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WOMEN IN POLICYMAKING: SOCIAL SPENDING AND OUTCOMES

NCAER Working Paper

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Abstract

This paper assesses the impact of women's participation in national governments (as parliamentarians and ministers) on social spending and outcomes in emerging market and developing economies (EMDEs). We find that the representation of women in politics has increased over time, with substantial variation across regions and countries. Latin America and the Caribbean lead among EMDE regions, while Middle East and Central Asia and Emerging and Developing Asia have lower female representation. The higher shares of women in parliaments and cabinet positions go hand-in-hand with increased government health spending, both as a share of GDP and total spending. The results on education outlays are broadly similar. Greater representation of women in policymaking is also associated with positive effects on social outcomes, such as a reduction in infant and under-five mortality rates, greater access to basic water services, and higher learning-adjusted years of schooling. The case studies presented in the paper highlight the importance of identifying national priorities on health and education and increasing the share of female political leaders (including through quotas where gender biases are entrenched).

Keywords: women in parliament; women in cabinets; social spending; health outcomes; education outcomes

JEL Classifications: H51; H52; I00; J16

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1. Introduction

Rising inequality within nations, the COVID-19 pandemic, and escalating regional and global conflicts have taken a heavy toll on low-income households in emerging market and developing countries (EMDEs). Looking forward, the modest outlook for global economic growth, combined with high levels of public debt, rising military spending, and declining foreign aid, will limit the scope in developing countries to reduce poverty and improve social outcomes. Against this backdrop, creative solutions to improving social outcomes are needed.

Studies have shown that unlocking the potential of female economic empowerment can raise economic growth, reduce inequality, and build financial resilience (Goyal and Sahay, 2023). In this paper, we explore a related question—the impact of greater political empowerment of women on public spending on health and education. A key question we explore is whether female political empowerment can raise social spending and outcomes in EMDEs, even after taking into account their budgetary constraints.[1]

The level of public spending a country can achieve depends on its level of development and the associated capacity to raise tax revenues to finance this spending. At the same time, there are institutional, cultural, and political forces that influence the level and quality of spending. In this paper, we explore one such factor that has received relatively little attention and that may influence the composition of spending across countries: the degree to which women participate in government.

Country-level studies in EMDEs suggest that greater female representation in government can alter policy priorities (Hessami and Lopes da Fonseca, 2020). Based on a number of studies on India, the literature finds that greater female leadership increases spending on public goods and is associated with better health and education outcomes for children (Beaman et al. 2007, 2012; Chattopadhyay and Duflo, 2007). Spending on education (Clots-Figueras, 2012) and health (Bhalotra and Clots-Figueras, 2014) is also higher when there are more women in policymaking.

Relatively few studies have tackled this issue from a cross-country perspective. To our knowledge there is only one recent study—Clayton and Zetterberg (2018), covering the period 1995-2012 for both advanced and developing economies. This study assesses the impact of the adoption of quotas for female legislators on the share of health spending in total government outlays. Our study adds to this literature, building on models of the economic determinants of health care and education spending in developing economies (Clements et al., 2013; IMF, 2017).

Our analysis focuses on the impact of women's participation in government cabinets and national legislatures across EMDEs on social spending. We also assess the impact of a composite indicator of political empowerment, based on existing data.[2]

We also provide an assessment of whether greater political participation of women has an independent effect (beyond its impact on social spending) on selected health outcomes (under-5 mortality and infant mortality), education outcomes (enrollment rates at the upper secondary level) and access to basic water services. For the two variables on health, our analysis helps isolate the impact of greater female political participation on factors other than the level of health spending (such as the composition and efficiency of health spending) on health outcomes. Previous research (Baldacci et al., 2008) identified gender equality as a

[1] Social spending is defined as spending on health and education.
[2] The spending data are drawn from the World Bank's World Development Indicators database.

determinant of health outcomes, using the share of female students as a proxy. Our study, in contrast, uses a more direct measure of gender political participation.

The broad picture that emerges is that political empowerment for women in EMDEs, while lower than in advanced economies (AEs) has risen over time, albeit with substantial variation across regions and countries. Education and health spending as a share of GDP have also risen over time in all regions. EMDEs have spent much more on education than on health, which has also reflected in impressive education outcomes in these countries. Across EMDE regions, Sub-Saharan Africa (SSA) continues to lag behind in health and education spending (with the exception of education spending as a share of total expenditure) as well as in health and education outcomes.

Our econometric results suggest that an increase in the share of women in parliament and as a share of ministers is associated with higher health and education spending, both as a share of GDP and as a share of total spending. In health, a 20-percentage point increase in the share of women in parliament goes hand-in-hand with an increase in health spending by 0.4 percentage point of GDP, a significant increase from its average level in 2019 (2.8 percent). Raising the share of women as ministers by 20 percent would have a broadly similar effect. For education spending, the results for raising the share of women in parliament also has a positive effect of a similar magnitude, although there is no statistically significant effect from raising the share of women that are ministers.

We also find a positive impact of greater female representation in government on socio-economic indicators. A greater share of women in parliament is associated with a reduction in infant and under-5 mortality rates and higher access to basic water services, even after controlling for the level of current health spending (which includes both public and private spending). These results suggest that raising the percentage of women in parliament may help improve the effectiveness of government health and infrastructure spending. Increasing the share of women in parliament is also associated with improvements in learning-adjusted years of schooling (LAYS). In sum, our results suggest that greater representation of women in policymaking may not only raise the level of social spending, but also how effectively this spending translates into better outcomes. This is confirmed by the case studies presented in this paper.

The remainder of this paper is structured as follows. In Section 2, we examine trends in the representation of women in politics, including a breakdown by region. In Section 3, we describe changes in health and education spending in EMDEs over the past 20 years, as well as trends in education and health outcomes over the same period. Section 4 discusses three country case studies to draw insights into policies that may have led to greater female representation of women in policymaking, higher social spending, and better social outcomes. Section 5 presents the methodology and data, and Section 6 the econometric results. The final section concludes and presents policy implications of the paper.

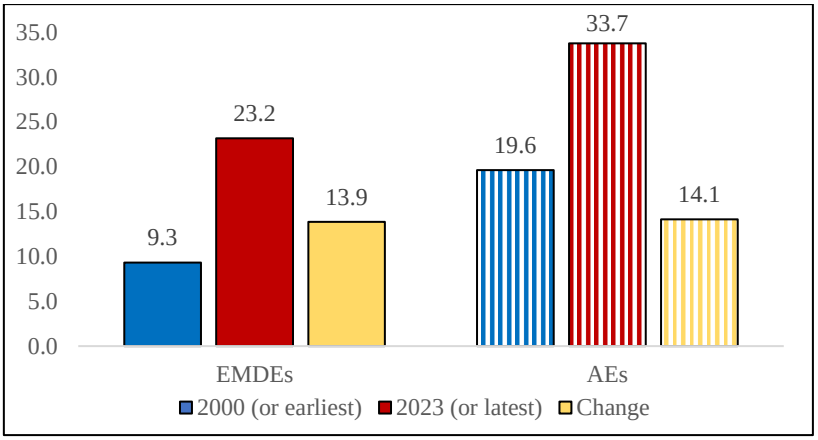
2. Trends in representation of women in politics[3]

The representation of women in politics across the world has trended upwards over time, though there is substantial variation across regions. Figure 1 shows that the share of women in national parliaments in EMDEs are about 23 percent (as of 2023) compared to nearly

[3] The IMF Gender Database, collated from various primary sources (such as the International Labour Organization (ILO), The World Bank and others) provide these data, which reveals substantial variation across countries and regions.

34 percent in AEs. This share has increased for both EMDEs as well as AEs since 2000 by about 14 percentage points, though the EMDEs started from a lower base in 2000.

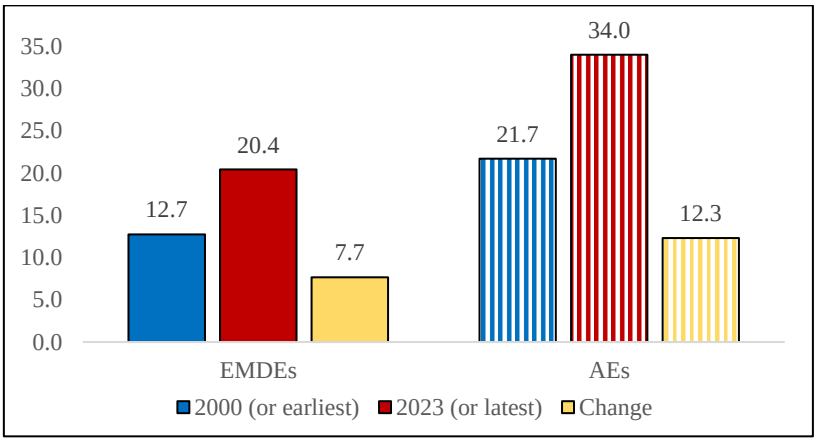
Figure 1: Proportion of Seats Held by Women in National Parliaments in EMDEs and AEs, 2000-2023



Source: IMF Gender Database.
Note: EMDEs=Emerging Market and Developing Economies; AEs=Advanced Economies.

Figure 2 below indicates that the share of women in ministerial level positions has also increased across the world, rising at a faster pace in AEs. As of 2023, this share was 20 percent for EMDEs and 34 percent for AEs.

Figure 2: Proportion of Women in Ministerial Level Positions in EMDEs and AEs, 2000-2023

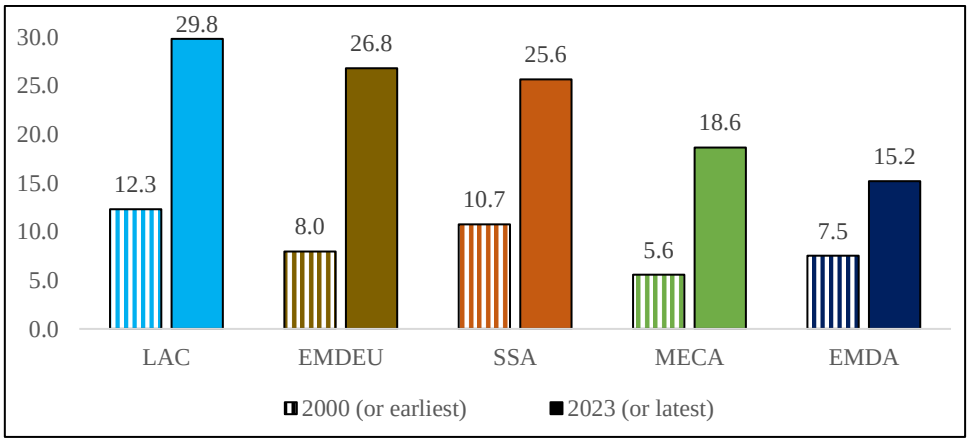


Source: IMF Gender Database.
Note: EMDEs=Emerging Market and Developing Economies; AEs=Advanced Economies.

Figures 3 and 4 below present the same indicators broken down by regions in EMDEs. Latin America and the Caribbean (LAC) leads among the EMDE regions at nearly 30 percent in both National Parliaments and as Ministers, having increased at a fast pace since 2000. In contrast, Middle East and Central Asia (MECA) and Emerging and Developing Asia (EMDA) have substantially lower female representation, likely reflecting cultural, social and legal

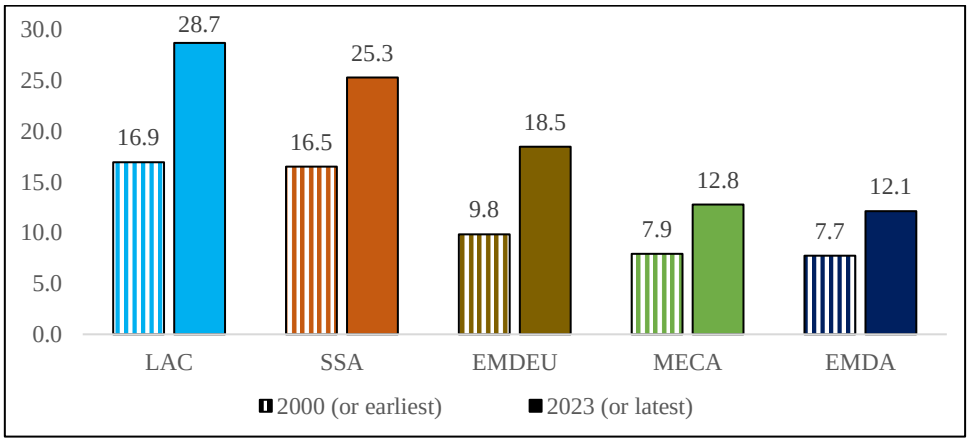
barriers faced by women. EMDA has the lowest share of women in national parliaments at 15 percent and in ministerial positions at 12 percent. SSA has performed well relative to peers, moving ahead of all regions except LAC in appointing women to ministerial positions.

Figure 3: Proportion of Seats Held by Women in National Parliaments in EMDE Regions, 2000-2023



Source: IMF Gender Database.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

Figure 4: Proportion of Women in Ministerial Level Positions in EMDE Regions, 2000-2023



Source: IMF Gender Database.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

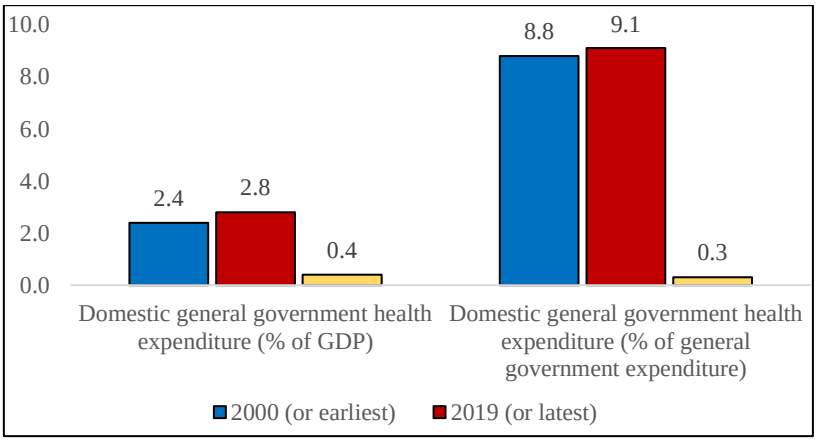
Country level data indicates that as of 2023, Rwanda in SSA stands out with over 60 percent of its seats in national parliaments being held by women. Albania ranks highest for female ministers at over 65 percent. Rwanda and Albania in Emerging and Developing Europe (EMDEU) have formal quotas mandated for these positions at 30 percent. Countries like the United Arab Emirates, Andorra, and Nicaragua have shown remarkable progress since 2000, achieving significant gains in female parliamentary representation reaching 50 percent or

higher by 2023. Similarly, with regard to ministerial positions, Albania (67 percent), Nicaragua (62.5 percent), and Mozambique (55 percent) have advanced the fastest since 2000.

3. Trends in health and education spending and outcome indicators

Health expenditures in EMDEs, both as shares of GDP and general government expenditure (GGE) have increased marginally during the 2000-2019 period (Figure 5).[4] This spending stands at 2.8 percent of GDP and a little over 9 percent of GGE, on average. Relative to AEs, they are smaller fractions of both GDP and GGE (the average for AEs is 6.4 of GDP and nearly 16 percent of GGE).

Figure 5: General Government Health Expenditure in EMDEs, 2000-2019

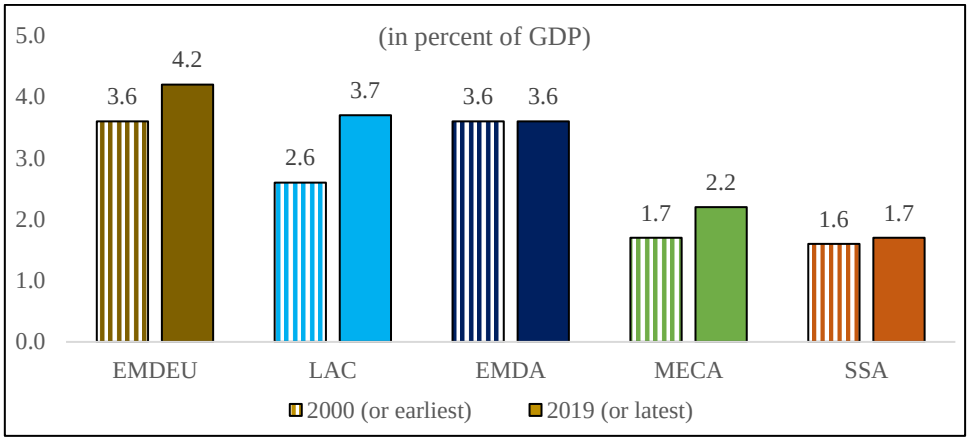


Source: Authors' calculations and World Bank, World Development Indicators.
Note: EMDEs=Emerging Market and Developing Economies.

Figures 6 and 7 below present government health spending by region as a share of GDP and in percentage of general government health expenditure. Data are for 2019 or the latest year available and for 2000 or the earliest available for countries in EMDEs. Across all regions, spending on health as a percentage of GDP has increased or stayed the same during the 2000-2019 period (Figure 6). However, as a share of GGE, health spending has fallen marginally in two regions—SSA and EMDA (Figure 7). EMDEU spends the highest at 4.2 percent, followed by LAC at 3.7 percent as a share of GDP. As a share of GGE, health spending is highest in LAC at 13.5 percent, followed by EMDEU at 11.2 percent. SSA spends the least by both measures at 1.7 percent of GDP and 6.8 percent of GGE, respectively. The low spending in Sub-Saharan Africa is not surprising given high levels of indebtedness in a majority of these countries. The latest World Health Organization report notes that out-of-pocket spending remained the main source of health financing in 30 low- and lower middle-income countries.

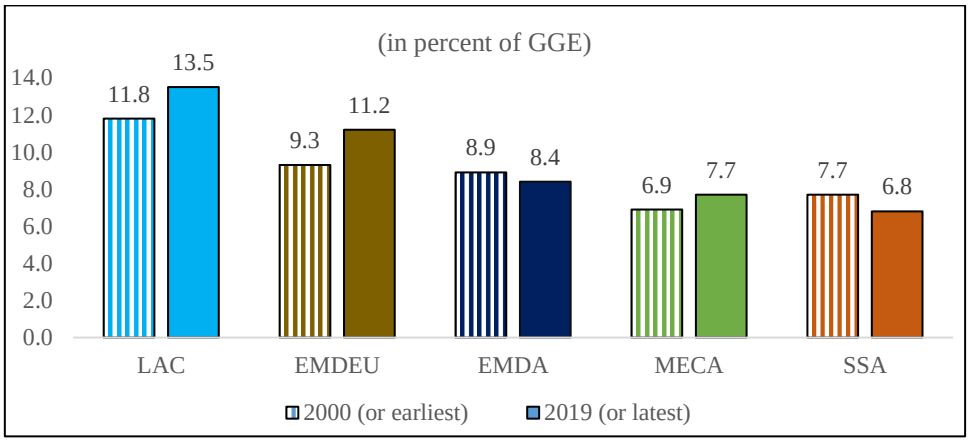
[4] We examine the period from 2000 to 2019, rather than data through 2022-23, to assess long term trends and avoid the one-off nature of spending increases that were observed in response to the COVID pandemic. We examine the changes in social outcome indicators until 2019 for a similar reason. In many countries, indicators have improved further since 2019.

Figure 6: General Government Health Expenditure in EMDE Regions, 2000-2019



Source: Authors' calculations and World Bank, World Development Indicators.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

Figure 7: General Government Health Expenditure in EMDE Regions, 2000-2019

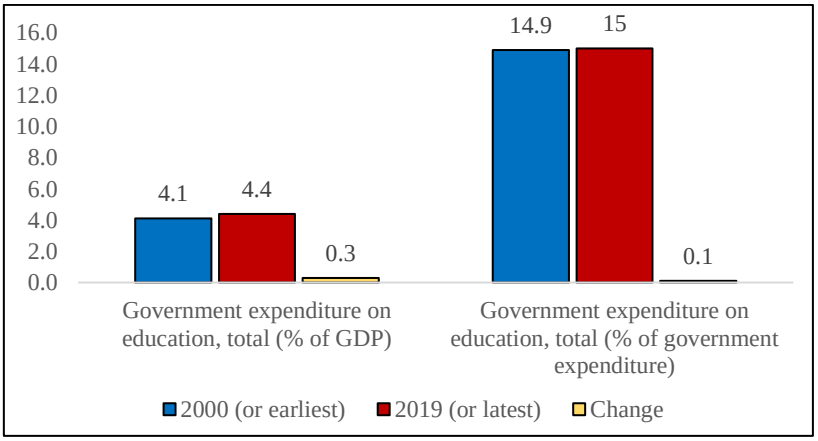


Source: Authors' calculations and World Bank, World Development Indicators.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

Country-level data indicates that small island economies in Asia spend the highest on health. Tuvalu ranks highest as a share of GDP (15.6%), followed by Nauru (10.9%) and Kiribati (9.4%). Costa Rica leads in allocating a significant proportion (24.1%) of its total government expenditure to health. Panama (21.9%) and Iran (21.4%) follow Costa Rica, respectively.

With regard to changes over the two decades (2000-2019), Ecuador and Suriname have increased health spending by 3.9 and 3.3 percentage points of their GDPs respectively, while Iran witnessed the highest jump (10.4 percentage points) since 2000 as a share of its total government expenditure, reaching 21.4 percent.

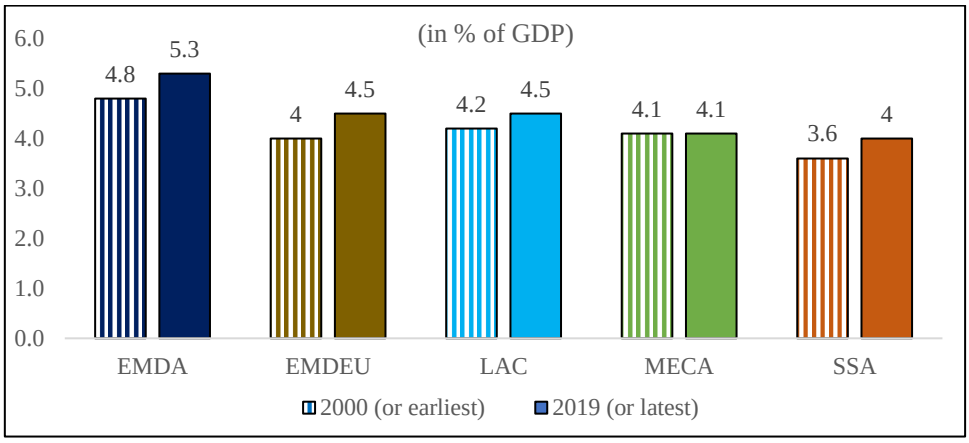
Figure 8: Government Education Expenditure in EMDEs, 2000-2019



Source: Authors' calculations and World Bank, World Development Indicators.
Note: EMDEs=Emerging Market and Developing Economies.

Spending on education by governments in EMDEs (Figure 8) is generally higher relative to health expenditure by both measures (as a share of government expenditure and as a share of GDP). Education spending has increased over the past two decades, both as a share of GDP and total government expenditure. It currently stands at nearly 4.4 percent of GDP and 15 percent of total government expenditure. Relative to AEs, they are smaller in terms of GDP and larger in terms of GGE (the average for AEs is 4.9 percent of GDP and 12.8 percent of GGE).

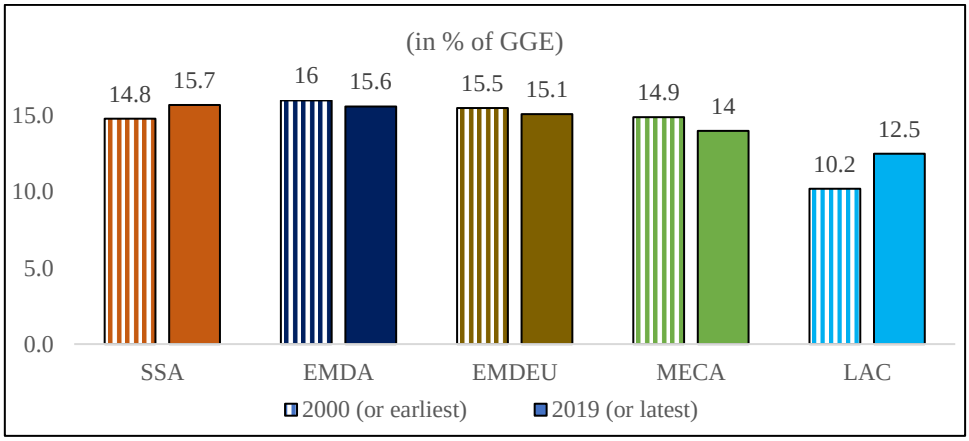
Figure 9: Government Education Expenditure in EMDE Regions, 2000-2019



Source: Authors' calculations and World Bank, World Development Indicators.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

There is some variation in spending patterns across regions in EMDEs (Figures 9 and 10). Interestingly, EMDA ranks first in spending on education as a share of GDP at 5.3 percent, and close to the highest in terms of spending as a share of total government expenditure at 15.6 percent. SSA spends the least as a share of GDP at 4 percent but is the highest as a share of total government expenditure (15.7 percent).

Figure 10: Government Education Expenditure in EMDE Regions, 2000-2019

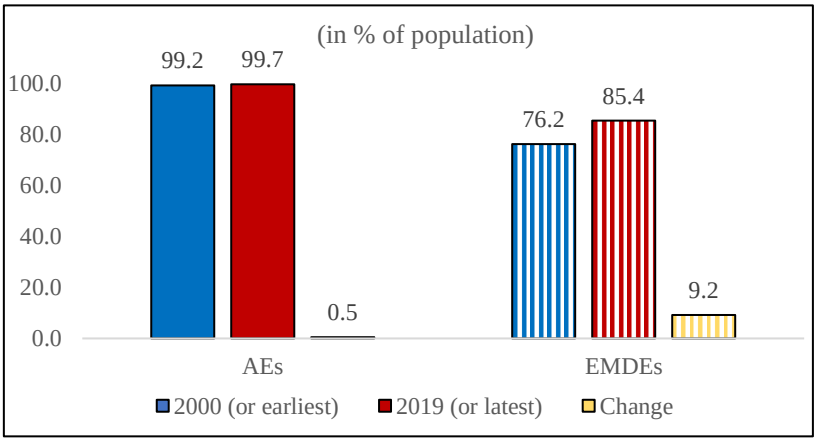


Source: Authors' calculations and World Bank, World Development Indicators.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

Country-level data indicates that three Asian countries—the Marshall Islands (15.8%), Kiribati (12.4%), and Mongolia (11.8%)—lead the way in terms of spending on education as a share of GDP. Mongolia (38.1%), Sierra Leone (35.0%), and Solomon Islands (30%) rank the highest as a share of central government spending. In fact, Mongolia ranks among the top three in terms of increasing its spending on education over 2000-2019 by both measures.

With regard to health outcomes, access to basic drinking water has been near universal in AEs during the 2000-2019 period (Figure 11). It rose by almost 10 percentage points in EMDEs, reaching over 85 percent of the population.

Figure 11: Basic Drinking Water Services in AEs and EMDEs, 2000-2019

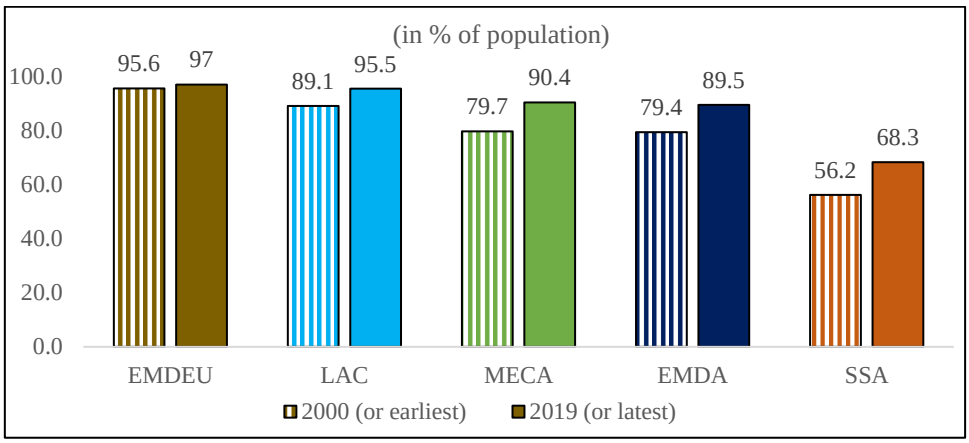


Source: Authors' calculations and World Bank, World Development Indicators.
Note: AEs=Advanced Economies; EMDEs=Emerging Market and Developing Economies.

Within the EMDEs, EMDEU stands out with almost universal access to drinking water for its population (Figure 12), reflecting the inherited socialist system that emphasized the provision of basic public services to its population. Three other regions, LAC, MECA, and EMDA also made progress, recording nearly 90 percent or above. While SSA made some

progress since 2000, it lags behind its peers at less than 70 percent of basic drinking water available for its population in 2019. At the country level, Afghanistan, Mozambique, and Lao PDR, have made substantial progress since 2000 with access increasingly by 44, 40, and 39 percentage points, respectively. By 2019, Afghanistan had reached 72.4 percent, Mozambique nearly 61percent, and Lao PDR over 85 percent.

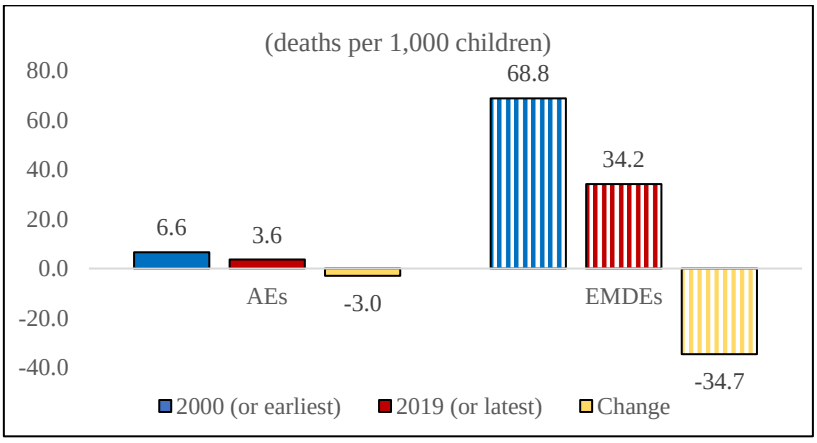
Figure 12: Basic Drinking Water Services in EMDE Regions, 2000-2019



Source: Authors' calculations and World Bank, World Development Indicators.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

Under-five mortality rates in AEs are very low at less than 4 deaths per 1,000 children, having decreased further during the 2000-2019 period (Figure 13). In contrast, while the EMDEs have more than halved the under-five mortality rates during the 2000-2019 period, they remain high at 34 deaths per 1,000 children in 2019.

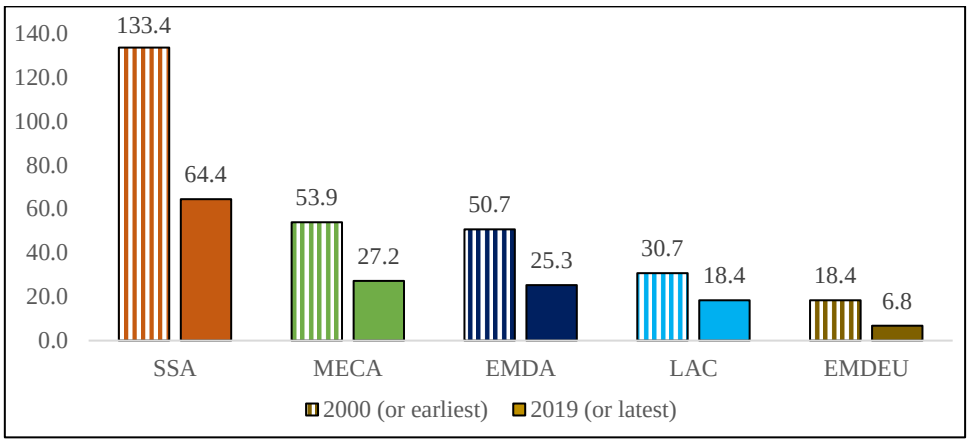
Figure 13: Under-Five Mortality Rates in AEs and EMDEs, 2000-2019



Source: Authors' calculations and World Bank, World Development Indicators.
Note: AEs=Advanced Economies; EMDEs=Emerging Market and Developing Economies.

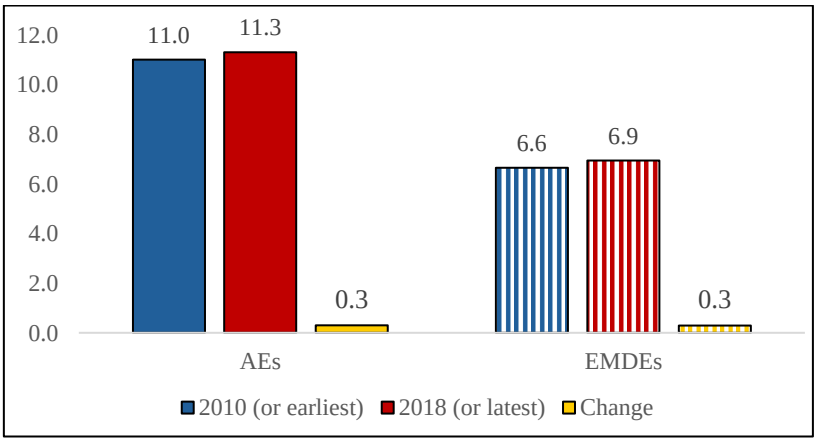
A comparison across EMDEs indicates that SSA stands out among its peers in EMDEs for having achieved the most substantial reduction in under-five mortality rates, but also for its relatively high rate at over 64 deaths per 1,000 children in 2019 (Figure 14). Rwanda, Angola and Malawi in Sub-Saharan Africa show the greatest improvements with reductions of 143, 130, and 129 deaths per 1,000 children since 2000, having dropped to 42, 75, and 46 deaths per 1,000 children by 2019. On the other hand, Niger and Nigeria currently have the highest under-five mortality rates at 117 deaths per 1,000.

Figure 14: Under-Five Mortality Rates in EMDE Regions, 2000-2019



Source: Authors' calculations and World Bank, World Development Indicators.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

Figure 15: Learning-Adjusted Years of Schooling in AEs and EMDEs, 2010-2018



Source: Authors' calculations and World Bank, Human Capital Index database.
Note: AEs=Advanced Economies; EMDEs=Emerging Market and Developing Economies.

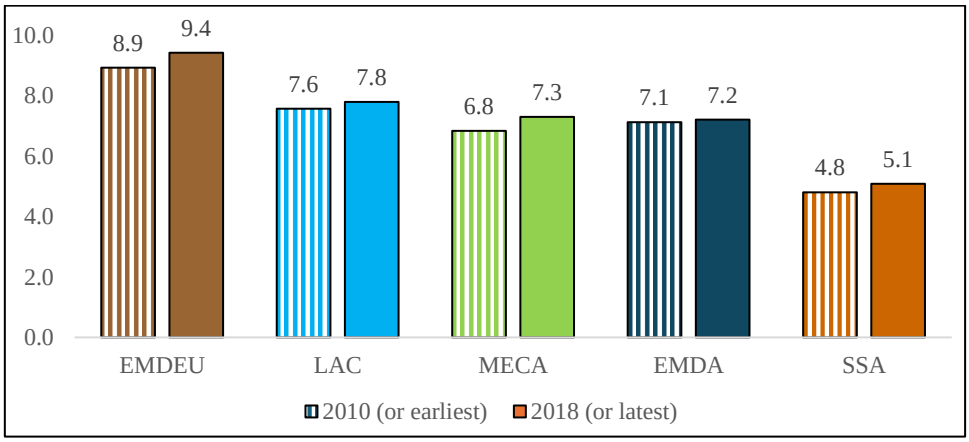
With regard to education outcomes, Figure 15 shows LAYS for the AEs and EMDEs at 11.3 and 6.9 years, respectively in 2018.[5] AEs were already at 11 years as early as 2010.

[5] LAYS measures the number of years a child can expect to complete, with an adjustment for the quality of education (as measured by performance on international test scores). Data are available beginning in 2010.

Leading the way among AEs are Singapore, Japan, Korea with LAYS surpassing 12 years. While the EMDEs improved in the 2010-2018 period by nearly 0.3 years, they still lag the AEs by a substantial margin.

The average numbers for EMDEs conceal substantial variation across the five regions (Figure 16). Not surprisingly, EMDEU, mainly representing former socialist countries which had emphasized basic education as part of their socialist ideology, had the highest LAYS at 9.4 years in 2018. However, LAC, MECA and EMDA have made substantial progress, reaching nearly 7.8, 7.3 and 7.2 years, respectively, by 2018. SSA distinctly lags behind other regions at 5.1 years in 2018. Excluding SSA, the average for the other 4 regions was 8.8 years in 2018. Within EMDEs, Kazakhstan and Russian Federation stand out, with LAYS rising to 11.8 years by 2018, starting from 9 and 9.8 years, respectively, in 2010.

Figure 16: Learning-Adjusted Years of Schooling in EMDE Regions, Total, 2010-2018

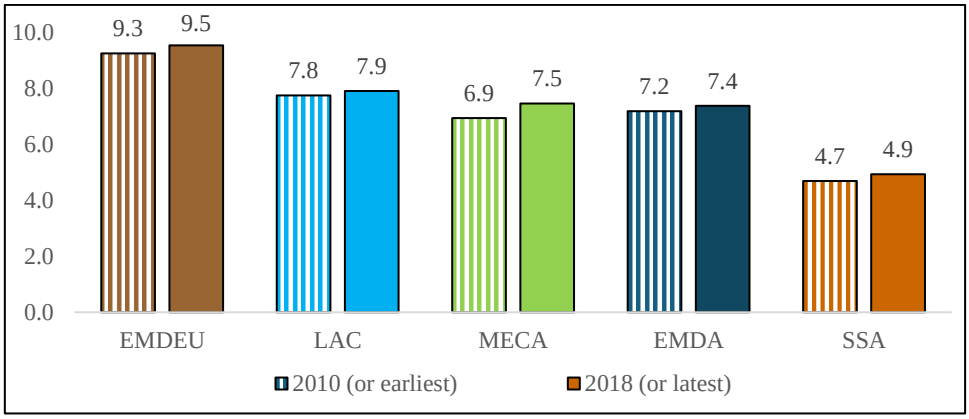


Source: Authors' calculations and World Bank, Human Capital Index database.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

Figure 17 demonstrates the rapid progress in girls' education over the period covered across all regions in EMDEs. In fact, comparing Figures 16 and 17, it is evident that by 2018, women had overtaken men in EMDEU, LAC, MECA and EMDA.[6]

[6] LAYS in EMDEs by Region, Male, 2010: EMDEU=9, LAC=7.4, MECA=6.7, EMDA=6.8, and SSA=4.9 and LAYS in EMDEs by Region, Male, 2018: EMDEU=9.3, LAC=7.6, MECA=7.1, EMDA=7, and SSA=5.

Figure 17: Learning-Adjusted Years of Schooling in EMDE Regions, Female, 2010-2018



Source: Authors' calculations and World Bank, Human Capital Index database.
Note: EMDA=Emerging and Developing Asia; EMDEU=Emerging and Developing Europe; LAC=Latin America and the Caribbean; MECA=Middle East and Central Asia; SSA=Sub-Saharan Africa.

In summary, the broad picture that emerges is that political empowerment for women in EMDEs has risen over time, albeit with substantial variation across regions and countries. Education and health spending as a share of GDP have also risen over time in all regions. EMDEs have spent much more on education than on health, which has also been reflected in impressive education outcomes in these countries. A remarkable feature is the advancement of female education, which was higher than that of males across all EMDEs, except SSA, by 2018. Within regions, SSA continues to lag behind other regions in health and education spending (with the exception of education spending as a share of total expenditure) as well as in health and education outcomes.

4. Country case studies

In this section, we discuss three case studies: two countries where both (i) the share of women in national parliaments and ministerial positions increased by more than twice the average and (ii) substantial increases in social spending and social outcomes were achieved. We also present a third country, India which represents a large emerging market economy with a mixed record on the representation of women and education and health expenditures and outcomes, even though poverty rates have fallen substantially in the last two decades as high growth rates have largely been inclusive. These case studies highlight specific lessons for other countries to improve social outcomes.

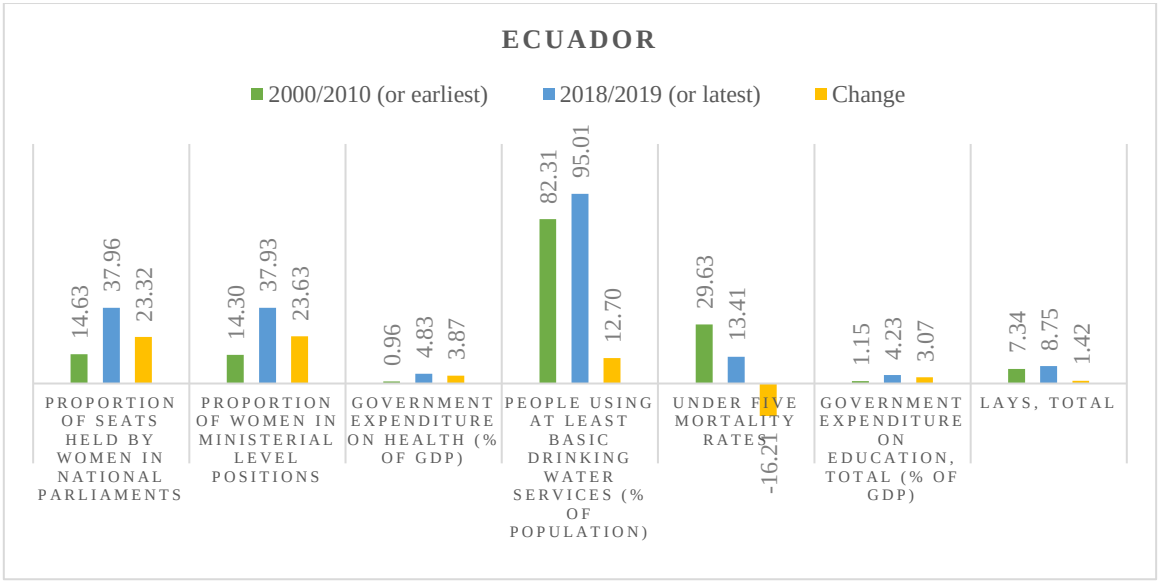
Ecuador[7]

In Ecuador, the proportion of seats held by women in national parliaments, as well as the proportion of women in ministerial level positions, were nearly 40 percent by 2019, increasing by more than 23 percentage points during 2000-2019 (Figure 18). An important factor driving this change was the introduction of quotas.

[7] This section draws on World Bank (2018).

Following the 2008 constitutional reforms that aimed for universal access to healthcare, there were significant investments in public health. Government spending on health increased from less than 1 percent (as a share of GDP) in 2000 to nearly 5 percent by 2019. The Ministry of Health invested in new and renovated hospitals and the expansion of access through a dual system of social health insurance and higher public service provision for the uninsured. Universal access to maternal health services was provided. Public investment in infrastructure also improved access to basic services such as water and sanitation for the underserved population. Access to basic drinking water services increased from 82 percent in 2000 to 95 percent in 2019.

Figure 18: Ecuador: Women in Policymaking, Social Spending, and Social Outcomes



Source: Authors' calculations and World Bank, World Development Indicators, Human Capital Index database.

Ecuador's public education spending has risen rapidly over the past two decades, reaching 4.23 percent of GDP. The 2008 Constitutional Reforms also prioritized free access to education and doubling education funding over the decade. Spending on education has focused on infrastructure, hiring of teachers with appropriate financial compensation, and expanded scholarships in secondary and higher education. As a result, quality-adjusted basic education (LAYS) rose from 7.34 to 8.75 during 2010-2018. Among those aged 30+, illiteracy also fell substantially.

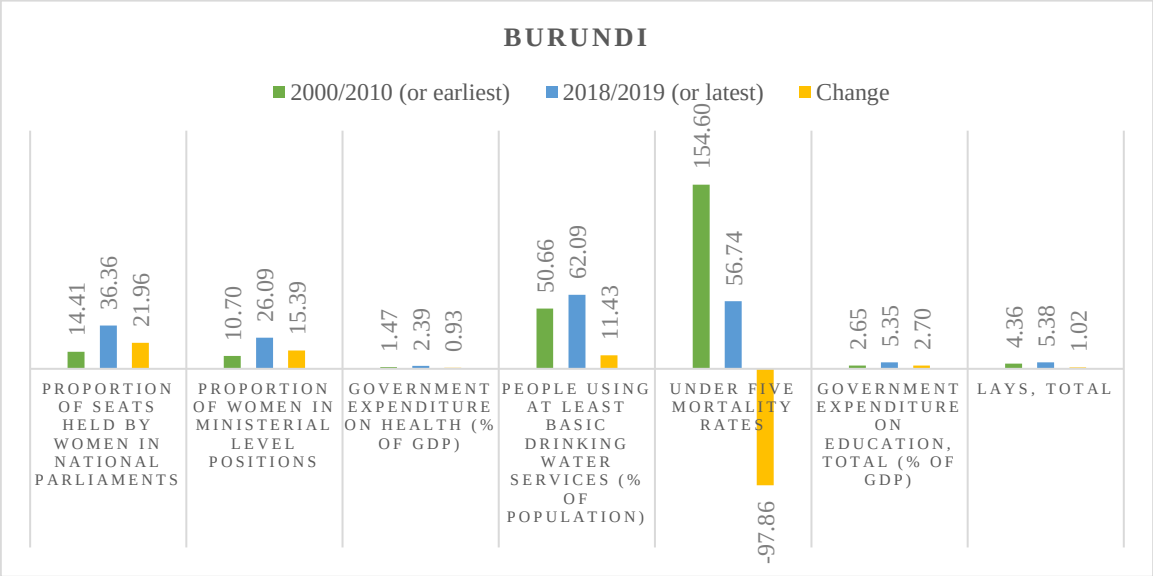
Burundi [8]

In Burundi, the proportion of seats held by women in national parliaments rose from less than 15 percent in 2000 to over 36 percent in 2019 (Figure 19). Since 2005, Burundi has set quotas for its three ethnic groups as well as women in the parliament, central government and municipal administrations. Its constitution states that women should make up at least 30 percent of these institutions.

[8] See World Bank (2017, 2018, 2024).

A large share of the government's budget is dedicated to providing free health care for children under five and pregnant women, as well as the expansion of immunization. Government spending on health increased by nearly 1 percentage point (as a share of GDP) during 2000-2019. Consequently, the under-five mortality rate decreased from 155 in 2000 to 57 per 1,000 live births in 2019. The population's access to basic drinking water has also risen from 51 percent in 2000 to over 62 percent in 2019.

Figure 19: Burundi: Women in Policymaking, Social Spending, and Social Outcomes



Source: Authors' calculations and World Bank, World Development Indicators, Human Capital Index database.

A turning point for Burundi appears to have been 2005 when it introduced a free primary education system and reformed its schooling system to ensure that all children, especially girls, had access to quality education. Despite political instability and post-conflict reconstruction imperatives, public spending on education more than doubled during 2000-2019, reaching 5.35 percent of GDP in 2019. In 2005, only two out of five adult Burundians were able to read and write. By 2014, this figure had risen to three out of five. Quality-adjusted basic education rose from 4.36 to 5.38 during 2010-2018.

India

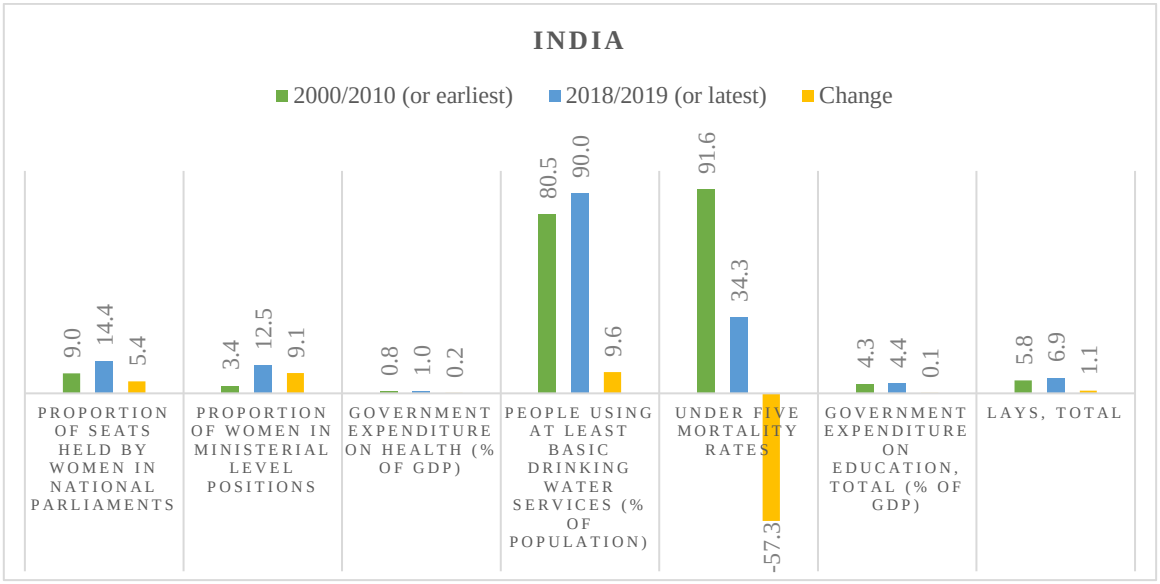
The proportion of seats held by women in national parliaments has risen steadily from about 9 percent in 2000 to 14.4 percent in 2019 (Figure 20). Women's representation in ministerial level positions has varied over time but remained well below the EMDEs average at 12.5 percent by 2019. In 1993, quotas on women's representation in local governments (the panchayat) in India were introduced, and there is a proposal to introduce one at the national level.

With regard to social spending and outcomes, the spending patterns in India have remained modest—public health spending rose modestly between 2000 to 2019 but remained around one percent of GDP, while that on education remained 4.3-4.4 percent of GDP during this period. However, several initiatives and reforms mainly targeting low-income households,

and more recently women, were launched at the national level that are improving health and education outcomes.

The National Rural Health Mission was launched in 2005 (later expanded into the National Health Mission in 2013) has boosted rural health infrastructure and strengthened primary care. Two additional programs that began in 2017-18 (Pradhan Mantri Matru Vandana Yojana and the Poshan Abhiyaan) have been instrumental in promoting better health practices. Health insurance coverage that started in 2008 was strengthened substantially to serve the poor by the Pradhan Mantri Jan Arogya Yojana (2018). Free services for poor pregnant women were introduced in 2011, and intensified immunization drives since 2014 have contributed to sharp improvements in child survival, reflected in a dramatic fall in under-five mortality rates to 34.3 in 2019, a decline of more than 57 deaths per 1,000 since 2000. The National Rural Drinking Water Programme (2009) has increased access to safe drinking water to more than 90 percent of the population by 2019. Since 2016, the provision of clean cooking fuel (LPG) has transformed the lives of rural and underprivileged households, especially women, by addressing their health and safety concerns.

Figure 20: India: Women in Policymaking, Social Spending, and Social Outcomes



Source: Authors' calculations and World Bank, World Development Indicators, Human Capital Index database.

The Sarva Shiksha Abhiyan (2001) sought to universalize elementary education, while the Right of Children to Free and Compulsory Education Act (2009) made schooling a legal right for children aged 6–14. The Rashtriya Madhyamik Shiksha Abhiyan (2009) focused on improving access to secondary schooling, and the expansion of the Mid-Day Meal Scheme (scaled up in 2001) supported both attendance and child nutrition. In 2015, the Beti Bachao Beti Padhao campaign was launched to give a new impetus to promote girls' education and awareness. As a result, LAYS increased from 5.8 years in 2010 to 6.9 years in 2018, reflecting gradual improvements in education quality.

The current government has focused on skilling, employability, and fostering women-led development through entrepreneurship. Flagship programs include the Pradhan Mantri Kaushal Vikas Yojana (2015) to boost vocational training, and women-focused schemes such as the Trade Related Entrepreneurship Assistance and Development (2014), the Skill

Upgradation and Mahila Coir Yojana (2017), and the Women Entrepreneurship Platform (2017), which provides information, services, and mentoring to women entrepreneurs. Entrepreneurship has been further supported by the Stand-Up India Scheme (2016), which aims to promote women's participation in establishing greenfield enterprises, particularly among the lower castes and tribes. The Overseas Fellowship Scheme (2017–18) aims to promote STEM education for women.

5. Methodology and data for assessing the impact of political empowerment on health and education spending and outcomes

Our study covers the period 2000-2019 for 121 countries. We use an empirical model similar to Clements et al. (2013) and IMF (2018) to assess the relationship between the political empowerment of women and government spending on health and education as a share of GDP and as a share of total government spending. We take two approaches to this issue. First, to provide an intuitive sense of the drivers of spending differences across countries, we estimate a regression model based on country averages over 2000-19. Second, as in Clements et al., we use System Generalized Methods of Moments (System GMM) to estimate panel regressions covering data from 2000 to 2019 and include time dummies to control for underlying trends not captured by the explanatory variables. This approach is appropriate for panel models where the dependent variable is persistent and thus reacts gradually to changes in the explanatory variables. Hansen overidentification tests were conducted for all results, and where possible the instrument matrices were collapsed to use the minimum number of instruments and avoid over-fitting the model. We limit the sample to EMDEs, as this is the primary focus of our study and since it is these economies that need to raise spending to improve the social outcomes of their populations. We limit the analysis to spending until 2019, given the effect of one-off expenditures for COVID in 2020 that complicate an assessment of long-term determinants of social spending.

The models use data drawn from a number of sources (Table 1). For health, we focus on the determinants of domestic health spending as a share of GDP and as a share of government spending. In education, we take a similar approach. For the determinants of health and education outcomes, data are drawn from various sources.

For the models on the determinants of spending, we use control variables that are similar to those utilized in previous studies (see Clements et al., 2013). The control variables used in our study are the following:

- **Degree of urbanization.** It is easier and more cost effective for governments to expand education and health spending when a large share of the population is in urban areas.
- **Government balance as a share of GDP (lagged one year).** This variable is added to capture the effect of fiscal space on spending and is lagged to avoid potential endogeneity between government spending and the fiscal balance. Countries with higher fiscal balances have more room to raise social spending.
- **Real GDP per capita in PPP dollars (in log levels).** Countries with higher incomes have a potentially larger tax base and can finance greater levels of government spending.
- **Demographic variables.** Share of the population 15 and under (for education spending) and share of the population over 65 (for health spending). Larger shares are expected to raise the level of social spending.

- **Degree of democratization.** We use the Polity2 variable from the Polity4 database to measure the degree to which countries are democratic. Countries with a greater degree of democratization are expected to more accurately reflect the public's preference for spending. In EMDEs, where this spending is low in relation to GDP, it is expected that more democratic governments boost spending upward.

For selected health outcomes (infant mortality rate, under-5 mortality rate), access to clean water, and education outcomes, we draw on Baldacci et al. (2008) and include the following control variables:

- **Degree of urbanization.** Baldacci et al. (2008) find that higher rates of urbanization improve health outcomes because of greater access to health services, clean water, and higher incomes. Schulz (1993) finds that the mortality rate is higher for rural, low-income agricultural households, not unrelated to fewer health care facilities in rural areas.
- **Real GDP per capita in PPP dollars (in log levels).** Countries with higher incomes have a potentially larger tax base and can finance greater levels of government spending. In addition, populations with higher incomes per capita can better afford to purchase health care, educational services, or clean water from the private sector.
- **Current health expenditure.** Countries with higher levels of current health spending (that is, total health spending excluding that for capital outlays) are presumed to provide more health services to the population and realize better health outcomes. This variable covers both public and private health spending.
- **Fertility rate.** Countries with high fertility rates are expected to perform worse on indicators of the under-5 mortality rate (Baldacci et al., 2008), but also for infant mortality rates.
- **Under-5 mortality rate.** This is used in the education equation as a measure of the health level of the student population, following Baldacci et al. (2008).
- **Repeat rate for lower secondary education.** Following Gupta et al. (2003) and Baldacci et al. (2008), this is used as a proxy for the quality of education.

Table 1. Variables Used in the Regression Analysis

Name	Description	Source
Domestic general government health expenditure (% of GDP)	Same	World Development Indicators 2000-2019
Domestic general government health expenditure (% of GGE)	Domestic general government health expenditure (% of total GGE)	World Development Indicators 2000-2019
Current Health Expenditure (% of GDP)	Current health expenditure (both public and private) (% of GDP)	World Development Indicators 2000-2019
Total government expenditure on education (% of GDP)	Same	World Development Indicators 2000-2019
Total government expenditure on education (% of GGE)	Same	World Development Indicators 2000-2019
Share of women in ministerial posts	Proportion of women in ministerial level positions	IMF Gender Database 2000-2019
Percentage of women in national parliament	Proportion of seats held by women in national parliaments	IMF Gender Database 2000-2019
Political Empowerment Index	Global gender gap political empowerment index	World Economic Forum Gender Gap Database 2006-2018
Urban population	Urban population (% of total population)	World Development Indicators 2000-2019
GDP per capita	Log of GDP per capita in constant prices (purchasing power parity; international dollars)	World Economic Outlook (WEO) database 2000-2021
Fiscal balance (% of GDP)	Same	WEO 2000-2021
Age 0-14 population	Population ages 0-14 (% of total)	World Development Indicators 2000-2019
Age 0-24 population	Population ages 0-24 (% of total)	World Development Indicators 2000-2019
Age 65+ population	Population aged 65 and over (% of total)	World Development Indicators 2000-2019
Polity	Measure of democracy	Polity IV database 2000-2018
Mortality rate, under-5 (per 1,000 live births)	Child mortality per 1,000 live births	World Development Indicators 2000-2019
Mortality rate, infant (per 1,000 live births	Infant mortality per 1,000 live births	World Development Indicators 2000-2019
Proxy for LAYS, total	Gross educational enrollment rates of upper secondary students as share of school-aged population, total students	UNESCO
Proxy for LAYS, female	Gross educational enrollment rates of upper secondary students as share of school-aged population, female students	UNESCO
Repeat rate in lower secondary level	Repetition rate for lower secondary education students	UNESCO
Access to basic drinking water services (% of population)	Access to at least basic drinking water (% of total population)	World Development Indicators 2000-2019
Fertility rate, total (births per woman)	The average number of children a woman would have if she were to live through her childbearing years and bear children at the current age-specific fertility rates	World Development Indicators 2000-2019

Source: Authors.

6. Econometric results

Health and education spending cross sectional

First, we provide the results of the cross-country regressions based on averages for 121 countries (Table 2). The results for health indicate that both the percentage of women in parliament (column 1) and women as a share of ministers (column 2) have a statistically significant association with health spending. Given the estimated coefficient (0.021 from equation 1), the results imply that an increase of 20 percentage points in the share of women in parliament would go hand-in-hand with an increase in spending of 0.4 percentage point of GDP, a significant increase relevant to current levels (2.8 percent of GDP on average in 2019). For education, the results suggest that increasing the share of women in parliament also has a positive association with spending.

Table 2. Impact of Women in Politics Empowerment on Average Domestic General Health Care and Education Spending in Developing Countries (% of GDP)

	(1)	(2)	(3)
Variables	**Health**	**Health**	**Education**
Percent women in national parliament	0.021**		0.030*
	(0.009)		(0.017)
Urban population	0.011	0.008	-0.006
	(0.007)	(0.007)	(0.013)
GDP per capita (PPP)	0.418***	0.480***	0.424
	(0.130)	(0.133)	(0.376)
Fiscal balance	-0.031	-0.038	-0.022
	(0.025)	(0.027)	(0.053)
Age 65+ population	0.076***	0.087***	
	(0.024)	(0.026)	
Polity	0.059***	0.040**	0.050*
	(0.016)	(0.020)	(0.030)
Percent women with ministerial posts		0.028**	
		(0.012)	
Age 0-14 population			-0.002
			(0.029)
Constant	-2.960***	-3.477***	0.084
	(0.921)	(1.035)	(3.860)
Observations	121	121	119
R-squared	0.518	0.525	0.098

Source: Authors' calculations.
Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Health spending panel results

Table 3 presents the results of the system GMM estimates for the determinants of health spending as a share of GDP. The results for first and second order autocorrelation are satisfactory—AR1 tests indicate p values of less than 0.05, while p values for the AR2 tests are above 0.20. The results for the Hansen overidentification test indicate that there is no correlation between the instruments used in the System GMM (the lagged values of the differences in the level equation, and lagged values of the levels in the difference equation) and the error term. In our case, this is particularly important, because it suggests that there are no variables outside of the model that simultaneously influence, say, the share of women in parliament, and health care spending. On this basis, we can be confident in inferring that a higher share of women in parliament has an independent effect on health spending. The effects of greater empowerment (and all the other explanatory variables) are modest in the short run (column 6), given the high value of the lagged dependent variable (0.821). Over the long run, an increase in the share of women in parliament of 20 percentage points would raise health spending by 0.4 percentage point of GDP, a significant increase from its average level in 2019 (2.8 percent).[9,10]

Results for the control variables are largely as expected (column 6). Urbanization, GDP per capita, the share of the population over 65, and the degree of democracy tend to boost domestic health spending. Contrary to expectations, however, higher fiscal balances tend to lead to lower domestic health care spending. This could reflect the fact that fiscally conservative governments targeting strong fiscal balances also keep health spending low as part of that effort. Similar results are obtained when we use the share of women in ministerial positions (Table 4, column 6) as our measure of female political empowerment. The size of the effect in both the short and long run is broadly similar.

[9] The long run result is calculated on the basis of the short-term coefficient divided by (1-value of the lagged dependent variable). In this case, the figure of 0.4 percent of GDP is calculated as 20*(.004/ (1-.821)).

[10] Strong results are also obtained when we use, as our measure of political empowerment of women, the political empowerment index, which we draw from the Economic Forum Gender Gap Database for 2006-2018 (Annex Table 1).

Table 3. Impact of Share of Women in Parliament on Domestic General Health Care Expenditure in Developing Countries (% of GDP)

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Domestic general government health expenditure (% of GDP) (t-1)	0.648***	0.600***	0.712***	0.722***	0.699***	0.821***
	(0.124)	(0.118)	(0.077)	(0.082)	(0.075)	(0.056)
Percentage of women in national parliament	0.001	0.002	0.004	0.004*	0.002	0.004**
	(0.004)	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)
Urban population		0.011**	0.004	0.004	0.005*	0.003*
		(0.005)	(0.004)	(0.003)	(0.003)	(0.002)
GDP per capita			0.092*	0.117***	0.039	0.080***
			(0.053)	(0.035)	(0.050)	(0.030)
Fiscal balance (% of GDP) (t-1)				-0.013***	-0.011***	-0.010**
				(0.004)	(0.003)	(0.004)
Age 65+ population					0.041***	0.016**
					(0.013)	(0.006)
Polity						0.007*
						(0.004)
Observations	2,620	2,620	2,607	2,593	2,593	2,011
Number of countries	147	147	146	146	146	121
Number of instruments	25	26	27	28	29	28
p-value (AB test for AR1)	0	0	0	0	0	0
p-value (AB test for AR2)	0.191	0.197	0.190	0.350	0.334	0.738
p-value (Hansen overidentification test)	0.0967	0.110	0.463	0.126	0.268	0.440

Source: Authors' calculations.
Note: Results for constant not shown. Coefficients estimated with System GMM (time dummies included). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4. Impact of Share of Women in Ministerial Posts on Domestic General Government Health Care Expenditure (% of GDP)

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Domestic general government health expenditure (% of GDP) (t-1)	0.886***	0.834***	0.831***	0.845***	0.864***	0.855***
	(0.054)	(0.076)	(0.077)	(0.067)	(0.051)	(0.052)
Share of women in ministerial posts	0.003*	0.004**	0.005**	0.005**	0.004**	0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Urban population		0.004*	0.000	0.000	0.000	0.002*
		(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
GDP per capita			0.135***	0.146***	0.106**	0.066**
			(0.049)	(0.048)	(0.046)	(0.030)
Fiscal balance (% of GDP) (t-1)				-0.016***	-0.014***	-0.010*
				(0.005)	(0.004)	(0.006)
Age 65+ population					0.015	0.020***
					(0.010)	(0.007)
Polity						0.003
						(0.004)
Observations	1,267	1,267	1,263	1,262	1,262	920
Number of countries	147	147	146	146	146	121
Number of instruments	15	16	17	18	19	18
p-value (AB test for AR1)	0.011	0.009	0.009	0.009	0.010	0.000
p-value (AB test for AR2)	99.99	99.99	99.99	99.99	99.99	99.99
p-value (Hansen test)	0.0752	0.111	0.106	0.0531	0.0575	0.377

Source: Authors' calculations.
Note: Results for constant not shown. Coefficients estimated with System GMM (time dummies included). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Greater female representation is also associated with a higher share of domestic health spending in total public outlays (Table 5). This is arguably a more important result than those revealed by our regressions of the determinants of health spending to GDP, since the level of a country's spending on health care is constrained by its revenues, while the composition of spending is not. Our results (column 6) imply that an increase in the share of women in the parliament by 20 percentage points raises the share of health care in total government spending by 2 percentage points.[11] Similar results (available upon request) are obtained for regressions using the share of women in ministerial posts.

[11] For the average developing country, this 2-percentage point increase in the share total spending would raise health spending by ½ percentage point of GDP. This is consistent with the results from the regressions as a share of GDP presented in Table 2.

Table 5. Impact of Share of Women in Parliament on Domestic General Health Care Expenditure in Developing Countries (% of GGE)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Domestic general government health expenditure (% of GGE) (t-1)	0.776***	0.743***	0.731***	0.723***	0.722***	0.683***
	(0.035)	(0.038)	(0.041)	(0.045)	(0.045)	(0.108)
Percentage of women in national parliament	0.013*	0.016**	0.018**	0.021**	0.018**	0.031**
	(0.007)	(0.007)	(0.007)	(0.009)	(0.008)	(0.013)
Urban population		0.019***	0.009**	0.009*	0.009*	0.011**
		(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
GDP per capita			0.314***	0.316***	0.168	0.212*
			(0.112)	(0.118)	(0.118)	(0.125)
Fiscal balance (% of GDP) (t-1)				0.017	0.023	0.055*
				(0.027)	(0.026)	(0.030)
Age 65+ population					0.077***	0.046**
					(0.028)	(0.020)
Polity						0.072***
						(0.023)
Observations	2,620	2,620	2,607	2,593	2,593	2,011
Number of countries	147	147	146	146	146	121
Number of instruments	39	40	41	42	43	42
p-value (AB test for AR1)	0	0	0	0	0	0
p-value (AB test for AR2)	0.592	0.588	0.592	0.513	0.472	0.425
p-value (Hansen test)	0.725	0.757	0.766	0.724	0.715	0.384

Source: Authors' calculations.
Note: Results for constant not shown. Coefficients estimated with System GMM (time dummies included). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Education spending panel results

Female political representation is also associated with higher education spending. The effect, however, does not hold for countries that are high spenders relative to the sample. Excluding the top 15 percent of spenders (based on data for 2000), an increase in the share of women in parliament of 20 percentage points will, in the long run, raise the education spending to GDP ratio by 0.4 percentage point of GDP (Table 6, column 6). Female political representation also has an impact on the share of the budget that is allocated to education outlays. This relationship does not hold, however, for countries that already allocate a relatively large share of their spending to education. For countries in the bottom 2/3 of the distribution (spending 12.6 percent of their budgets or less on education), increasing the share of parliamentary seats held by women by 20 percentage points raises the share of spending allocated for education by 1 percentage point (Table 7). One interesting result from the regressions is that as GDP per capita rises, the share allocated to education spending falls; this is consistent with the higher share of spending on social benefits (pensions and social assistance) observed in developing countries as their incomes rise. The share of women in ministerial positions, however, has no statistically significant effect for both education spending as a share of GDP and education spending as a share of total outlays.

Table 6. Impact of Share of Women in Parliament on Education Expenditure in Developing Countries (% of GDP)

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Total government expenditure on education (% of GDP) (t-1)	0.19861	0.19855	0.14199	0.14447	0.13237	0.29864*
	(0.29597)	(0.27713)	(0.30965)	(0.31855)	(0.32893)	(0.17789)
Percentage of women in national parliament	0.01487*	0.01576*	0.01549*	0.01661*	0.01688*	0.01304**
	(0.00873)	(0.00811)	(0.00847)	(0.00859)	(0.00884)	(0.00585)
Urban population		0.00676*	0.00837*	0.00023	0.00090	0.00221
		(0.00390)	(0.00478)	(0.00461)	(0.00478)	(0.00482)
Fiscal balance (% of GDP) (t-1)			-0.02702**	-0.02823**	-0.02785**	-0.02436**
			(0.01312)	(0.01332)	(0.01333)	(0.01124)
GDP per capita				0.26757**	0.15278	0.11467
				(0.12986)	(0.17214)	(0.15262)
Age 0-14 population					-0.01265	-0.01203
					(0.01315)	(0.01022)
Polity						0.01777*
						(0.01032)
Observations	1,443	1,443	1,435	1,430	1,430	1,191
Number of countries	132	132	132	131	131	113
Number of instruments	22	23	24	25	26	26
p-value (AB test for AR1)	0.284	0.255	0.425	0.439	0.478	0.0119
p-value (AB test for AR2)	0.601	0.592	0.810	0.813	0.819	0.541
p-value (Hansen test)	0.137	0.178	0.163	0.217	0.238	0.195

Source: Authors' calculations.
Note: Results for constant not shown. Coefficients estimated with System GMM (time dummies included). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 7. Impact of Share of Women in Parliament on Government Education Expenditure (% of GGE)

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Total government expenditure on education (% of GGE) (t-1)	0.48230***	0.48520***	0.51342***	0.50676***	0.50379***	0.53969***
	(0.08726)	(0.08641)	(0.08842)	(0.08891)	(0.08898)	(0.07546)
Percentage of women in national parliament	0.02327*	0.02286*	0.02455**	0.02407**	0.02368**	0.02294**
	(0.01332)	(0.01321)	(0.01172)	(0.01184)	(0.01151)	(0.01164)
Urban population		-0.00544	-0.00648	0.00100	0.00168	0.00324
		(0.00642)	(0.00573)	(0.00697)	(0.00702)	(0.00673)
Fiscal balance/GDP (t-1)			0.06403	0.06430	0.06551	0.07060*
			(0.04684)	(0.04809)	(0.04876)	(0.03923)
GDP per capita				-0.27168*	-0.47237*	-0.46950*
				(0.16296)	(0.24140)	(0.25478)
Age 0-14 population					-0.02400	-0.01690
					(0.02251)	(0.02185)
Polity						0.04732*
						(0.02417)
Observations	1,164	1,164	1,164	1,162	1,162	943
Number of countries	129	129	129	128	128	107
Number of instruments	95	96	97	98	99	94
p-value (AB test for AR1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
p-value (AB test for AR2)	0.470	0.470	0.421	0.413	0.409	0.141
p-value (Hansen test)	0.375	0.362	0.299	0.357	0.386	0.782

Source: Authors' calculations.
Note: Results for constant not shown. Coefficients estimated with System GMM (time dummies included). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Female political representation and social indicators

For this analysis, we use a fixed effects model with time dummies for the health indicators, and correct for heteroskedasticity, autocorrelation, and cross-sectional dependence with Driscoll and Kraay spatially consistent standard errors. We find that the greater female representation in government goes hand-in-hand with better social indicators. Table 8 indicates that when there is a greater share of women in parliament, the under-5 mortality rate, and infant mortality rate, tend to be lower, even after controlling for the impact of current health spending (which includes both public and private spending) on these outcomes. The control variables for urbanization, GDP per capita, and fertility have the expected signs and are statistically significant. The percentage of women in national parliament is also associated with better access to basic water services, a result similar to Tadadjeu et al. (2025). These results suggest that raising the percentage of women in parliament may help improve the effectiveness of government health and infrastructure spending.

Some caution is needed in interpreting these results, as some degree of reverse causality between health and infrastructure outcomes and female political representation cannot be ruled out, even after adding relevant control variables (Tadadjeu et al., 2025). Addressing this issue would require an instrumental variables approach (including system GMM). Thus, our results for health indicators should be interpreted as a first attempt to describe a possible causal link, which should be addressed in future research.

Table 8. Political Participation of Women and Health Outcomes and Infrastructure

Variables	**Mortality rate, under-5 (per 1000 live births)**	**Mortality rate, infant (per 1000 live births)**	**Access to basic drinking water services (% of population)**
Percentage of women in national parliament	-0.17412*	-0.12164**	0.03898*
	(0.09410)	(0.04977)	(0.01910)
GDP per capita	-12.53769***	-11.15633***	5.11058***
	(2.30154)	(1.62990)	(0.30853)
Urban population	-0.74675***	-0.38339***	0.36897***
	(0.03587)	(0.01696)	(0.01530)
Fertility rate, total (births per woman)	18.35757***	9.54882***	
	(1.07842)	(0.56393)	
Current health expenditure (% of GDP)	-0.68467*	-0.45003*	
	(0.39147)	(0.21550)	
Observations	2,710	2,710	2738
Number of countries	146	146	147
Within-R squared	0.640	0.700	0.509

Source: Authors' calculations.
Note: Results for constant not shown. Coefficients estimated using fixed-effect model with Driscoll and Kraay standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Increasing the share of women in parliament is also associated with improvements in educational outcomes (Table 9). As a proxy for LAYS, we use gross upper secondary

enrollment rates, which are highly correlated with the LAYS data (correlation coefficients of 0.8). For these results, we estimate the model with system GMM, since enrollment indicators may only respond to higher government spending and other variables with a considerable lag. The results suggest that a rising share of women in parliament is associated with higher gross enrollment rates, with a slightly stronger effect on enrollment rates of female students. The difference, however, is small relative to the size of our standard errors from our regressions. Also of interest is the fact that population matters for enrollments, but in an unexpected way: when a higher share of the population is young, enrollment rates are lower. This may reflect the fact that in these countries, families are large, necessitating that adolescent offspring need to work or take care of siblings, rather than attend school. Another surprising result is that urbanization is not linked to higher enrollment rates, once other variables (such as GDP per capita) are taken into account.

Some caution is needed in interpreting these results, as some degree of reverse causality—especially over a longer time period—cannot be ruled out in the case of education outcomes and female political representation. In particular, higher levels of educational attainment, especially for women, could be a driving force for greater representation of women in parliament or as ministers.

Table 9. Political Participation of Women and Education Outcomes

Variables	**Proxy for LAYS, Total**	**Proxy for LAYS, Female**
Proxy for LAYS, total (t-1)	0.78909***	
	(0.09185)	
Percentage of women in national parliament	0.03304*	0.04315*
	(0.02007)	(0.02559)
GDP per capita	2.12753**	2.12766
	(0.93554)	(1.86449)
Urban population	-0.02407*	-0.03024
	(0.01412)	(0.02268)
Mortality rate, under-5 (per 1,000 live births)	-0.05127**	-0.04776*
	(0.02095)	(0.02579)
Age 0-24 population	-0.19706*	-0.11126
	(0.10453)	(0.10710)
Repeat rate in lower secondary level	0.01337	0.01456
	(0.02791)	(0.03796)
Total government expenditure on education (% of GDP)	0.23164*	0.27637*
	(0.13149)	(0.16237)
Proxy for LAYS, female (t-1)		0.84709***
		(0.11357)
Observations	801	781
Number of countries	108	108
Number of instruments	34	169
p-value (AB test for AR1)	0.0129	0.0793
p-value (AB test for AR2)	0.433	0.709
p-value (Hansen test)	0.751	1

Source: Authors' calculations.
Note: Results for constant not shown. Coefficients estimated with System GMM (time dummies included). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

7. Conclusion and policy implications

The empirical results presented in this paper suggests that more women in policymaking roles may positively impact social spending and health and education indicators, as well as the education outcomes of girls. This implies that efforts to promote greater gender equity in top political positions can have a positive payoff via three channels: first, through spending on health and education; second, more directly impact social indicators, and third by narrowing the gaps between girls and boys in education. Further research is needed on the third channel, given the large standard errors from our regressions on education outcomes. The positive result from our regressions on social indicators could be interpreted as evidence that greater representation of women in parliament helps raise the efficiency of spending on infrastructure and the social sectors by ensuring that this spending is allocated to activities or regions where it will have the greatest impact. Another possible interpretation is that a higher share of women in parliament is correlated with societal values, norms, and priorities that place a high value on improving social outcomes, regardless of the level of public spending. In either case, raising female political representation is associated with stronger outcomes on social indicators.

An important issue for interpreting the results is the question of causality. For our results for social spending, we are on stronger ground for claiming causality, given that GMM uses instruments to estimate the coefficients, addressing some of the concerns related to endogeneity. For the social indicator results, in particular for health, the results should be viewed as preliminary, given the complex feedback between better social outcomes, gender equity, and political representation. This two-way relationship is likely characterized by long lags that are difficult to capture. Further research on this subject is warranted.

Annex Table 1. Impact of Index of Women's Political Empowerment on Domestic General Health Care Expenditure (% of GDP)

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Domestic general government health expenditure (% of GDP) (t-1)	0.827***	0.731***	0.711***	0.786***	0.799***	0.689***
	(0.057)	(0.098)	(0.086)	(0.115)	(0.102)	(0.099)
Political Empowerment Index	0.227	0.832*	0.973**	0.606	0.520	0.871*
	(0.327)	(0.466)	(0.425)	(0.403)	(0.348)	(0.459)
Urban population		0.011***	0.006*	0.006	0.006	0.009**
		(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
GDP per capita			0.142**	0.122**	0.079*	0.099**
			(0.058)	(0.059)	(0.041)	(0.050)
Fiscal balance (% of GDP) (t-1)				-0.021	-0.017	-0.024**
				(0.014)	(0.011)	(0.012)
Age 65+ population					0.015	0.019**
					(0.011)	(0.010)
Polity						0.010*
						(0.006)
Observations	1,376	1,376	1,370	1,370	1,370	1,176
Number of countries	117	117	116	116	116	105
Number of instruments	101	102	103	104	105	95
p-value (AB test for AR1)	0	0	0	0	0	0
p-value (AB test for AR2)	0.345	0.325	0.310	0.246	0.261	0.530
p-value (Hansen test)	0.297	0.234	0.255	0.242	0.298	0.395

Source: Authors' calculations.

Note: Results for constant not shown. Coefficients estimated with System GMM (time dummies included). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The political empowerment index, drawn from the World Economic Forum Gender Gap Database, covers data from 2006-2018.

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