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ARTICLE

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Girls' schooling is important but insufficient to promote equality for boys and girls in childhood and across the life course

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Abstract

Motivation: Investing in girls' schooling in low- and middle-income countries (LMICs) is seen as central to improving gender equity. It is argued that interventions to promote girls' enrolment are appropriate as girls face gendered barriers to school enrolment and completion and investing in girls' schooling has high economic and human development returns. But is this fair to boys and enough for girls?

Purpose: We ask how appropriate it is to direct development assistance towards improving girls' school enrolment, compared to prioritizing schooling for both girls and boys, and addressing barriers to gender equality throughout the life course.

Methods and approach: We frame the enquiry through a human development framework with three distinct but interdependent domains: protection of human development potential; realization of human development potential; and use of human development potential.

Using publicly available data, we identify indicators that are likely to be correlated with the degree to which human development potential is protected, realized, and utilized in LMICs. We compare male and female outcomes on each of these indicators to assess gender parity at different life stages.

Findings: In most regions, girls are ahead of boys in both school enrolment and completion. Girls have better outcomes than boys in several other indicators in early life and childhood.

In adolescence and adulthood, girls and women fall behind boys and men. This is especially apparent in workforce participation, in unemployment, in pay, and in share of unpaid care work and political participation, where women have less favourable outcomes than men. The bias against women is most marked in South Asia and sub-Saharan Africa.

Policy implications: A focus on girls' schooling should be tempered by ensuring quality pre-primary, primary, and secondary schooling for both boys and girls. At the same time, we must address causes of gender inequality, including labour market discrimination and social norms that justify the exclusion and exploitation of women and girls.

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gender and development, life-course outcomes, women's empowerment

1 | INTRODUCTION

For the past two decades, girls' education has been an important focus for international development aid agencies and global development policy (Peppin Vaughan, 2019). Examples include the United Nations Girls' Education Initiative (UNGEI) established in 2010, UNESCO's Her Education, Our Future initiative (UNESCO, 2019b), and USAID's Advancing Girls' Education (USAID Mozambique, 2022), while the World Bank includes advancing girls' education in multiple strategies (World Bank, 2022a). Initiatives include the UK government's Girls' Education Skills Partnership with 11 private sector companies as part of its official development assistance (ODA) (FCDO, 2022; Raab, 2020). Similarly, G7 leaders endorsed a global target for 2021–2026 to improve access to school for 40 million girls in low- and lower-middle income countries to ensure that 20 million more girls in these countries can read by the age of 10 (FCDO, 2021).

There are varying rationales underpinning initiatives to advance girls' education, three of which we detail here. The first, that education is a fundamental human right for all, is beyond question (World Bank, 2022). The second rationale is that girls face gender-specific barriers to enrolment in and completion of school that must be addressed to improve gender equity (Psaki et al., 2022). The third is that girls' schooling leads to high economic and human development returns; in this vein, girls' education is advanced as "the world's best investment with the widest-ranging returns" (Sperling & Winthrop, 2015), capable of drastically reducing poverty (Carvalho & Evans, 2022; Patrinos, 2008; Schultz, 2002; Sperling & Winthrop, 2015; Wodon et al., 2018) and "transform[ing] communities, countries, and the entire world" (UNICEF, 2022).

The headline prioritization of girls' education is often complemented by gender-responsive approaches to addressing gender disparities in education (UNESCO, 2019a). Gender-responsive approaches target gender-specific barriers to learning to address inequalities and reduce harmful gender norms and practises within the classroom (Gibbs, 2021; IGWG, 2017; UNFPA & UNICEF, 2021). Examples of gender-responsive strategies include facilitating girls' participation in science, technology, engineering and mathematics (STEM) subjects, ensuring gender-based and violence-free classrooms, and empowering girls for success in later life (UNESCO, 2019a). Although a gender-responsive approach is theoretically to the benefit of both boys and girls, in implementation they are often focused on the challenges girls face, reflecting the sentiment "when we call for girls' education, we are essentially calling for high-quality, universal education—but especially for girls" (Sperling & Winthrop, 2015).

In this article, we ask how appropriate it is to direct international development assistance towards improving girls' school enrolment, as opposed to prioritizing schooling for girls and boys and/or addressing gender inequality more fundamentally. To this end, we compare girls' and boys' access to schooling in LMICs to compare rates of access. We outline and apply a life-course framework of human development to examine whether a focus on girls' schooling is sufficient to address gender inequality. The life-course perspective is useful here because the instrumental benefits of schooling are determined by pre- and post-school exposures. As a consequence, improving gender parity in access to schooling will have limited impact on gender inequality if that inequality is driven by earlier or later negative exposures, such as early life adversities which limit girls' capacity to learn at school (Barth et al., 2008), or later life constraints that limit their opportunities to put their schooling to use, such as gender discrimination in labour markets (Kabeer, 2021). These interactions across the life course are critical for a range of human development outcomes. To supplement the existing literature on human development over the life course (Harris & McDade, 2018; Tomlinson et al., 2021), we categorize human development into three distinct but interdependent domains over the life course: the protection of human development potential, its realization, and its utilization, highlighting the roles of context in determining the outcome in these domains.

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Using publicly available data on gender differences in access to school, we show that girls often have better access than boys and that, where boys are ahead, access for both girls and boys tends to be low. Furthermore, by using a range of indicators of human development from across the life course, we show that the drivers of gender inequality tend to cluster beyond schooling. It is in late adolescence and adulthood that we find that girls' and women's human development outcomes tend to lag behind boys' and men's, probably because they are constrained by the impact of harmful gender norms and gender discrimination (Boudet et al., 2013; Cusack, 2013; Duflo, 2012; Jewkes et al., 2010, 2015; Kabeer, 2021; Klugman et al., 2014). Based on these observations, we suggest that it is necessary to tackle gender inequality by targeting these restrictions on women rather than focusing solely on girls' access to schooling. Taking this approach may require interventions starting at the school level, such as facilitating access to STEM subjects (Prieto-Rodriguez et al., 2020), and addressing gender norms (Amin et al., 2018; Levy et al., 2020; Malhotra et al., 2019). These interventions should be included alongside interventions to promote access to school for both girls and boys. These would need to be responsive to gender differences in barriers to school access and not be limited to girls.

Our life-course approach to human development complements existing efforts to compare levels and drivers of gender inequality across countries, which combine several different types of indicators to reflect different aspects of human development but fail to identify at which life stages unequal outcomes emerge. For example, while the United Nations Development Programme's Gender Inequality Index and the Global Gender Gap Index include dimensions of gender equality from adolescence (e.g. adolescent birth rate and school attainment) and adulthood (e.g. seats in parliament and labour force participation rate), they are aggregated and interpreted as a single score (UNDP, 2022; World Economic Forum, 2020). Thus, these indices provide a measure of the overall level of inequality between men and women but obscure the process of human development as it occurs at each life stage. For example, political participation, included in both indices, is shaped by, among other things, early life experiences which influence the development of cognitive and non-cognitive skills, access to schooling and opportunities to learn about the political system, and the degree to which political rights in adulthood are protected on constrained (OHCHR, 2014; United Nations Human Rights Council Secretariat & United Nations Human Rights Council Working Group on Discrimination against Women in Law and in Practice, 2013). The failure to recognize human development as a process can lead to mistimed responses to improve outcomes or address their unequal distribution. This may pertain, for example, to girls' access to schooling.

The article is structured as follows. Section 2 sets out the human development framework used in the study, followed by the presentation of the methods and approaches used in Section 3. Section 4 summarizes the findings. Section 5 discusses the overall findings and their policy implications and Section 6 concludes.

2 | A HUMAN DEVELOPMENT FRAMEWORK

The starting point for our human development framework (HDF) is the capabilities approach, which argues that, ultimately, we should be interested in human development, defined as people's ability to live lives they value—their freedom, rather than outcomes that are only of instrumental value, such as income (Nussbaum, 2000; Robeyns & Byskov, 2023; Sen, 2000). A human development rather than human capital framework is used, as it better captures the intrinsic value of improving people's lives as opposed to the instrumental value stemming from the impact of improving people's lives on productivity, which is the focus of the latter (Robeyns, 2006).

The HDF highlights the process of human development over the life course, with a view to discerning how life stage(s) drive gender inequality. The framework has been used previously to demonstrate how the returns to investments in early nutrition are shaped by the context over a person's life, and how a failure to improve the context in later life may lead the most vulnerable populations to benefit very little from improved nutrition (Desmond, Erzse et al., 2021; Desmond, Watt et al., 2023). The framework is designed to draw attention to the benefits of looking beyond outcomes in a single life stage when human development is a consequence of interactions across

life stages. By so doing, it complements the work of the economist James Heckman and others on the mechanisms driving high returns on investments in early childhood (Cunha & Heckman, 2007). It highlights how the process described by Heckman and colleagues of skills acquired in one life stage helping individuals to acquire more of the same and other skills in subsequent life stages (self-productivity and dynamic complementarity) only leads to high returns on early investment if the context in later life stages allows (Desmond, Erzse et al., 2021; Desmond, Watt et al., 2023). Without a supportive context across a person's life, the benefits of investments in early life wane, leading to lower rates of return (Alderman & Fernald, 2017; Rea & Burton, 2020).

The framework divides human development into three domains that map fairly closely to life stages: *protection* of human development potential in early childhood (Black et al., 2021), *realization* of human development potential in childhood through to adolescence (Patton et al., 2016), and *utilization* of human development potential in adolescence through to adulthood as individuals transition to more active roles in society, including in family life, social institutions, and the labour market. Figure 1 shows how these factors cluster in different life stages.

Each domain in the framework influences the next. The degree to which human development potential is *protected* sets a developmental ceiling for the individual (Adair, 2014; Black et al., 2021; Fink et al., 2016; Shonkoff et al., 2012; Walker et al., 2011). Factors that determine the *realization* of potential determine how close to that ceiling an individual can get (Black et al., 2017; Patton et al., 2016). The context in which individuals live, particularly as adults, determines the extent to which they can *utilize* their *realized* potential.

Early childhood is a period of rapid development, including physical, social, and neurological development (Black et al., 2017; Richter et al., 2017). Positive and negative experiences during this stage can trigger epigenetic changes that affect the architecture of our brains, body, and behaviours which significantly influence human development over a lifetime (Botros et al., 2019; Essex et al., 2013; Murgatroyd & Spengler, 2011; Wang et al., 2013). These changes become entrenched when external circumstances are consistent and become difficult, even impossible, to reverse. This limits an individual's developmental ceiling (Daelmans et al., 2017; Richter et al., 2017).

Realized human development potential determines how close to their developmental ceiling an individual can get. For the protected potential human development benefits of positive early inputs to be *realized*, there is a need for subsequent complementary inputs, mainly in childhood and adolescence (Black et al., 2017; Patton et al., 2016). Influences in adolescence that affect decisions related to education, substance use, sexual behaviour, and the like are particularly important in determining the extent of *realization* (Patton et al., 2016). Quality schooling environments that encourage safe experimentation and exploration are clear examples of contexts that facilitate *realization*.

Once individuals reach adulthood, their developmental ceiling, and the extent to which they will reach it, are largely determined (Shonkoff & Richter, 2013). What is not determined is the degree to which they will have opportunities to *utilize* that protected and realized human development potential. Economic opportunities, social norms, and social stability are all examples of contexts influencing *utilization*. These influence the extent to which the context constrains or facilitates people's abilities to put their *realized* potential to use.

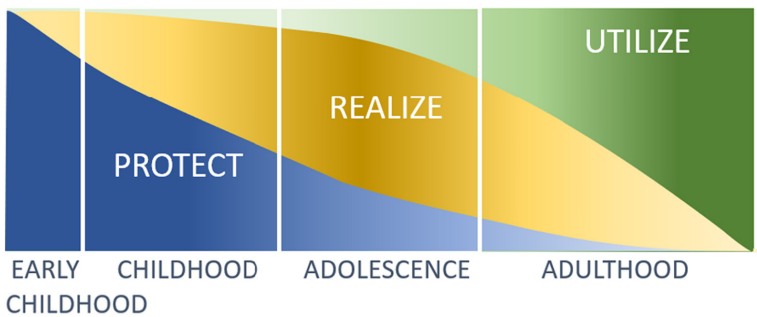


FIGURE 1 Human development framework. *Source:* Desmond et al. (2021).

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We explore the drivers of gender inequality by examining the degree to which potential is *protected*, *realized*, or *utilized* among men and women. We hypothesize that in many LMICs the major drivers of gender inequality predominantly influence the *utilization* of human development potential, noting that gender differences evident earlier in life tend to favour girls, albeit with important regional differences. We suggest that this pattern should lead to gender-transformative approaches to supporting *protection* and *realization*, including a greater emphasis on improving women's and girls' opportunities to *utilize* their human development in late adolescence and throughout adulthood. Gender-transformative approaches include classroom-based, gender-responsive approaches, but go further to include efforts to change the context outside the school system (Gibbs, 2021). This is in contrast to focusing only on increasing girls' enrolment in school, which serves to improve realization, although they are often not behind in this domain of development, while neglecting constraints on utilization, where women are often disadvantaged.

3 | METHODS AND MATERIALS

We identify three sets of indicators that are likely to be correlated with the degree to which human development potential is *protected*, *realized*, and *utilized* in LMICs. Although the mapping of these to life stages to these domains is not exact, for the purposes of this analysis we only use indicators from the life stage most closely associated with each domain: early childhood, childhood, and adolescence, and late adolescence through to adulthood, respectively. For each domain, we reviewed cross-country publicly available indicators which provide proxy measures of development in that domain or which measure inputs which are likely to influence outcomes in that domain, such as school attendance in *realization* and adult earnings in *utilization*. In line with existing country comparisons of gender differences in human development (UNDP, 2022; World Economic Forum, 2020), we aimed to include indicators of a variety of different aspects of development, such as health, education, economic outcomes, and political participation, as opposed to multiple indicators of a single aspect. We only use indicators that allowed comparisons between males and females, excluding those that are gender-specific. For example, girls are exclusively burdened by the risk of female genital mutilation/cutting and teenage pregnancy (Kandala et al., 2018; Kassa et al., 2018), while mandatory military conscription is almost entirely restricted to men (Heikkilä & Laukkanen, 2020). We selected indicators for which we have data on a large number of countries for both sexes, which excludes measures such as sexual violence, which, while fairly evenly distributed by gender for young children, tends to be higher for adolescent girls (Josenhans et al., 2020; UNICEF, 2020).

For each indicator, we calculate gender parity through the female-to-male ratio within each country. We define gender equality as achieved when the ratio is between 0.95 to 1.05. For negative outcome indicators, a ratio of less than 0.95 is defined as females being advantaged, and a ratio of greater than 1.05 is defined as females being disadvantaged relative to males. For positive indicators, a ratio of greater than 1.05 is defined as females being advantaged, and a ratio of less than 0.95 is defined as females being disadvantaged relative to males.

For each indicator, we report the population-weighted regional averages in the article, and the individual country results in the annex. We use the most recent World Bank regional definitions and income groups (World Bank, 2022). We select lead indicator(s) for each domain and map the ratios: stunting for *protection*; secondary school completion and Harmonized Learning Outcome Score for *realization*; and earnings and parliamentary representation for *utilization*. The rationale for the selection of the lead indicators is discussed below, and the rationale for the inclusion of the remaining indicators is summarized in Table 1.

Stunting of children under five years of age is selected as the single lead indicator for the *protection of potential domain*. Stunting is the percentage of children who fall more than −2 standard deviations in height-for-age below the gender-specific World Health Organization (WHO) medians for well-nourished populations (de Onis et al., 2013). Stunting in early childhood in poor populations is primarily an indicator of chronic undernutrition and/or infection, rather than of genetic differences (Grantham-McGregor et al., 2007). On average, it is associated with a range of

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TABLE 1 Selected indicators of *protection*, *realization* and *utilization*.

Domain and Indicators	Definition (as percentage)	Rationale
PROTECTION		
Birth registration (%) (UNICEF, n.d.)	Under-fives who are registered at the time of the survey.	Birth registration confers citizenship and facilitates access to services throughout life.
Stunting (%) (UNICEF et al., 2021)	Under-fives falling below −2 SDs of the gender-specific length/height WHO medians for well-nourished populations.	Stunting is an indicator of chronic malnutrition and infection. Stunting is associated with negative development outcomes over the life course.
Under-5 mortality (WHO, n.d.)	Probability of a child born in a specific year or period dying before reaching the age of five.	Under-five survival reflects the social, economic and environmental conditions in which children (and others) live, including their health care.
Early childhood education (ECE) attendance (%) (UNICEF, n.d.)	Children aged 36–59 months who are attending an early childhood education programme.	Opportunities for early stimulation can facilitate cognitive development.
Pre-primary attendance (%) (UNICEF, n.d.)	Of children in the given age range who participate in one or more organized learning programmes one year before the official primary entry age.	Opportunities for early stimulation, learning, and nutrition facilitate development of cognitive and social skills.
REALIZATION		
Years of life lost ages 4–15 (WHO, 2020)	Calculated from the number of deaths multiplied by a global standard life expectancy at the age at which death occurs.	Children must be alive to realize their potential. Furthermore, mortality and health are related, and the indicator therefore provides a proxy for health, which facilitates realization.
Primary school attendance (%) (UNICEF, n.d.)	Children of a primary school age who are attending school at a level compatible with or higher than their age cohort, accounting for children who enter formal schooling early.	Access to primary schooling fosters basic learning and skills that can be used over a person's life.
Harmonized Learning Outcome (HLO) Score (Angrist et al., 2021)	A measure of learning and progress based on the results from seven different types of tests combined and made comparable among children attending school. Scores are disaggregated by schooling level (primary or secondary), subject (mathematics, science, and reading), and gender.	Learning outcomes are a measure of school quality, other inputs into learning and achievement which relates to human development including during pre-school ages and in homes.
Secondary school completion (%) (UNICEF, n.d.)	Young people 3–5 years older than the intended completion age for upper secondary school who have completed that level of school or higher	Completion of secondary school can open opportunities for employment and higher education.

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TABLE 1 (Continued)

Domain and Indicators	Definition (as percentage)	Rationale
Secondary school dropout (%) (UNICEF, n.d.)	Young people in the official age range for a given level of upper secondary school who are not attending that level or higher.	Leaving school early limits later life opportunities and has been linked to higher likelihood of unemployment and behavioural risks.
Tertiary education (%) (UNESCO Institute for Statistics, n.d.)	Population enrolled at a tertiary level from a 5-year age group following on from secondary school-leaving age.	Tertiary education opens up employment opportunities.
Youth literacy rate (%) (UNICEF, n.d.)	Population (15–24 years) who can both read or write a short, simple statement about their everyday life.	Literacy rates provide an indicator of how successful primary schooling has been, and literacy is necessary for navigating everyday life.
UTILIZATION		
Adult mortality rate (WHO, 2021)	The probability of dying between the ages of 15 and 60.	Potential cannot be realized unless people are alive. Furthermore, mortality, given its correlation with health, provides an indicator of health, which facilitates utilization.
HIV prevalence (%) (UNAIDS et al., n.d.)	Individuals (age 15+) living with HIV or AIDS out of the total number of adults (15+).	Chronic illness, such as HIV, make utilization of potential more difficult.
Youth unemployment (%) (ILO, n.d)	Total labour force aged 15–24 that is without work but available for and seeking employment.	Ability to successfully access the labour market is a key indicator of the extent to which young people have an opportunity to utilize their potential.
Labour force participation (%) (ILO, n.d.)	The population aged 15 and over that engages actively in labour markets.	Participation in labour markets facilitates economic independence.
Adult earnings (ILO, n.d.)	Mean nominal monthly earnings of employed women expressed as percentages of male earnings.	Relative earnings provide an indication of relative differences in economic independence and the level of discrimination in the labour market.
Adult unemployment (%) (ILO, n.d.)	Share of the labour force that is without work but available for and seeking employment.	Youth unemployment highlights differences in initial access to the labour market, but differences may persist throughout adulthood, limiting the utilization of realized potential.

(Continues)

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TABLE 1 (Continued)

Domain and Indicators	Definition (as percentage)	Rationale
Share of unpaid care work (ILO, n.d.)	Ratio of female-to-male share of unpaid care work.	Unpaid care work is unremunerated work carried out to sustain the well-being, health, and maintenance of other individuals in a household or the community, and includes both direct and indirect care (i.e. routine housework and other domestic services and caring for children and other household and community members). Uneven division of unpaid care work may make it harder for women to participate in the labour market.
Parliamentary seats (%) (IPU, 2020)	Proportion of seats held by women in the national parliament expressed as a percentage of total seats. For countries with a bicameral legislative system, the share of seats is calculated based on both houses.	The opportunity for women to participate in governance is an indicator of the extent to which women are able to utilize their schooling and experience to shape the political and policy environment in which they live.

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negative developmental indicators, including poor cognitive development (Grantham-McGregor et al., 2007; Hoddinot et al., 2012). Therefore, stunting in early childhood indicates a failure in the *protection* of developmental potential.

Two lead indicators are chosen to represent the *realization of protected potential*: learning outcomes and completion of secondary schooling. These indicators are selected as a person's educational attainment provides a marker of the extent to which they have had the opportunities to develop the skills and knowledge required for employment and access to higher education, and therefore provides a proxy for *realized* potential. To measure learning outcomes, we use the Harmonized Learning Outcomes (HLO) Database, a resource compiled to enable cross-country comparisons of educational quality and progress (Angrist et al., 2021). The database consists of standardized scores on tests and includes multiple data points for each country. For the purposes of this study, HLO scores are selected according to a hierarchy of the disaggregated data. We use data from the most recent year with gender-disaggregated data. If more than one school subject is represented in the most recent year, the order of selection is maths (38% of cases), reading (62% of cases), or science. Thus, while the subject-score data included here differs from country to country, the in-country gender comparison is always based on the same subject. Completion of upper-secondary school is measured as the percentage of young people three to five years older than the intended age for the last grade of upper-secondary education who have completed that level of education or higher (UNICEF, n.d.). MICS household survey data from the past 10 years are used for the calculation of completion rates. For countries with multiple years of data, the most recent dataset is used (UNICEF, n.d.). School completion provides a summary of enrolment and performance.

The lead indicators selected to illustrate the *utilization of realized potential* are adult earnings and shares of parliamentary seats held by women. *Utilization* is multifaceted, but arguably economic and political freedom are critical factors that lead to other opportunities (Ballard et al., 2019; Naanwaab, 2018; Sharma, 2020). Adult earnings are measured as the mean nominal monthly earnings of employed women in local currency and expressed as a proportion of men's earnings (ILO, n.d.). Relative earnings provide an indication, inter alia, of relative differences in economic independence and levels of discrimination in the labour market (ILO, n.d.). The proportion of seats held by women in the national parliament is expressed as a percentage of total seats (IPU, 2020). For countries with a bicameral legislative system, the share of seats is calculated based on both houses. The opportunity for women to participate in governance is an indicator of the extent to which women can use their education and experience to shape the environment in which they live (IPU, 2020).

Our indicators do not map precisely to the domains of *protection*, *realization*, and *utilization*, as several of them express outcomes in more than one domain. ECE attendance, for example, is included as an indicator of *protection*, but could also be thought of as an indicator of *realization*. Life expectancy could be considered a measure of *protection* over the life course, or as a necessary condition for each of the domains. We opted for the latter, but recognize the arguments for the former. We use measures of mortality, as these are more sensitive to sex differences, in each life stage.

The indicators are from different age cohorts. They do not represent the experience of a single cohort over their life. Rather, they provide an indication of states of cross-sectional inequality, as reflected in available current data. This is a limitation, especially for the *utilization* domain, which is likely to reflect historical inequalities in *protection* and *realization* that probably were different from current inequalities. But many countries have no longitudinal data to follow individuals through adulthood and, even if they did, they would characterize early life contexts decades previously, not recently.

4 | FINDINGS

The lead indicators for each of the domains are mapped in Figures 2–6; the country-level results are reported in Table A1 in the appendices. Blue indicates where females as a group are ahead in that country, green where outcomes between the sexes are similar, and red where females are behind.

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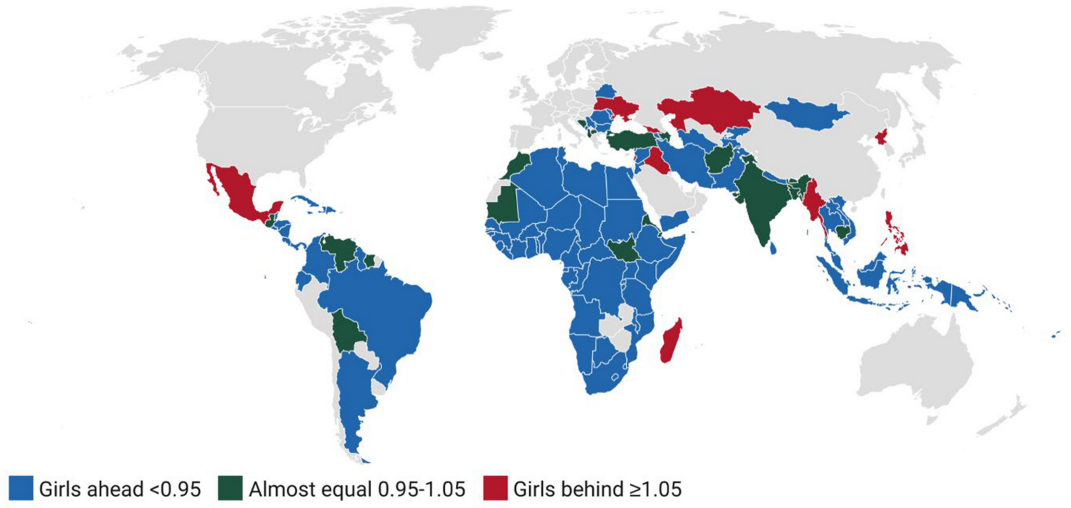


FIGURE 2 Stunting (height-for-age z-score (HAZ) < −2 SD below medians for well-nourished populations) for children under five years of age, by gender in low- and middle-income countries.

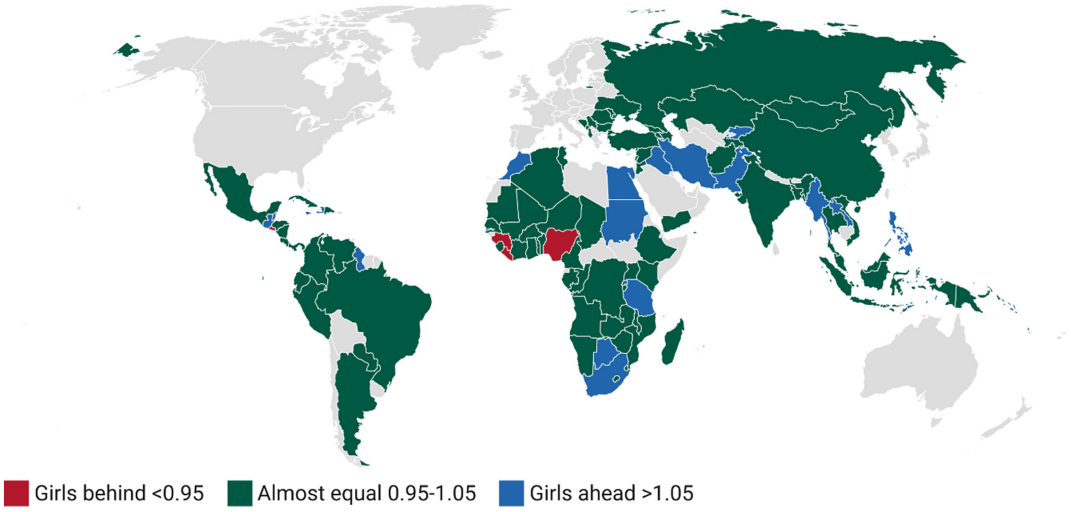


FIGURE 3 Harmonized Learning Outcome (HLO), by gender in low- and middle-income countries.

In most LMICs, girls are less likely to experience stunting than boys, as shown in Figure 2.

Figure 3 shows where girls are behind, almost equal to, or ahead of boys in standardized test scores. Females who are in school in LMICs are achieving equal, if not better, scores compared to their male peers. While the subject-score data included here differs from country to country, the in-country gender comparison is always based on the same subject.

Figure 4 shows where girls are ahead or behind in terms of secondary school completion. In Africa, excluding Southern Africa and most parts of South Asia, girls are behind. In most other LMICs, they are ahead. Across all LMICs, girls and boys have an almost equal chance of completing secondary school.

Figure 5 illustrates that women are behind men in earnings in almost every LMIC. In only 10 out of 86 LMICs included do women earn more than men on average (ratio > 1.05), namely Burundi, Ecuador, Haiti, Honduras,

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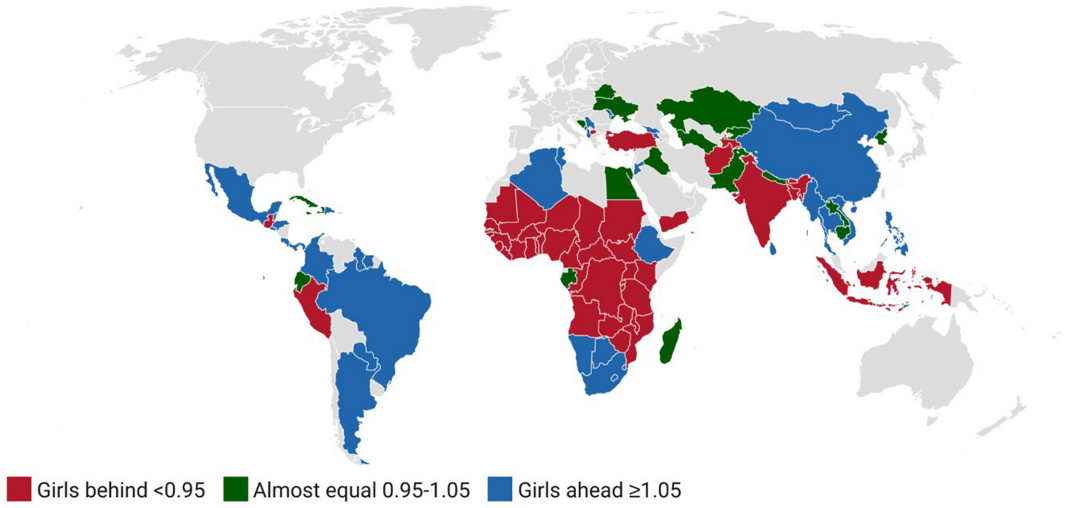


FIGURE 4 Completion of upper secondary school, by gender, in low- and middle-income countries.

Liberia, Maldives, Samoa, Timor-Leste, Philippines, and Zambia. These countries make up less than 7% of the population of the 86 countries with adult earnings data.

Figure 6 shows the percentages of seats in parliament held by women compared to men. Except for Bolivia, Cuba, and Rwanda, there are fewer women parliamentarians than men.

Table 2 shows the results, by region, for each of the indicators. The trend across indicators echoes the patterns of the lead indicators. In the *protection* domain, girls are almost always faring as well as or better than boys. The same is true in the *realization* domain, with important regional differences, notably girls being behind in countries across South Asia and sub-Saharan Africa (SSA). In the *utilization* domain, women as a group are mostly behind men.

5 | DISCUSSION

The data we use are not new. What is new is that we consider the data together with a focus on differences across lifecycle stages, on the continuum from childhood to adulthood, and interpret them within a conceptual framework that distinguishes between *protection*, *realization*, and *utilization* of human potential, recognizing that the three are progressive and inter-related.

Unlike other population measures of gender inequality, our life-course approach highlights that on average, girls in many LMICs are faring better than boys during their younger years, and generally remain ahead throughout childhood and early adolescence. This pattern is seen in the lead indicators and most of the secondary indicators that we include. The patterns suggest that girls and young women, on average, approach adulthood with a higher proportion of their human development *protected* and *realized* than do boys and young men. It also suggests that girls and women are limited in their opportunities to *utilize* their *realized* human development in adolescence and adulthood. There are regional variations in these patterns; in South Asia and SSA, for example, gendered constraints of human development begin, on average, earlier than in other regions. In these regions, girls are less likely than boys to enrol in school and access other services they need to realize their full potential and are constrained in using the potential they do realize.

It is important to underline that these results are on average and relative. For many girls, the constraints on their development come much earlier in life and for others much later. Also, as the results are relative, where girls or boys are *doing better* should not be interpreted as either girls or boys *doing well*.

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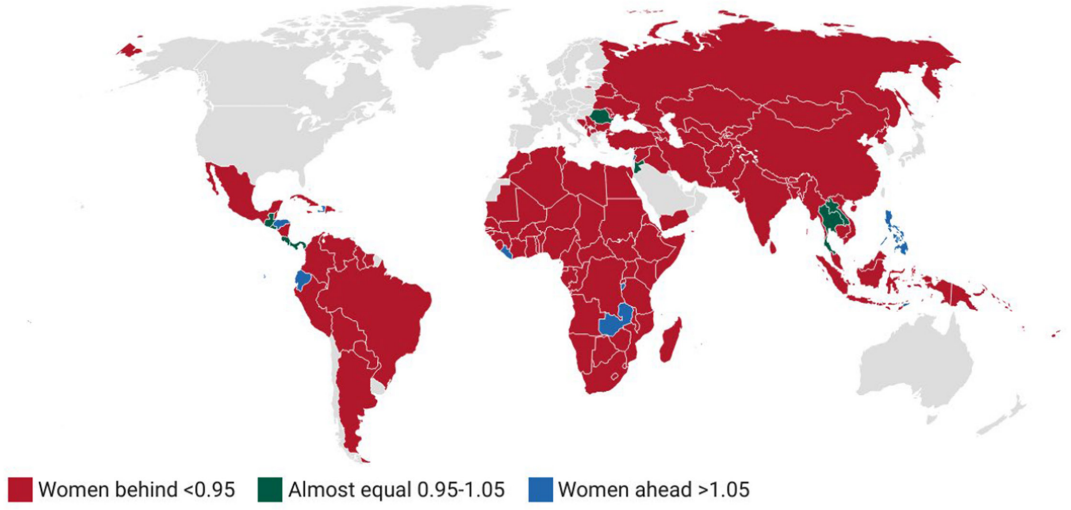


FIGURE 5 Adult earnings, by gender, in low- and middle-income countries.

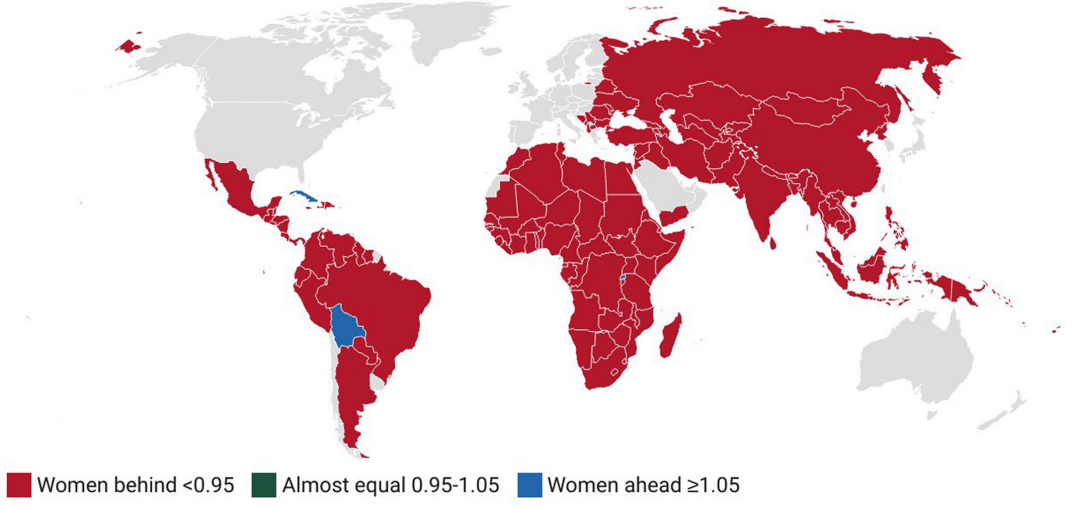


FIGURE 6 Parliamentary seats, by gender, in low- and middle-income countries.

Our analysis suffers from other limitations, not least of which is that the indicators for each domain are imperfect. We do not have a direct measure of protection, realization, and utilization. The indicators included are the best available proxies for each domain. To highlight the need for careful interpretation of these indicators, we examine each lead indicator in more detail before returning to discuss the implications of our findings for the debate on the appropriateness of only prioritizing girls' schooling.

The lower risk of stunting among girls in LMICs is well documented, particularly in SSA, although there is no consensus about why or whether there are gender differences in associations with stunting that change with children's age (Alderman, 2021; Astatkie, 2020; Bork & Diallo, 2017; Duc & Behrman, 2023; Svedberg, 1990; Takele et al., 2019; Thompson, 2022; Thurstans et al., 2020; Wamani et al., 2007). Boys' comparative vulnerability to stunting has been hypothesized to be due to a combination of biological and social factors that place them at a disadvantage compared to girls (Bork & Diallo, 2017; Garenne et al., 2019; Svedberg, 1990;

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TABLE 2 Female-to-male ratio of indicators of human development protection, realization and utilization by World Bank region, for low- and middle-income countries.

	LMIC	EAP	ECA	LAC	MENA	SA	SSA
Protection							
Birth registration	0.99	1.00	1.00	1.00	1.00	1.00	0.98
Stunting	0.92	0.95	0.87	0.91	0.89	0.96	0.85
Under-5 mortality rate	0.89	0.86	0.82	0.81	0.87	0.99	0.85
Early childhood education attendance	1.05	1.10	0.99	1.09	1.03	1.02	1.01
Pre-primary attendance	1.00	1.02	1.02	1.01	1.02	1.02	1.00
Realization							
Years of life lost	0.80	0.65	0.72	0.74	0.81	0.98	0.84
Primary school attendance	0.99	1.00	1.00	1.00	0.99	0.99	0.99
Harmonized Learning Outcome (HLO)	1.01	1.00	1.02	0.99	1.08	1.01	1.00
Secondary school completion	0.96	1.07	0.94	1.11	1.09	0.87	0.82
Secondary school dropout	1.04	0.78	1.02	0.91	1.23	1.20	1.25
Tertiary education enrolment	0.91	1.08	1.14	1.23	0.95	0.73	0.60
Youth literacy rate	0.98	1.00	1.00	1.00	1.00	0.97	0.90
Utilization							
Adult mortality rate	0.67	0.63	0.45	0.53	0.65	0.73	0.80
HIV prevalence	0.67	0.47	0.79	0.49	0.39	0.58	1.42
Youth unemployment	1.13	0.93	1.11	1.38	2.08	1.10	1.11
Labour force participation	0.60	0.77	0.69	0.68	0.24	0.30	0.83
Adult earnings	0.81	0.91	0.77	0.90	0.84	0.74	0.71
Adult unemployment	1.14	0.86	1.03	1.31	2.39	1.12	1.20
Share of unpaid care work	5.78	2.64	2.44	2.94	5.33	9.62	3.48
Parliamentary seats	0.28	0.31	0.24	0.46	0.17	0.19	0.34

Green: Gender equality; Blue: Girls ahead/faring better; Red: Girls behind/faring worse.
LMIC: Low- and middle-income countries.
EAP: East Asia Pacific.
ECA: Europe and Central Asia.
LAC: Latin America and the Caribbean.
MENA: Middle East and North Africa.
SA: South Asia.
SSA: Sub-Saharan Africa.

Thurstans et al., 2020). Thompson (2022) attributes boys' risk of stunting to "biocultural mechanisms," in which social and biological causes are not easily disentangled. Starting before birth, male infants are biologically more at risk of undernutrition; caregivers' responses to this predisposition are shaped by an array of cultural and social factors that in turn shape how girls and boys receive care and feeding (Thompson, 2022). The degree to which these differences are present varies among contexts and declines as socioeconomic advantage increases (Thompson, 2022; Wamani et al., 2007).

The evidence suggests that the gender gap—that is the difference in outcomes for men and women, favouring males in educational attainment—has steadily decreased in LMICs (Buhl-Wiggers et al., 2021; Evans et al., 2019; Grant & Behrman, 2010; Permanyer & Boertien, 2019). Closing the gender gap in schooling is, however, not typically linear. Evans et al. (2019) suggest that historical trends show that the gender gap in schooling often widens

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before it narrows. This is echoed by Baten et al., who state that "at the world region and country level, the expansion of men's education was initially associated with a growing gender gap and subsequently a decline, a pattern we refer to as the 'educational gender Kuznets curve'" (Baten et al., 2021). That is to say, when schooling levels start low for both sexes, an increase in male enrolment and attainment precedes an increase in female enrolment and attainment, while in contexts where men are highly schooled there is typically no gender gap (Evans et al., 2019). In the data we use, in countries where girls are behind boys in schooling, boys are often not far ahead, and for both boys and girls, school completion is poor. As illustrated in Table A2, in countries where girls are behind boys (<0.95) in upper secondary school completion, the average for boys is 29% and for girls is 22%. Where girls are ahead (>1.05) the average for boys is 46% and for girls is 55%. Where girls and boys are almost equal (0.95–1.05) in their secondary school completion, the averages for boys and girls are 62%.

Where boys are averaging higher levels of completed schooling it is the result of them being more likely to be enrolled in school (Jones & Ramchand, 2016), rather than performing better in school. The available evidence suggests that once enrolled in school, girls in LMICs "progress through school on pace with or faster than boys and have equal or greater schooling attainment than boys" (Grant & Behrman, 2010). The reasons why girls match or surpass boys in educational attainment in many countries vary, but are thought to include early language advantages; teaching systems that favour girls' learning; family needs and attitudes towards education; changing opportunity costs of schooling, perceived returns to education for girls versus boys, policies and programmes that reward and encourage girls' education; and labour market conditions (Buhl-Wiggers et al., 2021; Heath & Jayachandran, 2016; UNICEF, 2006). It is noteworthy that there are long-standing gender gaps favouring boys in enrolment and performance in STEM subjects, not limited to LMICs, although it has been suggested that the gender gap in maths disappears in gender-equal societies (Dickerson et al., 2015; Guiso et al., 2008; Meinck & Brese, 2019; Ullah et al., 2021).

In LMICs, women's increased participation in the labour force does not always translate into reducing gender wage gaps that favour men (Kanjilal-Bhaduri & Pastore, 2018; Patrinos & Psacharopoulos, 2020; Terada-Hagiwara et al., 2018). Fewer women than men participate in the formal labour force, with many in the lower-paid informal economy, and women who are employed work fewer hours and earn less than men, often even when similarly qualified and employed in comparable positions (Adelekan & Bussin, 2018; Brixiová Schwidrowski et al., 2021; Comblon et al., 2017; Ntuli & Kwenda, 2020). The barriers to closing gender wage gaps are multiple and differ by context. They include social norms that preclude women from the workforce, participation in work that is unpaid, part-time or informal, work in lower-paying economic sectors that are predominantly female, and the costs of child-bearing (Jayachandran, 2020; Kleven & Landais, 2017; Ortiz-Ospina & Roser, 2018; Terada-Hagiwara et al., 2018). An analysis of 117 countries found that women are more likely to participate in the labour market if there are paid maternity-leave schemes, there are higher pre-primary enrolments, and less religiosity (Besamusca et al., 2015).

The number of women in politics has increased over time. Globally, 134 countries have some form of constitutional, electoral, or political party quota to increase the number of women representatives in politics (Hughes & Paxton, 2019; International IDEA et al., 2022). However, there are still consistently fewer women in politics than men. Although quotas have increased women's participation in politics, they require sufficient political will and support from public or informal networks, along with a social climate that encourages women to run for office (Clayton, 2021; Dahlerup et al., 2013; Kilimo, 2022; Tripp & Kang, 2007). Democracy, in and of itself, does not improve women's political representation, as non-democratic countries can, by decree, ensure a high proportion of women in legislatures, even without public support (Fallon et al., 2012; Hughes & Paxton, 2019; Stockemer, 2011). If we assume that, other things being equal, women are no less eager to take up political positions than men, we can infer that there are socioeconomic or cultural barriers to women's political representation, such as patriarchal norms (Paxton et al., 2020).

The two lead indicators of *utilization* and almost all the secondary indicators, regardless of region, reflect high levels of gender inequality. However, we should be clear that this inequality includes historic consequences of

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inequality in *protection* and *realization*. Today's greater levels of equality in these two early life domains should, hopefully, over time, shift some of the *utilization* indicators towards more equal distributions. Although we hope for these improvements, it is unlikely that incremental changes will be sufficient to fully correct the deep gender inequalities we report. The conclusion, therefore, is that much needs to be done to improve gender equity in *utilization*.

The discussion of the lead indicators highlights that while we must interpret our results with care, the results nonetheless support our argument that we should be cautious when assuming that prioritizing girls' schooling will be effective in addressing gender inequalities. The argument that girls' schooling should be prioritized because of gender-specific barriers that prevent their enrolment in, and completion of, school now holds only in a limited number of settings, and we need to broaden our scope.

The argument, frequently used in the development field, as outlined in the introduction, that investing in girls' schooling should be prioritized because of the high returns is not directly challenged by our results but has been critiqued in the literature.

It is not disputed that investing in girls' schooling leads to large returns (Duflo et al., 2021; Masuda & Yamauchi, 2020; Mensch et al., 2019; Psacharopoulos & Patrinos, 2018). These returns are generally higher than for boys' education (Monkman & Hoffman, 2013; Psacharopoulos & Patrinos, 2018; Schultz, 2002). The question is whether this pattern of returns should lead to the prioritization of girls' schooling.

This type of argument, often referred to as a business case, has been powerfully critiqued by feminist economists as the "feminization of responsibility." This critique has two components. First, it is argued that the social benefits are not required to justify investments in girls and women, and second, that the pressure for women to carry the responsibility of generating these social returns is not appropriate (Chant, 2008, 2016; Chant & Sweetman, 2012; Khader, 2018; Wilson, 2015). If we apply this argument to school enrolment, the first component of this critique suggests that, given that basic education is almost universally recognized as a human right, girls and boys should have equal access to school, regardless of the size of social returns for each. The second component of the critique suggests that trying to address social ills such as child marriage, young women's high risk of acquiring HIV, and unequal labour market outcomes via girls' school enrolment places an inappropriate onus on girls to improve these outcomes. Rather, these ills must be tackled directly, which may well include removing barriers to girls' schooling, but this is not the same as enrolling girls in school so that they can address these problems. The former does not place the responsibility of changing the world on girls, while the latter does not discriminate against boys. The limitations of the business-case approach are apparent if taken to its full conclusion, which would suggest higher rates of investment in populations where the returns are likely to be largest, for example in urban areas, and lower rates for populations which are unlikely to see high returns, such as the profoundly disabled and the socially excluded.

The business-case approach and its feminist critique have been further critiqued by Maithreyi et al. (2022) as framing girls as unwittingly "responsibilised" or as victims in need of "rescue." They suggest that both approaches are limited by an individualized concept of agency, and that a relational understanding may be more appropriate. They suggest that interventions that seek to empower girls should "restructure relationships and the ways in which power is held within society" (Maithreyi et al., 2022). Such changes in the relations of power hold the key to agency but empowerment interventions do not "preclude the range of possible actions, thus neither straightforwardly leading to 'rescue' or 'responsibilisation'" (Maithreyi et al., 2022). We suggest that our results dovetail with this argument by highlighting how constraints on *utilization* limit the benefits of improvements in education/*realization*.

Given the weaknesses in the investment case approach and the fact that girls are often ahead of boys in terms of school completion, we argue for the need to move away from a focus on girls' enrolment. Gender-responsive approaches can play a key role in starting to address constraints on women's utilization but need to be complemented by gender-transformative approaches that seek to act on the context beyond the classroom. This should be done without unfairly ignoring boys' right to education.

Harmful gender norms, and gendered barriers, have shared and distinct impacts on girls' and boys' schooling (Barker et al., 2012; Buhl-Wiggers et al., 2021; McCleary-Sills et al., 2015; Psaki et al., 2022; UNICEF, 2006;

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Welmond & Gregory, 2021). A focus on education for all should not lead to minimizing these differences. For example, while school feeding may help both boys and girls, boys may benefit more from interventions to reduce child labour and girls from decent sanitation facilities at schools. Critically, gender differences across school subjects should be considered in a gender-responsive approach, addressing the challenges that girls face with STEM subjects (Ullah et al., 2021). If not, subject choices in school can constrain options at the tertiary level and ultimately career choices (Dasgupta & Stout, 2014). Moreover, women may be more vulnerable than men in times of stress and a gender-responsive approach needs to account for this. For example, the COVID-19 pandemic appears to have adversely affected girls and women through social mechanisms to a greater extent than boys and men, even though men may be more vulnerable biologically (Alon et al., 2020; Flor et al., 2022; McCoy et al., 2021). Given the economic drivers, it may be best to pursue gender-responsive interventions for the poorest girls and boys (Grant & Behrman, 2010; Jones & Ramchand, 2014; Psaki et al., 2018). In contexts of adversity, boys and girls are vulnerable, and while some may be less or more so, the fact remains that both need support.

Gender-responsive interventions to enrolment and completion should be complemented by gender-transformative interventions to disrupt harmful gender norms affecting girls and boys in and outside classrooms (Barker et al., 2007; Heymann et al., 2019; Kågesten & Chandra-Mouli, 2020; Levy et al., 2020). This is because focusing on girls' schooling (*realization*) bypasses the tough challenge of improving *utilization*. A focus on schooling essentially asks girls to be and do better rather than asking for the improvement of the environments in which their potential should be realized and utilized. We are also discriminating against boys in the process. In the final analysis, in order to tackle gender inequality and maximize human development for boys and girls over their lives, we must tackle challenges outside the classroom. If we are committed to addressing gender inequality, there is a need for major changes across many areas of society to improve *utilization* of human potential, and there is guidance pointing to effective approaches.

The UN Secretary General's High-Level Panel on Women's Economic Empowerment (2016) outlines strategies clustered into seven focus areas: (1) addressing adverse social norms; (2) legal protection and reforming discriminatory laws and regulations; (3) recognizing, reducing, and redistributing unpaid work and care; (4) building assets; (5) changing business culture and practice; (6) improving public-sector procurement and employment; and (7) strengthening visibility, collective, voice, and representation (2016). Other suggestions include supporting women in school-to-work transitions, such as giving young women information about jobs; assistance with networking; and improving the education system to better prepare girls for their futures; and employing more women in the public and private sectors (Carvalho & Evans, 2022). Addressing the constraints on *utilization* associated with economic participation would have major implications for many women's freedom. First, because economic restrictions limit many aspects of the *utilization* of potential; and secondly, because addressing the barriers to economic participation, such as the absence of day care, can free up women's time for activities beyond employment.

Economic constraints are, however, not the only limits on utilization, and interventions in other fields are required. To improve women's agency—their freedom of choice—interventions across domains need to be designed that "intentionally address the constraints that women face" (Chang et al., 2020). These include policies and programmes designed to reduce violence against women and improve access to sexual and reproductive health (SRH) services (Klugman et al., 2014; Razavi, 2021). Violence is a direct curtailment of freedom and hinders the uptake of opportunities because of fear or being physically prevented from doing so (Caldwell et al., 2012; Dutton et al., 2006; Lagdon et al., 2014; Vyas, 2013). Access to comprehensive SRH health services enables women to have more control over their lives, enhancing not only economic participation but freedom to *utilize* their human development in ways they choose (Gammage et al., 2020; Upadhyay et al., 2014).

Gender inequality in *utilization* may be further addressed through comprehensive social protection mechanisms (Enríquez, 2021; Razavi et al., 2012). Social protection supports care, reduces the pressure on women, and frees up resources for other purposes (Holmes & Jones, 2013). The achievement of these goals, however, should not be left to chance. If not expressly considered in the design of programmes, social protection can reinforce gender inequality by supporting women only when they are mothers and disincentivizing job-seeking for fear

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of losing grants (Enríquez, 2021). Other opportunities can be identified through gender-budgeting exercises, but it is important that these are not limited to the social sectors, as opportunities to address inequality have been identified in a range of sectors, including water and sanitation, transport, and clean energy (Elson, 2021; Seguino, 2017). Moreover, there are opportunities that can be found beyond government; for example, support for trade unions has been seen to lower wage gaps between men and women (Hayter & Weinberg, 2011; Kucera, 2021). The interventions required to improve *utilization* require investment. Efforts to strengthen fiscal options in LMICs are therefore critical (Razavi, 2021). Indeed, resisting austerity and addressing tax evasion by wealthy individuals and large firms may be more important targets for promoting gender equality than focusing on girls' schooling.

6 | CONCLUSION

In this article, we have taken a step back and examined gender inequality in human development outcomes over the life course. In so doing we have highlighted how gender inequality is often driven by constraints on women's freedom to use their potential. This contrasts with the focus of international development approaches, which target improvements in the realization of girls' potential via increased school enrolment. This focus is inadequate and unfair to boys. We have argued that we need to invest in improving enrolment for girls and boys and tackle gender inequality through gender-transformative intervention within and way beyond the classroom.

AUTHOR CONTRIBUTIONS

Chris Desmond: Conceptualization, writing- original draft preparation. Sara Naicker: Writing- reviewing and editing, data curation, formal analysis. Kathryn Watt: Writing- reviewing and editing, data curation, visualization. Jere Behrman: Conceptualization, writing- reviewing and editing. Linda Richter: Conceptualization, writing- reviewing and editing.

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DATA AVAILABILITY STATEMENT

All data reported herein are publicly available.

ETHICS STATEMENT

This paper reports analysis of secondary sources.

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