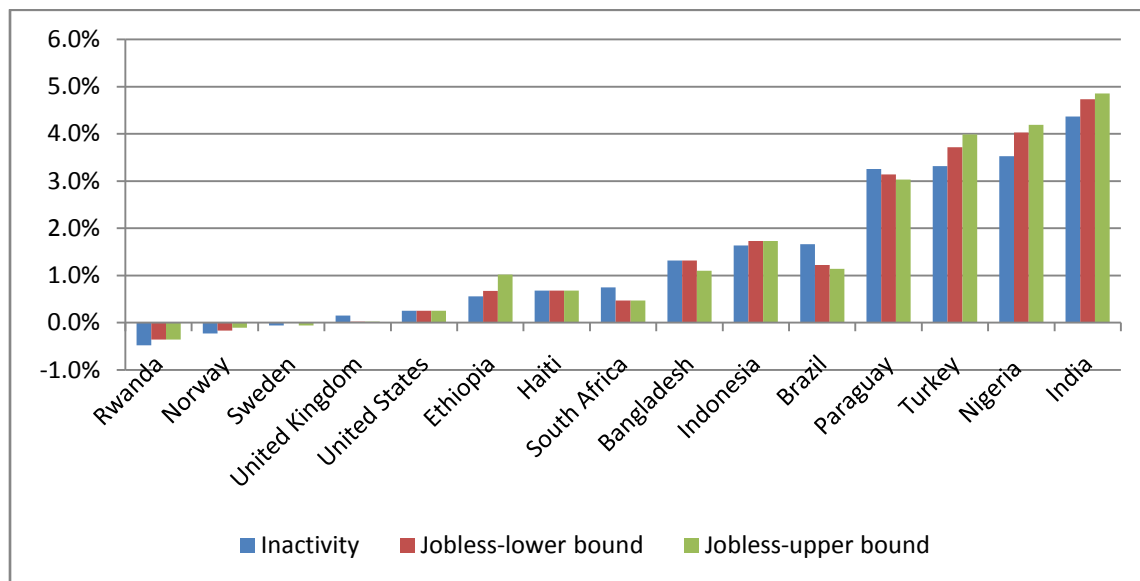
Note: Jobless-lower bound reduces the inactivity rate by gross upper secondary enrolment rates thereby dropping students . Jobless-upper bound reduces the inactivity rate by gross upper secondary and by partial net lower secondary thereby dropping students.
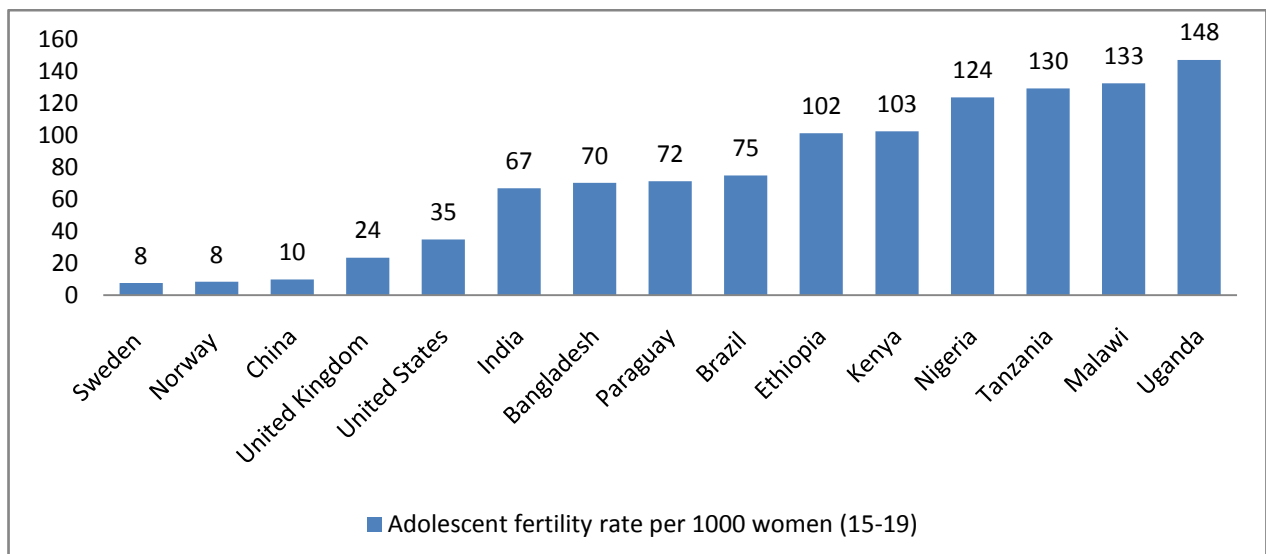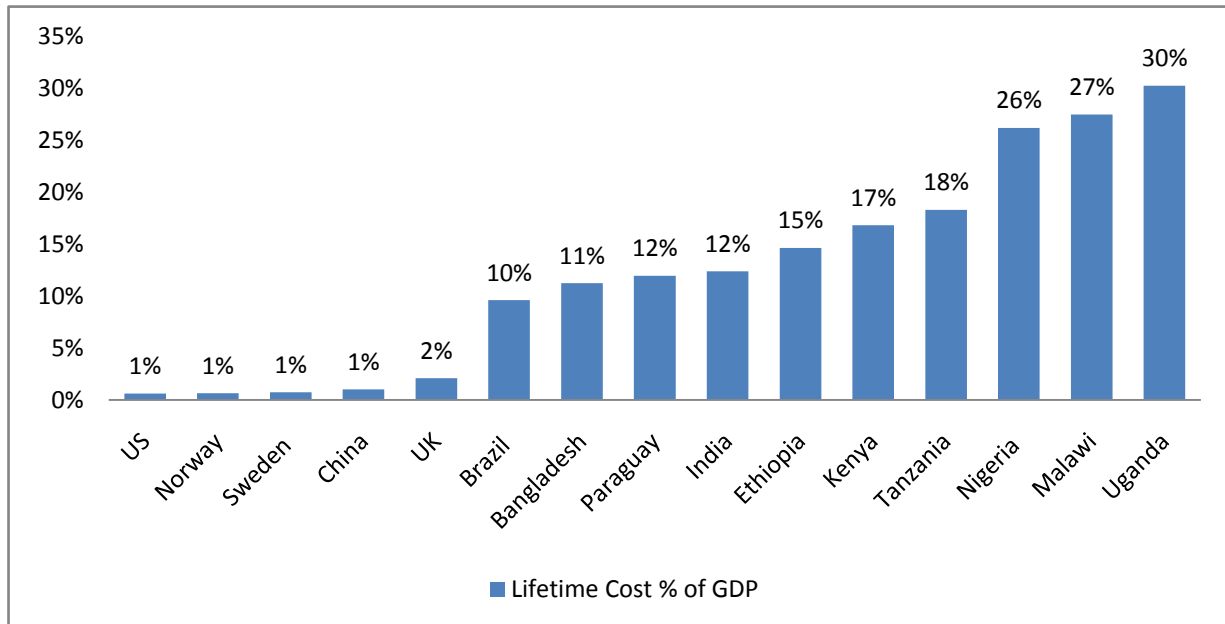Source: Authors' computations based on data from ILO KILM and WDI

Figure 8: Adolescent Fertility Rate per 1000 Adolescent Girl, 2007

Source: World Bank HNPStats

Figure 9: The Lifetime Cost of Adolescent Pregnancy of Current Cohort of 15-19 Year Old Girls, as a Share of Annual GDP

Source: Authors' computations based on data from ILO KILM, WDI, and World Bank HNPStats

Table 1: Life time Cost Estimates of Girls Dropping out of Primary and Secondary Education

Country	Life time Cost of early school leaving USD million		Cost of early school leaving %GDP		Cost of early school leaving % GDP developing countries adjusted for labor elasticity		Education premium pe...	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Percentage increase in lifetime earnings, prim over no edu	... i... ea...
Burundi	719	1970	24.83%	68.04%	21.96%	46.44%	24%	
China	817	32336	0.01%	0.46%	0.01%	0.44%	21%	
Ethiopia	2090	6803	2.98%	9.70%	2.47%	6.89%	15%	
India	1315	10610	0.04%	0.34%	0.04%	0.34%	27%	
Kenya	11501	27415	19.97%	47.60%	18.85%	41.04%	43%	
Nigeria	34157	40366	10.76%	12.72%	8.18%	8.38%	23%	
Norway	144	399	0.05%	0.14%	-	-	8%	
Senegal	2801	4861	13.54%	23.51%	11.19%	16.77%	24%	
Sweden	570	122	0.17%	0.04%	-	-	9%	
Tanzania	8727	15833	17.86%	32.40%	14.76%	21.75%	24%	
Uganda	3843	9742	13.23%	33.55%	11.7%	22.90%	24%	
UK	705	4041	0.03%	0.19%	-	-	9%	
US	29684	62783	0.21%	0.45%	-	-	8%	

Source: Authors' computations based on data from ILO KILM, WDI and WB EdStats

Table 2: Cost of Girls Inactivity- Target 1 (youth female inactivity rate = adult female inactivity rate), Target 2 (youth female inactivity rate = youth male inactivity rate)

Country	Inactivity Rates %			Targets Female Inactivity, 000		Cost, million USD PPP		Cost, % GDP	
	Youth Female	Youth Male	Adult Female	Target 1 FYJR = FAJR	Target 2 FYJR = MYJR	Cost for Target 1	Cost for Target 2	Target 1	Target 2
Bangladesh	50%	38%	40%	1729	1970	$2,660	$3,030	1.2%	1.3%
Brazil	57%	38%	43%	2251	3210	$23,521	$33,534	1.2%	1.7%
Ethiopia	26%	21%	19%	606	404	$646	$431	0.8%	0.6%
India	78%	42%	65%	14083	39455	$58,941	$165,129	1.6%	4.4%
Nigeria	83%	62%	51%	4988	3266	$17,917	$11,732	5.4%	3.5%
Norway	45%	49%	38%	22	-11	$1,199	$ (610)	0.4%	-0.2%
Paraguay	61%	32%	41%	129	187	$644	$935	2.2%	3.3%
South Africa	85%	80%	57%	1440	273	$20,032	$3,797	3.9%	0.7%
Sweden	60%	60%	41%	108	-5	$4,014	$ (203)	1.1%	-0.1%
United Kingdom	49%	46%	48%	28	92	$1,043	$3,449	0.0%	0.2%
United States	51%	47%	45%	1307	754	$61,821	$35,685	0.4%	0.3%

Source: Authors' computations based on data from ILO KILM and WDI

Table 3: Costs Associated with Adolescent Pregnancy

Country	Total Adolescent Births per year	Total Cost per year, USD PPP	Adolescent Mother's Foregone Annual Income	Total life time cost %GDP
Bangladesh	576,868	$ 442,628,523	$ 767	11%
Brazil	618,114	$ 3,527,860,193	$ 5,707	10%
China	525,445	$ 1,451,660,440	$ 2,763	1%
Ethiopia	457,482	$ 207,975,905	$ 455	15%
India	3,812,362	$ 7,667,428,958	$ 2,011	12%
Kenya	220,098	$ 193,850,761	$ 881	17%
Malawi	106,444	$ 57,821,320	$ 543	27%
Nigeria	994,023	$ 1,652,468,504	$ 1,662	26%
Norway	1,297	$ 33,976,032	$ 26,193	1%
Paraguay	23,370	$ 63,467,790	$ 2,716	12%
Sweden	2,334	$ 50,894,510	$ 21,804	1%
Tanzania	300,951	$ 179,011,003	$ 595	18%
Uganda	261,064	$ 175,646,582	$ 673	30%
UK	45,908	$ 891,394,152	$ 19,417	2%
US	79,288	$ 1,753,020,638	$ 22,110	1%

Source: Authors' computations based on data from ILO KILM, WDI and WB HNPStats

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