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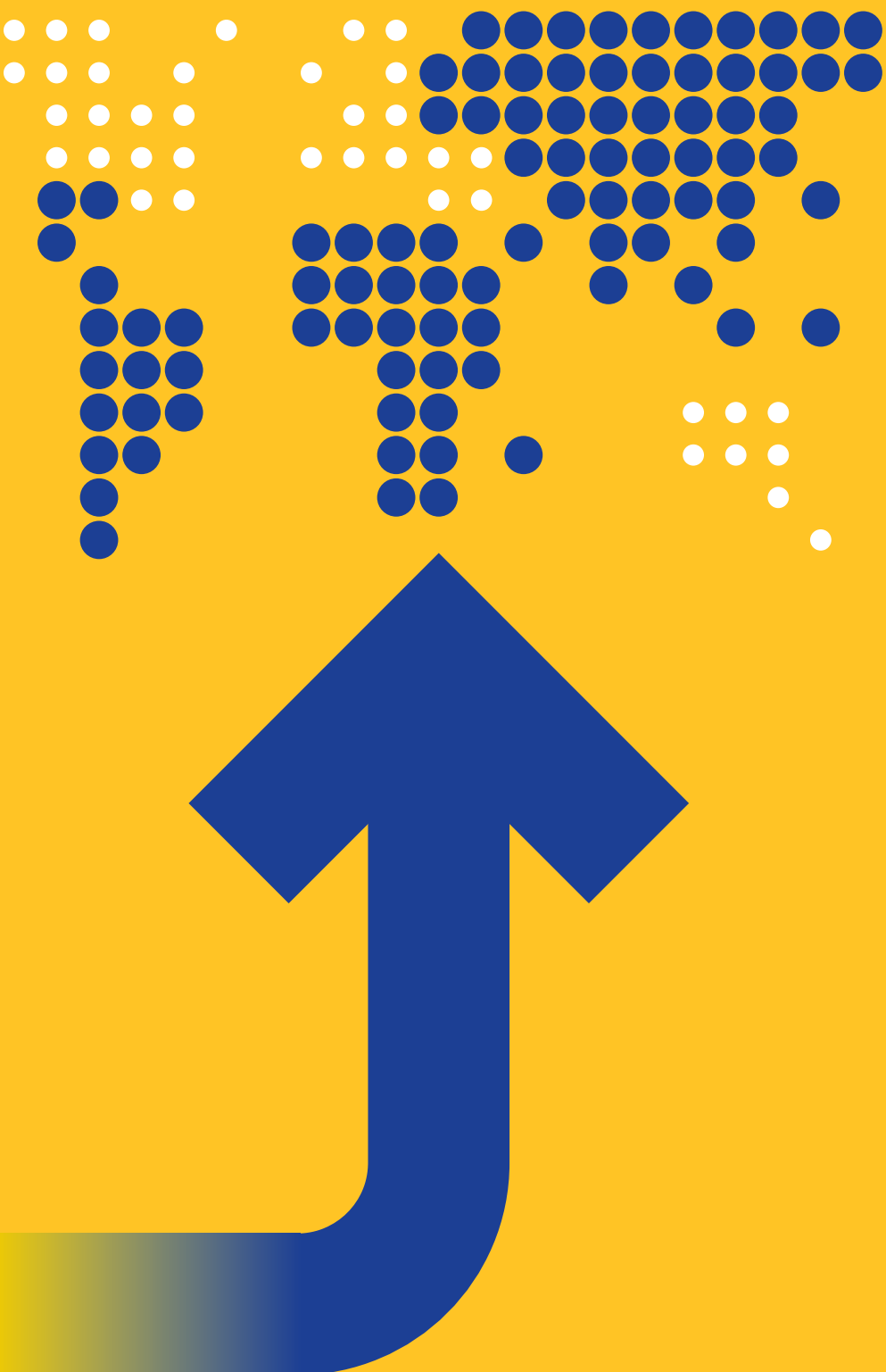
Addressing
Income Inequality:
Key Issues, Policy
Recommendations
and Long-term
Scenarios

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Background
Paper

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**Emerging
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Addressing Income Inequality: Key Issues, Policy Recommendations and Long-term Scenarios

Executive Summary

Executive Summary¹

- Since the end of World War 2, output per capita has surged in many countries across the globe. This has reflected the expansion of knowledge and technological innovation, the diffusion of market-based resource allocation backed by stronger government institutions and enhanced international cooperation on important political and economic issues (e.g. conflict resolution, governance norms, international trade and finance, and macroeconomic stability).
- Despite this progress, the institutional framework that underlies this long period of growth has come under strain in recent years. Underlying this is the fact that in many countries the benefits of economic growth have not been shared equitably in recent decades.
- While income inequality has fallen globally reflecting the rapid growth of some of the large emerging market economies, within-country income inequality deteriorated in many countries. Meanwhile, the wealth share of the bottom 90 percent of the population declined, while that of the top 1 percent increased.
- Increasing income and wealth inequalities are associated with slower output growth. This is because they lead to: (1) worsening distribution of economic and social opportunities, less social mobility, and lower human capital formation; and (2) an erosion of support for pro-growth norms and institutions. This slows technological progress and lowers productivity growth.
- The differing inequality trends between countries reflect differing norms, institutions and policies regarding fairness. Effective government actions have been shown to reverse this process, while accelerating economic growth.
- This study identifies several priority policy areas that would help countries address and reverse the inequality trends. By and large, the focus is on policies and measures that enhance the human capital of the population, especially in the lower income deciles. Policy reforms should improve the quality of public education, enhance labor training programs and increase access to critical health services; reduce gender discrimination in education and the labor markets. Supporting policies should address regional and local disparities through improvements in transportation infrastructure and housing; and they also should rationalize the regulation of distorted labor and product markets. These policies would foster a better allocation of resources, and help the poor take advantage of opportunities and, thus, facilitate upward social mobility.
- Fiscal space would need to be created to support the recommended policies to reduce inequality. This study identifies tax measures (such as increasing the progressivity of the income tax and eliminating regressive tax expenditures), cuts in inefficient and regressive government spending, and targeted spending measures, including conditional cash transfers (as in Brazil, Mexico and Peru).
- The study also identifies political economy features of successful policies and reforms. These include the need to build support among key stakeholders, sequence the reforms to ensure that key stakeholders begin receiving benefits early on, build support for the reform process across the political spectrum, and give adequate attention to relieving administrative and budgetary constraints.
- Finally, the study quantifies the relationships between enhancing education and income per capita and education and income distribution, and

1. This paper was inspired by and expands on the article “El aumento de las desigualdades: ¿qué podemos hacer al respecto?” by Mr. Michel Camdessus (2018).

presents illustrative long-term scenarios for several countries. These scenarios show the extent to which, over the long run, comprehensive educational reform packages that improve cognitive skills, and thus human capital, (1) yield high economic returns that would more than compensate the reform costs and (2) can reduce substantially inequality in income distribution.

- In the high performing Advanced Economies, the reform efforts would target their worse performing schools and students, which tend to be located in low income areas. Compared with a no reform scenario, by 2060 GDP per capita would be 10 percent higher and the GINI coefficient would be 2 ½ percentage points lower than in the no reform scenario.
- In the other countries, it is assumed that the reform would target all schools and students and succeed in closing 60 percent of their gaps in test scores with the best performing country (Japan) or increase test scores by 50 points (about half the standard deviation), whichever is larger. Thus, the increase in test scores would be different in each country (the larger the gap, the higher the benefit), and the long-term economic effects would generally be very substantial. Indeed, the larger is the envisaged increase in test scores, the larger would be the effects on per capita GDPs and GINI coefficients of the assumed partial convergence to the best scores.

Addressing Income Inequality: Key Issues, Policy Recommendations and Long-term Scenarios

Jose Fajgenbaum, Jorge Guzman, and Ieva Vilkelyte

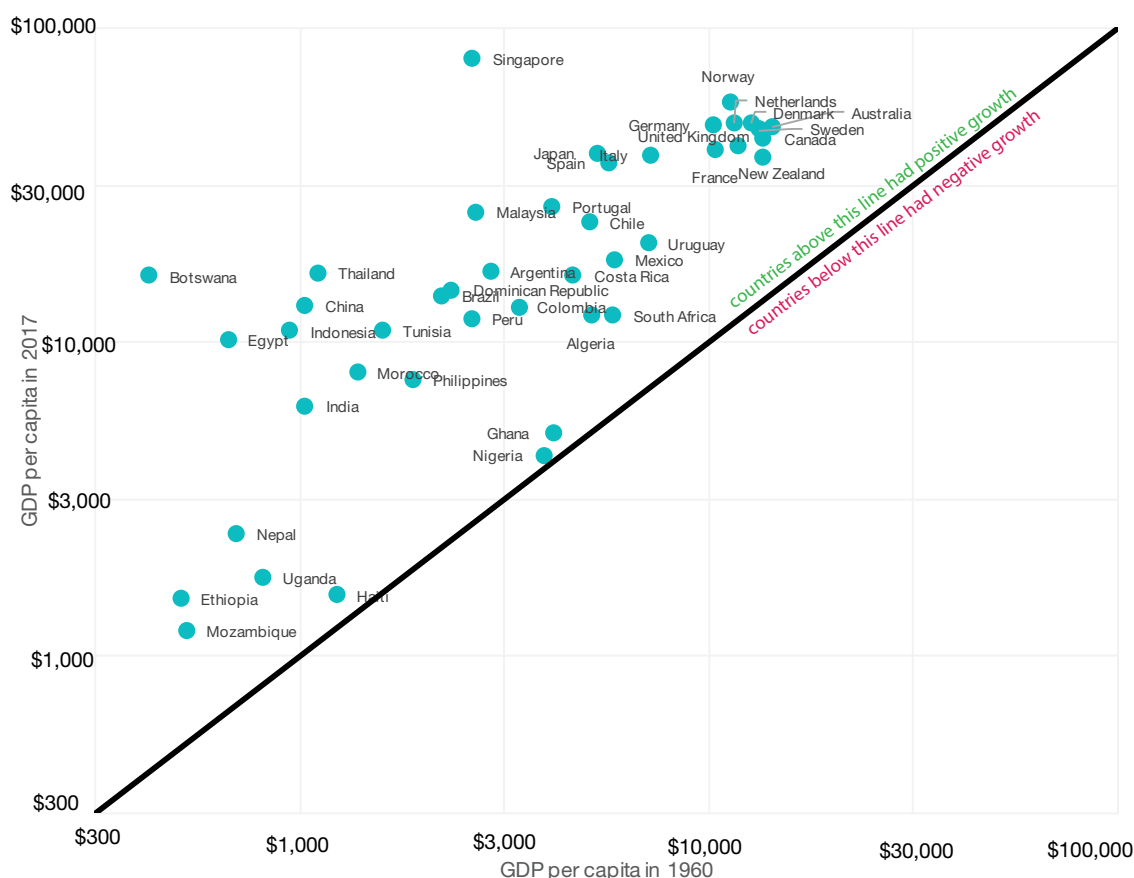
I. Introduction

We are living in a period of unparalleled global economic prosperity. Since the end of Second World War, major improvements in living standards have been reflected in a variety of economic, social and political indicators across the globe. Indeed, since 1960, output and income per capita have surged in a large number of countries (Figure 1).

Important factors behind these trends are:

- the expansion of knowledge and technological progress, supported by the spread and
- strengthening of public and private institutions that underlie relatively efficient market-based resource allocation;
- the diffusion of democratic norms and more efficient governance in countries across the globe, supported by their growing middle classes; and
- enhanced rules-based international cooperation, including through international institutions that promote avoidance (or peaceful resolution) of serious conflicts between countries, the expansion of international trade and finance, and macroeconomic stability.

Figure 1: GDP per capita in 1960 and 2017



Note: Real GDP at chained PPPs (in USD 2011)
Source: Penn World Table 9.1.

However, **the institutional framework that underlies this long period of growth has come under strain in recent years.** Political movements in several countries are seeking to debilitate democratic norms and governance institutions, as well as the rules-based system of international cooperation, while undermining the policy foundations of economic prosperity

Fraying political cohesion is undermining countries' ability to address festering problems that demand collective action at national and international levels—such as climate change and environmental degradation, nuclear proliferation and disorderly international migration.

Underlying these strains, is the fact that the benefits of economic growth are not being shared equitably. In too many instances, the benefits of growth are not being felt by those associated with lagging activities or regions, or that lack the skills to adjust easily to the economy's structural changes.

This paper discusses:

- Conceptual issues regarding the relationship between income distribution and output growth.
- Recent trends in income and wealth distribution.
- Channels through which income inequality affects output growth.
- Policies that lower inequality, while promoting faster output growth.
- Political economy issues associated with putting in place and implementing these policies.

The last section quantifies the relationships between enhancing education and income per capita and education and income distribution. On this basis, it presents illustrative scenarios of the projected long-run effects of policies that would improve educational achievement on the per capita incomes and income distribution of selected countries.

II. Conceptual issues regarding the relationship between income distribution and output growth

Output growth reflects technological modernization and the accumulation of factors of production, in an appropriate, pro-growth institutional framework (North, 1990 and Acemoglu and Robinson, 2008). Important characteristics of a pro-growth framework are:

- rules and norms that enable political and social cooperation;
- government institutions with capacities to safeguard property rights, provide macroeconomic stability and regulate markets to ensure appropriate

incentives for risk-taking, saving and investment (including in human capital);

- government actions that address important market failures (e.g., in education, health, economic infrastructures, finance, environmental protection, etc.).

On the one hand, **technological modernization, saving and capital accumulation, and structural economic change are all essential for growth, and tend to exacerbate economic and social inequalities overtime.** The processes of technological modernization and structural change can produce winners and losers of incomes at regional and national levels (Kuznets, 1955). At the same time, high asset returns and the higher private saving of the relatively well-off tend to concentrate the ownership of economic assets and heighten economic and social inequalities (Picketty, 2014).

On the other hand, **growing economic and social inequities can adversely impact output growth** (Bradbury and Triest, 2016).

- Because of various market inefficiencies, economic and social inequalities can lower efficient investment, particularly human capital accumulation. This affects adversely institutional strength, technological modernization and innovation, and productivity growth.
- Growing inequities also can undermine the framework of political and social cooperation necessary for collective action in growth-enhancing areas.

Institutional and government policy frameworks influence powerfully the relationship between growth and income distribution. Government policies in the provision of key services (e.g. education, health, infrastructure, environmental protection, domestic security and social safety nets), taxation and subsidization, and market regulation have proven important in affecting the distribution of income and opportunities in ways that can either enhance or undermine long-term productivity growth (Levy and Temin, 2007).

G-20 leaders have acknowledged recently the important linkages between income distribution and growth, as well as the potential ameliorative effects of appropriate government policies. In their recent declaration, they indicated their intention to “...strive to create a virtuous cycle of growth by addressing inequality and realize a society where all individuals can make use of their full potential.”

III. Recent inequality trends

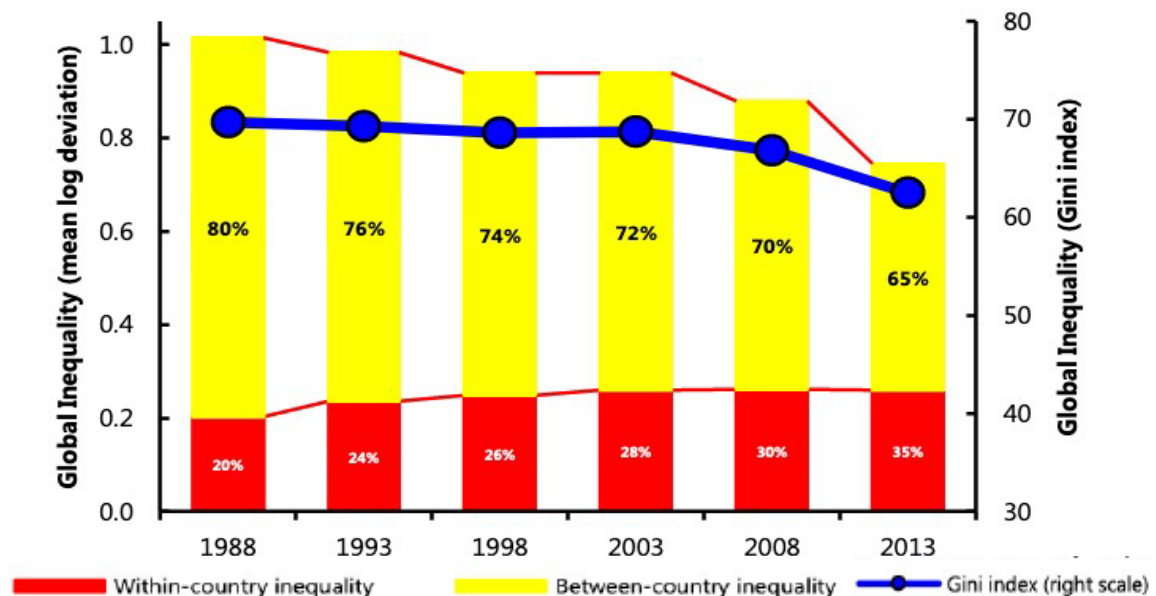
Globally, household income inequality declined in recent decades (IMF, 2017) (Figure 2). This reflects the narrowing of income differentials between countries owing to the faster growth of many large emerging market economies (EMEs) and developing countries (DCs). As a consequence, the global GINI coefficient fell from almost 68 percent in 1988 to 62 percent in 2013. Nonetheless, about 2/3 of global inequality still reflects income per capita differentials between countries.

However, inequality of incomes increased in most countries over the past three decades, particularly in the advanced countries (IMF, 2017) (Figure 3). In OECD countries, the incomes of the top 10 percent of households is now over 10 times those of the poorest 10 percent, compared with 7 times in the 1980s (OECD, 2015). The decline of the income share of the lowest 40 percent of households was particularly important, while the relative increase was concentrated in households at the top of the distribution. In EMEs and DCs, income inequality is generally higher than in OECD countries owing to their less active and effective government administration and redistributive policies. Moreover, in fast growing China and India, the top income households have benefited disproportionately from their recent fast output and incomes growth. In contrast, in other EMEs and DCs, policy initiatives and administrative improvements have reduced income inequality in recent decades.

Inequality of wealth is substantially higher than income inequality (Figure 4). Globally, the least wealthy 50 percent of households hold nearly zero percent of wealth, while the top 1 percent hold almost half (IMF, 2017). In many countries, the wealth share of the bottom 90 percent has declined in recent years, while that of the top 1 percent has increased. In OECD countries, the bottom 40 percent of households hold around 3 percent of wealth, while the next 50 percent and the top 10 percent each hold around half (OECD, 2015).

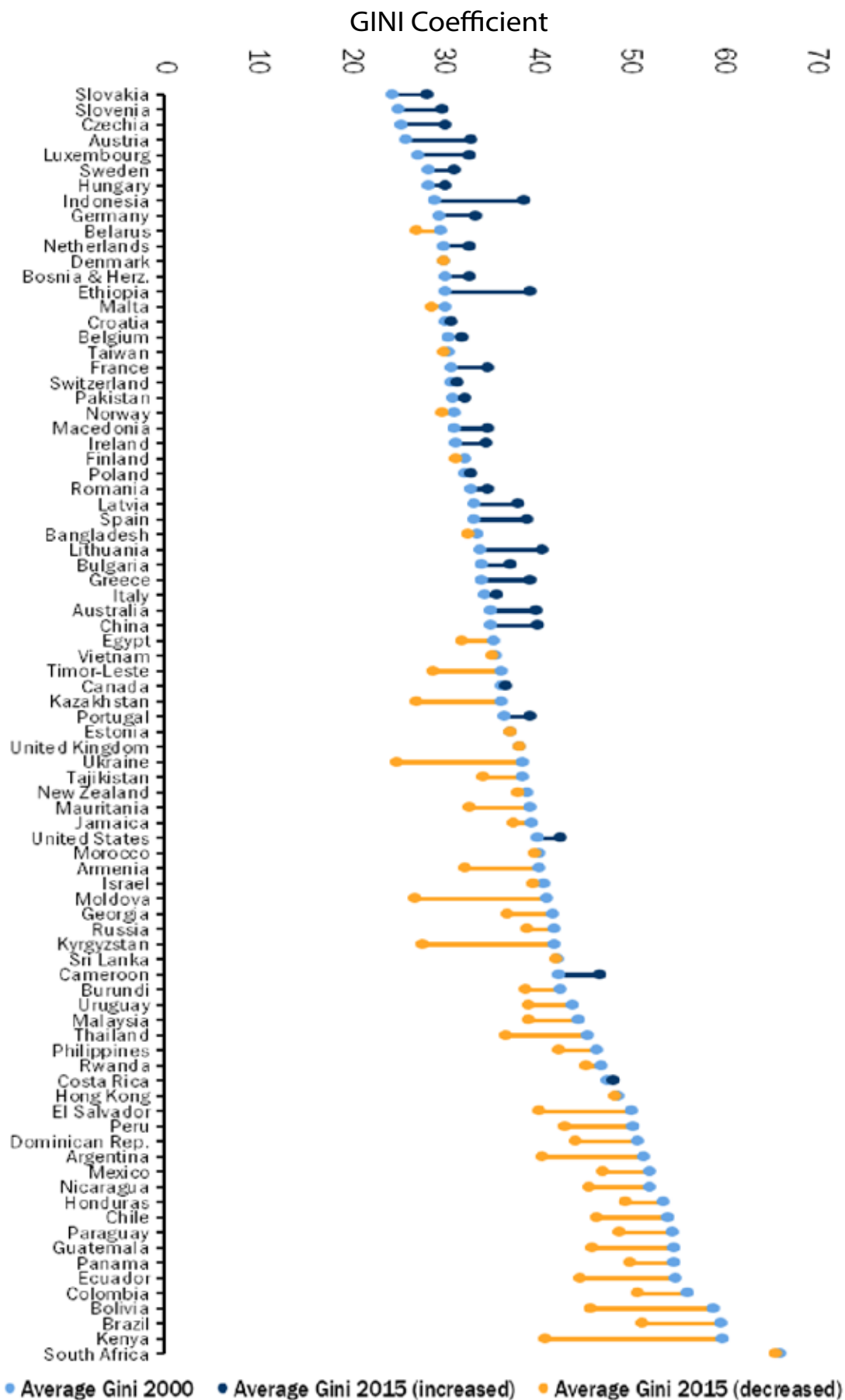
Intergenerational economic and social mobility declines as the distribution of incomes and opportunities worsens (Krueger, 2012) (Figure 5). Especially in EMEs and DCs, income inequality is associated with exclusion from job opportunities and gaps in gender education, health and financial access (IMF, 2017). In all countries, higher income inequality increases the chances that the economic status of parents will be transferred to their offspring (social immobility). This is because parents have the incentives—and those better off have more resources—to invest in their children's health and education; also, the better off have better social connections and access to superior job networks. High inequality also reflects government policies and social institutions that affect opportunity and mobility adversely. Thus, in many countries there was an erosion of opportunities of the bottom 40 percent, which hampered the potential for low-income parents to improve the economic and social position of their children.

Figure 2: Global inequality, 1988-2013

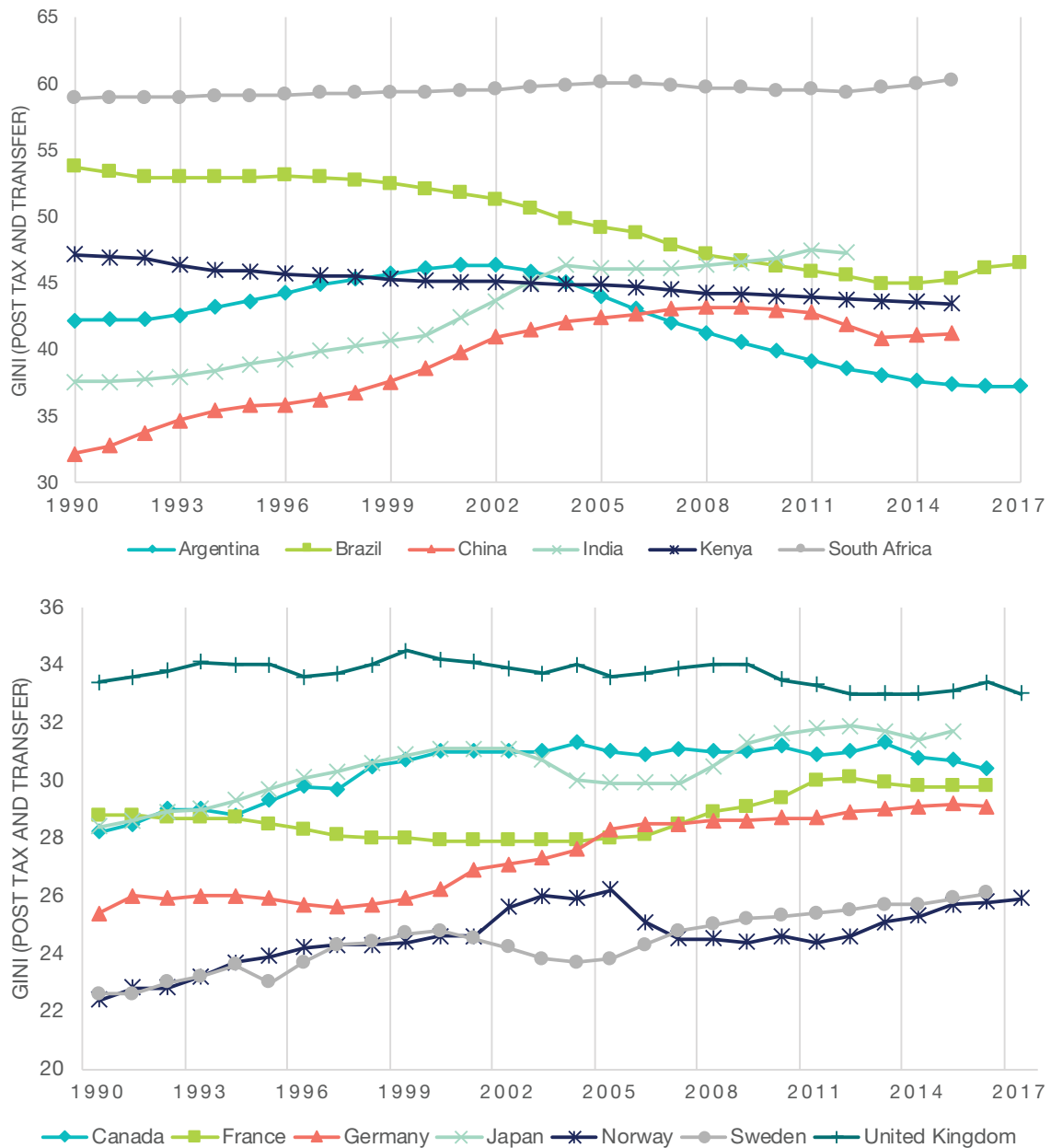


Source: IMF, 2017, G-20 Report "Fostering Inclusive Growth."

Figure 3a: Income inequality trends in selected countries



Source: Revenga, Ana and Meagan Dooley, May 28, 2019.

Figure 3b: Income inequality trends in selected countries

Source: Standardized World Income Inequality Database

The above adverse income and wealth distribution trends are associated with market processes, particularly technological changes and structural adaptations in the economy, as well as the weakening of redistributive policies and institutions in several countries. The following factors have been particularly important:

- Higher saving and the continued concentration of asset ownership at the top of the income scale (as discussed above).
- Winners and losers under structural economic changes. In recent years, the role of modern computer and information technologies has become especially important in: (1) eroding demand for

workers undertaking routine tasks, while increasing the demand for those that are educated, technologically adept, and can boost productivity; (2) increasing product and labor market competition globally and specialization under open trade, in the context of the economic liberalization carried out in several EMEs and DCs; and (3) boosting the earning opportunities—both nationally and internationally—of successful (or lucky) corporations, entrepreneurs, artists and sports people (Krueger 2013).

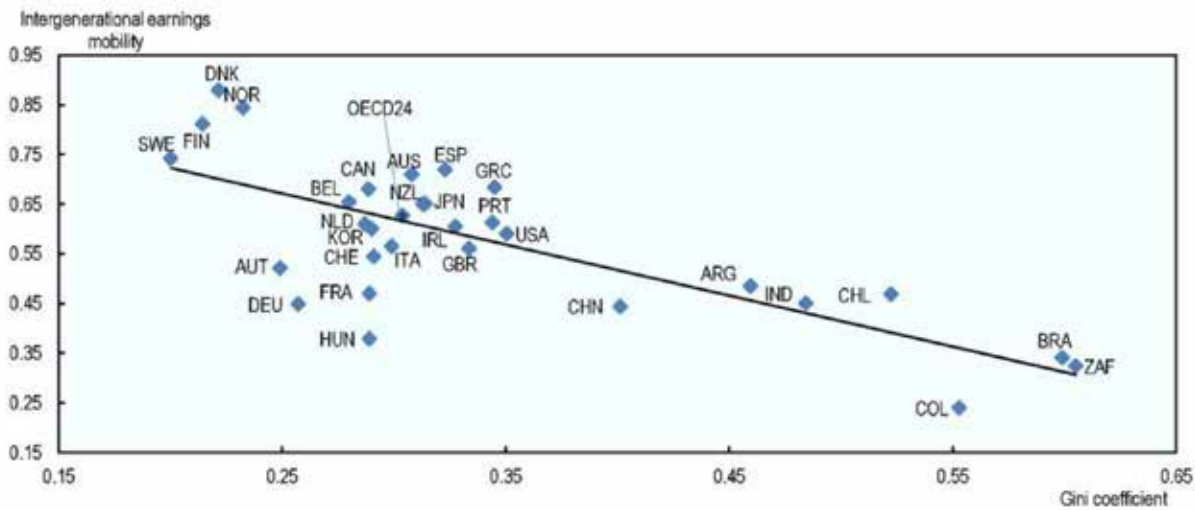
- Wage suppression on account of the rising power of employers in labor markets, outsourcing

Figure 4: Wealth and income inequality, 2018



Note: Net Income Gini using 2017 data for Argentina, Brazil, Indonesia, Norway, United Kingdom; 2016 data for Canada, France, Germany, Sweden; 2015 data for China, Japan, Kenya, and South Africa. Wealth Gini data is for 2018.
Source: Standardized World Income Inequality Database for Net Income Gini data and the Global Wealth Databook 2018 (Credit Suisse) for Wealth Gini.

Figure 5: Earnings mobility across generations and income inequality



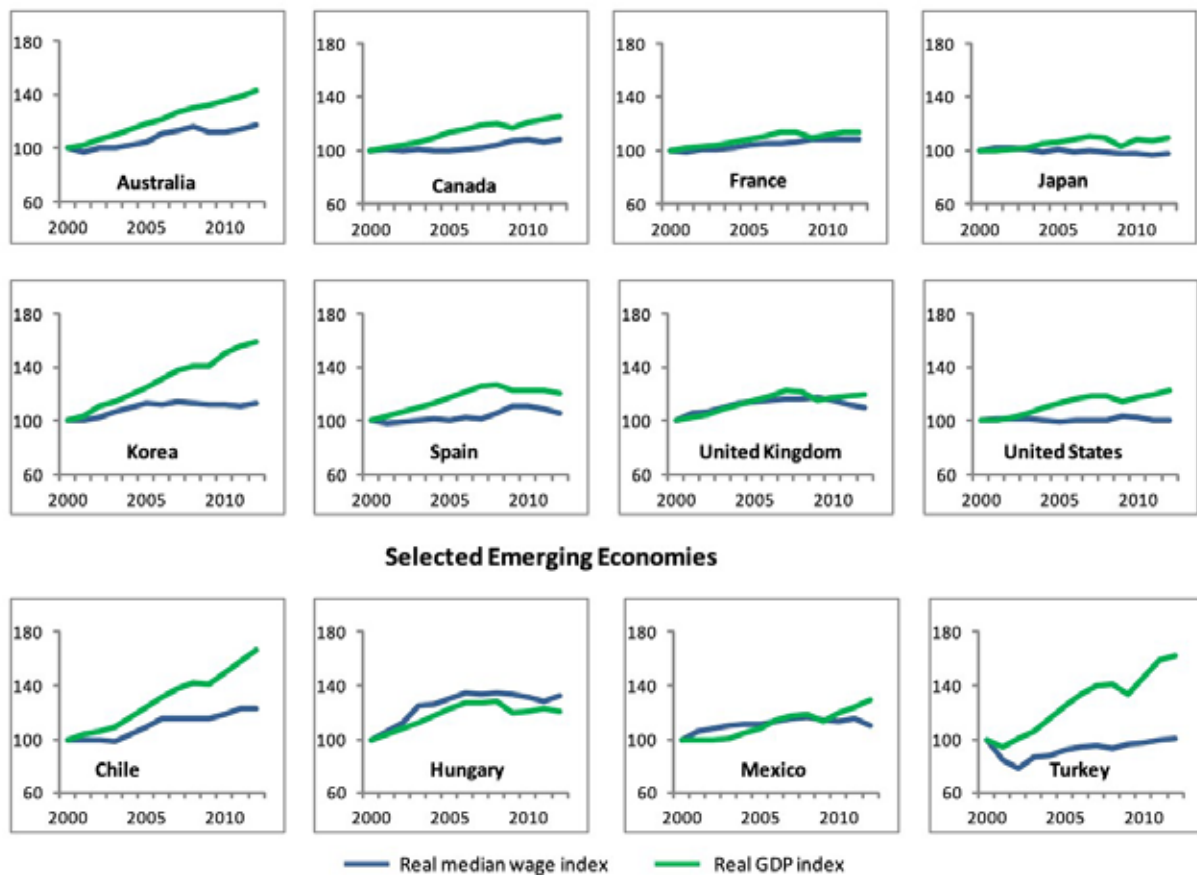
Note: Earnings mobility is proxied by 1 minus the intergenerational earnings elasticity of fathers with sons. Gini coefficients refer to mid-1980s/early 1990s.
Source: OECD, 2018. A Broken Social Elevator? How to Promote Social Mobility.

facilitated by technology, and declining role of labor unions (Naidu et al., 2018) (Figure 6).

- Widening wage disparities, related to the limited opportunities of lower income groups to access quality educational and health services (OECD, 2015) (IMF, 2017) (Figure 7).
- In many countries, there have been changes in norms, institutions and policies regarding fairness (Krueger, 2013). There have been changes in corporate norms and governance, labor market regulations, tax and benefit systems, and in

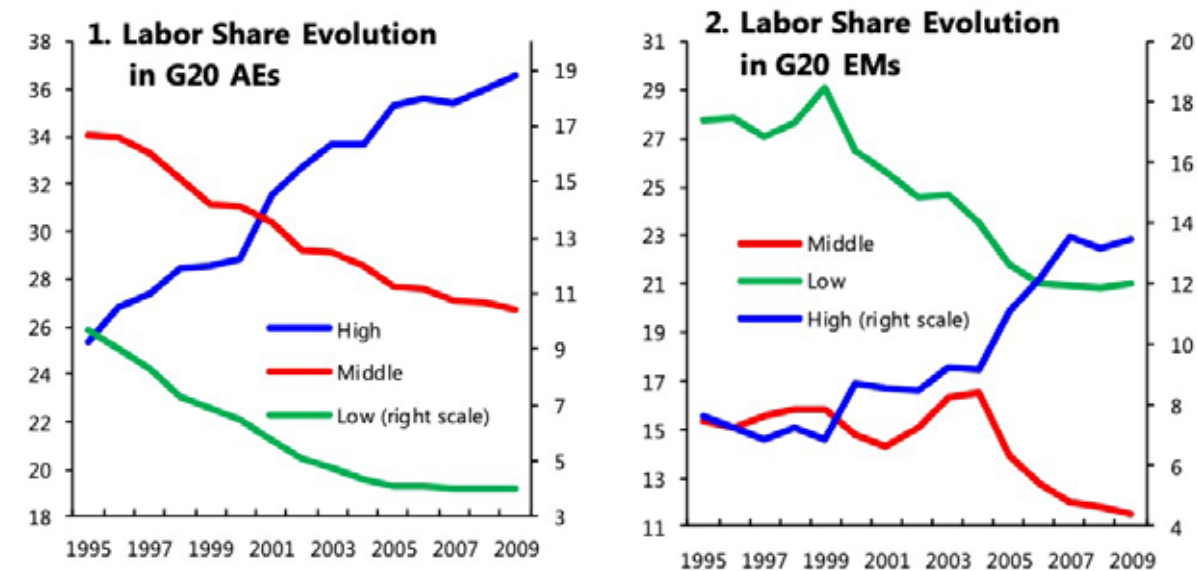
government spending in social programs, including programs that could support those harmed by structural economic changes. Differences in these areas are key contributors to differences in inequality trends between countries.

Figure 6: Disconnect between real median wage and economic growth



Source: IMF, 2017, G-20 Report: "Fostering Inclusive Growth."

Figure 7: Labor share evolutions and labor force composition by skill level in G20 countries, 1995-2009 (percent)



Note: Advanced G20 includes AUS, CAN, DEU, FRA, GBR, ITA, JPN, KOR, USA; Emerging G20 includes BRA, CHN, IDN, IND, MEX, RUS, and TUR.
Source: IMF, 2017, G-20 Report: "Fostering Inclusive Growth."

IV. Channels through which income and wealth inequalities affect output growth

Over the long-term, **rising inequality of incomes and opportunities lowers countries' economic prosperity** (Ostry et al., 2014 and Aiyar and Ebeke, 2019).

The negative effects of inequality on output growth in EMEs and Advanced Economies have been confirmed (Ostry et al., 2014, and OECD, 2015, respectively). The latter study, for 19 OECD countries, shows that an increase of income inequality of 2 GINI subtracted nearly 5 percentage points from cumulative output growth between 1990 and 2010.

Economic and social immobility—associated mainly with inequality of opportunities and the inter-generational transmission of human capital—rises with income and wealth inequality. Low wealth holdings by the lower middle class and the poor severely limits their access to investment opportunities, including in human capital. As a result, the disadvantaged have lower educational attainment, skills and employment prospects (OECD, 2015).

Social immobility is, to an important extent, explained by important weaknesses in the delivery of quality education for, and in the learning outcomes of, children in low income households (Krueger, 2013 and World Bank, 2018). Although there has been progress in

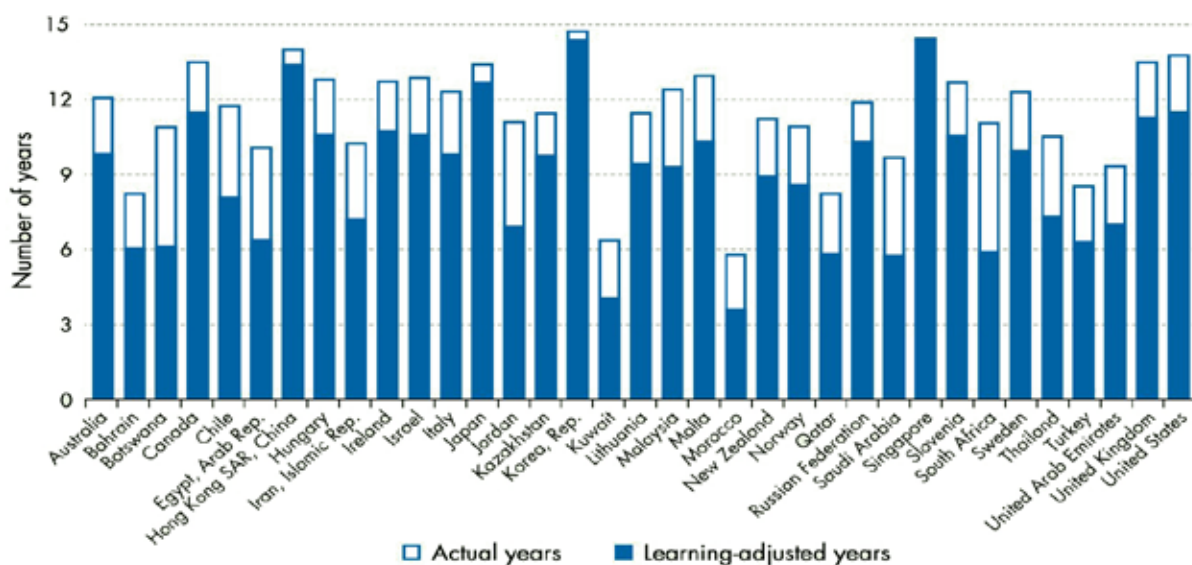
narrowing education coverage gaps in most EMEs and DCs during the past decades, quality shortfalls remain serious impediments to human capital improvements (Figure 8).

A country's human capital—largely associated with the delivery of high-quality educational services—is a proximate causal factor of long-term output per capita growth in both developed and developing economies (Hanuschek, 2008 and 2017). Beyond its positive impact on the productivity of individuals, a country's human capital indicators are associated positively with other societal pro-growth factors, such as government effectiveness, social cohesion, low crime rates, good health outcomes, sound democratic governance and political stability (World Bank, 2018).

Per capita income growth is associated robustly with “knowledge capital”—a human capital indicator based on country scores in international tests of mathematics and science (Figure 9). It explains almost three-quarters of the cross-country variation in long-term per capita growth rates (in contrast, regressions using years of schooling explain less than one fourth of the variation). A one standard deviation increase in knowledge capital is associated nearly with a 2 percent a year faster growth rate, which is approximately the higher growth rate of East Asian countries than that of the OECD average or the growth shortfall of Latin American countries

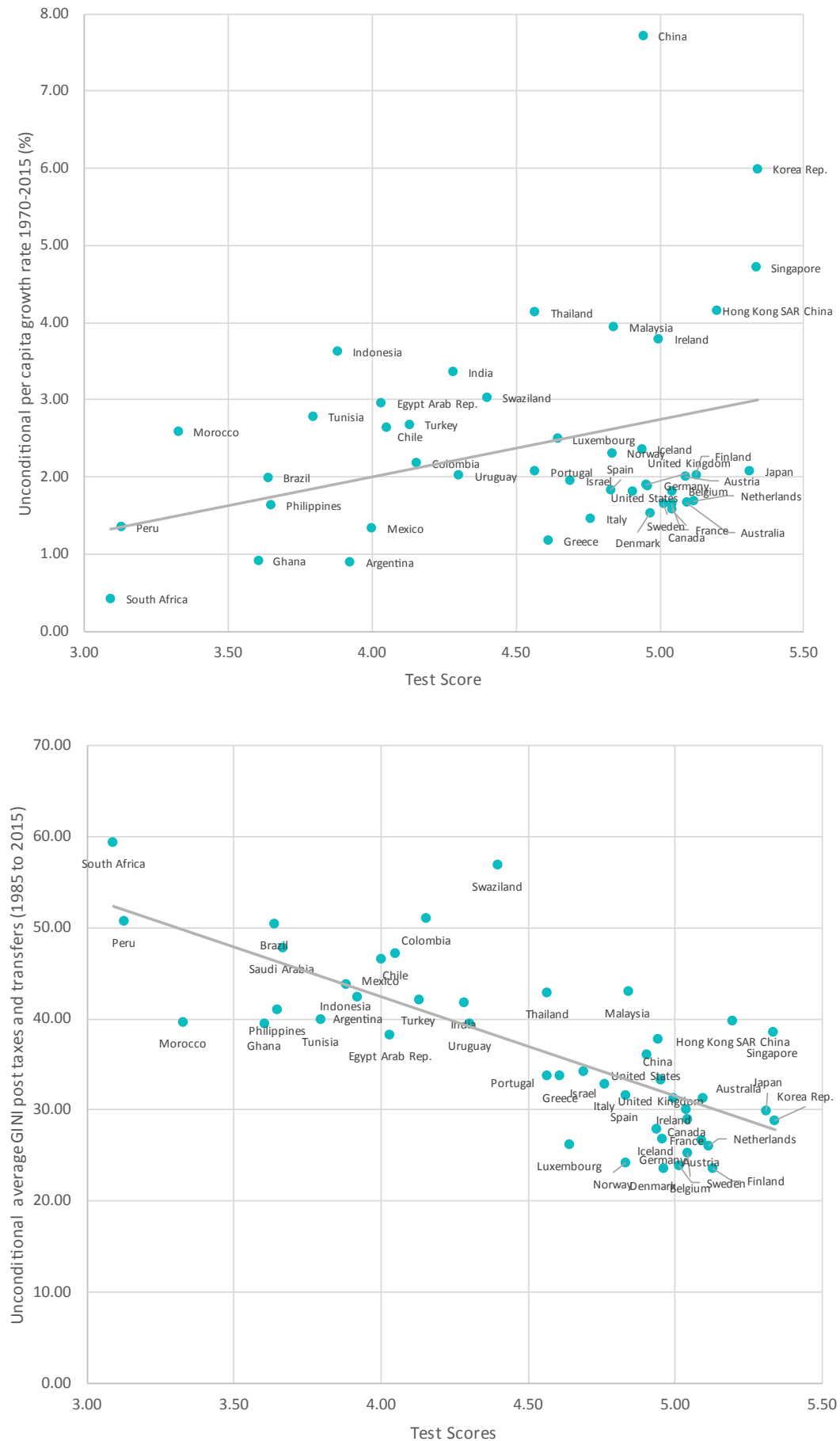
Figure 8: Learning-adjusted and unadjusted years of schooling

Years of actual and learning-adjusted schooling among young people, ages 25–29, illustrated using TIMSS data



Note: Years of schooling in Singapore are the same as learning-adjusted years because Singapore, which scored highest on the Trends in International Mathematics and Science Study (TIMSS) mathematics assessment in 2015, serves as the basis for comparison in this illustration. For the purposes of this illustration, data for years of education in the United Kingdom are adjusted using the TIMSS score for England. Note that for all countries and economies, the size of the adjustment will reflect the scale of the metric used to make it.

Source: World Bank, 2018. World Development Report 2018: Learning to Realize Education's Promise.

Figure 9: Knowledge capital and long-term GDP growth rates and GINI

Source: World Development Indicators, Standardized World Income Inequality Database, and Hanushek and Woessmann (International Data on Cognitive Skills).

(Hanuschek, 2017). This robust result is replicated and discussed further in section IX.

Students at the lower end of the income distribution generally receive less and lower quality education. Those lower in the income distribution scale develop less skills in the schooling time spent (OECD, 2015).

Raising the knowledge capital or cognitive skills of individuals from the lower middle class and the poor boosts a country's growth prospects, and improves equity and social mobility. The positive growth impact of enhanced cognitive skills of the labor force is especially strong in countries that are modernizing rapidly and changing structurally. This is because the enhanced skills of workers raise firm productivity and adaptability to change. Such skills generally are rewarded in the labor market and help reduce inequities. In contrast, modernization and structural change can hurt the labor market prospects of those with weak cognitive skills, thereby increasing economic and social inequalities (Hanuschek, 2017). This helps explain why many countries that have modernized and grown quickly also have experienced worsening income distributions.

Health outcomes, which are essential for human capital development, remain highly unequal (Figures 10 and 11). To an important extent, this is because the levels of coverage of essential health services varies significantly between countries (World Health Organization and World Bank, 2017). Coverage is high in East Asia and Northern

America and Europe, and lowest in Sub-Saharan Africa followed by Southern Asia.

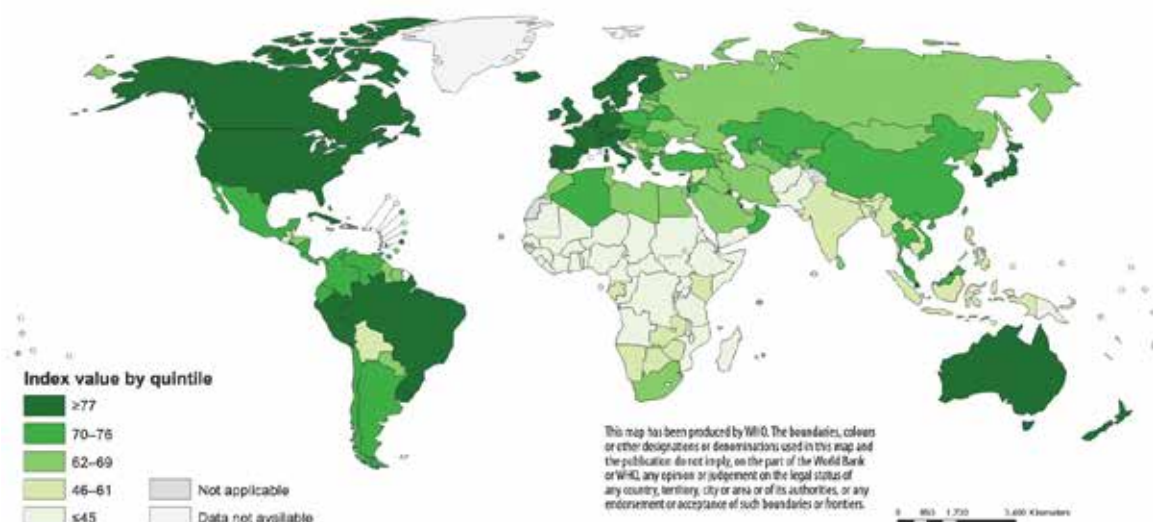
In Advanced Economies (AEs), important life expectancy differences are found between higher and lower educated males. The differences in health outcomes reflect disparate access to education and health services, as well as the higher life disadvantages and risks faced by lower income households.

In EMEs and DCs, infant and female mortality and morbidity rates remain substantially higher in lower income households; in part, this reflects their limited access to necessary health interventions, notwithstanding important coverage improvements in recent years (Figures 12 and 13).

Female education and labor force participation is beneficial economically (Ostry et al., 2018). It grows the labor force and its productivity, especially important in coming decades in the context of global population aging. Moreover, male and female labor tend to be complementary in production, as women bring new skills and attitudes to the workplace. Women's education, in addition to raising the individual's productivity, influences strongly the health and education of children. The impact of this on future generations has implications for societies' long-run growth and welfare. Also, increased female education and labor force participation is associated with reductions in fertility rates among the poor.

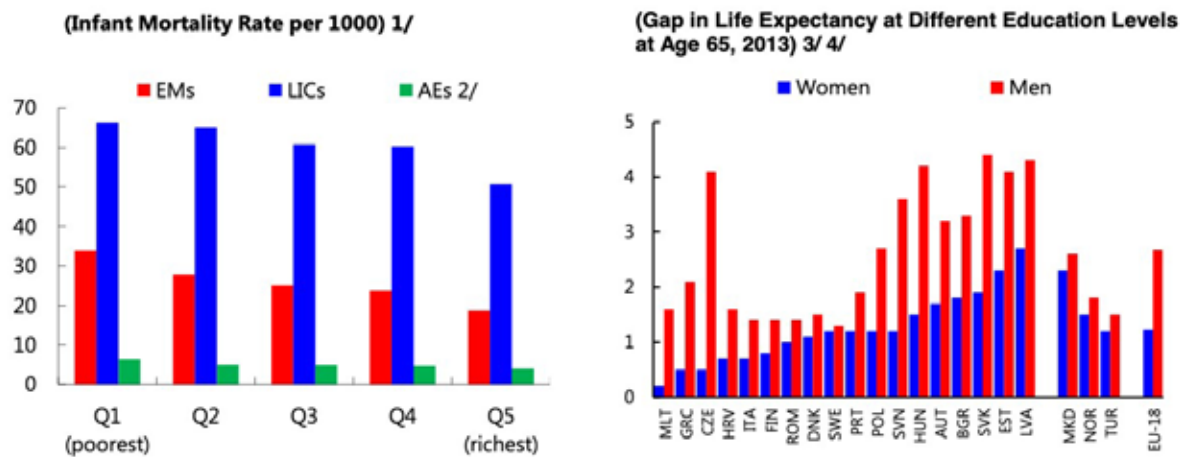
In DCs facing severe population pressures on resources, accelerating the demographic transition

Figure 10: Universal Health Coverage index by country, 2015 (SDG indicator 3.8.1)

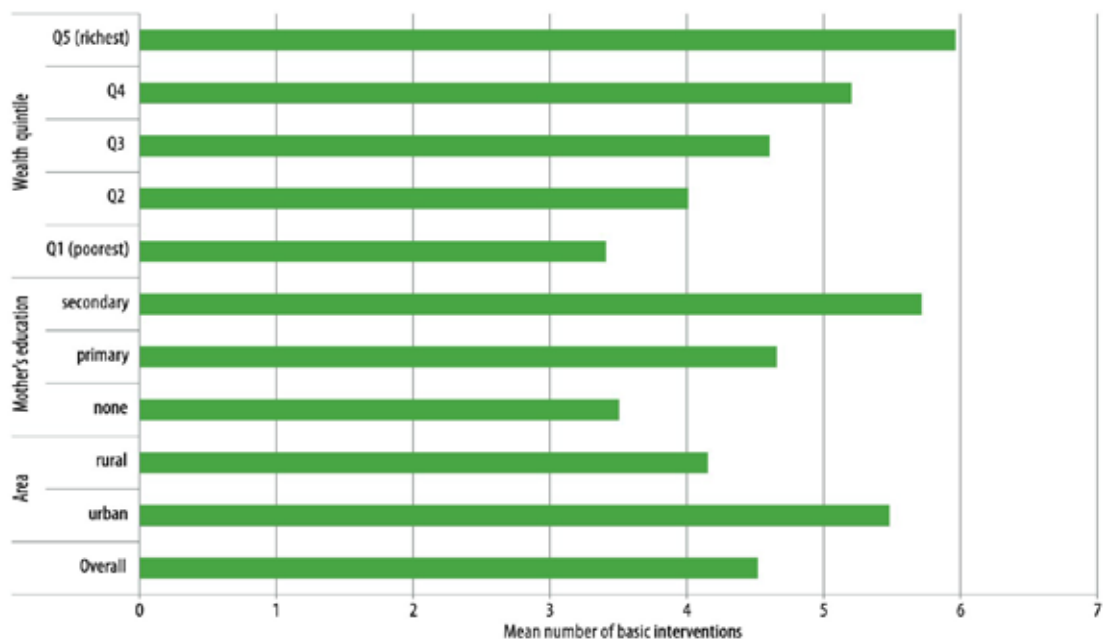


SDG: Sustainable Development Goal; UHC: universal health coverage.

Source: WHO and World Bank, 2017. "Tracking Universal Health Coverage: 2017 Global Monitoring Report."

Figure 11: Inequalities in health outcomes

Notes: AEs = advanced economies; DCs = developing countries; EMs = emerging market economies. 1/ Numbers are median values of income groups based on the latest available (2010–12). 2/ AEs only including data for Canada in 1996. 3/ The gap is between adults with the highest level (“tertiary education”) and the lowest level (“below upper secondary education”) of education. 4/ Data for Malta are from 2011; Austria, Latvia, and Turkey from 2012.
Source: IMF, 2017. G-20 Report: “Fostering Inclusive Growth.”

Figure 12: Mean number of basic interventions that mother-child pairs receive, overall and by inequality dimensions, in low- and lower-middle-income countries, 2005-15

Source: WHO and World Bank, 2017. “Tracking Universal Health Coverage: 2017 Global Monitoring Report.”

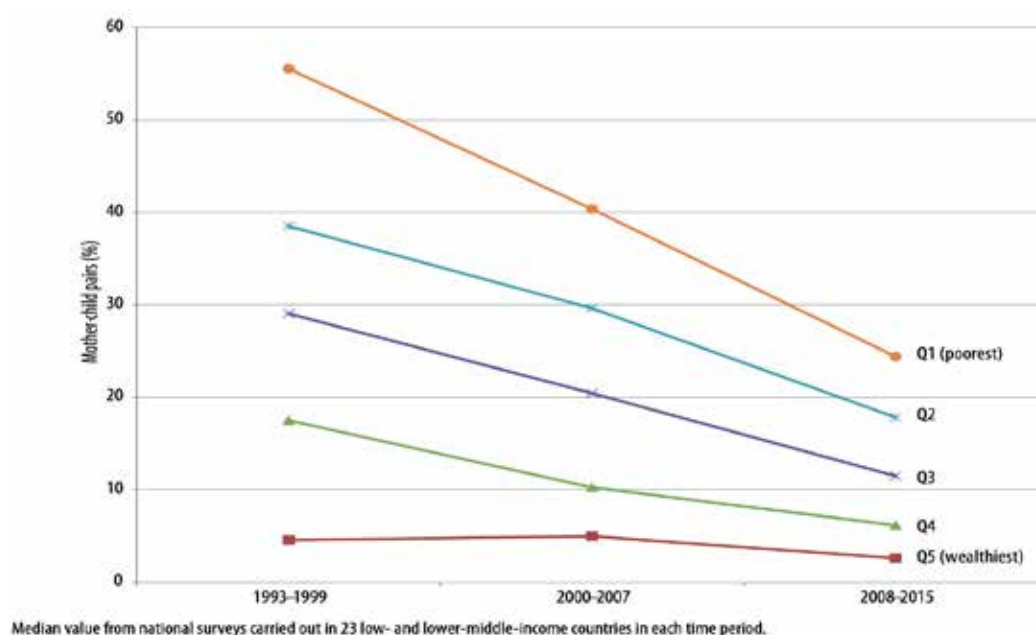
would help reduce poverty and inequality, and contribute to faster output per capita growth (Bashir et al., 2018). At the household level, lower numbers of children would help relax the financial constraints on families, allowing better nutrition, higher school enrollment of young children and lower school dropout rates of older children. At the country level, lower fertility rates and smaller child cohorts would help increase government resources for investment, including on health and education per child.

Individuals’ economic and social mobility is related to factors that are location specific, such as

differences in economic conditions at the local level (Narayan et al., 2018). Local differences in the quantity and quality of educational and health services, economic infrastructures and housing contribute to the clustering of poverty across space. Economic and social barriers to spatial mobility of households contribute to social immobility and the persistence of poverty.

Improvements in the distribution of income are associated with longer growth spells (Berg and Ostry, 2011). In contrast, countries that suffer recessions and/or macroeconomic crises have bouts of rising poverty

Figure 13: Percentage of mother-child pairs covered with three or fewer basic health services by within-country wealth quintile



Source: WHO and World Bank, 2017. "Tracking Universal Health Coverage: 2017 Global Monitoring Report."

and deteriorating income distribution because (1) rising unemployment and real incomes declines affect disproportionately lower quintile households and (2) the delivery of government social services is impaired (Baldacci et al., 2002).

V. Equity and growth enhancing policies

The policy reforms and actions discussed below focus on boosting the accumulation of human capital, particularly in disadvantaged households. In addition to education system reforms, policy efforts in complementary and supporting areas will be needed in most countries. Policy action should be comprehensive, and geared to the characteristics and specific needs of each country or region. For instance, most AEs have room to improve the delivery of education, healthcare and other important services (e.g., housing, transportation and childcare) to those in the lower income quintiles, and those adversely affected by disruptive economic transformations. In the case of EMEs, many should urgently undertake reforms to enhance the quality of public education, while redoubling efforts to improve the nutrition and health of the poor. In all countries, the need for comprehensive policy action can be expected to grow in coming years as they continue to experience structural economic transformations that threaten to disrupt the livelihoods of large numbers of people. The following is a

non-exhaustive set of policies and measures to improve income distribution.

Promote macroeconomic stability

Macroeconomic stability is essential to sustain output growth, improve the distribution of income and reduce poverty. Policies to that effect should focus on maintaining low fiscal deficits and ensuring public debt sustainability; implementing strong prudential regulation and supervision of financial entities; and attaining adequate fiscal liquidity and official international reserve cushions to help deal with potential adverse shocks.

Enhance educational opportunities

The main focus should be on improving education outcomes and mitigating education inequalities (OECD, 2018 and World Bank, 2018). Indeed, in the 2019 G-20 leaders' declaration, they reaffirmed their "...commitment to invest in human capital and promote inclusive and equitable quality education for all...."

- At the low end of the income distribution, support setting infants on higher physiological development paths and provide quality instruction to pre-school children. Develop targeted interventions for at risk mothers and babies to reduce malnutrition, improve health, and promote physiological development during the child's first three years of life. For children 3-6 years old, support day

care centers and preschool programs that buttress early development of cognitive skills (e.g. language and numeracy) and social skills (self-confidence and social behavior), while promoting adequate nutrition and good physical health. These are key to children's subsequent success in primary education (World Bank 2018, OECD 2018 and US Academy of Sciences 2018).

- Strengthen the delivery and quality of public education. Develop a commitment to learning at the system level, while acting to remove technical and political obstacles to education reform initiatives. This would require, inter alia, strengthening the technical capacities of relevant ministries and agencies, working to align the interests of stakeholders in reforms, and reforming school systems (World Bank 2018).
- An important intermediate aim of the school reform effort is bolstering teacher quality and training, which experts identify as key in encouraging student learning (Hanuschek, 2017). Boosting school funding (especially of disadvantaged schools), and improving school management and governance (e.g. by selecting and empowering capable school administrators) and involving the community in school oversight, are essential for efforts aimed at attracting and retaining good teaching staff, and improving the availability and allocation school inputs (Bashir et al., 2018).
- Put in place a good monitoring system to track learning outcomes and other relevant metrics in order to determine the extent by which policies and programs are making contributions to student learning (Figure 14). Then use evidence to guide policy and program initiatives, as well as actions to improve schools and teaching in ways that deliver better learning outcomes. Better monitoring information also can help shape the incentives of stakeholders and political leaders in support of long-term education reform efforts.
- Support appropriate tertiary education, which provides high labor markets rates of return. When targeted at low income students, fee reductions, adequate scholarships or grants and income contingent loans have proven effective in raising both enrollment and completion rates (OECD, 2018b). Completion rates are increased when counseling services and remedial instruction is provided, early on, to students that need them. Cost

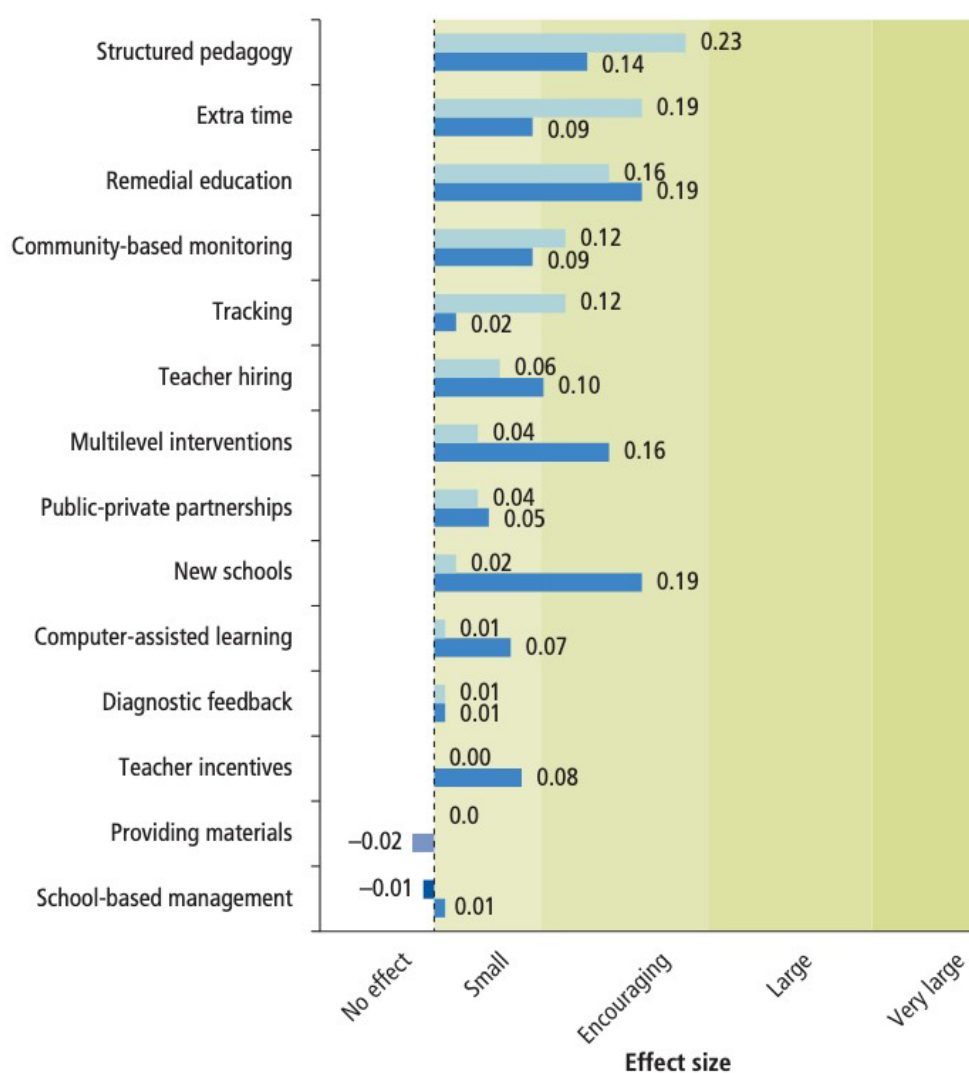
recovery charges would be desirable in the case of students that are not from low or lower-middle income households.

- Support vocational training and continuing education programs (OECD, 2018a). This could involve financial incentives (e.g. wage subsidies, rebates of social contributions or sub-minimum wages) to employers to create apprenticeship places and good quality adult training programs. Programs should help individuals make good vocational and training choices. This involves (1) providing good quality advice and guidance, and (2) fostering strong business-education partnerships so that the programs are well aligned with employer needs.
- Increase education spending—appropriately targeted at disadvantaged children (including pre-school aged) and youth. This would yield substantial growth dividends, and improve equity significantly overtime. Thus, it should be regarded as high priority investment. Although education spending is a large share of government budgets in EMEs and DCs (Figure 15), its allocation frequently is unrelated to student learning outcomes, and is not distributed equitably (World Bank, 2018) (Table 1). Improvements in this regard would require, inter alia, bolstering the capacity of the ministry of education, and modernizing public financial management and human resource management in the education sector (Bashir et al., 2018). In the OECD countries, public expenditure on primary, secondary and post-secondary education, while essential for inclusive growth, is much lower than spending on healthcare and pensions (OECD, 2018a).

Improve health outcomes

Improvements in health outcomes would raise worker productivity and child learning and, thereby, improve growth prospects and income distribution. In OECD countries, unmet healthcare needs are high among the poor and lower middle class (OECD, 2018b). In addition, in EMEs and DCs, health care coverage is limited and service quality is uneven and its delivery inequitable (WHO and World Bank, 2017). In this context, priority actions include:

- Boost the supply and improve the distribution of healthcare professionals. This requires (1) the use of financial incentives to encourage the supply in underserved areas; (2) increasing enrollment in medical education programs; (3) re-organizing

Figure 14: Average effectiveness of interventions to boost learning in low- and middle-income countries

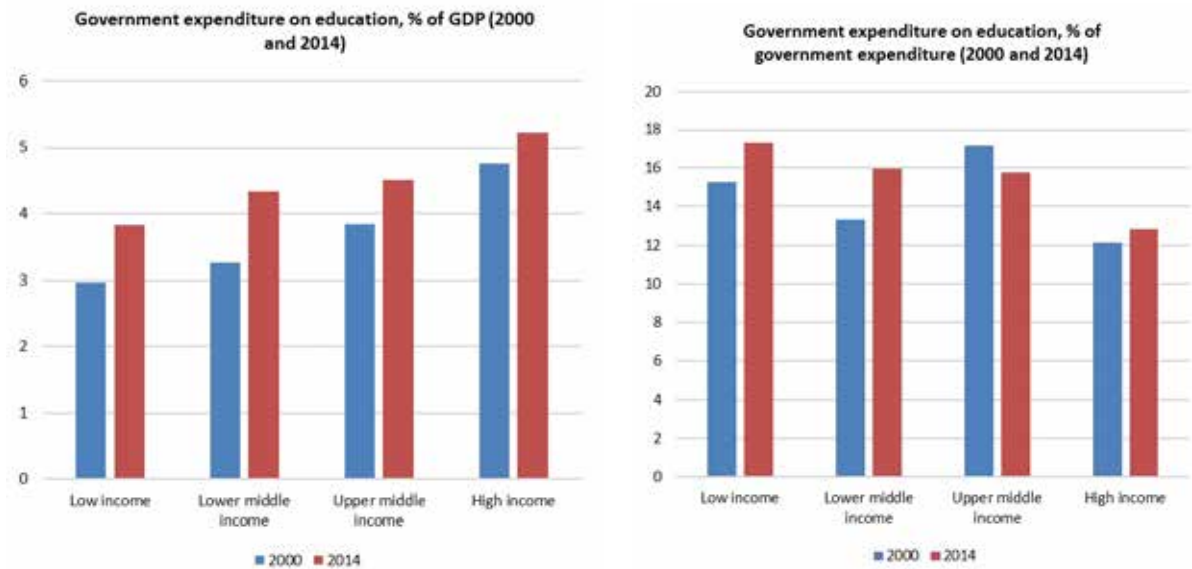
Note: "Extra time" refers to added learning time through an extended school day or year. "Multilevel" refers to interventions that target all levels: students, teachers, schools, and parents. "Structured pedagogy" is a package of teacher training, ongoing pedagogical support, and instructional materials. "Effective size" refers to effectiveness of a given intervention, shown as a unit of 1 standard deviation: effect sizes of less than 0.1 are "small," of 0.1-0.25 are "encouraging," and of more than 0.25 are "large."
 Source: Bashir et al. 2018. Facing Forward: Schooling for Learning in Africa.

service delivery, for instance, through greater reliance on outpatient care, mobile/local clinics, and information and communication technologies in service delivery; and (4) regulatory modifications to remove inefficient restrictions on human resource use.

- Focus policy attention and resources on addressing the more important causes of ill health among lower income households. Give priority to addressing major risk factors that are preventable (e.g., obesity, smoking, alcohol consumption, drug addiction and environmental pollution). In all countries, anti-microbial resistance has become a key threat, and research efforts to address it should be funded adequately. In EMEs and DCs, communicable diseases remain important health threats

and their control or eradication require enhanced capacities and efforts, both in the public and private sectors. Boosting the delivery of essential health services to underserved populations (especially expectant mothers, infants and young children) remains a key priority.

- In EMEs and DCs, widen access to clean water and sanitation services, especially in poor urban communities and in rural areas. In wealthier areas, the main challenge is to upgrade existing water and sanitation infrastructures. Well-designed tariffs and subsidies are essential to equitable and sustainable efforts in this area.
- Reduce medicinal drug costs through regulatory reforms to bolster competition and means-tested subsidies.

Figure 15: Government education spending

Source: World Development Indicators

Table 1: Inequalities in government education spending in selected DCs (percent)

Country	Year(s)	Primary		Secondary		Tertiary		Total	
		Poorest	Richest	Poorest	Richest	Poorest	Richest	Poorest	Richest
Bangladesh	2010	27	13	13	23	2	55	20	20
Burundi	2006	23	13	12	27	4	59	15	29
Cong o, Rep.	2011	21	16	18	18	1	62	-	-
Ghana	2007	19	13	13	20	4	65	12	34
Honduras	2004	31	6	5	20	1	67	-	-
Indonesia	2007	26	11	15	19	4	57	20	23
Pakistan	2007-08	25	11	16	23	9	55	17	28
Thailand	2011	25	14	-	-	1	73	20	26
Uganda	2009-10	19	15	6	38	1	68	-	-
Zambia	2010	22	14	8	39	0	86	15	31

Note: Poorest (richest) refers to the poorest (richest) 20 percent of households. Estimates for secondary in Ghana and the Republic of Congo are for lower secondary. Primary estimates for Thailand also include secondary. - = data not available.

Source: World Bank 2018. "World Development Report."

- Especially in EMEs and DCs, bolster the capacity of public health systems, including to tackle health emergencies, such as epidemics (e.g. Ebola and SARS).
- Support comprehensive family planning programs to help poor families achieve smaller family size. Effective programs should reduce the cost of contraceptives and provide counseling and treatment services.

Alleviate local and regional disparities

Lower income populations face important barriers in accessing jobs, housing, education and health services. Significant investment in infrastructure and services would lower accessibility gaps in regions and cities. Public

support would assist economic adjustment in depressed areas (OECD, 2018b).

- Transport policies should seek to ease geographical mobility and improve regional connectivity. In particular, good and inexpensive public transport systems would improve individuals' access to jobs, educational institutions, and health facilities. Building high density housing and workspaces along public-transport corridors also would serve this purpose.
- In depressed areas, public support (e.g. investment aid or loan guarantees) should promote business diversification and modernization, and job creation. Policies also should ease financial impediments on

severance pay, labor migration, and worker counseling and functional retraining.

- Provision of affordable housing, coupled with support services to household heads in searching and contracting rental housing, have proven effective in helping low-income families move away from depressed areas to higher-opportunity areas. For instance, a recent study of housing assistance in a US metropolitan area found that families that received such assistance (“Treatment” families in Figure 16) were 40 percent more likely to move to high opportunity neighborhoods compared with those that did not (“Control” families) (Bergman, Peter et al., 2019). The authors of the study conclude that “...redesigning affordable housing policies to provide customized assistance in housing search could reduce residential segregation and increase upward mobility substantially.”

Promote gender equality in access to education and the labor markets

In OECD countries, a 50 percent increase in the female labor force participation rate is estimated to raise annual per capita GDP growth by 1/3 percent (OECD, 2015). At the same time, it is estimated that household income inequality in OECD countries would be higher (by around 2 GINI points) if the proportion of working women and their relative salaries had not increased over the last 25 years. These trends reflect women's greater

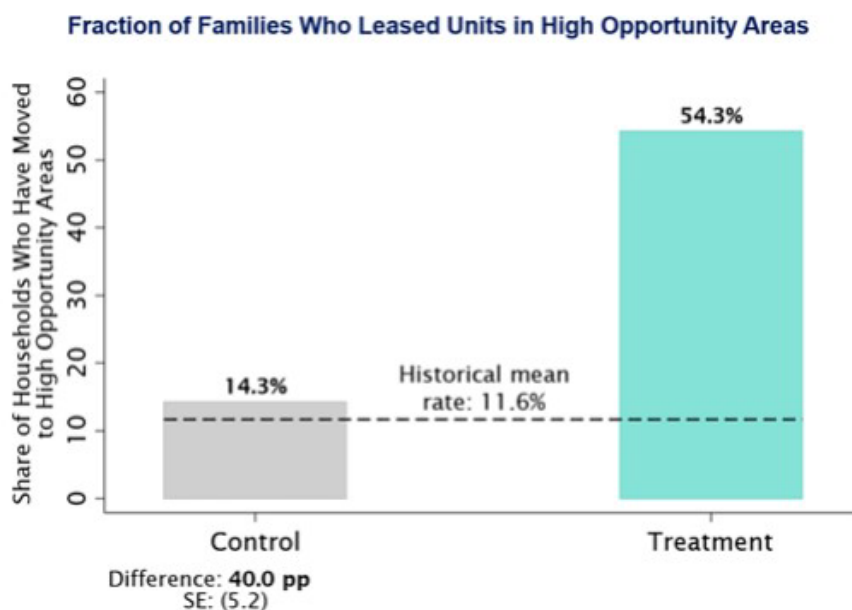
labor force participation and enhanced capacities to work in high skilled/higher paying jobs. Nevertheless, in OECD countries, women are still around 16 percent less likely to be in paid work; moreover, they earn on average 15 percent less than men for similar work.

Gender disparities generally are much greater in EMEs and DCs (Ostry et al., 2018): (1) in middle income countries, female labor force participation was 49 percent, 26 percentage points below male labor force participation; (2) in low income countries, the figures are 64 percent, and 13 percentage points, respectively.

Policies that would promote gender equality include:

- Removing gender discrimination in education. Although female educational attainment has increased and contributed to better labor market conditions for women, important differences persist in the type and quality of education and jobs that men and women access. Adjustments in labor laws and regulations should facilitate part-time work and flexible work schedules. The removal of gender discrimination in education is especially important in view of women's important roles in the health and education of children.
- Providing lower-income households access to subsidized, quality childcare. Countries that support childcare in this way have higher female labor force participation rates and lower income inequality outcomes.

Figure 16: Effects of improved housing policies



Source: Bergman et al., 2019.

- Reducing the costs (time and money) of transportation to schools and work areas.
- Adopting gender neutral family leave policies to narrow the employment cost differential between men and women.

Improve the functioning of key markets

Reform laws and regulations to reduce the ability of employers to use their market power and anti-competitive practices to set wages below workers' marginal revenue product (Naidu et al., 2018). Necessary actions would include improving the legal and regulatory frameworks for setting wages and employment conditions of the low-income workers with weak bargaining power. Research on the effects of recent minimum wage increases in the U.S. indicates that (1) they improved the earnings of low-skilled workers; and (2) reasonable minimum wage increases had zero-to-moderately positive effects on employment, while large increases reduced it by just over 2 percent in the short-run (Clemens, Jeffrey and Michael Strain, 2019).

Address market power concentration. In some countries, this means less regulatory burdens and creating a more business friendly environment. In other countries, it means modernizing regulations with the aim of fostering competition and removing barriers to market entry. For instance, in the U.S. possible regulatory actions would include (Abernathy et al., 2019):

- In reviewing mergers, regulators should evaluate the effects on a broader array of stakeholders, including workers, buyers, and suppliers with a view to dispersing private power.
- The regulation of technology platforms should be upgraded. Regulatory action should endeavor to prevent that network externalities lead to effective monopolies and restrictions in access to key economic infrastructures. Also, regulatory action is needed to adequately protect and restrict access to users' data.

Role of private entities

In many corporations, governance reforms have the potential of changing managerial incentives toward long-term profitability considerations (rather than the short-run maximization of share value) in ways that promote growth and improve the distribution of incomes. In doing so, management would give greater emphasis to, for instance: (1) long-term investments and innovation; (2) enhancing workforce productivity through non-discriminatory

hiring, while providing workers productivity-based wage increases, adequate employment conditions, and satisfactory retraining programs; and (3) appropriately supporting the surrounding community and proactively addressing negative externalities.

Many non-governmental organizations play important roles in researching, informing public discourse and lobbying to address societal problems that seriously affect disadvantage populations (e.g. climate change, environmental pollution, discriminations by gender or race, poor education quality, etc.).

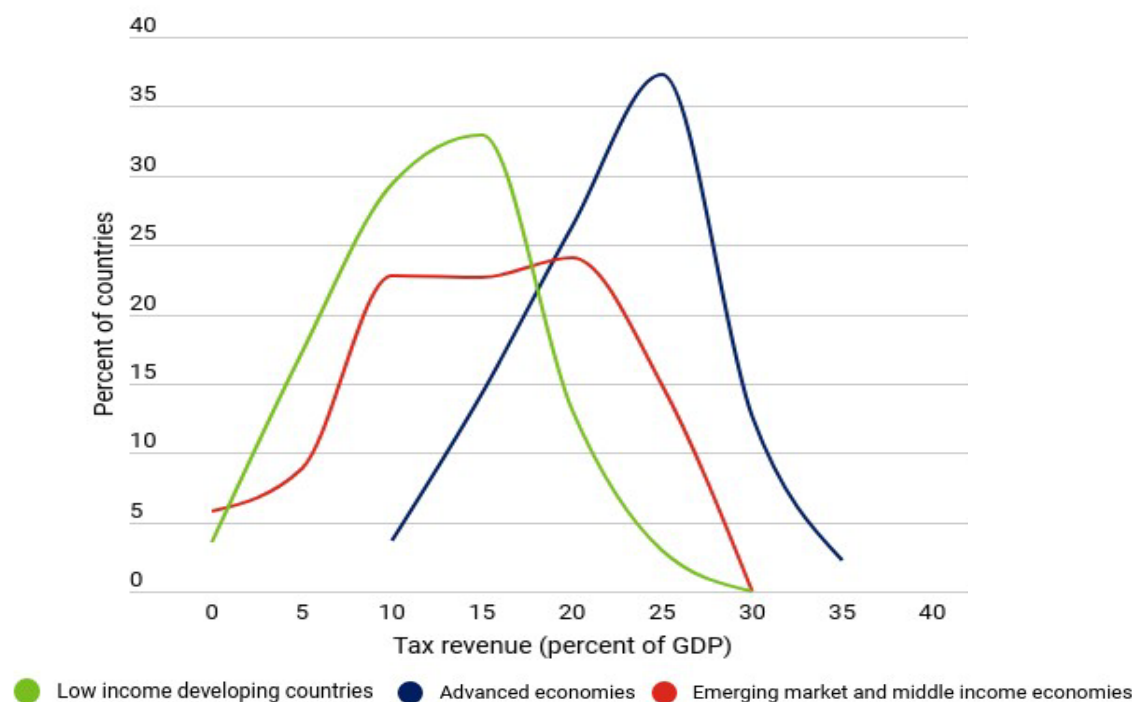
Many private charitable organizations (e.g. Doctors Without Borders, the Bill and Melinda Gates Foundation, the Carter Center, etc.) continue to do extremely important work that directly or indirectly favors disadvantaged populations across the world.

VI. Creating fiscal space to reduce inequality

Creating the necessary fiscal space in support of the policies described above would involve increasing tax revenue, and cutting inefficient and regressive spending. Government budget deficit financing is not a sustainable long-term option because the increases in the debt servicing burden eventually would reduce the fiscal space for priority spending.

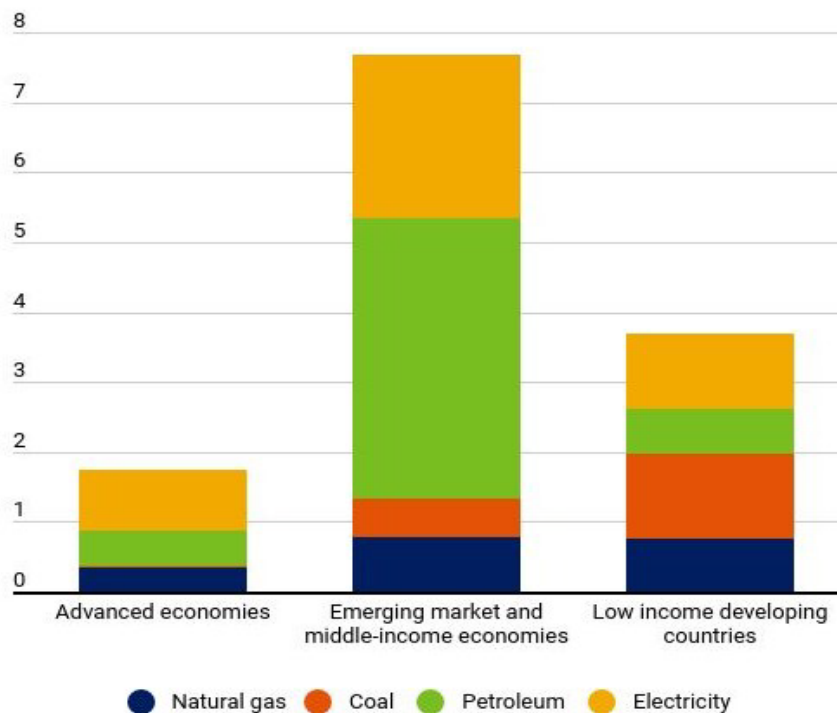
Well-designed systems of taxes are essential instruments to support growth-enhancing income redistribution. Because taxes raise revenue for government spending, it is essential to analyze both the progressivity and the economic efficiency of the overall fiscal system, taxes and spending. For instance, a Value Added Tax (VAT) rate increase, while regressive in principle, may help fund progressive social spending and, thus, improve the overall income distribution. In the design, it also is necessary to take into account the administrative capacity of the relevant government agencies. In this context, policy and administrative measures should be prioritized in carefully designed in a medium-term revenue strategy appropriate for each country's circumstances.

- Tax measures that would raise revenue and improve the distribution of income, while ensuring that incentives remain adequate, include:
 - Strengthening indirect tax systems. Boost VAT revenue, including by curtailing exemptions and unifying rates, and increasing the rate if warranted. Boost taxation of easy-to-tax luxury goods, such as high-value cars.

Figure 17: Tax revenue/GDP ratios by country groups

Source: IMF Fiscal Monitor: Curbing Corruption, April 2019

- Raising the progressivity of the personal income tax and broadening its base by rationalizing exemptions, removing or scaling back tax expenditures that benefit high income recipients disproportionately, and taxing as ordinary income all forms of remuneration, including fringe benefits, capital gains, carried interest and stock options.
 - Improving the taxation of wealth, including inheritances, land and real estate. Restricting the use of trusts to shelter assets and incomes.
 - Removing inefficient corporate income tax expenditures, which unduly benefit high executives and wealthy shareholders.
 - Removing opportunities for tax avoidance and evasion, including through profit shifting, transfer pricing and interest stripping by multinational corporations. To that effect, instruments include: establishing caps on the deductibility of certain expenses, setting minimum profit margins for certain transactions, introducing digital service taxes and, if appropriate, replacing the corporate income tax by a border adjusted profit tax (IMF, 2019).
 - Strengthening tax and customs administration. Actions in this area include adequately resourcing the relevant agencies, while bolstering their budgetary and managerial autonomy; strengthening their internal units that deal with large taxpayers; and investing in technological modernization to lower compliance costs, facilitate cross-checking of returns, help rationalize auditing functions, and boost internal operational efficiencies.
 - Tax measures that would raise disposable incomes of lower-income workers, while encouraging work and hiring, include:
 - Scaling back wage-based social contribution rates.
 - Introducing (or increasing) an earned income tax credit.
 - Tax goods with negative externalities (e.g. cigarettes, alcoholic beverages, sugar, polluting fuels, carbon emissions, etc.). The regressive effects could be offset through appropriate government spending, transfers and subsidies. For instance, in OECD countries, income inequality was negatively related to energy taxes when energy tax revenue was used to lower the tax burden on income and labor (OECD, 2018b).
- On the expenditure side,
- Provide conditional transfers targeted to low income households. These have been effective in several countries (e.g. Brazil, Jamaica, Peru and

Figure 18: Fuel subsidies/GDP ratios by country groups

Source: IMF Blog, Chart of the Week, Fuel for Thought: Ditch the Subsidies, August 14, 2019

Mexico) in reducing poverty and improving income distribution, while encouraging pro-growth behaviors (e.g. better nutrition, school attendance and child health check-ups).

- Reduce inefficient and/or regressive expenditures. This would involve:
 - Refocusing subsidies on low income households/individuals. This would involve replacing across-the-board subsidies (e.g. on energy, and on tertiary education and health services) with targeted subsidies.
 - Especially in EMEs and DCs, modernizing public financial management and comprehensive action to improve the efficiency of public investment.
 - Restraining the growth of military outlays.

VII. Political economy considerations

The proposed policies and reforms may be difficult to put in place and sustain. And political economy considerations will suggest the sequence of implementation of these policies and reforms, as they may disrupt the interests of important stakeholders and politically influential interest groups in the short run. Because these policies yield benefits to society at large over the medium and long runs, the reform efforts need to be sustained over long periods of time, maintaining the commitment of political

leaders is challenging in the context of countries' short political cycles and in the face of important administrative and budgetary obstacles.

Key features of successful reform strategies include:

- At the outset, building support of key stakeholders in favor of the most critical policy reforms. This involves giving stakeholders' leaders a voice in the development of the reform strategy.
- Sequencing the reforms so that key constituents and stakeholders begin to receive benefits early on.
- Building support for the reform among leaders across the political spectrum.
- Giving adequate attention to relieving administrative and budgetary bottlenecks.

Chile provides an example of how to build support for comprehensive educational reforms (Box 1).

Continuing macroeconomic stability and sustained output growth would help secure political "buy in" for the authorities' redistributive reforms. This is because: (1) it would be easier to maintain broad-based political support for the reform effort when the real incomes of the public and of key stakeholders are rising; and (2) the growth-induced increases in tax collection would ease the burden on the public finances of compensating those adversely affected by some reforms. More fundamentally, overtime a growing middle class would reinforce demand at the political level for equity enhancing policy actions.

Box 1: Reformers in Chile negotiated changes gradually

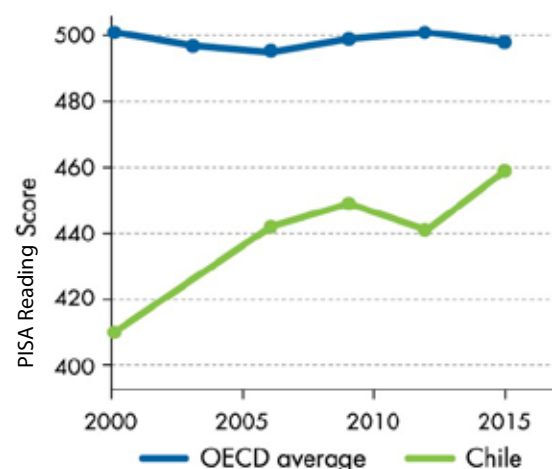
In the early 2000s Chile's education system registered significant, sustained improvements in learning levels. The proportion of 15-year-olds who achieved reading scores at or above a Programme for International Student Assessment (PISA) level of proficiency increased from 52 percent to 69 percent between 2000 and 2015 (figure B1).

Much of the improvement was attributable to the Sistema Nacional de Evaluación de Desempeño (National Performance Evaluation System; SNED) program implemented in 1996. This program began by awarding teacher bonuses based on school-level indicators of performance. In 2004 individual teacher incentives were introduced, based on mandatory performance evaluations of public school teachers. By the end of the 2000s, these incentives accounted for 15-25 percent of the average teacher salary. Rigorous evaluations of the group-based program revealed that the incentives significantly improved student learning.

The gradual shift from school to individual incentive payments was a pragmatic attempt to address the potential opposition of teachers' unions to performance-related pay. Before implementing a mandatory program for all teachers, the administration introduced a voluntary individual assessment and incentive system that set a precedent for teacher evaluation. Because these steps allowed time to adjust and gain support for the new system, they were key to its success.

Establishing credibility with the teachers' union early on was another key strategy. The Teacher Statute passed in 1991 conferred civil service status on teachers, guaranteeing associated job benefits, protection, and an opportunity for centralized wage negotiations. This move sent a positive signal to teachers. Trust between the union and the government increased further through regular discussions on the implementation of

Figure B1: Reading scores have improved in Chile



reforms. As part of these efforts, union members codsigned the performance evaluations used for the incentive program.

A final factor in the successful adoption of these reforms was their inclusion in a broader set of reforms that increased resources for education and raised teachers' salaries. SNED became part of the teacher professionalism pillar of the Full School Day reform package. More teachers were covered by the reforms, and the incentive amount was increased. Salary increases before the start of the program may have helped to lessen opposition to the mandatory individual pay incentive.

As a consequence, the Chilean programs remain one of the few long-running "pay for performance"-type reforms that have been successfully scaled to the national level. In other contexts, such reforms have often been unpopular, but in Chile the reforms continue: in 2016 new legislation passed to widen the coverage of the incentive program, while strengthening teacher professional development.

Source: World Bank 2018. "World Development Report."

VIII. Quantitative relationships between human capital,¹ growth and income distribution and long-term scenarios for selected countries

The estimated models are consistent with the "endogenous growth" theory. This theory hypothesizes that countries with more human capital have greater capacity to develop new ideas, adopt or innovate new technologies, and develop better-quality supportive public and private institutions. All this sustains productivity gains and leads to higher growth rates. The central role of education in affecting growth has been confirmed in a variety of studies. Similarly, the linkages between education, earnings

capacities, social mobility, and income distribution, though complex, are increasingly understood, as discussed earlier.

Empirical growth model with cognitive skills

The estimated model is based on the work described in Hanushek and Woessmann, 2008 and 2015, and in OECD, 2010. It relates a human capital proxy variable to per capita output growth.

The model estimation employed a sample of 45 countries with the relevant economic data available covering the period 1970-2015.²

The model relates the growth rates of GDP per capita to: (1) the initial level of GDP per capita, (2) years of school attainment, and (3) the level of cognitive skills of students,

1. Proxied by cognitive skills or education achievement tests (e.g., PISA scores).

2. Comparable data on international test scores and on income distribution was available for the 45 countries that were included in the sample.

as measured by mathematics and science scores on available international exams (PISA).

- The initial income level is included to capture “conditional convergence” effects, i.e. that lower income countries’ national income levels may play “catch up” with those of AEs, as they adopt existing technologies and emulate better institutions, rather than innovate.
- The analysis assumes that the average education test scores observed for students roughly 10-18 years old are a good proxy of human capital, i.e., the skills of the labor force.³ It is believed that measurement errors associated with the use of such proxies likely would tend to bias downward the estimates of the impact of skills.

The estimated **output per capita growth model** is:

$$g = -4.24 - 0.0001 \text{ GDP/capita1970} + 1.88 \text{ C} - 0.14 \text{ S}$$

(3.93) (4.67) (6.74) (1.57)
(Adjusted R²=0.58)

where *g* is the average annual growth rate in GDP per capita between 1970 and 2015, GDP/capita1970 is initial national income, *C* is the composite measure of cognitive skills (average score on all international tests 1964 to 2003 in math and science in primary and secondary school⁴), and *S* is years of schooling (measured in 1970). Absolute values of *t*-statistics are reported in parentheses below coefficients.

The estimated coefficient on cognitive skills is statistically highly significant and implies that an increase of 100 points on the PISA score would yield an increase in the annual growth rate of nearly 2 percentage points.

Empirical income distribution model with cognitive skills

The model is estimated using the same group of countries and time period as in the growth model.

It relates the GINI coefficient after taxes and transfers (in percent) to: (1) the initial level of GDP per capita, (2) the initial years of school attainment, and (3) the level of cognitive skills of students, as measured by math and science scores on available international exams. In addition to the explanatory variables used to estimate the growth model, we added average GDP per capita growth in 1970-2015 in order to test whether the income distribution regularly behaves differently in fast growing economies.

The estimated **income distribution model** is:

$$\text{GINI} = 75.998 - 0.0005 \text{ GDP/capita1970} - 7.998 \text{ C} + 0.51 \text{ S}$$

(10.27) (3.36) (3.39) (0.94)

-0.125 AvgGDP/capita growth
(0.14)
(Adjusted R²=0.67)

The estimated coefficient on cognitive skills is statistically highly significant and suggests that an increase in 100 points on the PISA scale would reduce GINI by 8 percentage points.

IX. Illustrative country scenarios of education reform and inclusive growth⁵

The above statistical results confirm that **concerted efforts to raise the cognitive skills of a country’s population through improvements in the coverage and quality of education can have sizeable long-term effects on both economic output and the distribution of income.**

Undoubtedly, comprehensive education reforms are complex undertakings. As discussed earlier, they require stakeholder support, institutional improvements, upgrading of teacher skills, infrastructure investments, etc. They take years to put in place and implement. Moreover, even in the best of cases, the productivity enhancing effects of reforms filter through the economy with lags, and large economic and social effects are experienced decades after reform implementation.

Using the above regression results, **country scenarios were prepared to illustrate the quantitative effects that improvements in educational achievement can have on the per capita GDP and income distribution of selected countries over the long-term.** In preparing the scenarios, the following key assumptions were made:

- The estimated coefficients would remain unchanged in coming decades. This assumes, very conservatively, that for instance: (1) ongoing improvements in educational knowledge and practices will have negligible effects; (2) the economic institutional frameworks of the past remain largely unchanged; (3) country economic shocks and their effects would be similar to those of past decades; (4) the effects of education on population and labor force growth remain as in the estimation period; and (5) inter-country effects are negligible.

3. It is assumed that what students learn in school is a good predictor of their capacities to continue learning subsequently and to utilize the learned skills productively.

4. Comparable reading scores were not available for all the countries included in the sample. Where available, they are highly correlated with science and math scores.

5. The methodology used in this section borrows heavily from the work of E. Hanushek and L. Woessmann described in OECD, 2010.

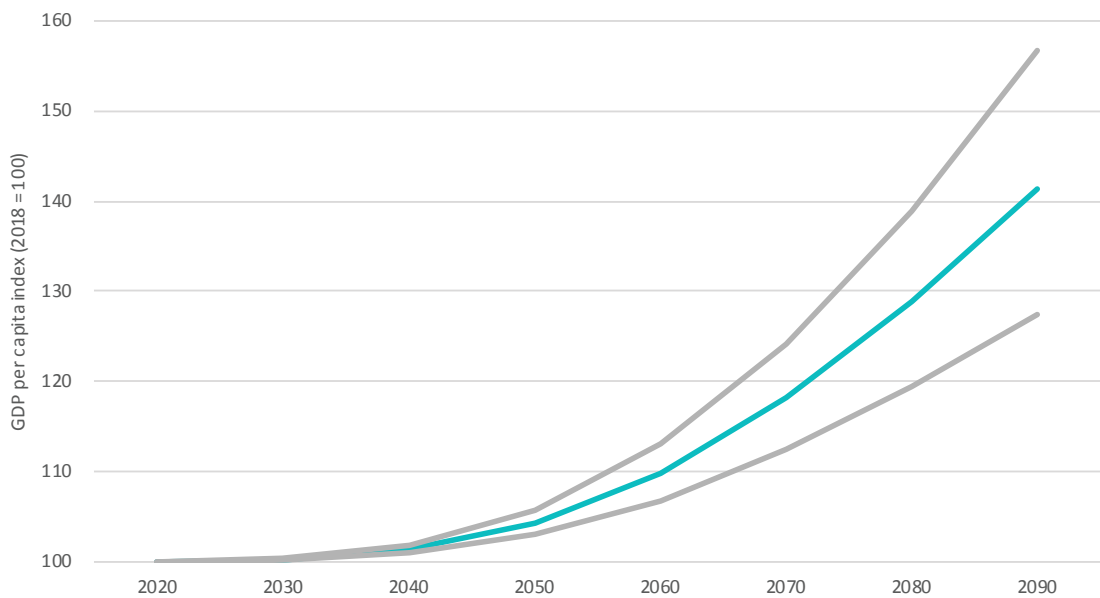
- The education reform takes 30 years to be implemented fully; thus, the cumulative improvement in cognitive skills is assumed to rise by 1/30th a year.
- The economy is affected gradually as the share of the working age population that is more productive increases. In particular, each new, more productive cohort is assumed to constitute 2½ percent of the labor force, so that the growth and

economic distribution effects rise gradually over a 40-year period.

Over the long run, the economic and income distribution benefits of educational reforms would be sizeable.

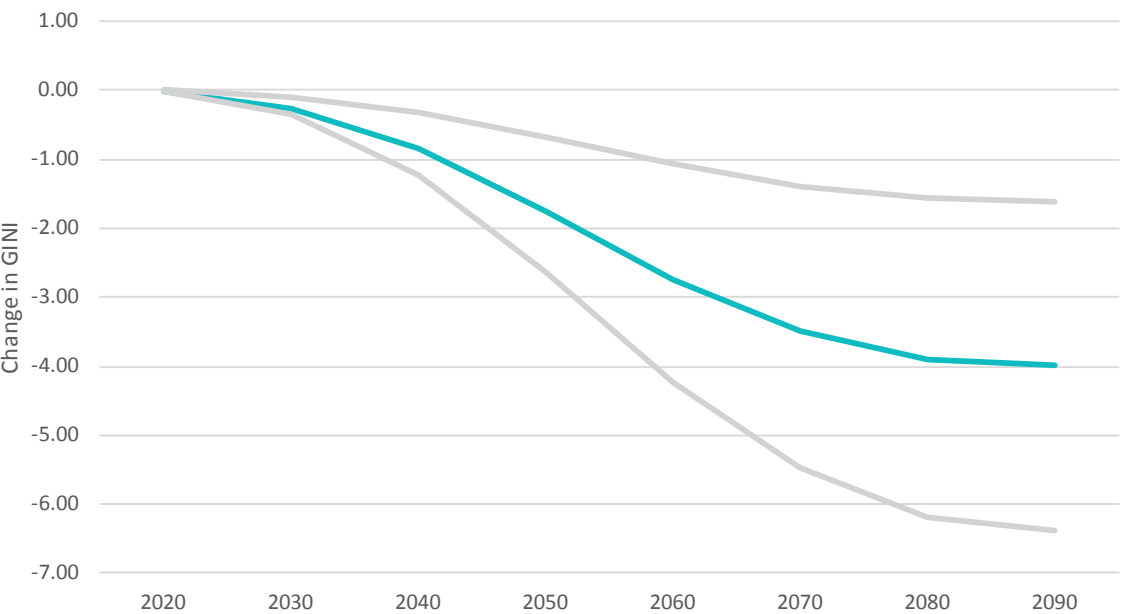
- In the already high performing AEs, the reform efforts would target their worse performing schools and students, which tend to be located in low income areas. As a result, over the long run, the

Figure 19: GDP per capita projection – Advanced Economies



Source: Author Projections

Figure 20: GINI projections– Advanced Economies



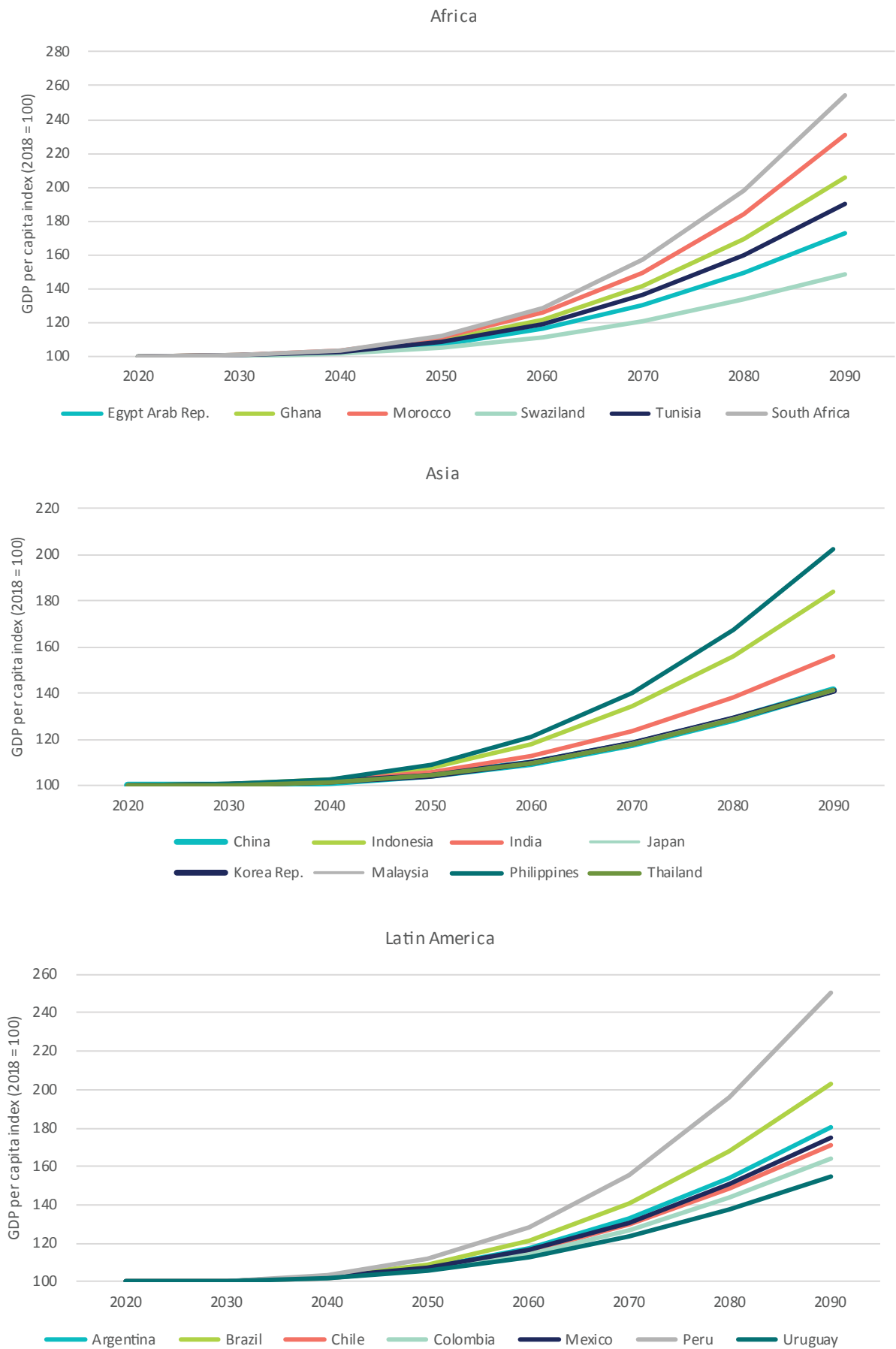
Source: Author Projections

standard deviation in student test results would be halved and average test scores would increase by the equivalent of 50 PISA points. Compared with a no reform scenario, by 2040 GDP per capita would be 1 percent higher and GINI coefficients would be nearly 1 percentage point lower. However, as the effects of the reform increase more rapidly thereafter, by 2060 GDP per capita would be 10 percent higher and GINI coefficient would be 2½ percentage points lower than in the no reform scenario. Figures 19 and 20 illustrate the effects on the GDP per capita and GINI coefficients for the AE as a group (light gray lines represent the 95 percent confidence interval of the point estimates of the regressions).

- In the other countries, it is assumed that the reform would target all schools and students and succeed in closing 60 percent of their gap in test scores with the best performing country (Japan) or increase test scores by 50 points, whichever is larger. Thus, the increase in test scores would be different in each country, and so would the economic effects. Indeed, the larger the gap in test scores, the larger the effect of the partial convergence to the best scores. Figures 21 and 22 illustrate the effects on the GDP per capita and GINI coefficients of various countries.

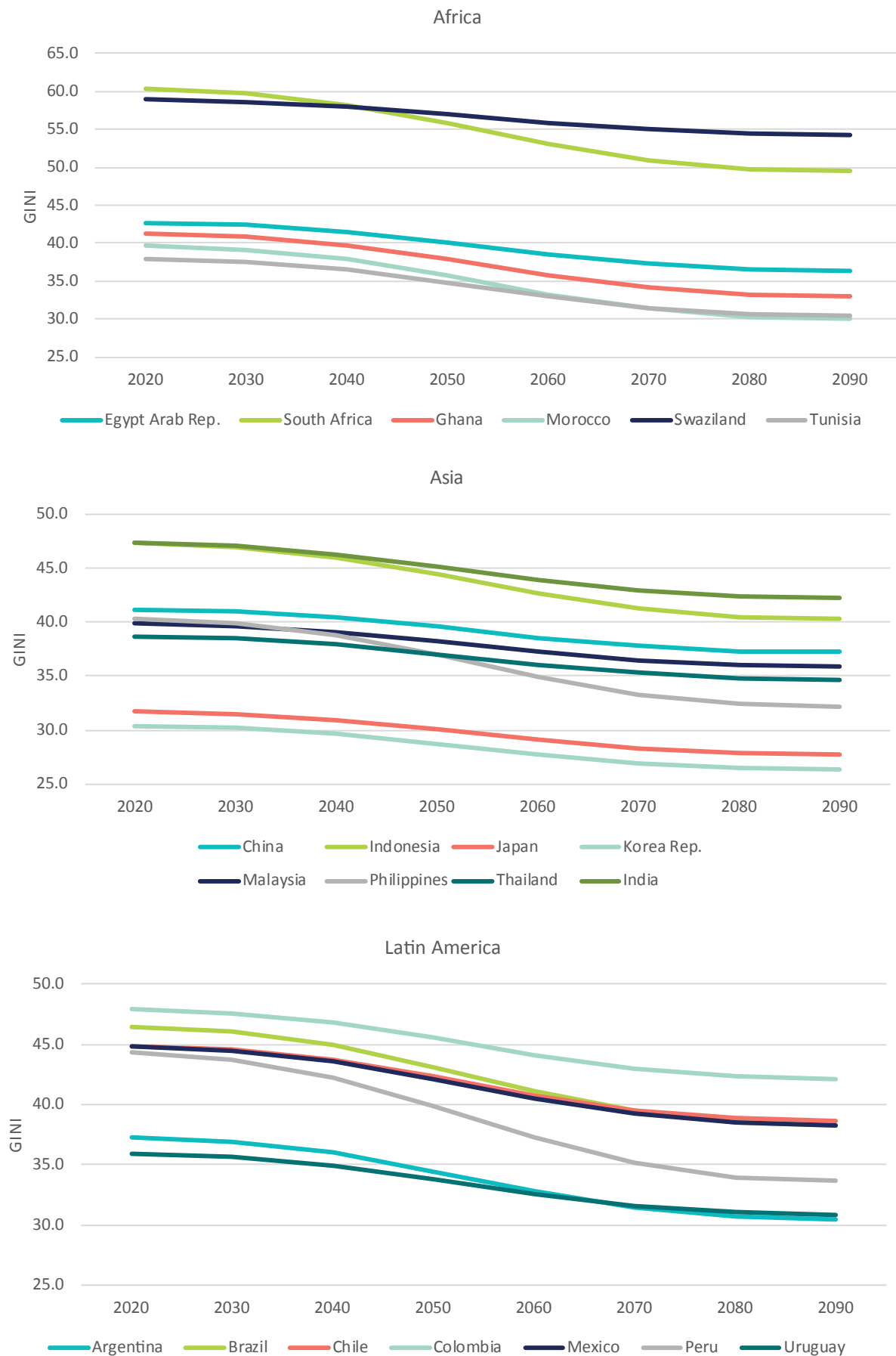
These scenarios illustrate the extent by which, over the long run, comprehensive educational reform packages that improve cognitive skills and thus human capital (1) yield high economic returns that would more than compensate the reform costs and (2) can reduce substantially inequality in income distribution. Indeed, the beneficial effects of successful comprehensive educational reforms may well be larger than is being envisaged here because of uncaptured intercountry economic externalities, and enhanced societal cooperation, institutional strengthening and political stability.

Figure 21: GDP per capita projections



Source: Author Projections

Figure 22: GINI Projections



Source: Author Projections

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