GENDER

NOTES

Promoting Gender Equality and Tackling Demographic Challenges

Jiajia Gu, Lisa Kolovich, Jorge Mondragon, Monique Newiak (all IMF), and Michael Herrmann (UNFPA)

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Abbreviations

ADC	Australian Development Corporation
LIDCs	low-income and developing countries
OECD	Organisation for Economic Co-operation and Development
UNFPA	United Nations Population Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization

Promoting Gender Equality and Tackling Demographic Challenges

Jiajia Gu, Lisa Kolovich, Jorge Mondragon, Monique Newiak (all IMF), and Michael Herrmann (UNFPA)

June 2024

Two broad contrasting demographic trends present challenges for economies globally: countries with aging populations, often advanced economies and increasingly emerging markets, anticipate a significant shrinking of the labor force, with implications for growth, economic stability, and public finances. Economies with rapidly growing populations, as is the case in many low-income and developing countries, will face a burgeoning young population entering the labor market in the next decades—a large potential to reap the demographic dividend if the right skills and economic and social conditions are in place. This note highlights how gender equality, in both cases, can serve as a stabilizing factor to rebalance demographic trends. As decisions regarding fertility, human capital investment, and labor force participation are interlinked, policies should aim at relaxing households' time and resource constraints that condition these choices. This means that, in general, in advanced economies and emerging markets, policies should facilitate women's work–life choices and boost female participation in the labor market, whereas policies in low-income and developing countries should focus on reforms that narrow gender gaps in opportunities and support human capital accumulation.

Motivation

Two broad contrasting demographic trends present challenges for economies globally: aging populations in some regions and growing populations in others.

- Economies with aging populations, often advanced economies and increasingly emerging markets, anticipate a significant shrinking of the labor force, with implications for growth, economic stability, and public finances. In fact, the ratio of the population beyond working age (above 64 years) relative to the working-age population (aged 15–64 years) has more than doubled to above 30 percent for the average advanced economy over the past 60 years. About half of the increase has taken place over the past two decades. The ratio has also picked up for the average emerging market.
- The growing workforce in low-income and developing countries (LIDCs) presents tremendous opportunities for development, provided policies support a successful transition. Many countries that underwent periods where the workforce grew faster than the rest of the population—a declining overall dependency ratio—saw a boost to growth, known as a "demographic dividend." Some estimate that the demographic transition has driven 40–50 percent of India's per capita income growth since 1970 (Aiyar and Mody 2011), and one-fourth to two-fifths of East Asia's growth between 1965 and 1990 (Bloom and others 2009). Policies to support the demographic transition are critical to reaping the demographic dividend and achieving macroeconomic and development objectives (World Bank Group 2016; Bloom,

Canning, and Sevilla 2003). Changes in the age structure can turn into a "demographic gift" if the young population has access to quality education, health services, and finance, among other factors. Historically, policies to boost human capital, such as investments in education and health to ensure workers enter the labor market productively and at higher wages, have accompanied a successful demographic transition (IMF 2013).

Gender equality, in both cases, can serve as a stabilizing factor to rebalance demographic trends. In advanced and emerging markets, increasing female labor force participation to levels in the best performing peers could, in most cases, more than offset GDP losses resulting from a shrinking labor force in the next few decades. In LIDCs, narrowing gender gaps in education and health can help build human capital, support productivity gains and GDP growth, support fertility choices, and reduce income inequality while also bolstering fiscal revenues.

Policy options that tackle families' resource and time constraints can facilitate balanced education, labor force participation, and fertility choices. Households make joint decisions on education, work, and fertility. These decisions are based on preferences and time and resource constraints, in the context of expected future income streams. While preferences, which reflect social norms and intra-household bargaining power, may be challenging to alter in the short to medium term, policies can target constraints related to time and resources. This note offers a simple framework on how adjustments in policies, by addressing the time and resource constraints, can influence household trade-offs between paid and unpaid work, current human capital investment versus future income prospects, and the quantity versus the quality of children.

The note proceeds as follows. The next section outlines the broad demographic trends followed by a section on the macroeconomic gains from addressing gender gaps in advanced economies, emerging markets, and LIDCs. The subsequent section discusses the interactions among fertility, education, and labor force choices given resource and time constraints, and offers policy recommendations depending on the demographic context. The final section concludes.

Limitations. In addition to women's empowerment, there are other policy avenues that could mitigate demographic challenges, such as changes in migration, which are beyond the scope of this note. This note also does not discuss trade-offs between different policy solutions, such as migration versus increased gender equality.

Stylized Facts: Diverging Demographic Trends

Population structures shape societal challenges and opportunities. This section presents stylized facts on two broad but divergent demographic trends.

Aging societies are confronted with a shrinking labor force and an increasing old-age dependency ratio, with implications for macroeconomic sustainability.

- Over the past 60 years, the old-age dependency ratio—the ratio of the population beyond working age (above 64 years) relative to the working-age population (aged 15–64 years)—has more than doubled. It now stands above 30 percent for the average advanced economy (Figure 1.1). About half of the increase has taken place over the past two decades. The ratio has also trended upward for the average emerging market.
- In both advanced economies and emerging markets, old-age dependency ratios are projected to rise steeply over the next several decades (Figures 1.2 and 1.3), more than doubling in the next 50 years

even under the United Nations Population Division's medium-fertility scenario projection.[1] The Division's population projection scenarios consider factors including fertility, mortality, and migration. Under low-fertility assumptions, the average old-age dependency ratio in advanced economies is projected to reach 100 percent by 2090, although this average masks country-level heterogeneity. For instance, in Japan and Korea, the old-age dependency ratio would exceed 60 percent in the next two decades, while in China, it could exceed 140 percent by 2084 under the low-fertility assumption.

- An increasing old-age dependency ratio and related declining population can put pressure on future output, the sustainability of pension and social safety net systems, entrepreneurial activities (Liang, Wang, and Lazear 2018), and the effectiveness of monetary policy (Baksa and Munkacsi 2019).

In contrast, many LIDCs are facing, or are expected to face, large numbers of young entrants to the labor market, which presents an opportunity to reap the demographic dividend under the right policies. The young-age dependency ratio—the ratio of the population below age 15 to the population aged 15–64 years—has been declining since the mid-1990s but remains high at close to 70 percent (Figure 1.4).[2] Under a constant-fertility-rate scenario, the young-age dependency ratio would remain elevated. This implies substantial population growth and the potential for added fiscal and socioeconomic pressures on governments to provide basic services. In other fertility scenarios, dependency ratios would decline substantially over the next decade, mirroring the trends in young-age dependency ratios in many advanced economies and emerging markets over the past decades (Figure 1.5).

At the global level, the two diverging trends imply a major shift in population structures, with implications for global labor markets. Under the medium-fertility assumption, the European region's population is expected to shrink, and the Western Hemisphere region to see only marginal increases in its population (Figure 1.6).[3] The Asia and Pacific region would remain the most populous region worldwide, despite an overall decreasing population. In contrast, sub-Saharan Africa and countries in the Middle East and Central Asia would see about a doubling of their population over the next five decades, with implications for domestic labor markets, migration, and other cross-border flows. For instance, by 2035, the net number of sub-Saharan African citizens entering the labor market is expected to exceed the net entries from the rest of the world combined (IMF 2015). Annex 1 provides population projections for each area of the world under different fertility assumptions.[4]

[1] The United Nations' Population Division defines fertility scenarios as low, medium, high, constant, and instant-replacement fertility. These five fertility scenarios all assume medium mortality and medium migration. The medium-fertility projections assume fertility based on the median probabilistic fertility, taking into account not only the experience of a country but also the uncertainty of projections based on past trajectories of countries in similar conditions. The low scenario represents a fertility level that is 0.5 births below the medium scenario, while the high is 0.5 births above the medium scenario. The constant fertility scenario is the 2022 level of fertility.

[2] Dependency ratios in this note are based on chronological age, with working age population defined as individuals aged 15–64 years. This is the relevant age category as, in LIDCs, secondary and tertiary school enrollment rates are lower, and people join the workforce earlier relative to advanced economies and emerging markets. An alternative calculation using prospective age (Sanderson and Scherbov 2019) would be more suitable for policy guidance rather than assessing current trends. Economic dependency ratios, such as employment- and income-based ratios, offer additional perspectives, but data are less available for LIDCs. Economic dependency ratios could be affected by changes in labor force participation for a given age structure.

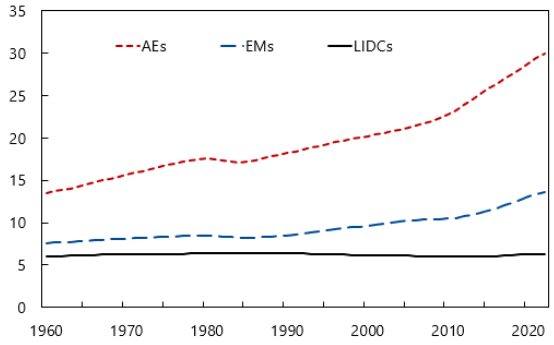
[3] We use the IMF Area Department groupings for country classifications: AFR (sub-Saharan Africa), APD (Asia and the Pacific), EUR (Europe), MCD (Middle East, North Africa, and Central Asia), and WHD (Western Hemisphere).

[4] While population projections already capture assumptions on migration, an analysis of migration scenarios or policies is beyond the scope of this note.

Figure 1. Dependency Ratios in Advanced Economies, Emerging Markets, and Low-Income and Developing Economies, 1960–2022

1. Dependency Ratio, Old, 1960–2022

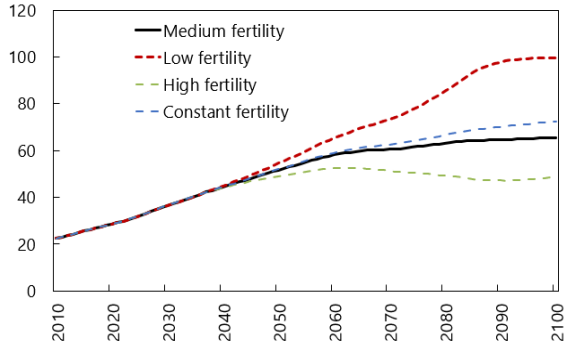
(Percent, population age 64+ compared to working age population)



Source: UN Population Division and IMF staff calculations.

2. Advanced Economies: Dependency Ratio, Old, 2010–2100

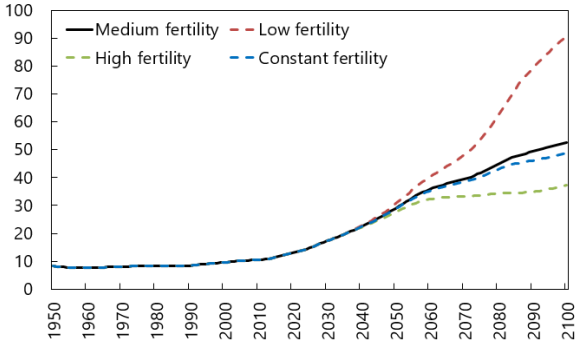
(Percent, population age 64+ compared to working age population)



Source: UN Population Division and IMF staff calculations.

3. Emerging Markets: Dependency Ratio, Old

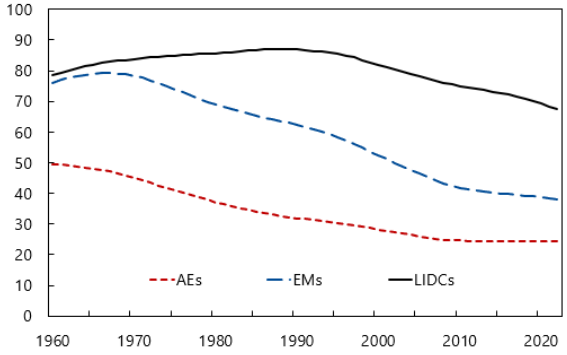
(Percent, population age 64+ compared to working age population)



Source: UN Population Division and IMF staff calculations.

4. Dependency Ratio, Young, 1960–2022

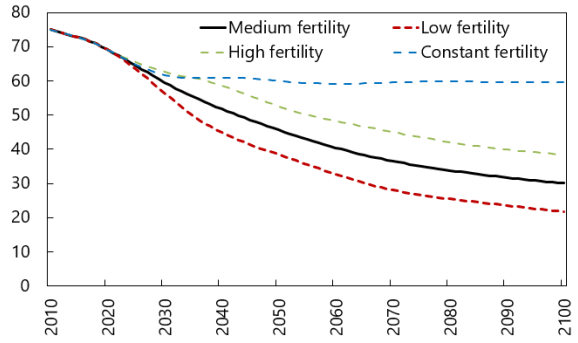
(Percent, population below age 15 compared to working age population)



Source: UN Population Division and IMF staff calculations.

5. LIDC: Dependency Ratio, Young, 2010–2100

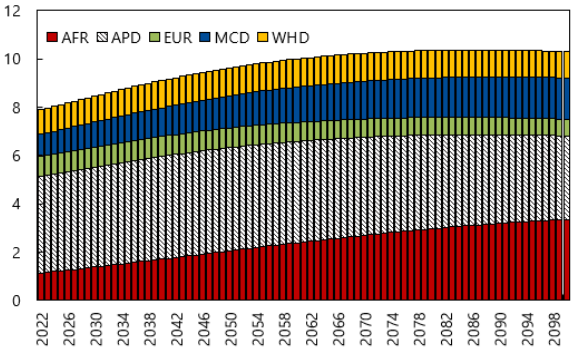
(Percent, population below age 15 compared to working age population)



Source: UN Population Division and IMF staff calculations.

6. Population Developments, 2022–2100

(Billions of people, medium variant fertility)

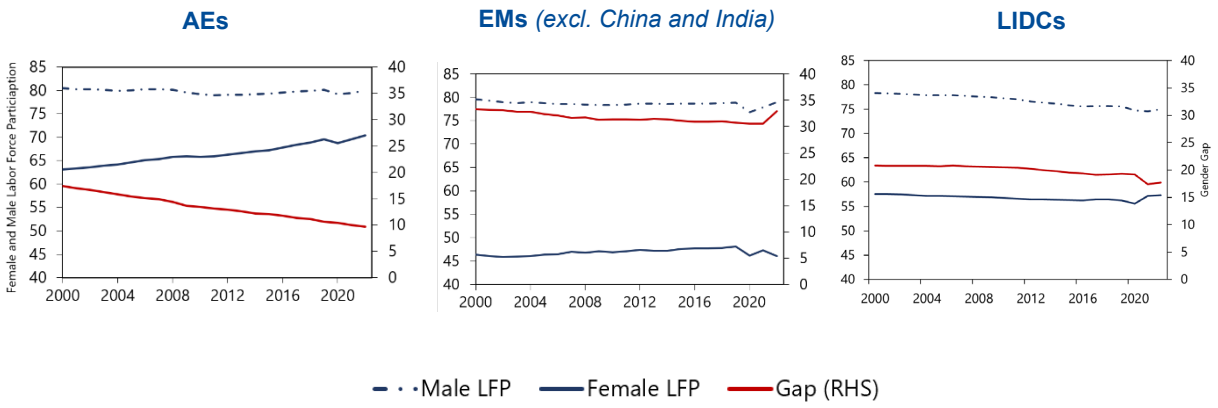


Sources: UN Population Division and IMF staff calculations.

Note: High, medium, low, and constant refer to fertility scenarios by the United Nations Population Division in Figures 1.2–1.5. AEs = advanced economies; AFR = sub-Saharan Africa; APD = Asia and the Pacific; EMs = emerging markets; EUR = Europe; LIDCs = low-income and developing countries; MCD = Middle East, North Africa, and Central Asia; WHD = Western Hemisphere.

Trends in labor force participation rates[5] have also varied across income groups (Figure 2). Over the past 20 years, the gender gap in labor force participation decreased by almost 8 percentage points in advanced economies, driven largely by an increase in female labor force participation. In emerging markets and LIDCs, the gender gap remained relatively stable. During the COVID-19 pandemic, the gap increased in many countries, and emerging markets continue to see a widening gap.

Figure 2. Labor Force Participation Rate by Gender and Country Group, 2000–2022



Sources: ILO, and IMF Staff Calculations.

Notes: Vertical axis: Female labor force participation rate, International Labour Organization-modeled estimates. Weighted averages using UN population estimates for ages 15–64 years. AEs = advanced economies; EMs = emerging markets; LFP = labor force participation; RHS = right hand side; LIDCs = low-income and developing countries.

Addressing Demographic Challenges: The Gains from Gender Equality

Population aging, particularly in advanced economies and emerging markets, is projected to cause significant GDP losses by 2050. However, immediate or gradual increases in female labor force participation could mitigate GDP losses caused by shrinking labor forces, especially for the median advanced economy and emerging market. Although there is heterogeneity among countries, aside from compensating for GDP losses, higher female labor force participation is expected to boost tax revenues and pension contributions, thereby contributing to the sustainability of pension systems over the long term.

Economic Benefits of Increasing Female Labor Force Participation in Aging Societies

In many advanced economies and emerging markets, population aging, everything else equal, will lead to a decline in output in the medium to long term (Figures 3.1 and 3.2). The baseline scenario in this note relies on the medium-fertility projection from United Nations Population Division's population growth forecasts and assumes no changes in labor market participation or structure. In this case, the median advanced economy will face output losses in the second half of the current decade (2020s), and more than a quarter of advanced economies will experience a GDP loss of more than 25 percent by 2050. More than a fourth of emerging markets are projected to experience an output decline in the next decade. These projections are based solely on population projections, holding all other factors constant.

[5] Defined as the rate of male labor force participation minus the rate of female labor force participation.

However, GDP gains from higher female labor force participation could offset some of the decline. To estimate the GDP gains from higher female labor force participation rates across countries, this note follows the approach from Ostry and others (2018) to calculate changes in GDP due to changes in population and those resulting from increased female labor force participation. The following scenarios are considered:

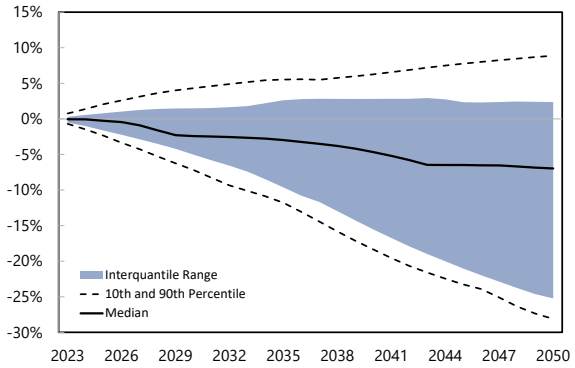
- ***Scenario 1: An immediate increase in female labor force participation*** to match the level of the best-performing peer countries with the lowest gender gaps in labor force participation. For advanced economies, this implies increasing female labor force participation in each country such that the gender gap in labor force participation is no more than 7 percentage points. In emerging markets, this implies narrowing the gender gap in labor force participation to be no more than 10¼ percentage points. Figures 3.3 and 3.4 highlight that in the long run, such realistic increases in female labor force participation could partially mitigate GDP losses caused by a shrinking labor force for the median advanced economy and significantly boost GDP for the median emerging market.
- ***Scenario 2: A gradual increase in female labor force participation over the next two decades.*** Recognizing that the immediate increase in Scenario 1 may not be feasible, Scenario 2 aims for the same level of female labor force participation as in Scenario 1 but only in the long run. It allows for a more gradual increase over a period of 20 years from 2023 to 2043. It shows that, for the median advanced economy, this increase in female labor force participation can nearly offset the GDP losses due to population decline from 2023 to 2030.

The median gains for advanced economies and emerging markets mask substantial variations across countries. Figure 4 depicts the scenarios for select countries, highlighting the heterogeneous demographic projections in advanced economies and emerging markets. For instance, Australia, the United Kingdom, and the United States are projected to see positive population growth under medium-fertility assumptions, so that gains from increased female labor force participation would further complement a still-expanding labor force. In China, Germany, Italy, Japan, and Korea, however, population growth is already negative, with negative contributions of population growth to GDP. In these cases, increasing female labor force participation could lessen the projected decline in GDP for a few decades. In Japan, for example, during the “Abenomics” period, female labor force participation increased from 63 percent in 2012 to 74 percent by 2022 and was a major contributor to per capita GDP growth (Xu 2023).

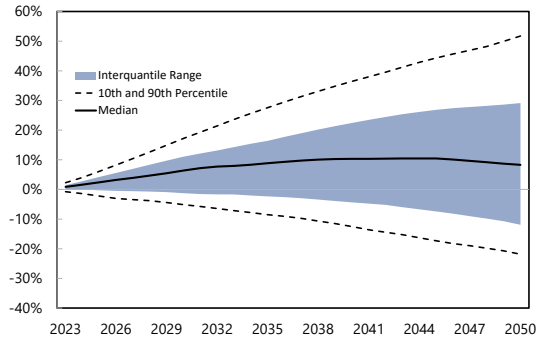
In addition to compensating for GDP losses, increasing female labor force participation can also boost taxes and pension contributions. Women are more tax compliant compared to men (D’Attoma, Volintiru, and Steinmo 2017; D’Attoma, Volintiru, and Malézieux 2020). In the short run, new job market entrants pay taxes and contribute to pension system, helping to alleviate the immediate burden. This influx of tax revenue can help finance public expenditures, including investments in infrastructure, education, and health care, which are essential for sustainable economic growth. In the long run, higher labor force participation rates reduce the share of people relying on pension income for a given age structure, hence improving the sustainability of the pension system. That is, when more women work, it can help offset the effects of declining birth rates and lengthening life expectancies, leading to lower dependency ratios. This demographic shift reduces the burden on pension systems, as there are more working-age individuals contributing to these systems relative to retirees.

Figure 3. Change in GDP: Scenarios of Population Declines and Increased Female Labor Force Participation

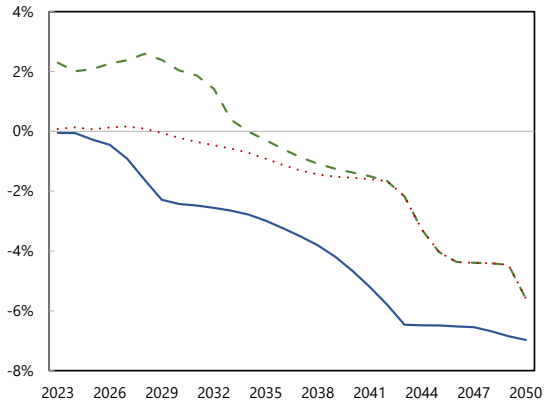
1. AEs: Change in GDP due to Population Change
(Percent)



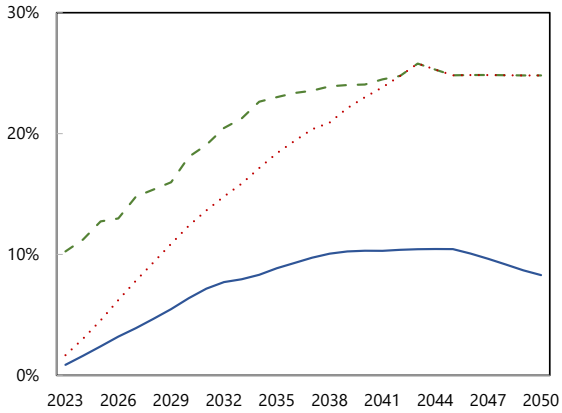
2. EMs: Change in GDP due to Population Change
(Percent)



3. AEs: Median Change in GDP (Percent)



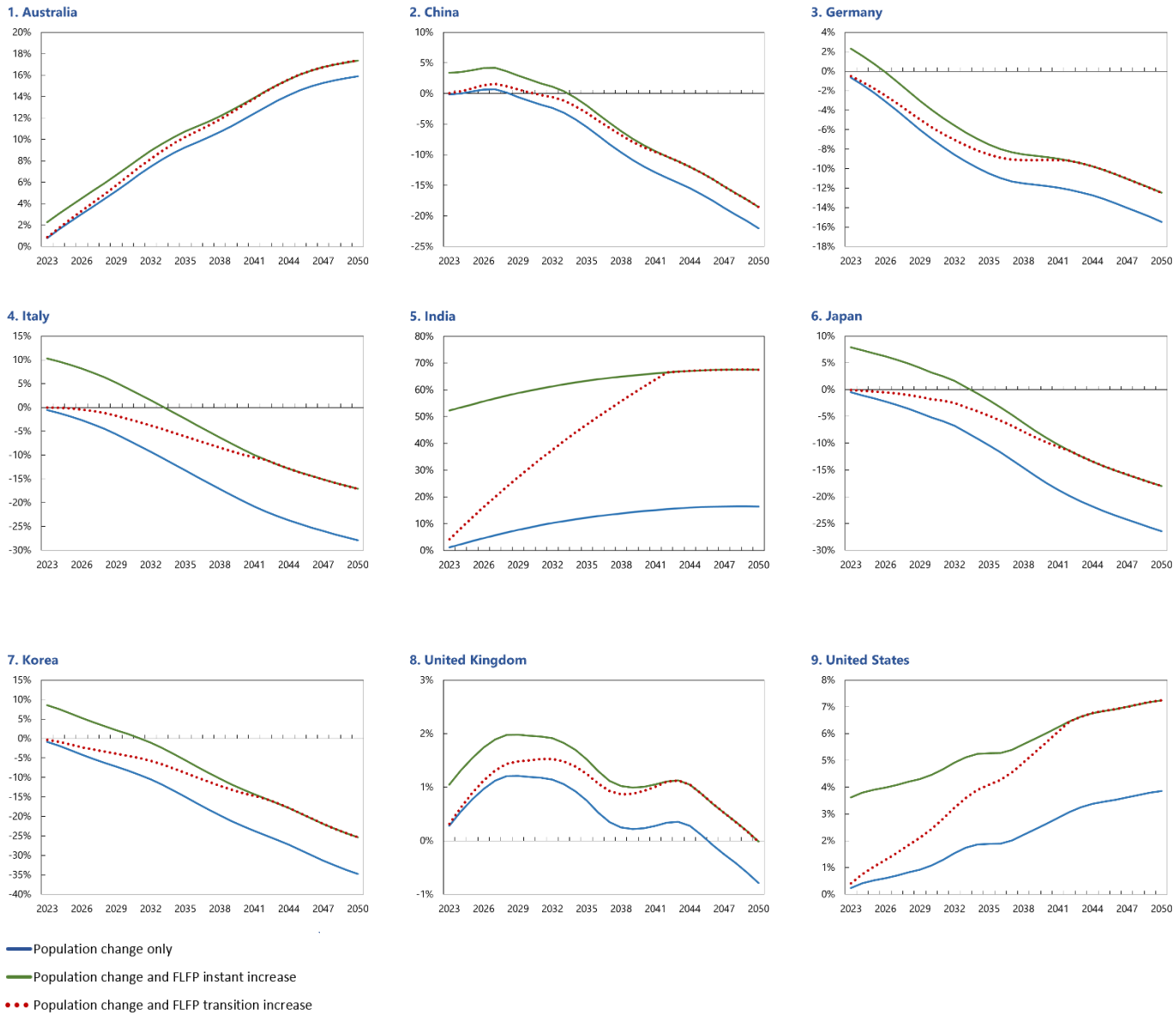
4. EMs: Median Change in GDP (Percent)



Sources: United Nations Population Division; ILO; and IMF Staff Calculations.
Note: The scenarios assume that the population changes according to median population growth projection. Female labor force participation targets are set such that countries achieve a gender gap that is not higher than that for the 10 percent of countries with the smallest labor force participation gaps in the income group. For advanced economies, female labor force participation is therefore assumed to increase in each country such that the gender gap in labor force participation is no more than 7 percent. In emerging markets, a gender gap of no more than 10¼ percent is considered. AEs = advanced economies; EMs = emerging markets; GDP = gross domestic product.

Figure 4. Scenarios of Population Declines and Increased Female Labor Force Participation, Select Countries

(Percentage change in GDP)



Sources: United Nations Population Division; ILO; and IMF Staff Calculations.

Note: Assumes United Nations Population Division's median population growth projection. FLFP = female labor force participation; GDP = gross domestic product.

Box 1. Estimating the Impact of Gender Gaps in Labor Force Participation on GDP under Different Demographic Trends

This section expands on Ostry and others (2018) to examine how changes in labor force participation over time under four different population growth scenarios can drive potential changes in GDP. The fertility projections come from the United Nations Population Division and are based on the constant-, median-, low-, and high-fertility variant assumptions. Data on male and female labor force participation are from the International Labour Organization. The exercise quantifies potential output gains in GDP of increasing female labor force participation to different targets (for example, peer country or fixed rate of improvement) under different time spans.

The framework considers three different outputs. The baseline showcases the potential output changes driven solely by the change in population (compared to a scenario without population growth, holding all other factors constant). These changes can be shown by the different percentage distribution across time for different types of fertility variant assumptions and countries. The scenarios present the potential output changes from the changes in population *and* the increase in female labor force participation, holding other factors constant. The following equation characterizes the framework:

$$Y_t = N_t \left(\left(L_t^{\text{male}} \right)^{\frac{\sigma-1}{\sigma}} + \left(\theta L_t^{\text{female}} \right)^{\frac{\sigma-1}{\sigma}} \right)^{\frac{\sigma}{\sigma-1}},$$

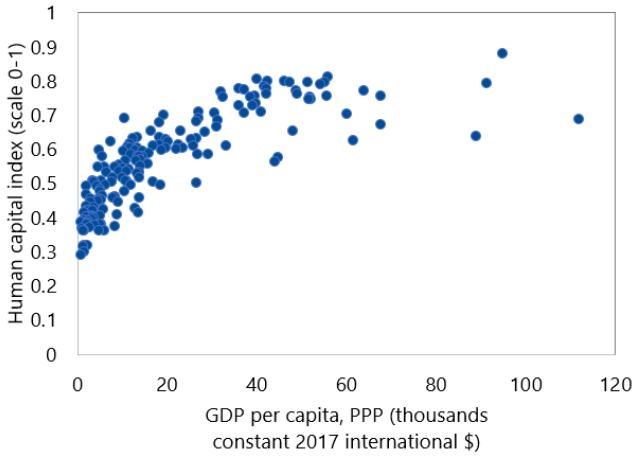
where Y_t represents output; N_t is working-age population; L_t^{male} and L_t^{female} are male and female labor force participation rates, respectively; σ is the elasticity of substitution between female and male inputs; and θ is the ratio of female to male work hours. Parameters match Ostry and others (2018) with the highest substitutability between female and male labor inputs. Such calibration provides a lower boundary of the potential gains from increasing female labor force participation. Figures 3 and 4 show the output changes resulting solely from population changes, an immediate rise in female labor force participation, and a transitional increase in female labor force participation.

Gains from Narrowing the Gender Gap in Education in LIDCs

Most LIDCs face substantial challenges in human capital development, which, if not addressed, could inhibit opportunities to benefit from the demographic dividend. Figure 5 highlights that human capital—capturing both health and educational outcomes—tends to be lower in countries with lower GDP per capita. While declining fertility and lower dependency ratios are prerequisites for generating the demographic dividend, they alone are insufficient to drive economic growth. For that, future workers need to enter the labor force healthy and educated. Because education investments take time to translate into capacity for the future labor force, LIDCs would need to implement gender-responsive human capital policies now to help ensure that today's youth will be well equipped to enter the labor force. These issues are highlighted in IMF country reports for The Gambia, Mali, Niger, Nigeria, Senegal, and Sierra Leone, which have analyzed gender in the context of high population growth.

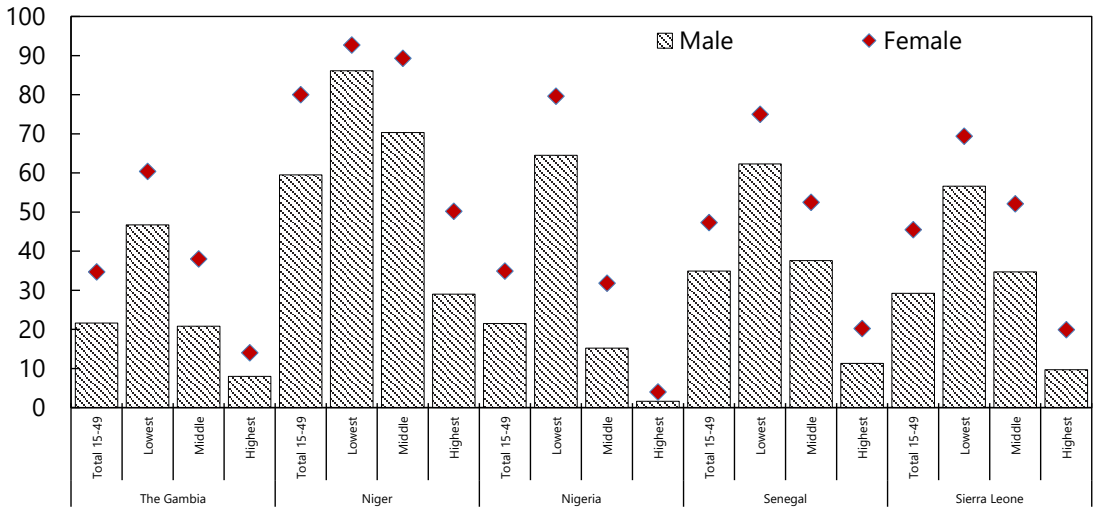
LIDCs often face low levels of education attainment, gender gaps in school enrollment rates, weak health outcomes for women and girls, and high adolescent fertility rates. While enrollment rates for boys and girls have been converging, gender gaps in education attainment persist, in particular for children in households at the lowest income levels (Evans, Akmal, and Jakiela 2020). In Africa, the Middle East, and South Asia, girls are more likely to be disadvantaged in terms of educational access than boys (UNICEF 2022). Figure 6 highlights gender gaps in educational access for five countries for which this section presents the gains from closing gender gaps in more detail. On the health side, adolescent fertility remains high in LIDCs. In 2021, there were 81.3 births per 1,000 women aged 15–19 years,[6] depressing school attendance (Figure 7.1) and increasing the risk of maternal death (Figure 7.2) and child mortality (Figure 7.3).

Figure 5. Economic Development and Human Capital, 2020



Source: World Bank.
Note: Global sample. GDP = gross domestic product; PPP = Purchasing Power Parity.

Figure 6. Share of Population without Education, Select Countries, by Gender and Wealth Quintile



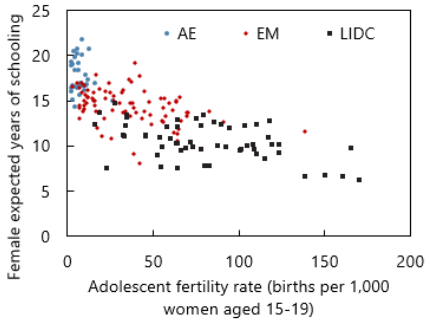
Source: Demographic and Health Surveys (latest available)

Source: Demographic and Health Surveys (latest available).
Note: No education: Share of population that has not completed primary education.

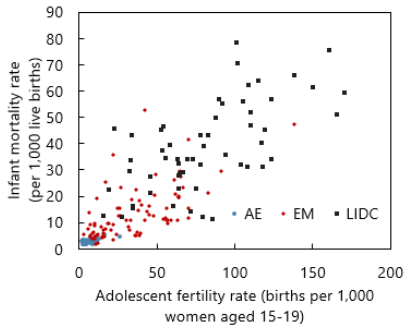
[6] Calculated using the unweighted average of 56 LIDCs. Data downloaded from the World Bank and sourced from the United Nations Population Division, World Population Prospects.

Figure 7. (Adolescent) Fertility, Infant Mortality, and Maternal Death

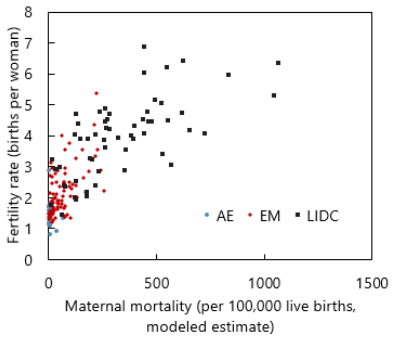
1. Adolescent Fertility and Female Years of Schooling, 2021



2. Adolescent Fertility and Infant Mortality, 2021



3. Maternal Mortality and Fertility, 2020



Sources: IMF Gender Data Hub and World Bank World Development Indicators.
Note: AE = advanced economy; EM = emerging market; LIDC = low-income and developing country.

Gender gaps in education have wide-ranging implications for economic growth and development outcomes (Barro 2013; Krueger and Lindahl 2001). Inequality in education perpetuates income inequality and curbs progress (Galor and Zeira 1993; Gonzales and others 2015). In nations with large educational disparities between girls and boys, the limited development of female human capital slows technological uptake and innovation (Barro 2013; Krueger and Lindahl 2001). Where there are diminishing marginal returns to education, the decision to restrict girls' education to lower levels while providing higher levels of education to boys implies that the marginal return on educating girls surpasses that of boys (World Bank 2001; Knowles, Lorgelly, and Owen 2002). Increased female educational attainment promotes greater diversification of output and exports (Kazandjian and others 2019) and drives the growth of manufacturing exports (Berge and Wood 1994; Dollar and Gatti 1999; Forbes 2000; Appiah and McMahon 2002; Klasen 2002; Gonzales and others 2015). Others show that gender gaps in education have a negative impact on future economic growth, challenging earlier findings that suggested a potential negative relationship between female education and economic growth (Barro and Lee 1994).

Educating girls also benefits societies more broadly and can contribute to changing gender norms and increasing socioeconomic participation. In many LIDCs, it will contribute to a fall in fertility rates. World Bank (2008) highlights, in particular, that one year of female schooling reduces fertility by 10 percent, particularly where secondary schooling is undertaken. Women with formal education are more likely to use reliable family planning methods, delay marriage and childbearing, and have fewer and healthier babies than women with no formal education (Karam 2014). Higher education for girls also helps close the gap between actual and desired fertility by giving women a greater voice. Educating girls therefore has the potential to change the population age structure and to lay the foundation for a demographic dividend.

Quantifying the gains from narrowing gender gaps in education can help identify investment trade-offs and better design gender-responsive policies. A Dynamic General Equilibrium Life-Cycle Model with heterogeneous agents helps quantify key transmission channels through which gender-responsive policies impact female labor force participation, earnings, economic growth, income inequality and poverty, and public finances (see Annex 2 for details). Application of the model to four sub-Sahara African economies has shown that the benefits from equalizing boys' and girls' education are large. In Senegal, successfully implementing a policy that ensures all children receive at least 5 years of education could raise GDP by 8 percent (Malta and others 2019). In Nigeria, lifting the level of education of girls in each income quintile to that of boys would boost GDP by 5 percent (Malta and Newiak 2019). Closing gender

gaps in education for each income quintile could increase GDP by 8 percent in Sierra Leone (Malta, Newiak, and Sandy 2020).

Applying this micro-founded general equilibrium model to Niger highlights the channels of transmission (Ouedraogo and Gomes 2023). In Niger, on average, girls and boys only spend 1.7 and 2.8 years in school. About 45 percent of girls drop out of primary school, and more than three in four women get married by age 18. As a result, men have more years of education than women at every income percentile. Equalizing girls' and boys' education levels in each income percentile triggers a series of positive effects on the economy. With higher education, women face higher forgone labor market income if they choose not to work, and their incentives to enter the labor force increase. The model also points to an increase in household mean labor income of 8.6 percent. GDP rises by 11.2 percent, owing primarily to the increase in effective hours worked. Higher labor income enables households to consume more (+3 percent). In the analysis for Niger, the government would need to increase its public education spending by 21.2 percent, raising total government spending by 3 percent. However, total tax revenue would increase by 11.3 percent, providing more than enough resources to cover the new education expenditures, implying a 9.3 percent reduction in the primary deficit.

Policy Solutions: Accounting for Time and Resource Constraints

Diverging trends in demographics and the different channels that could mitigate the trends—through labor force participation, education, and fertility—call for considering such choices in a unified manner. This section follows Doepke and others (2023) to propose a simple guide for policies to consider the choices and trade-offs households face with respect to fertility, education, and labor force participation.

General Considerations

The decision regarding fertility is intricately linked to choices of human capital investment and participation in the labor market. Adult household members make these decisions considering their preferences for consumption, leisure, number of children, and the development of their children's human capital, while navigating two pivotal constraints: time and resources. These constraints dynamically interact with each other and over time. For example, choosing to have a child now will inevitably influence future allocations of time and resources.

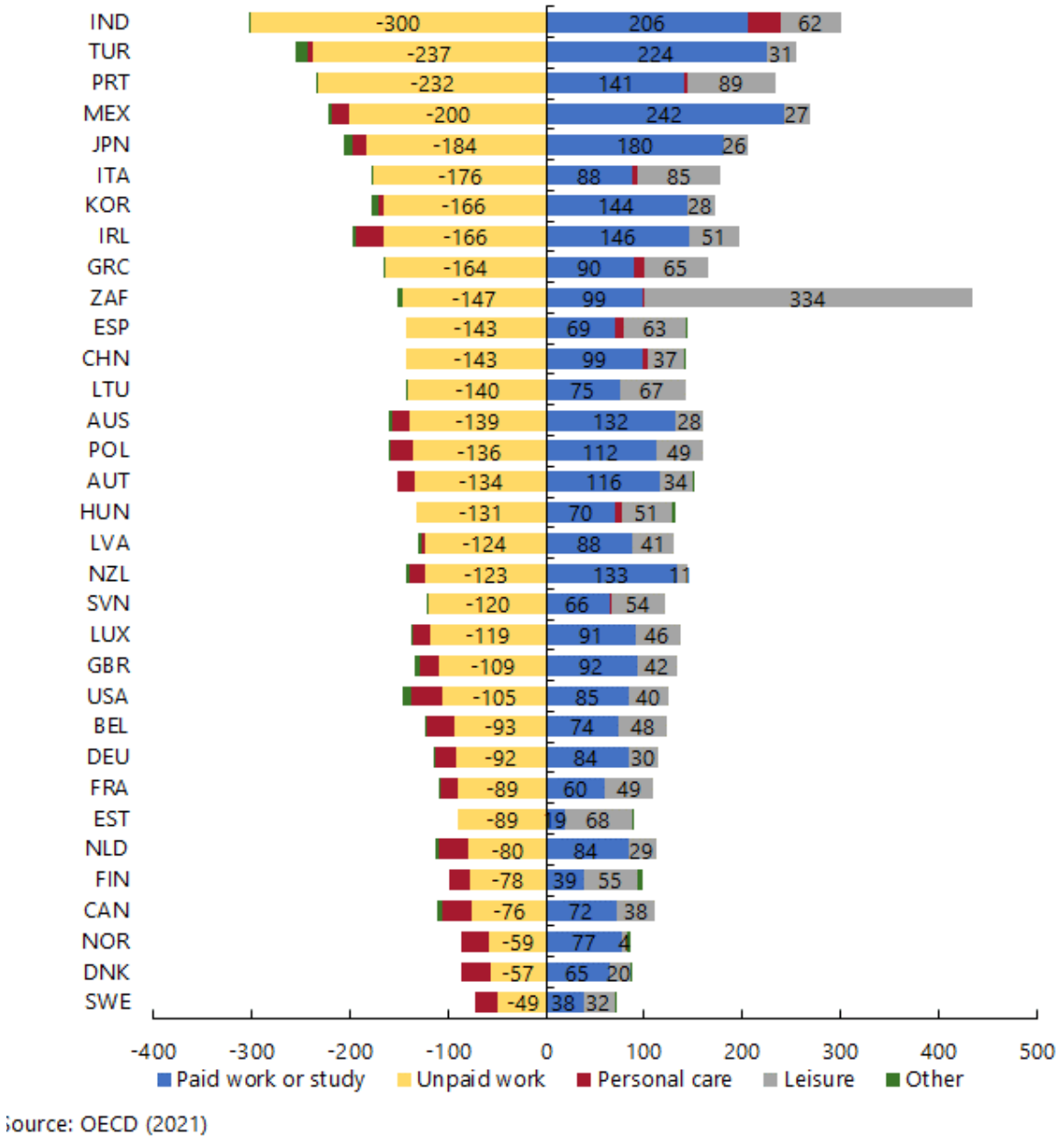
Time can generally be divided into three categories: paid market work, unpaid home production (such as household chores, childcare, and elderly care), and leisure. Figure 8 presents a breakdown of gender gaps in time use by activity and country: Women allocate more time to unpaid work while dedicating less time to paid work and leisure activities. For Organisation for Economic Co-operation and Development (OECD) countries, on average, women allocate 127 minutes more to unpaid work than men, while men dedicate 100 minutes more on paid work and 43 minutes more to leisure activities. In most countries with available data, women also work longer hours when paid and unpaid work are considered together (OECD Data).

Men and women need to manage their time between paid employment and unpaid home production, but women typically face higher unpaid care burdens. The period of pregnancy coupled with having more children translates to more unpaid home production work for women, spanning numerous years. Hence, on average, higher fertility rates lead to less time to devote to paid market work.

Resource constraints refer to the combinations of goods and services that are available for households for a given level of income. Goods and services include everything that a household chooses to purchase, including education goods, while the income level depends on household members'

employment decisions. In situations where education is costly and obstacles for women to participate in paid labor market activities are significant, parents may opt to have more children but provide less educational investment per child.

Figure 8. Time Use Gap (Male-Female) by Country by Activity, Minutes per Day



Source: OECD 2021.
Note: Most recent year used for each survey. Data labels in the figure use International Organization for Standardization (ISO) country codes.

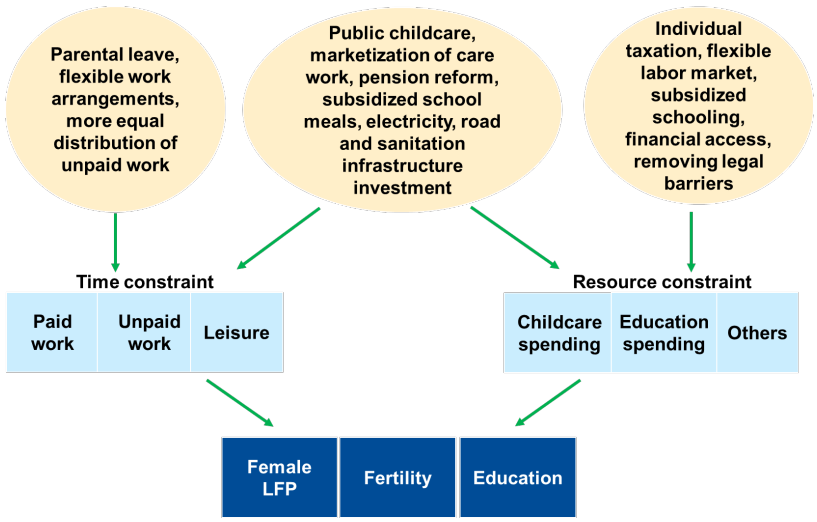
Higher levels of female education and wages increase a woman's lifetime opportunity cost of having children. The cost involves both the income forgone and the loss of female human capital accumulation. Consequently, the rise in the relative cost of raising children is reflected in resource constraints and contributes to the negative correlation between the female labor force participation rate and the fertility rate. This reflects the substitution effect.

The positive correlation between female labor force participation rates and fertility rates in advanced economies suggests there are other mechanisms at play too. Apart from the substitution effect, there is also an income effect. A higher wage rate enables employed women to afford a broader range of goods and services, including items that can act as substitutes for home production, such as housekeeping and childcare services. The income effect alone is probably not enough to generate a positive correlation, but there is room for policy to intervene.

To alleviate women's time constraints, policies should try to correct unequal distributions of care burdens. In LIDCs, prioritizing the construction and accessibility of infrastructure such as electricity, water, and sanitation can improve efficiency and alleviate women's time constraints. In advanced economies, increased involvement by men in unpaid work helps ease women's time constraints. Evidence indicates that the fertility rate is higher when men take on greater housework and childcare responsibilities (Doepke and others 2023). Implementing policies such as mandatory parental leave can facilitate the redistribution of unpaid work from women to men. Policies to encourage the marketization of home-produced goods and services, such as child and elderly care, create paid jobs while reducing time constraints.[7]

Certain policies can relax both the household resource and time constraints. For example, subsidizing childcare, which reduces its cost and increases the probability of usage, aids in alleviating both the time and resource constraints. Similarly, initiatives like subsidized education programs, such as school feeding programs, serve to alleviate household resource constraints, reducing the time parents spend on meal preparation, incentivizing parents to send children to school, and ultimately, positively impacting children's human capital development. Moving from family to individual taxation relaxes the resource constraint for women to join the labor market, but, if not combined with measures to address time constraints (for example, through available childcare), may result in more restricted fertility choices. Figure 9 summarizes how policies impact the time and resource constraints.

Figure 9. Policies and Household Constraints



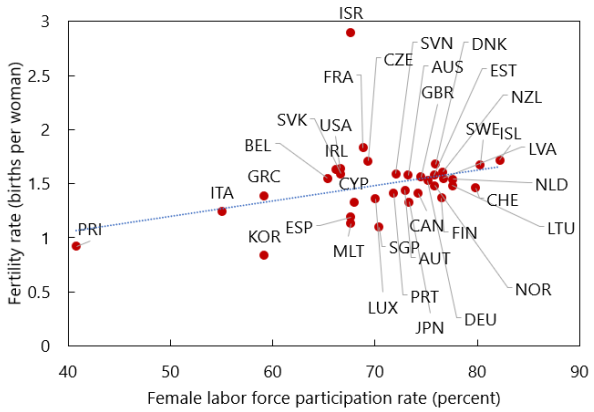
Source: IMF Staff.
Note: LFP = labor force participation.

[7] Marketization occurs when caregiving responsibilities traditionally performed within households, such as childcare, eldercare, and domestic chores, become commodified or commercialized. This can occur through the outsourcing of caregiving tasks to paid service providers or the development of commercial products and services aimed at facilitating household chores and caregiving responsibilities.

Advanced Economies and Emerging Markets: Facilitating Work–Life Choices

In advanced economies and emerging markets that face declining labor forces, policies should focus on empowering women to balance work–life choices. The previous section highlighted that most advanced economies and emerging markets are on track to see a decline in the working-age population due to below-replacement fertility rates, either presently or in the near future. At the same time, they are facing significant gender gaps in labor force participation (a median of more than 10 percent in advanced economies and almost 21 percent in emerging markets). This section therefore focuses on policies that are suitable to increase female labor force participation without exacerbating the trade-off between work and fertility choices.

Figure 10. Female Labor Force Participation and Fertility, 2020



Sources: Gender Data Hub and ILOSTAT.
Note: Results for 2019 are broadly similar. Data labels in the figure use International Organization for Standardization (ISO) country codes.

In advanced economies, the data no longer support the relationship of the trade-off between female labor force participation and fertility. Instead, there is a positive correlation of female labor force participation and fertility (Figure 10), reflecting changes in the economic environment in these countries, the marketization of childcare that has reduced the opportunity cost of working, a rise in productivity of home production, and the availability of fertility treatments that decrease the risk of unwanted childlessness under delayed fertility, among other factors (Doepke and others 2023). Similarly, the correlations between income and fertility and between education and fertility have also turned—from negative to positive—with higher fertility rates for highly educated women in advanced economies than seen in the past (Doepke and others 2023).

Public childcare can increase female labor force participation while relaxing possible constraints to fertility choices (Figure 11.1). Outsourcing childcare allows for parents to pursue a career by reducing the opportunity cost of childbearing, facilitating career–family choices. It also creates jobs for others through marketizing care responsibilities. While a country-level assessment would be needed to assess the net fiscal cost for individual countries, evidence from the United States during the 1997–2002 period showed that the increase in female wage income due to higher labor force participation by mothers was more than enough to compensate for the cost of subsidizing childcare (Council of Economic Advisors 2023). In Japan, public childcare support has helped improve female labor force participation and contributed to per capita GDP growth (Xu 2023).

The marketization of the care sector holds the potential to generate employment opportunities for men and women. Women currently bear a disproportionate burden in care responsibilities for older persons. In the United Kingdom, 83 percent of formal home-care workers and 58 percent of informal carers are female (Banks, French, and McCauley 2023). Similar figures hold in Italy, where 87 percent of formal caregivers are women, along with 60 percent of informal caregivers (Geyer and others, 2023). Simulation results indicate that investing 2 percent of GDP in public-care services would create more jobs than an equivalent investment in construction in the United Kingdom, the United States, Germany, and Australia. In comparison to investing in construction, directing funds toward care services could create almost as many jobs for men, while generating up to four times as many jobs for women (Women's Budget Group 2016).

Well-designed maternity leave schemes, in particular when combined with mandatory paternity leave, can help reduce the gender gap in labor force participation.

- Amin and Islam (2022) examine the links between the legally mandated length of maternity leave and firm-level female employment and find a significant, positive association. However, long periods outside the labor market also risk reducing skills and earnings (Ruhm 1998; Edin and Gustavsson 2008) (Figure 11.2). In addition, providing parental leave only to women can encourage employer discrimination and discourage employers from hiring women for positions that require costly qualification and training periods (Mandel and Semyonov 2005). Higher participation of men in childcare is associated with higher fertility (Doepke and others 2023), suggesting that designing appropriate parental leave schemes could also support fertility choices.

- This evidence implies that policies that encourage greater parity between paternity and maternity leave could support a more rapid return to work among mothers and help shift underlying gender norms (World Bank 2012) while facilitating fertility choices. For example, in Sweden, a certain portion of parental leave is set aside exclusively for fathers, operating under a "use it or lose it" principle (Duvander, Hass, and Thalberg 2017). In Germany, the parental leave period can be shared between the parents, but a period of two months is reserved for each parent, which will be lost if not used (Kraemer 2015). Unterhofer and Wrohlich (2017) find that introducing a quota on parental leave in Germany, which led to the share of fathers taking at least two months of paid leave, had a positive impact on social attitudes toward gender equality.

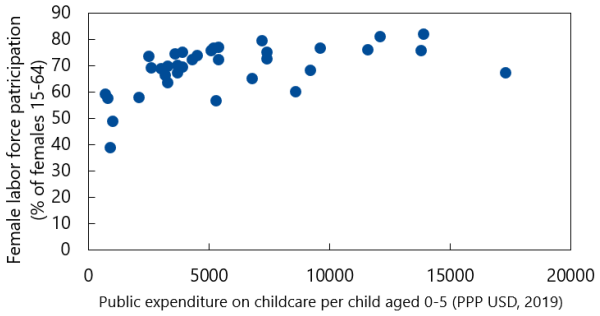
Supportive frameworks for maternity and parental leave schemes should be part of the policy design.[8] World Bank (2024) shows that significant gaps exist between the legal and supportive frameworks designed to support female labor force participation post-childbirth. That is, while many countries have introduced legal requirements concerning maternity, paternity, and parental leave, their implementation often falls short. Only 16 percent of countries offer incentives to encourage paternity leave. Expectant mothers may also face hurdles in applying for maternity benefits, suggesting a need for streamlined application processes. However, some countries have developed policies that incentivize parental leave. In Portugal, for example, parents who take at least 30 days of shared parental leave are offered an additional 30 days of parental leave. In Spain, maternity and paternity leave benefits are exempted from personal income tax (World Bank 2023).

In many OECD countries, policies support fertility decisions regardless of marital status. Many children born outside marriage live in single-parent households (Chamie 2017). In most OECD countries, the proportion of children born outside marriage has increased by at least 25 percentage points since 1970 (OECD Family Database), and policies are extended to different family circumstances (Picken and Janta 2019). Governments can offer additional financial support, such as targeted transfers and affordable childcare, to single-parent households (OECD 2022a).

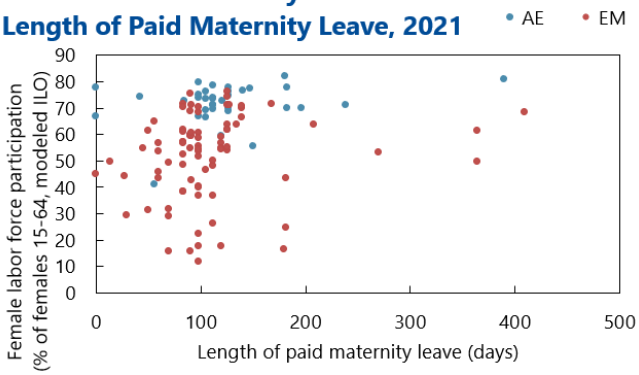
[8] The International Labor Organization's provision, outlined in Convention No. 183, stipulates the payment of at least two-thirds of wages (referred to as "cash benefits" in the Convention) during this period, a legally binding treaty for those countries that have ratified it.

Figure 11. Female Labor Force Participation, Childcare, and Maternity Leave

1. AE and EM: Childcare Spending and Female Labor Force Participation, 2019



2. AE and EM: Maternity Leave & LFP Length of Paid Maternity Leave, 2021



Sources: 1. OECD, 2. World Bank, Women Business and the Law.

Note: Assuming maximum maternal leave (all parental days for mother plus all joint parental leave) for five countries where maternity leave is not separated from parental leave—Australia, New Zealand, Norway, Portugal, Sweden. AE = advanced economy; EM = emerging market; GDP = gross domestic product; ILO = International Labour Organization; LFP = labor force participation.

Labor market segmentation, where workers are divided into protected and unprotected sectors, can influence fertility decisions (Box 2).

- In high-income countries with dual labor markets, individuals in the protected sector often enjoy better job security, higher wages, and more comprehensive benefits, while those in the unprotected sector face greater job instability and lower wages (Guner and others 2024). This disparity can discourage family formation and fertility among individuals in the unprotected sector, contributing to declining birth rates. Policies aimed at reducing labor market segmentation and promoting inclusivity include strengthening employment protections, expanding access to social benefits, and fostering labor market flexibility. By creating more equitable and secure employment opportunities, these policies can potentially mitigate the negative impact of dual labor markets on fertility rates.
- In addition, when women struggle to maintain stable formal jobs if they are not able to work excessively long hours, both labor market and fertility outcomes suffer. Korea serves as an example with its long work hours (longest among OECD advanced countries) and rigid dual labor market. Box 2 discusses the gains of reducing this duality by lowering the firing cost. These gains are enhanced when women's participation increases in the regular job sector, a goal that could be achieved through policies promoting flexible work arrangements.

Flexibility in work arrangements can help combine labor force and fertility choices. Goldin (2021) illustrates that the need to commit to long, rigid hours outside the home is one of the most important challenges women face, reinforcing gender disparities. Flexible work arrangements help women achieve career success while also being available for their families, encouraging them to stay in the workforce. Covid-19-related lockdowns have increased the use of flexible workplace arrangements, including hybrid work and work from home. In 2019, 60 percent of remote-capable employees spent their week working fully on-site, whereas that figure had fallen to just 20 percent in 2023 (Wigert, Harter, and Agrawal 2023).

Flexible work arrangements can impact the distribution of unpaid work among household members, especially when combined complementary policies. Policymakers can aim to design gender-responsive flexible work arrangements within specific country contexts, which can not only boost female labor force

participation but can also lead to a more gender-balanced allocation of household unpaid work. In tandem with complementary policies, such as paternal leave, well-designed flexible work arrangements can help break down gender stereotypes, contribute to the advancement of gender equality, and foster socioeconomic progress.[9] A recent United Nations Population Fund (UNFPA) initiative, as described in Box 3, offers examples of policies implemented within the private sectors and on a national scale in Western Balkans and Moldova.

There is also scope for fiscal policy that is tailored to country-specific circumstances, which can help reduce the trade-offs that countries, particularly those with limited fiscal space, face (Table 1).

- Tax credits or benefits for low-wage earners can stimulate labor force participation. By reducing the net tax liability, such credits increase the net income gain from accepting a job. However, these credits, which are mostly provided at a lower level of income and phased out at higher income levels, may result in a trade-off between work and childbearing.
- As female labor supply is more responsive to taxes than male labor supply (IMF 2013), switching from family income taxation to individual income taxation that reduces the tax burden for (predominantly female) secondary earners can increase female labor force participation. However, this policy, while increasing household income, may also increase the opportunity cost of childbearing and result in fertility declines if not accompanied by other measures such as childcare or tax credits or deductions.
- Progressive taxation can help reduce the overall tax burden on lower-income households, which are often disproportionately female-headed households. Tax incentives for part-time work can help with balancing work and family responsibilities, while tax credits or deductions for education and training, particularly in sectors where women are underrepresented, can further boost female incentives to join the labor force.
- Integrating a gender lens into tax policy design can help identify and eliminate potential areas of gender discrimination.

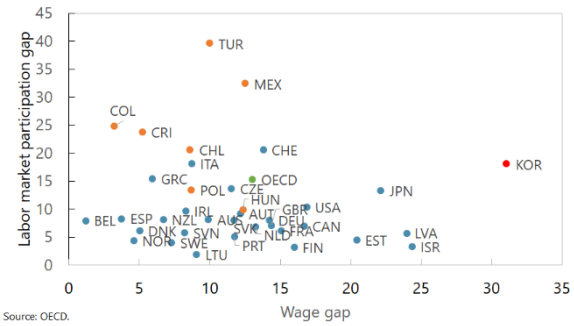
Gender-responsive policy changes are needed to promote a more equal sharing of the unpaid care burden. In OECD countries, women receive, on average, 25 percent less income from pensions. This partly reflects inequalities in the labor market, as women have lower employment rates, are more likely to work in part-time jobs, have shorter careers, and receive overall lower wages, while legal retirement ages also still differ for men and women (OECD 2021). However, women also face disproportionate unpaid work burdens, which limit their opportunities to participate in the formal labor market. Hence, policies aimed at reducing labor market barriers for women and promoting a more equal distribution of unpaid work are needed.

[9] Christopherson Puh and others (2022) offer country case studies that cover legal reforms aimed at promoting female labor force participation. Examples include Namibia's 2007 Labor Act, Iceland's parental leave laws, and the Philippines Maternity and Paternity Leave Acts.

Box 2. Addressing Gender Gaps in the Labor Market in Korea

Among advanced OECD countries in 2021, Korea has the largest gender gap in wages and a high gender gap in labor force participation. There is an 18-percentage point gap in labor force participation and a 31-percentage-point difference in wages. Women are more often in short- and fixed-term contract jobs (47 percent of paid female workers compared to 30 percent of paid male workers). Korea's working hours are among the longest within OECD advanced countries, while the gender gap of working hours is less than the OECD average, indicating that Korean women face much longer working hours compared to women in peer countries. They are also overrepresented in lower-paid roles like service and manual labor, with only 12 percent of managerial positions held by women.

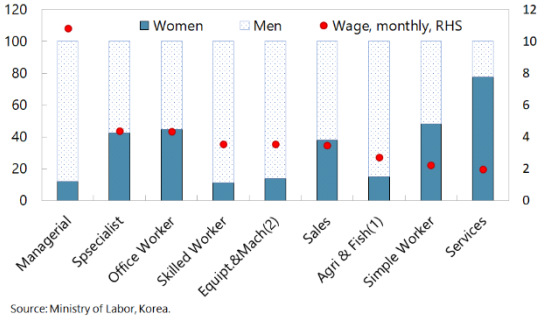
Gender Gap in Labor Force Participation and Wage
(Percent, 2021)



Source: OECD.
Note: Oragne dots are emerging market countries; wage gap = median earnings of (men-women)/(men) for full time emp. Data labels in the figure use International Organization for Standardization (ISO) country codes.

The disparities stem largely from entrenched social norms and rigidities in Korea's labor market structure. Women are expected to shoulder the bulk of household chores and childcare responsibilities. The rigid labor market, emphasizing seniority and demanding long hours, compounds this challenge, leading many women to leave the workforce during their prime years, only to return later and often find themselves relegated to less-secure, lower-paying nonregular jobs. This cycle deepens gender inequalities, perpetuating the wage gap and limiting women's career advancement opportunities. As implied in Guner and others (2024), less flexible labor markets, through longer working hours, can constrain time with family and thus limit fertility choices.

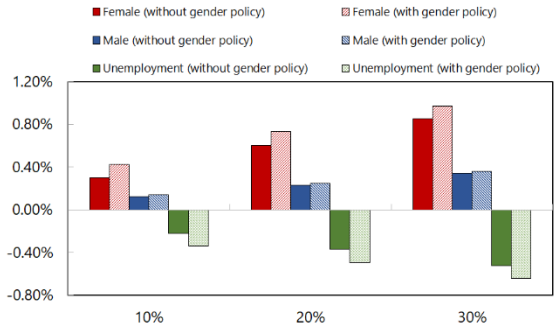
Gender Share by Job Classification and Wage
(LHS percent, RHS Mil KRW, 2021)



Source: Ministry of Labor, Korea.
Note: (1) Agriculture and fisheries, (2) equipment and machinery operator.

Labor market reforms to address labor market duality can have significant benefits for output, productivity, and labor market outcomes while reducing inequality and gender gaps. A study conducted in preparation for the 2023 Article IV consultation with Korea examined the impact of enhancing job market flexibility, particularly by reducing severance payments for regular contract workers, alongside policies to encourage more women to enter the workforce. The findings reveal that reducing severance payments could lead to fewer people being unemployed, with women benefiting the most by joining the workforce. Moreover, productivity improved, especially among women, contributing to a reduction in income inequality. While both men and women saw increased participation in both stable and less-secure job types, the rise was more prominent in the latter for women. Importantly, implementing policies to support female labor force participation resulted in even greater improvements, including higher female productivity, a decrease in the proportion of women in less-secure jobs, and an increase in their presence in stable positions.

Labor Force Participation and Unemployment Rates
(Change in ppts)



Source: IMF Staff Calculations.

Source: [Republic of Korea: 2023 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for the Republic of Korea (imf.org) – Annex XII.]

Box 3. Expanding Choices: Gender-Responsive Family Policies for the Private Sector in the Western Balkans and Moldova

United Nations Population Fund (UNFPA), with funding from the Austrian Development Cooperation (ADC)–implemented "Expanding Choices" (December 2019–November 2023) in Albania, Kosovo, and Moldova. This project supported governments and private sectors to design and implement gender-responsive family policies with the goals of helping employees balance work and life, equally distributing the unpaid care work between men and women and increasing women's participation in the labor force.

The project has achieved significant milestones. In terms of private sector engagement, 19 "Champion Companies" have initiated family-friendly initiatives, including establishing breastfeeding rooms, family-friendly rooms, and children's playgrounds at work; providing extended paternity and parental leave and carer leave; increasing financial support; keeping colleagues on parental leave informed; and providing flexible work arrangements. These initiatives have benefited over 13,600 employees and their families.

Moreover, the project has had a notable impact on national policies. Through policy mapping and scenario development, legislative changes have been adopted in Moldova in July 2022. Childcare leave can now be shared between fathers and mothers, the period for requesting paternity leave has been extended, the child-raising allowance has been changed, and the flexible work schedule is now regulated in the Labor Code.

The project has also focused on advocacy and knowledge sharing. UNFPA and its private sector partner, Parent Smart Employer from Sweden, have developed a model to support companies' family-friendly workplace initiatives. Study visits and conferences have facilitated knowledge exchange and influenced the private sector mindset. Furthermore, awareness campaigns promoting work–life balance and family-friendly workplaces have reached over 4.5 million individuals online. As part of these efforts, Albania celebrated its first Fathers' Day, signaling a cultural shift toward recognizing diverse caregiving roles and promoting greater gender equality in caregiving responsibilities.

Overall, "Expanding Choices" has made significant strides in promoting gender-responsive policies, both within the private sector and at the national level. The project has laid the groundwork for creating more supportive environments where individuals can thrive both personally and professionally.

Table 1. Reducing the Need for Work–Life Trade-offs—Policies That Facilitate Choices

Measure	Female Labor Force Participation	Fertility	Examples
Public childcare Several countries offer subsidized childcare, often as part of broader family-friendly policies aimed at supporting parents, promoting gender equality in the workforce, and ensuring the well-being and development of children. Programs are typically income-based and differ in terms of availability and cost.	**Positive**	**Positive**	Canada, Costa Rica, Denmark, Finland, Korea, Luxembourg, Germany, Norway, Singapore, Sweden.[10]
Protection, care, and support for older persons Build the social infrastructure to support older adults; marketization of care work; long-term care; community-care services; assisted living arrangements. Encourage men to take on more care responsibilities for older persons at home. Family leave and flexible work arrangement together with social norm change could encourage the redistribution. Establishing a network of healthy aging centers as a form of day centers contributing to reducing the costs of health care and contributing to improved well-being of older persons.	**Positive**	**Potentially positive** as it frees up women's time and allows them to focus on other activities. Needs to be combined with other policies.	Japan (long-term care insurance). Bosnia and Herzegovina (healthy aging centers). Uruguay (national-care systems which include care and support for children, older people, and people with disabilities and dependence). Costa Rica (National-Care System and Policy).
Paid maternity leave Paid maternity leave supports women's health and ability to return to work after childbirth.	**Positive if well designed**	**Positive**	A survey of 41 high-income countries (Gromada and Richardon 2021) finds that maternity leave averages 19 weeks and is paid at 77 per cent of the national average wage. Philippines Maternity and Paternity Leave Acts (Christopherson Puh and others 2022)

[10] However, the fertility rate (native born) has been falling in Norway and Sweden since the 1970s. See European commission (2023a, 2023b, 2023c, 2023d) for more details on childcare policies.

Table 1. Reducing the Need for Work–Life Trade-offs—Policies That Facilitate Choices (concluded)

Measure	Female Labor Force Participation	Fertility	Examples
Paternity leave Paternity leave encourages a more equal distribution of childcare responsibilities.	**Positive**	**Positive**	World Bank's Women, Business, and the Law 2024 report indicates that 123 countries offer paid paternity leave, although the average paid maternity leave is 196 days compared to 25 days for paternity leave. Iceland's parental leave laws (Christopherson Puh and others 2022).
Individual taxation Moving to individual taxation that lowers the marginal tax rate on secondary earner could encourage women to participate in labor market.	**Positive**	**Positive if combined with other policies**	In Angola, Chile, Egypt, and Georgia, the tax unit is individual.[11]
Flexible working hours Facilitates better balance between paid and unpaid work.	**Positive**	**Positive**	The Article IV report for Korea is discussing the flexibility of working hours.
Remote work Facilitates better balance between paid and unpaid work.	**Positive**	**Positive**	
Retraining and capacitation Allows women who leave the labor market due to child rearing, care for older persons, or other reasons to reenter the labor market. Upskilling and reskilling of inactive and long-term unemployed women aimed at boosting of socioeconomic development and ensuring the provision of public services to most vulnerable population groups	**Positive**	**Possibly positive** (increases the likelihood of reentering the labor market after having kids)	Korea Bosnia and Herzegovina (the effects of population changes on the provision of public services)

[11] France, Germany, Belgium, Switzerland, and the United States tax the couple's joint income.

LIDCs: Boosting Human Capital in High-Population-Growth Countries

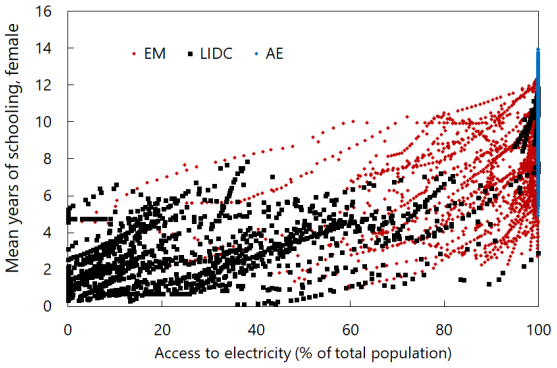
Educating girls is necessary to build the human capital stock, and leveling the playing field is needed to ensure women have equal opportunities to utilize their skills. The previous sections have highlighted large gains from building human capital, including through closing gender gaps, in particular when women can apply accumulated skills in the labor market.

Legal rights are crucial. In some instances, this requires removing legal barriers hindering women's participation in the labor force. Nineteen countries have legal restrictions on a woman's ability to be employed or pursue a trade/profession (for example, women must obtain permission from their husbands or are required to provide additional documentation compared to men) (World Bank 2024). In other cases, it entails guaranteeing women's rights to land ownership such as in Sierra Leone, where in 2022, revisions to the legal framework (through the Customary Land Rights Act) eliminated discriminatory legal barriers to female customary land ownership. The Rwandan parliament has enacted measures ensuring equal working conditions and wages alongside specific rights and benefits for childbirth, including maternity leave, pay, job security, post-maternity leave, and accommodations for pregnant and breastfeeding women (Christopherson Puh and others 2022). As noted in Christopherson Puh and others (2022), Christopherson Puh and others (2024a), and Christopherson Puh and others (2024b), it is important to address legal rights across several categories of law: this includes constitutional law (civil rights and citizenship), property law, family law, labor law (employment and social security), and tax law.

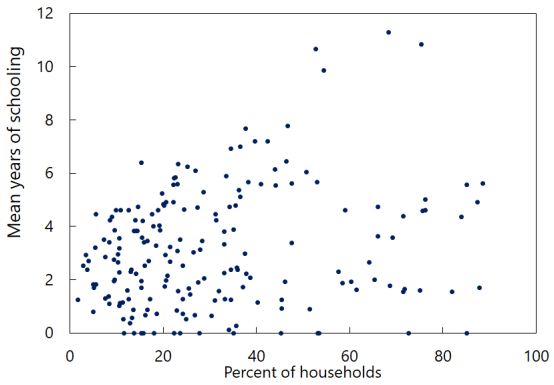
Investments in electricity, water, and sanitation infrastructure can reduce unpaid work and time burdens, which typically fall disproportionately on women and girls. This, in turn, allows women and girls to pursue education, employment, or other productive activities. Evidence indicates that rural electrification significantly raises female employment (Dinkelman 2011), and there is a positive relationship between electricity access and mean years of schooling for girls (Figure 12.1). Moreover, improved water and sanitation infrastructure supports better health outcomes by reducing the risk of waterborne diseases, improving maternal health, and increasing the safety and dignity of women and girls, especially during menstruation and pregnancy. Access to water in schools is also positively associated with mean years of schooling (Figure 12.2).

Figure 12. Female Education, Electricity, Access to Water, and Sanitation

1. Electricity Access & Female Education
(1990–2016)



2. Schooling & Access to Water on Premise
(By income group, 1990–2022)



Sources: 1. UNESCO Institute for Statistics, UN Human Development Index, World Bank Development Indicators, 2. UNESCO Institute for Statistics, UN Human Development Index, Demographic & Health Surveys Program.

Safe, accessible road and travel infrastructure can enhance access to markets, schools, and health care facilities. Proper street lighting supports safety of women and girls by reducing their vulnerability to violence. Ensuring that women are involved in the planning and implementation of infrastructure projects not only fosters gender equality in community decision making but also provides opportunities for women to voice their concerns and ideas. Women's participation in infrastructure planning, design, and execution contributes to their empowerment and improved service delivery (Small and van der Meulen Rodgers 2023).

In many countries, women face legal, societal, and cultural barriers to accessing financial services, depriving them of the means to save, borrow, and invest in their businesses or education. While global access to financial services has increased over time, on average, women have fewer accounts at financial institutions than men, with women being 6 percentage points less likely to own an account than men in developing economies (Global Findex 2021). Women often face more restrictive collateral requirements and less favorable loan conditions more generally, despite lower average rates of nonperforming loans for women than for men in many countries. Promoting financial access for women can promote female labor force participation in general, and entrepreneurship in particular. For instance, as noted in Field and others (2021) for the case of India, women who receive training in account use and direct deposits into accounts are more likely to work in public and private jobs. IMF (2022) provides an overview of policies to address gender gaps in financial access.

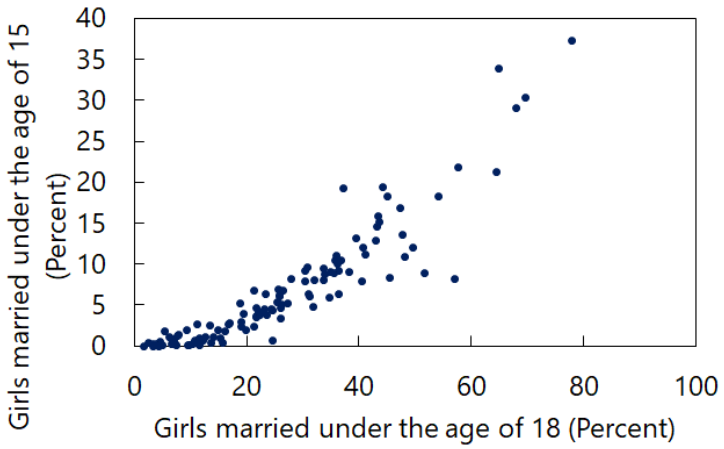
Improving access to fintech, particularly in rural areas, can boost female labor force participation (Kumar, Amaglobeli, and Moszoro 2023). For example, targeted subsidies could increase the adoption of mobile banking technologies. Additionally, promoting digital payment platforms and ensuring that fintech solutions are accessible and user-friendly can support financial inclusion and labor force participation, particularly for women in rural and underserved areas. Mentorship and training in financial management and business development also serve as tools to build human capital.

Investments in family planning can lead to lower fertility, thus changing the population's age structure and creating the potential for a demographic dividend. Sustainable Development Goal 3.7[12] recognizes the importance of access to reproductive health care and contraception. Investments in reproductive health care have been shown to be highly cost effective: Kohler and Berman (2014) estimate that every US$1 spent to meet the unmet need for contraception can yield US$120 in long-term benefits related to lower infant and maternal mortality and economic growth. However, globally, in 2022, family planning needs were unmet for nearly 30 percent of women aged 15–49 (United Nations 2022). When individuals, regardless of gender, lack access to family planning resources or a voice in fertility decisions, it can hinder the realization of the demographic dividend as populations continue to grow. Removing barriers to accessing family planning and reproductive health care services can support countries' efforts to realize demographic dividends.

[12] Sustainable Development Goal 3.7 targets "…universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes" Sustainable Development Goal indicator 3.7.1 measures the "Proportion of women of reproductive age (aged 15–49 years) who have their need for family planning satisfied with modern methods." UNFPA defines family planning as "the information, means and methods that allow individuals to decide if and when to have children."

Child marriage has profound consequences on sexual and reproductive health, mental health, and educational and economic outcomes. The incidence of child marriage—under age 15—is as high as 35 percent in some countries, and even higher when considering a cutoff of 18 years of age (Mitra and others 2020; Figure 13). Child marriage and its corresponding adolescent fertility harm physical and mental health and the human capital and skill development of women and girls, with negative implications for income and poverty reduction. Eradicating child marriage is crucial for the realization of demographic dividend. In fact, if child marriage were ended today, long-term annual per capita real GDP growth rate in emerging and developing countries would increase by more than one percentage point (Mitra and others 2020).

Figure 13. EMs and LIDCs: Incidence of Child Marriage



Source: UNFPA.

Note: EMs = emerging markets; LIDCs = low-income and developing countries.

Child labor remains an issue for both girls and boys. In the world's poorest countries, slightly more than one in five children are engaged in child labor (UNICEF 2023). Child labor is a complicated issue and is usually a result of poverty. Eradicating it all together will take time, but there is room for policymakers to improve children's education and basic rights and agency. Studies show that subsidized schooling and food for education program can increase schooling, even in the presence of child labor (Ravallion and Wodon 2000; Meng and Ryan 2010).

Addressing the above issues will require gender-responsive reforms that go hand in hand with needed structural reforms. Countries face complicated social, cultural, and economic interactions. Implementation of the aforementioned policies may require trade-offs, and difficult choices in countries facing fiscal constraints and large levels of debt. Some policies, such as legal reforms aimed at promoting gender equality, do not always require fiscal space, as many discriminatory practices can be addressed through legislative changes without significant cost.

Prioritizing policies to boost female labor force participation and harness the demographic dividend necessitates a nuanced approach that underscores the importance of country-specific analysis. Country capacity should also be considered to best leverage existing resources efficiently while maximizing impact. Monitoring and evaluation mechanisms are also crucial for policymakers to track the effectiveness of implemented initiatives, allowing for timely adjustments and ensuring sustained progress.

Harnessing the demographic dividend requires expanding opportunities for young people to engage in the economic sector. For instance, measures to improve education outcomes may need to be accompanied by vocational training or university–industry partnerships to support both male and female entry into the labor market. Complementing policies that promote higher female labor force participation and human capital accumulation with other economic reforms, such as financial sector, labor market, legal, and transparency reforms can bolster the macroeconomic and gendered impacts (Budina and others 2023).

Table 2. Enhancing Human Capital Accumulation

Measure	Female Labor Force Participation	Human Capital (Education and Health)	Fertility	Examples
Removing discriminatory legal barriers.	**Positive**	**Positive** as it gives women more incentive to pursue education due to higher expected lifetime earnings.	Increases women's bargaining power which can reduce unwanted childbirths.	Sierra Leone (women's land rights). Kiribati (gender harassment at workplace, remove restrictions on women's employment, promote equal pay for equal work, and introduce maternity leave). Rwanda (equal treatment in inheritance laws). Namibia's 2007 Labor Act.
Invest in electricity, water, and sanitation infrastructure to reduce the unpaid work and time burdens on women and girls.	**Positive** if women's decision rights can be improved at the same time.	**Positive** if women's decision rights can be improved at the same time.	Ambiguous.	Evidence from Burkina Faso shows that men report higher empowerment relative to women from water, sanitation and hygiene infrastructure. Evidence from Kenya show that women's decision making power was positively associated with households having better sanitation.
Road and travel infrastructure enhances access to markets, schools, and health care facilities.	**Positive**	**Positive**	Ambiguous.	In Middle East and North Africa, improving public transport systems is a necessary step for increasing women's participation in the workforce.
Family planning, that is, addressing unmet need for birth control and contraception methods.	**Positive**	**Positive**	Reduces unwanted childbirths.	Malawi

Table 3. Enhancing Human Capital Accumulation (concluded)

Measure	Female Labor Force Participation	Human Capital (Education and Health)	Fertility	Examples
Reducing child marriage and harmful practices, such as female genital mutilation.	**Positive**	**Positive**	Reduces adolescent fertility.	A cross country study covering 112 countries shows that child marriage harms growth. Kenya (outlawed female genital mutilation in 2011). Thailand (Adolescent Pregnancy Prevention and Alleviation Act in 2016, engaging concerted efforts of 5 ministries to reduce adolescent births).
Subsidized schooling and food for education program.	**Positive**	**Positive**	Reduces future unwanted childbirths.	Bangladesh

Conclusion

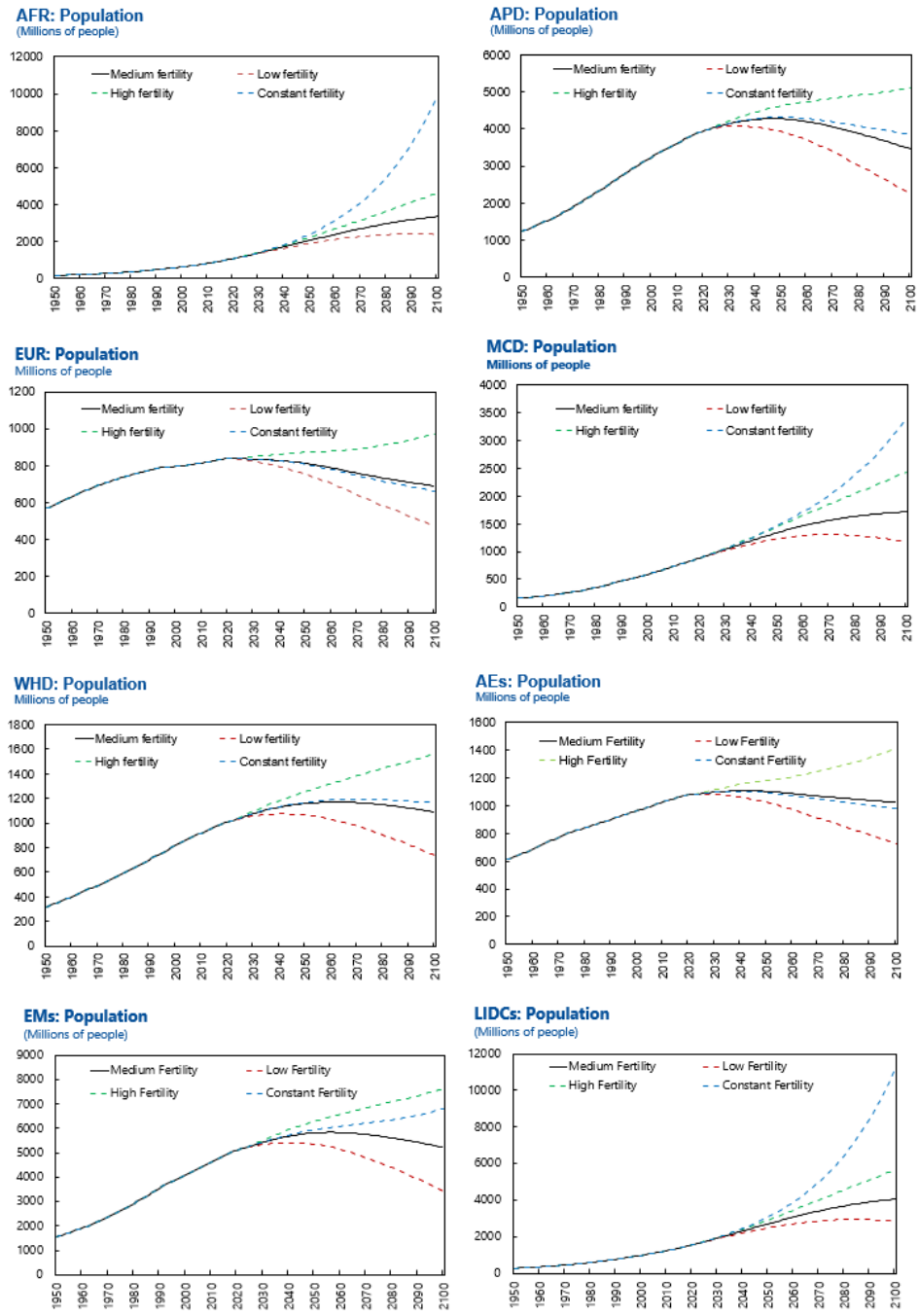
This note summarizes the contrasting demographic trends faced by the world's economies: aging populations in some regions and growing populations in others. These trends have wide implications for growth, economic stability, and public finances. As highlighted in a number of recent Article IV consultations between governments and the IMF, policymakers are contemplating policy responses to the changing demographic structure.

This note also emphasizes that promoting gender equality will mitigate demographic challenges across both scenarios. In countries with aging populations (advanced economies and emerging markets), higher female labor force participation could compensate for potential GDP losses due to a shrinking labor force. In countries expecting a surge of young individuals (LIDCs), measures to enhance human capital and ensure entry into the labor force with appropriate skills are crucial to harnessing demographic dividends.

Recognizing the differential challenges and the corresponding targeted outcomes, this note argues for facilitating joint decisions of education, fertility, and labor force participation. This approach allows polices to be categorized as addressing the time constraint, the resource constraint, or both. In addition to removing barriers for female labor force participation in general, in advanced economies and emerging markets, policies should prioritize alleviating women's time constraints through subsidies and promoting a more equal distribution of unpaid work between men and women. In LIDCs, policies should concentrate on overcoming household resource constraints that impede education outcomes.

Annex 1. Population Dynamics

Figure A.1. Population Estimates and Projections, 1950–2100



Sources: United Nations Population Division and IMF Staff Estimates.

Note: AEs = advanced economies; AFR = sub-Saharan Africa; APD = Asia and the Pacific; EMs = emerging markets; EUR = Europe; LIDCs = low-income and developing countries; MCD = Middle East, North Africa, and Central Asia; WHD = Western Hemisphere.

Annex 2. Framework to Assess the Macroeconomic Gains from Education

As described in IMF (2024) (see Malta and others [2019] or Fruttero and others [2020] for more details), the country-specific model allows for individuals to be different in key aspects, such as gender, stage of life, labor skills, and access to savings. It examines gender biases in both the workplace and the household, which create barriers to female labor force participation. The model also allows for workers to decide between participating in formal and informal jobs to capture that women are disproportionately represented in the informal sector which remains a substantial part of the economy in LIDCs.

In each life period, households (a man and a woman) make decisions about consumption of goods and services. These are produced in formal and informal sectors. Men and women make labor supply decisions separately. Men decide the number of hours worked in formal or informal sectors. Women decide first if they participate in the labor market and, if they do, how many hours to work in the formal or informal sectors. Households incur a utility cost when women participate in the labor market, which comes from the need to coordinate home production, child or elderly care, and other unpaid work, and to comply with laws and social norms that create barriers for women to work outside the household. Initial skills and years of education determine human capital that evolves endogenously through on-the-job experience.

Formal sector production uses capital and labor inputs. Informal sector production uses only labor. Women face wage discrimination. Households pay taxes on formal sector goods and services, purchases, and earned income. Corporate revenues in the formal sector are also taxed. The government spends revenues on public consumption, public education, and transfers.

References

Aiyar, Shekhar, and Ashoka Mody. 2011. “The Demographic Dividend: Evidence from the Indian States.” IMF Working Paper 11/38.

Amaglobeli, David, Ruud de Mooji, Andualem Mengistu, Mariano Moszoro, Manabu Nose, Soheib Nunhuck, Sailendra Pattanavak, Lorena Rivero del Paso, Frankosiligi Solomon, Rebecca Sparkman, Herve Tourpe, and Gerardo Uña. 2023. “Transforming Public Finance through GovTech.” IMF Staff Discussion Note 2023/004.

Amin, Mohammad, and Asif. M. Islam. 2022. “The Impact of Paid Maternity Leave on Women’s Employment: Evidence Using Firm-Level Survey Data from Developing Countries.” World Bank Policy Research Working Paper 10188.

Appiah, Elizabeth N., and Walter W. McMahon. 2002. “The Social Outcomes of Education and Feedbacks on Growth in Africa.” *Journal of Development Studies* 38 (4): 27–68.

Baksa, Daniel, and Zsuzsa. Munkacsi. 2019. “More Gray, More Volatile? Aging and (Optimal) Monetary Policy.” IMF Working Paper No. 2019/198.

Banks, James, Eric French, and Jeremy McCauley. 2023. “Long-term Care in England.” National Bureau of Economic Research (No. w31826).

Barro, Robert J. 2013. “Education and Economic Growth.” *Annals of economics and finance*, *14*(2), pp.301-328.

Barro, Robert J., and Jong-Wha Lee. 1994. “Sources of Economic Growth.” Carnegie-Rochester Conference Series on Public Policy, 40: 1–46. North-Holland.

Berge, Kersti, and Adrian Wood. 1994. “Does Educating Girls Improve Export Opportunities?” Institute of Development Studies Working Paper. Brighton: Institute of Development Studies, University of Sussex.

Bloom, David E., David Canning, Gunther Fink, and Jocelyn E. Finlay. 2009. “Fertility, Female Labor Force Participation, and Demographic Dividend.” *Journal of Economic Growth* 14: 79–101.

Bloom, David, David Canning, and Jaypee Sevilla. 2003. *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change*. Santa Monica, CA: RAND Corporation.

Budina, Nina, Christian Ebeke, Florence Jaumotte, Andrea Medici, Augustus J. Panton, Marina M. Tavares, and Bella Yao. 2023. “Structural Reforms to Accelerate Growth, Ease Policy Trade-offs, and Support the Green Transition in Emerging Market and Developing Economies.” IMF Staff Discussion Note 2023/007.

Chamie, Joseph 2017. “Out-of-Wedlock Births Rise Worldwide.” YaleGlobal Online.

Christopherson Puh, Katharine, Audrey Yiadom, Juliet Johnson, Francisca Fernando, Hanan Yazid, and Clara Thiemann. 2022. “Tackling Legal Impediments to Women’s Economic Empowerment.” IMF Working Paper 2022/037, International Monetary Fund, Washington, DC.

Christopherson Puh, Katharine, Audrey Yiadom, Juliet Johnson, Francisca Fernando, and Lucia Gruet. 2024a. “Legal Rights: Women’s Economic Empowerment.” In Kolovich and Newiak (eds): *Gender Equality and Economic Development in Sub-Saharan Africa* (2024, 225-235), edited by Lisa L. Kolovich and Monique Newiak. Washington, DC: International Monetary Fund.

Christopherson Puh, Katharine, Audrey Yiadom, Juliet Johnson, Francisca Fernando, and Lucia Gruet. 2024b. “Legal Rights: Women’s Economic Empowerment—Case Studies.” In Kolovich and Newiak (eds): *Gender Equality and Economic Development in Sub-Saharan Africa* (2024, 237-251), edited by Lisa L. Kolovich and Monique Newiak. Washington, DC: International Monetary Fund.

Council of Economic Advisors. 2023. “Did Stabilization Funds Help Mothers Get Back to Work After the COVID-19 Recession?.” Council of Economic Advisors Working Paper.

D’Attoma, John, Clara Volintiru, and Sven Steinmo. 2017. “Willing to Share? Tax Compliance and Gender in Europe and America.” *Research & Politics* 4 (2), p.2053168017707151.

D’attoma, John W., Clara Volintiru, and Antoine Malézieux.. 2020. “Gender, Social Value Orientation, and Tax Compliance.” CESifo Economic Studies, 66(3), pp.265-284.

De Henau, Jerome, and Diane Perrons. 2016. “Investing in the Care Economy to Boost Employment and Gender Equality.” *Women’s Budget Group*, pp. 1–6. https://wbg.org.uk/wp-content/uploads/2016/03/De_Henau_Perrons_WBG_CareEconomy_ITUC_briefing_final.pdf

Dickin, Sarah, Elijah Bisung, Juste Nansi, and Katrina Charles. 2021. “Empowerment in Water, Sanitation and Hygiene Index”. *World Development*, 137, pp.105158.

Dinkelman, Taryn 2011. “The Effects of Rural Electrification on Employment: New Evidence from South Africa.” *American Economic Review* 101 (7): 3078–108.

Doepke, Matthias, Anne Hannusch, Fabian Kindermann, and Michele Tertilt. 2023. “The Economics of Fertility: A New Era.” In *Handbook of the Economics of the Family* edited by *Shelly Lundberg and Alessandra Voena* (Vol. 1, No. 1, pp. 151–254). North-Holland.

Dollar, David, and Roberta Gatti. 1999. *Gender Inequality, Income, and Growth: Are Good Times Good for Women?* (Vol. 1). Washington, DC: Development Research Group, The World Bank.

Duvander, Ann-Zofie, Linda Haas, and Sara Thalberg. 2017. “Fathers on Leave Alone in Sweden: Toward More Equal Parenthood?” *Comparative Perspectives on Work-Life Balance and Gender Equality: Fathers on Leave Alone, edited by Margaret O'Brien and Karin Wall*, pp.125–45.

Edin, Per-Anders and Magnus Gustavsson. 2008. “Time Out of Work and Skill Depreciation.” *ILR Review* 61 (2): 163–80.

European Commission. (2023a). “Finland: Early Childhood Education and Care.” Eurydice. Accessed April 26, 2024. https://eurydice.eacea.ec.europa.eu/national-education-systems/finland/early-childhood-education-and-care

European Commission. (2023b). “Luxembourg: Funding in Education: Early Childhood and School Education Funding.” Eurydice. Accessed April 26, 2024. https://eurydice.eacea.ec.europa.eu/national-education-systems/luxembourg/early-childhood-and-school-education-funding

European Commission. (2023c). “Norway: Early Childhood Education and Care.” Eurydice. Accessed April 26, 2024. https://eurydice.eacea.ec.europa.eu/national-education-systems/norway/early-childhood-education-and-care#:~:text=ECEC%20is%20not%20compulsory%20in,when%20they%20start%20primary%20school

European Commission. (2023d). “Sweden: Early Childhood Education and Care.” Eurydice. Accessed April 26, 2024. https://eurydice.eacea.ec.europa.eu/national-education-systems/sweden/early-childhood-education-and-care#:~:text=From%20age%201%2C%20children%20are,school%20recreation%20centre%20(fritidshem)

Evans, David K., Maryam Akmal, and Pamela Jakiela. 2020. “Gender Gaps in Education: The Long View.” *IZA Journal of Development and Migration* 12 (1).

Field, Erica, Rohini Pande, Natalia Rigol, Simone Schaner, and Charity T. Moore. 2021. “On Her Own Account: How Strengthening Women’s Financial Control Impacts Labor Supply and Gender Norms.” *American Economic Review* 111 (7): 2342–75.

Forbes, Kristin J. 2000. “A Reassessment of the Relationship between Inequality and Growth.” *American Economic Review* 90 (4): 869–87.

Fruttero, Anna, Daniel Gurara, Lisa Kolovich, Vivian Malta, Marina M. Tavares, Nino Tchelishvili, and Stefania Fabrizio. 2020. “Women in the Labor Force: The Role of Fiscal Policies.” IMF Staff Discussion Note 2020/003. International Monetary Fund, Washington, DC.

Galor, Oded, and Joseph Zeira. 1993. “Income Distribution and Macroeconomics.” *The Review of Economic Studies* 60 (1): 35–52.

Geyer, Johannes, Axel H. Börsch-Supan, Peter Haan, and Elsa Perdrix. 2023. “Long-term Care in Germany.” National Bureau of Economic Research (No. w31870).

Global Findex Database 2021, “Women and Financial Inclusion”, World Bank Policy Note, Washington, DC.

Goldin, Claudia 2021. *Career and Family: Women’s Century-Long Journey toward Equity*. Cambridge, Massachusetts, and London England: Princeton University Press.

Gonzales, Christian, Sonali Jain-Chandra, Kalpana Kochhar, Monique Newiak, and Tlek Zeinullayev. 2015. “Catalyst for Change: Empowering Women and Tackling Income Inequality.” IMF Staff Discussion Note 15/20, International Monetary Fund, Washington, DC.

Gromada, Anna, and Dominic Richardson. 2021. “Where Do Rich Countries Stand on Childcare?” UNICEF Office of Research. Florence, Italy.

Guner, Nezih, Ezgi Kaya, and Virginia Sanchez Marcos. 2024. “Labor Market Institutions and Fertility.” International Economic Review, forthcoming.

Hirai, Mitsuaki, Jay P. Graham, and John Sandberg. 2016. “Understanding Women’s Decision Making Power and Its Link to Improved Household Sanitation: The Case of Kenya.” Journal of Water, Sanitation and Hygiene for Development, 6(1), pp. 151-160.

IMF. 2013. “Jobs and Growth. Analytical and Operational Considerations for the Fund.” IMF Policy Paper, International Monetary Fund, Washington, DC.

IMF. 2015. “How Can Sub-Saharan Africa Harness the Demographic Dividend?” April Regional Economic Outlook Sub-Saharan Africa. Chapter 2. International Monetary Fund, Washington, DC.

IMF. 2022. “IMF Strategy toward Mainstreaming Gender.” IMF Policy Paper No. 2022/037, International Monetary Fund, Washington, DC.

IMF. 2024. “Interim Guidance Note on Mainstreaming Gender at the IMF.” IMF Policy Paper 2024/003, International Monetary Fund, Washington, DC.

Karam, Azza 2014. “Education as the Pathway towards Gender Equality.” *UN Chronicle* 50 (4): 31–36.

Kazandjian, Romina, Lisa Kolovich, Kalpana Kochhar, and Monique Newiak. 2019. “Gender Equality and Economic Diversification.” *Social Sciences* 8 (4): 118.

Klasen, Stephan 2002. “Low Schooling for Girls, Slower Growth for All? Cross-Country Evidence on the Effect of Gender Inequality in Education on Economic Development.” *The World Bank Economic Review* 16 (3): 345–73.

Knowles, Stephan, Paula K. Lorgelly, and P. Dorian Owen. 2002. “Are Educational Gender Gaps a Brake on Economic Development? Some Cross-Country Empirical Evidence.” *Oxford Economic Papers* 54 (1): 118–49.

Kohler, Hans-Peter, and Jere R. Behrman. 2014. “Benefits and Costs of the Population and Demography Targets for the Post-2015 Development Agenda: Post-2015 Consensus.” Copenhagen Consensus Working Paper.

Kraemer, Birgit 2015. “Germany: Family Benefit Rule Changes Encourage Parents to Share Childcare Duties.” European Foundation for the Improvement of Living and Working Conditions.

Krueger, Alan B., and Mikael Lindahl. 2001. “Education for Growth: Why and for Whom.” *Journal of Economic Literature* 39 (4): 1101–36.

Kumar, Utkarsh, David Amaglobeli, and Mariano Moszoro. 2023. “Determinants and Social Dividends of Digital Adoption.” IMF Working Paper 2023/065, International Monetary Fund, Washington, DC.

Liang, James, Hui Wang, and Edward P. Lazear. 2018. “Demographics and Entrepreneurship.” *Journal of Political Economy* 126 (S1): S140–96.

Malta, Vivian, Angelica Martinez, and Marina M. Tavares. 2019. “A Quantitative Analysis of Female Employment in Senegal.” IMF Working Paper 2019/241, International Monetary Fund, Washington, DC.

Malta, Vivian, and Monique Newiak. 2019. “Human Capital and Gender Equality. Nigeria Selected Issues.” IMF Country Report No. 19/23. International Monetary Fund, Washington, DC.

Malta, Vivian, Monique Newiak, and Mathew Sandy. 2020. “Sierra Leone: Selected Issues.” IMF Country Report No. 20/117. International Monetary Fund, Washington, DC.

Mandel, Hadas, and Moshe Semyonov. 2005. “Family Policies, Wage Structures, and Gender Gaps: Sources of Earnings Inequality in 20 Countries.” *American Sociological Review* 70 (6): 949–67.

Meng, Xin, and Jim Ryan. 2010. “Does a Food for Education Program Affect School Outcomes? The Bangladesh Case.” *Journal of Population Economics* 23: 415–47.

Mitra, Pritha, Eric M. Pondi Endengle, Malika Pant, and Luiz F. Almeida. 2020. “Does Child Marriage Matter for Growth?” IMF Working Paper 2020/027, International Monetary Fund.

OECD. 2021. “Towards Improved Retirement Savings Outcomes for Women.” OECD Publishing, Paris.

OECD. 2022a. “Evolving Family Models in Spain: A New National Framework for Improved Support and Protection for Families.” OECD Publishing, Paris.

OECD. 2022b. “OECD Family Database.” OECD, Paris. https://www.oecd.org/els/family/database.htm

Ostry, Jonathan D., Jorge Alvarez, Raphael A. Espinoza, and Chris Papageorgiou. 2018. “Economic Gains from Gender Inclusion: New Mechanisms, New Evidence.” IMF Working Paper No. 2018/006, International Monetary Fund, Washington, DC.

Ouedraogo, Rasmane, and Diego- Gomes. 2023. “Macroeconomic Gains from Closing Gender Educational Gaps in Niger.” IMF Country Report No. 23/006, International Monetary Fund, Washington, DC.

Picken, Natalie, and Barbara Janta 2019. “Leave Policies and Practice for Non-Traditional Families.” European Commission, Directorate-General for Employment, Social Affairs and Inclusion, Publications Office.

Ravallion, Martin, and Quentin Wodon. 2000. “Does Child Labour Displace Schooling? Evidence on Behavioural Responses to an Enrollment Subsidy.” *The Economic Journal* 110 (462): 158–75.

Ruhm, Christopher J. 1998. “The Economic Consequences of Parental Leave Mandates: Lessons from Europe.” *The Quarterly Journal of Economics* 113 (1): 285–317.

Sanderson, Warren C., and Sergei Scherbov. 2019. *Prospective Longevity: A New Vision of Population Aging*. Cambridge, Massachusetts, and London England: Harvard University Press.

Schultz, Paul T. 2015. “Fertility Transition: Economic Explanations.” *International Encyclopedia of the Social and Behavioral Sciences* (pp. 60–67).

Small, Sarah F., and Yana van der Meulen Rodgers. 2023. “The Gendered Effects of Investing in Physical and Social Infrastructure.” *World Development* 171, 106347.

UNICEF. 2022. “Education.” UNICEF. Accessed May 2, 2024. https://data.unicef.org/topic/gender/gender-disparities-in-education/#:~:text=More%20than%20two-thirds%20of%20countries%20have%20reached%20gender,are%20more%20likely%20to%20be%20disadvantaged%20than%20boys. UNICEF.

UNICEF. 2023. Child Labor. Child Labor Statistics—UNICEF DATA. UNICEF. Accessed May 2, 2024.

UNICEF.2022. https://data.unicef.org/topic/gender/gender-disparities-in education/#:~:text=More%20than%20two%2Dthirds%20of,more%20likely%20to%20be%20disadvantaged

United Nations. 2022. “Estimates and Projections of Family Planning Indicators 2022.” United Nations Department of Economic and Social Affairs, Population Division.

Unterhofer, Ulrike, and Katharine Wrohlich. 2017. “Fathers, Parental Leave and Gender Norms.” IZA Discussion Paper 10712, Institute of Labor Economics, Bonn, Germany.

Wigert, Ben, Jim Harter, and Sangeeta Agrawal. 2023. “The Future of the Office Has Arrived: It’s Hybrid.” Gallup Workplace. https://www.gallup.com/workplace/511994/future-office-arrived-hybrid.aspx

Women’s Budget Group. 2016. “Investing in the Care Economy to Boost Employment and Gender Equality (Jerome De Henau and Diane Perrons).

World Bank. 2001. *Engendering Development*. Washington, DC: World Bank.

World Bank. 2008. *The Road Not Travelled: Education Reform in the Middle East and North Africa*. Washington, DC: World Bank.

World Bank. 2012. *World Development Report 2012. Gender Equality and Development*. Washington, DC: World Bank.

World Bank. 2023. *Women, Business, and the Law 2023*. Washington, DC: World Bank.

World Bank. 2024. *Women, Business, and the Law 2024*. Washington, DC: World Bank.

World Bank Group. 2016. Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change. Washington, DC: World Bank.

Xu, Rui 2023. “Japan’s Economy Would Gain with More Women in Science and Technology.” *IMF News*. https://www.imf.org/en/News/Articles/2023/11/13/cf-japans-economy-would-gain-with-more-women-in-science-and-technology, International Monetary Fund, Washington, DC.