



Demographics and the Future of Work (FoW)

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Cover photo

"Marcel Crozet. 2013-03, young fishermen from the Salima region (Malawi) repairing fishing nets seated on the beach." *Photo by ILO. Some rights reserved.*

The French philosopher Auguste Comte once said that “demography is destiny.” The quote may have grown trite, but only because it emphasizes an essential truth—that underlying many of the economic, social, and political dynamics that structure human society are demographic fundamentals. Global discourse on the future of work often foregrounds technological acceleration and climate change; but global

transitions in demography will also shape labor markets in profound ways. This brief explores general findings from global literature on demographic trends, while also unveiling the specific demographic concerns of the Global South, which are themselves internally diverse, and connecting all of these population dynamics to the quest for a better world of work.

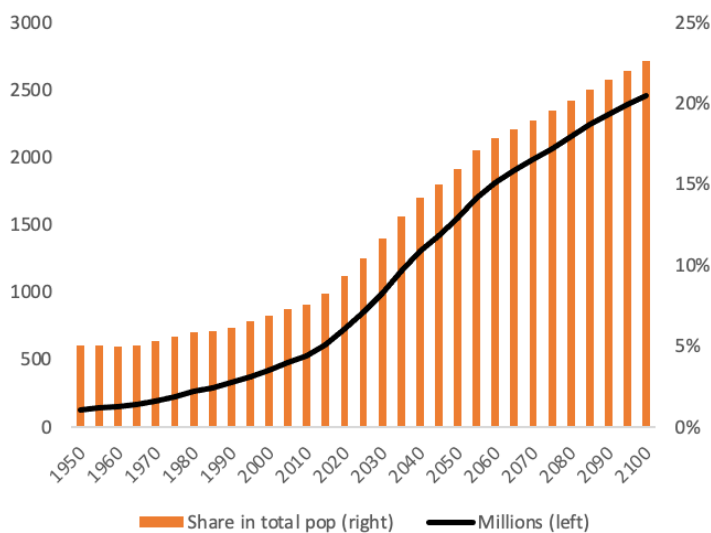
The Global Picture: Key Findings from the Literature

The world is aging rapidly and population growth is likely to cease by 2100. As Figure 1 shows, the population over 65 years of age is likely to grow at an accelerated rate in the coming decades. This age group, representing 5 percent

of the global population between 1970 and 2020, is estimated to account for almost 20 percent of the population in 2070.¹ The number of people aged over 65 will rise dramatically—from around 0.7 billion in 2020 to almost 2 billion in 2070.

Figure 1

World population aged 65+



Source: UN World Population Prospects 2019

These changes in population structure are accompanied by a sharp reduction in population growth. A steep drop in infant mortality rates caused the world to experience an explosion in population in the second half of the twentieth century, with numbers shooting up from 2.5 billion in 1950 to 6.2 billion in 2000.² Fertility rates also declined after a lag, after which population growth began to reach a steady state. The population will continue to expand in the coming decades, though much more slowly. It is expected to plateau by the year 2100, returning to the dynamics prior to changes in mortality and fertility rates discussed above.

Population aging is challenging labor market institutions. Most people aged 65 and over are economically passive; they do not generate an income associated with work activities. In the United States, for example, the participation rate drops from 64 percent in the 55-64 age group to 26 percent in the 65-74 age group. For this reason, the working-age population is defined as all individuals between the ages of 15 and 64.

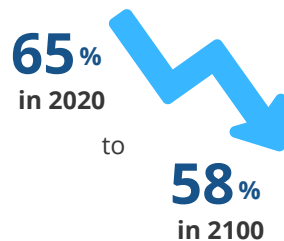
Population aging is accompanied by a reduction in labor supply. In fact, according to United Nations (UN) estimates, of the 7.8 billion people living on Earth in 2020, 65 percent made up the economically active population; by 2100, this ratio will drop to 58 percent.

A Rapidly Aging World Challenges Labour Market Institutions

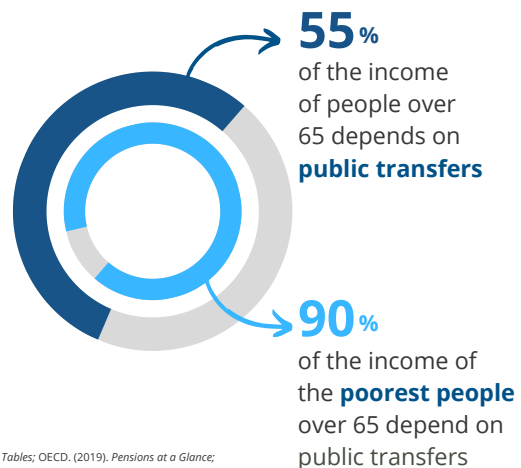


Most people over 65 are **economically passive** and do not generate income from work activities

The ratio of the **economically active population** is expected to drop from



Sources:
United Nations. (2019). *World Population Prospects 2019, Volume I: Comprehensive Tables*; OECD. (2019). *Pensions at a Glance*;
ILO. (2014). *Social protection for older persons: Key policy trends and statistics*.



Source: Albrieu, R. (2022). *Demographics and the Future of Work (FoW)*. JustJobs Network and Red Sur.



These population dynamics affect the workings of labor institutions—that is, of the collective agreements that regulate the workplace and help workers and their families manage shocks to their livelihoods.³ This is particularly true in the case of social protection for older persons, the so-called pension systems. About 55 percent of the income of people over 65 comes from public transfers,⁴ with the share rising to 90 percent for the poorest people.⁵ As a result, the aging of the population is associated with new long-term challenges regarding the sustainability of public finances.⁶ The negative impact of aging on fiscal sustainability is also related to the increase in health expenditures.⁷

A second challenge—perhaps more structural—is that of a world without employment.⁸ Currently, of the 5.1 billion aged 15 to 64, some 3.2 billion earn their income through the sale of their labor services, whether in formal or informal jobs. If the working population begins to shrink due to the aging process, the global economy will be faced with the need to create new sources of income for a large part of the population. The most visible feature of this trend would be an acceleration in the fall of workers' share of national income.⁹

If the UN's population forecasts are accurate, the income of a large part of the population would have to come from capital or public transfers in the future. Since capital income is increasingly concentrated in a small group of economic agents,¹⁰ novel redistributive policies will need to be implemented. Many of them are already in discussion, particularly those related to taxing the richest 1 percent of individuals.¹¹

Regarding novel public transfers, the most famous proposal is the [Universal Basic Income \(UBI\)](#). According to Gentilini et al., “a UBI is a program to be delivered in cash, unconditionally, and to everyone. A UBI is the simple combination of three complex debates (...) Its design features—all in cash, no conditions, and no targeting—challenge current practices to varying degrees.”¹² It is universal instead of targeted to specific groups; unconditional instead of tied to some amount of work; and it is in the form of cash instead of in vouchers or in-kind.

Population aging is challenging the education system. An alternative way to address these aging challenges is to retain the population in the labor market for a longer time. The strategy is more plausible today, a time in which work tasks are primarily cognitive rather than physical, as they may have been a couple of centuries ago. This strategy is also critical considering that life expectancy gains have been made in recent years.¹³ If, in past decades, people spent 30 years in the labor market, they are likely to spend 40 years or more in the near future. That is why increasing their time in education or training is crucial. In the past, people reserved a well-defined part of their lives (from childhood to adolescence, or for the lucky ones, a little more) to acquire the necessary knowledge to be part of the labor market. With the acceleration of technological change, the set of skills in demand is constantly changing, so learning must be a continuous, lifelong practice.

For this reason, governments have reinforced their efforts to design and finance lifelong learning (LLL) systems. From this perspective, the importance of

the formal education system (primary, secondary, tertiary) continues to be recognized, but the specific discussion on the training of those who are already in the labor market—known as Technical and Vocational Education and Training (TVET)—is incorporated. TVET refers to “education or training, which is technical in nature and aimed to provide skills for a person related to a profession, in order for that person to get a job and provide a livelihood.”¹⁴ According to UNESCO, it is possible to differentiate between two types of TVET: one, wherein the learning takes place in an institution, and two, when it takes place in the workplace (although it is also possible to find a combination of both). The first group includes formal programs that provide students with an official diploma or certificate from industry or companies, but also non-formal programs, which often do not lead to certification. On-the-job training, meanwhile, can occur pre-employment, as part of training, or during employment.¹⁵

Population aging leads to greater automation.

Until a few years ago, the prevailing view of automation was that it would reduce the demand for jobs vis-a-vis labor supply, resulting in a world in which people were redundant. However, evidence began to support an alternative hypothesis:¹⁶ population aging—and the resulting shortage of middle-aged workers in the labor market—was behind the acceleration of technological change.

The arguments behind this hypothesis rest on the fact that the near future will be one of labor scarcity, not abundance. Autor et al predict that, contrary to the conventional narrative in which automation makes jobs increasingly scarce, “due to slowing labor force growth rates, rising ratios of retirees to workers, and increasingly restrictive immigration policies, over the next two decades industrialized countries will face more jobs than adults able to fill them.”¹⁷ Labor scarcity will be particularly acute in middle-aged cohorts, which—given the age patterns of the occupational matrix—will increase the relative cost of labor in performing manual production tasks that require physical activity and dexterity. Acemoglu and Restrepo document that countries undergoing more rapid demographic change (Japan, Germany, South Korea, and the United States) have invested more in new robotic and automation technologies.¹⁸ They also provide evidence that this is because of the scarcity of middle-aged workers and that industrial automation is indeed most substitutable with middle-aged workers. According to the authors, the effects of demographic change on investment in robots are robust and sizable: differential aging alone accounts for about 35 percent of the cross-country variation in investment in robotics. Abeliatsky and Prettnner tested this hypothesis on panel data for 60 countries in the years spanning 1993 to 2013 and found that a 1 percent decrease in population growth is associated with an approximately 2 percent increase in the growth rate of robot density.¹⁹

Demographic Challenges through the Lens of the Global South

Labor markets in the Global South are characterized by high informality. The dynamics of the population structure and its relationship with aggregate patterns of labor income and productivity are highly dependent on the context of each country and region. One of the key structural features in this regard is informality. According to the International Labour Organization definition, individuals are informally employed if their employment relationship is not subject to national labor legislation, income tax, social protection or entitlement to employment benefits. The reasons for informality, meanwhile, could be many: non-declaration of jobs or employees; casual or short-term employment; jobs with working hours or wages below a certain threshold (e.g. for social security contributions); or failure to apply the law and regulations in practice.²⁰

According to ILO, about two billion of the world's employed population aged 15 and over work informally, representing more than 60 percent of global employment.²¹ The proportion of informal employment is particularly high in Africa (86 percent), Asia (68 percent) and the Arab States (69 percent). More than two thirds of the employed population in low- and middle-income countries work in informal employment (69.6 percent), while less than one-fifth of the employed population (18.3 percent) are informal in high-income countries.

One of the channels through which informality affects the relationship between demographics and the future of work is through the support ratio (SR). This ratio describes the burden on the working population of the older non-working population. One of the most commonly used ratios is the potential support ratio, calculated based on the population dynamics: it is the number of people aged 15-64 per one older person aged 65 or older.

However, a more accurate calculation of dependency would have to adjust the ratios by at least two factors. The first would be for those persons of working age who are not part of the labor force, and the second for those working-age people who are effectively contributing to some type of savings system, public or private, to finance old age. If we adjust for the latter, we get the economic support ratio (ESR). According to Loichinger et al., the ESR allows an understanding of the degree of economic dependency in a society. While demographic dependency ratios are based on fixed threshold ages, economic dependency takes into account the fact that the type and intensity of economic activity varies among individuals, particularly those of different ages.²²

This is where informality comes in. The contribution of informal workers to the financing of public pension systems is minimal. The impact on the

sustainability of pension systems becomes visible at the time of retirement, when the true number of dependents is known. It is not by chance that there is discussion of UBI in the countries of the Global South but, unlike in the Global North, the rationale for UBI is associated with coverage failures of standard labor institutions rather than technological changes. UBI is usually such an expensive proposition for the countries of the Global South that more economical solutions, like non-contributory pensions, may be better.

Informality also affects the future of work in other, more indirect ways. First, informal jobs tend to be less productive, which poses additional financing problems for dependents. Second, institutions to foster technological change and allow for the acquisition of 21st-century skills are usually designed for formal sectors and are not immediately applicable to the rest of the economy. Third, the participation rate of middle-aged workers is higher in the informal sectors, perhaps owing to the failures of institutional coverage.

Some regions, such as Latin America and East Asia, are aging faster than the Global North did in the past. Population aging is a stage in a long-term process of population change related to births and deaths. This process is called the

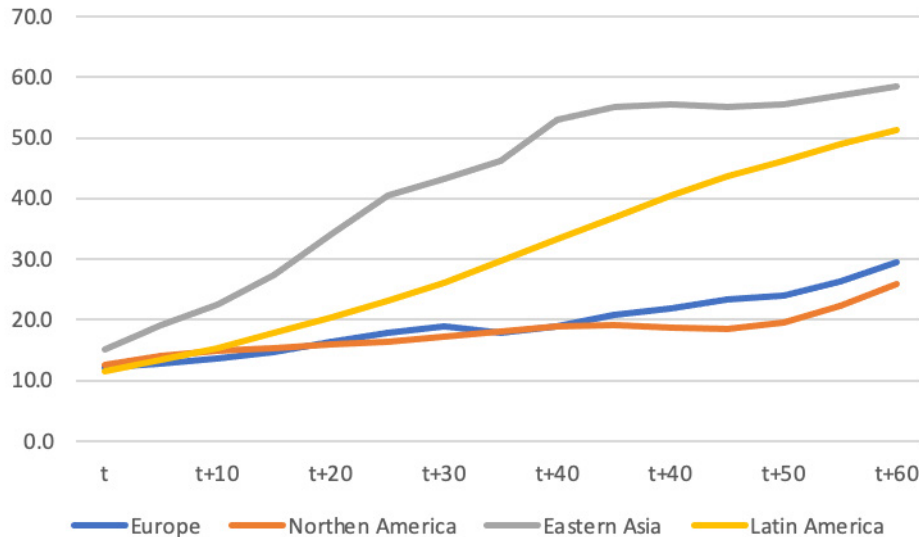
demographic transition.²³ According to Lee,²⁴ the classic demographic transition starts with mortality decline, followed by reduced fertility, leading to an interval of first increased and then decreased population growth and, finally, population aging.

Globally, the demographic transition began in Europe about 300 years ago. Today, all countries in the Global North are in the aging phase. Among regions in the Global South, upper-middle-income countries, many of them in Latin America and East Asia, are now entering this phase. Perhaps more importantly, however, the speed of change in population structure is significantly higher in these regions than it was in the Global North.²⁵ As shown in **Figure 2**, while it took six decades for Europe and the United States to bring the old-age dependency rate from 15 to 30 percent, it is likely to take less than two decades in Eastern Asia, and only about three decades in Latin America.

This means that the challenges presented in the previous section must be addressed most urgently in this set of Global South countries. Given the obstacles to development in these regions, there is a particular risk: these countries could grow old before they become rich.²⁶

Figure 2

Old-age dependency ratio (ratio of population aged 65+ per 100 population 15-64)



Source: UN World Population Prospects 2019
(t=1950 in Europe and Northern America; t=2015 in Eastern Asia and Latin America)

Issues In the Global South Poorly Investigated in Current Research

The Global South (and the world economy) is going through the demographic dividend stage. Not all countries in the world are at the same stage of the demographic transition.²⁷ The UN calls the period prior to aging the “demographic window” and defines it as a period in which the share of the population under 15 years of age is permanently below 30 percent but those over 65 years of age constitutes a small group.²⁸ This

allows for a classification of countries according to demographics: i) “young” countries are those that have not yet entered the demographic window and are struggling to grow because they have high dependency ratios, and consequently low savings rates; ii) “adult” countries are those passing through the demographic window to accelerate growth, create jobs, and increase productivity; and iii) “older” countries have already

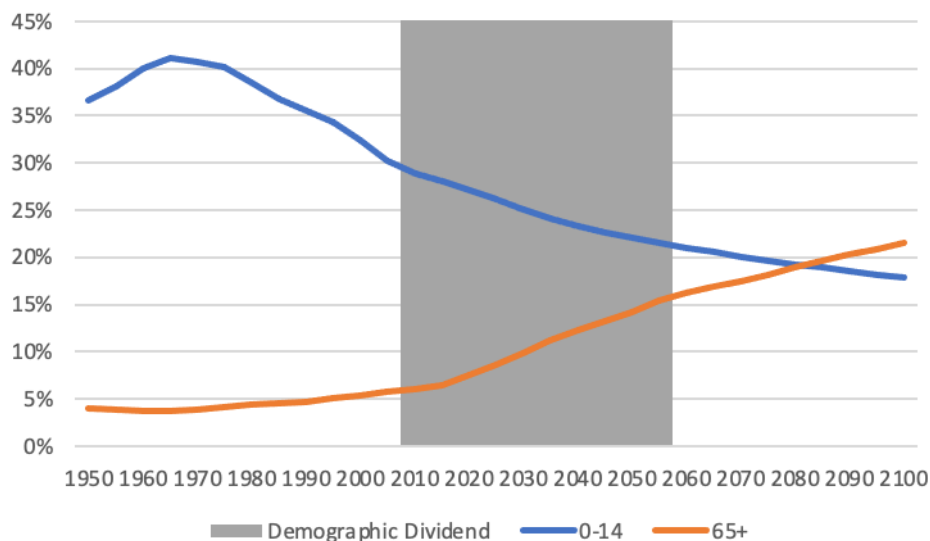
passed through the demographic window, have high dependency rates, and experience shrinking labor incomes.

As seen in **Figure 3**, the Global South is in the intermediate stage, the “demographic window,” where it will remain until 2055 at least.

Given that more than 80 percent of the world’s population lives in the Global South, it should come as no surprise that the conclusion arrived at above also applies globally. The world as a whole is not “old” but is in the window of the demographic dividend. Additionally, the high percentage of working population presents an opportunity to accelerate growth for at least another two decades.

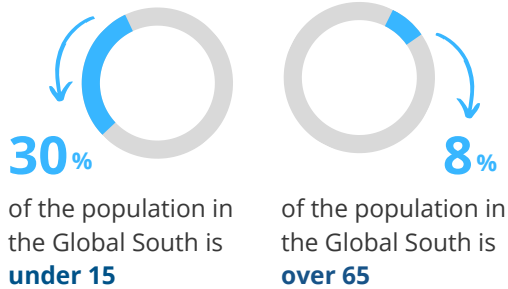
The demographic window is an opportunity for achieving development through job creation, but it can turn into a burden. How is the change in population structure related to growth dynamics and job creation? Until a few decades ago, the literature was not concerned with answering this question, but focused more on studying the effects of population growth on per capita GDP growth.²⁹ The answer to this question has value not only for historians, but also for contemporary policy makers: the reduction in birth and death rates in the Global South is a phenomenon of the late 20th century, or even of the early 21st century.³⁰

Figure 3
Population shares in the Global South



Source: UN World Population Prospects 2019

Much of the Global South is Still Amidst its Demographic Transition. Will it be a "dividend" or "disaster?"

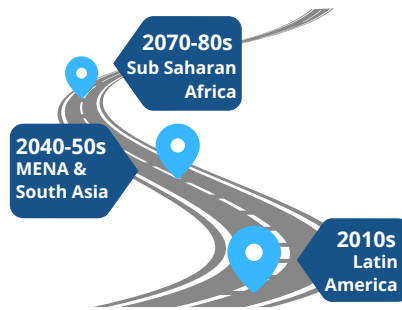


The demographic window is an opportunity to create more & better jobs, but the "dividend" is not automatic.

Sources:
World Bank. (2021). *World Development Indicators: Population age composition*; Fanelli, J. M., & Albrieu, R. (2015). *Demographic Asymmetries and the Global Macroeconomy. In Asymmetric Demography and the Global Economy*.

Source: Albrieu, R. (2022). *Demographics and the Future of Work (FoW)*. JustJobs Network and Red Sur.

Global South countries will see peaks in their working-age population at different times in the 21st century.



The growth of GDP per capita depends on two ratios: output-per-worker and the number of workers to the total population.³¹ In the case of the United Kingdom, for example, GDP per capita doubled between 1820 and the outbreak of the First World War; a little more than 10 percent of this increase was directly due to the higher share of the working population in the total population, and the remaining 90 percent was related to improvements in productivity.³² As explained earlier, this is not just a historical phenomenon: the East Asian miracle was closely related to the rapid fall in mortality and fertility rates observed between 1965 and 1990.³³

It is interesting to note that in both cases the direct effect of the change in population structure has been one of magnitude. This first effect, called the "first dividend," is largely automatic, although its size depends crucially on how prepared the economy is to absorb new entrants into the labor force, something that is far from assured. And—critically important for countries of the Global South—it is transitory in nature: the increase in the share of working-age population in the total population is followed some decades later by an increase in the share of old-age population.

Several authors have defined an additional, indirect effect based on the connections between the demographic transition and productivity dynamics. This is known as the “second dividend” and relates to the increase in savings (public and private) and its impact on the accumulation of different forms of capital (physical, digital, and human). More specifically, a higher share of the working population in the total population implies the following macroeconomic effects:

- According to the life-cycle hypothesis postulated by Modigliani and Brumberg,³⁴ individuals tend to save and accumulate capital while working in order to finance consumption after retirement. It follows from this hypothesis that changes in population structure will generate different types of cycles at the aggregate level in terms of production, consumption, and savings.³⁵ In particular, the concentration of the population in active ages also implies a greater weight of those who consume below their income, *i.e.*, who save, so that the possible result is an increase in national savings and an acceleration in the rate of accumulation of the different forms of capital, including human capital.
- The evolution of public accounts is also affected by the demographic transition.³⁶ On the one hand, tax payments are concentrated on adult cohorts, as they focus on income and property. On the other hand, the benefits of public spending are concentrated on children and youth (spending on education and, to a smaller extent, health) and on the elderly (spending on pensions and health). Adding the

two behaviors and analyzing for the aggregate, we see that a greater concentration of the population in active ages improves the fiscal profile, while a young or aging society results in strong pressures on fiscal accounts.

The fact that the world is still going through the demographic window calls for new debates on labor market institutions, skills, and technology. The demographic window is an opportunity to create more and better jobs, but the dividend is not automatic. In fact, the opportunity can turn into a burden with the implementation of the wrong policy frameworks. The debates recounted above need, then, to be reframed to fit the real challenges and opportunities for job creation in the Global South.

First, in relation to social protection, for example, debates must place greater focus on working conditions and job quality than on old-age benefits. Some 700 million people are expected to enter the labor force in the next three decades, all of them in the Global South.³⁷ Second, the discussions around UBI must be rethought in the context of a pressing need to create jobs amid a reduced fiscal space.

Third, education systems must be reformed to promote life-long learning, but must also invest heavily in extending the coverage and improving the quality of basic education for the millions who will soon enter the labor market.³⁸ Fourth, discussions on technology must consider the fact that the relative price of labor versus capital is low in these countries, and will remain so for a long period of time—with exceptions such as

China. Thus, automation should not be taken for granted.³⁹

Gender gaps in participation rates persist—particularly in some regions of the Global South. Globally, the labor force participation rate for people aged 15 and above continues its long-term decline; it stands at 59 percent in 2022, down by four percentage points over the past decade.⁴⁰ On average around the world, women remain much less likely to participate in the labor market than men. At 43 percent in 2021, women’s global labor force participation rate was 24 percentage points below that of men (see **Figure 4**). Since 1990, this gap has only narrowed

by three percentage points, with most of the reduction occurring before the 2010s.

There are, however, sizable differences in participation rates across countries at different stages of development. Though the gap in participation rates between men and women is narrowing in the Global North and some upper-middle-income countries, it continues to widen in lower-middle-income countries. In those countries, the gap stood at 31 percentage points in 2018. Gender gaps in participation rates are especially wide in the Arab States, Northern Africa, and South Asia, and are expected to remain so in the near future, mainly owing to the

Figure 4

Employment to population ratios: 2019-22



Source: ILOSTAT. ILO modelled estimates (2021).

extremely low participation rates of women in the labor market in these regions.

The available evidence points to the fact that women, particularly low-skilled women, were hit harder by the pandemic and the recovery of their jobs is slower than in the case of men. The decline in women's participation rate during the

pandemic is also due to what the ILO calls "the motherhood penalty." The pressures of juggling work and family, widespread school closures, and job losses in female-dominated sectors resulted in even fewer women participating in the workforce.⁴¹

Regional Differences across the South

Although the characterization of advanced economies as the "old world" and emerging ones as the "young world" reflects the current situation, we should not overlook the fact that important within-group asymmetries exist in advanced as well as emerging economies (see **Figure 5**).⁴² The share of the working age population in countries in the first group, such as Japan and Italy, peaked in the early 1990s; in France and Germany in the mid-1980s; and in the United States, United Kingdom and Australia in the late 2000s. We also see differences among the peaks in the emerging economies' working age population. While the share of the working-age population was expected to peak in Latin America in the late 2010s, the Middle East and North Africa and South Asia are yet to see peaks, estimated only to occur in two to three decades. Sub-Saharan Africa, meanwhile, will see a peak in working-age population in the 2070s or 2080s. As previously mentioned, there are differences in the speed of adjustment after the peak, with some countries, such as China and Brazil, expected to age at a

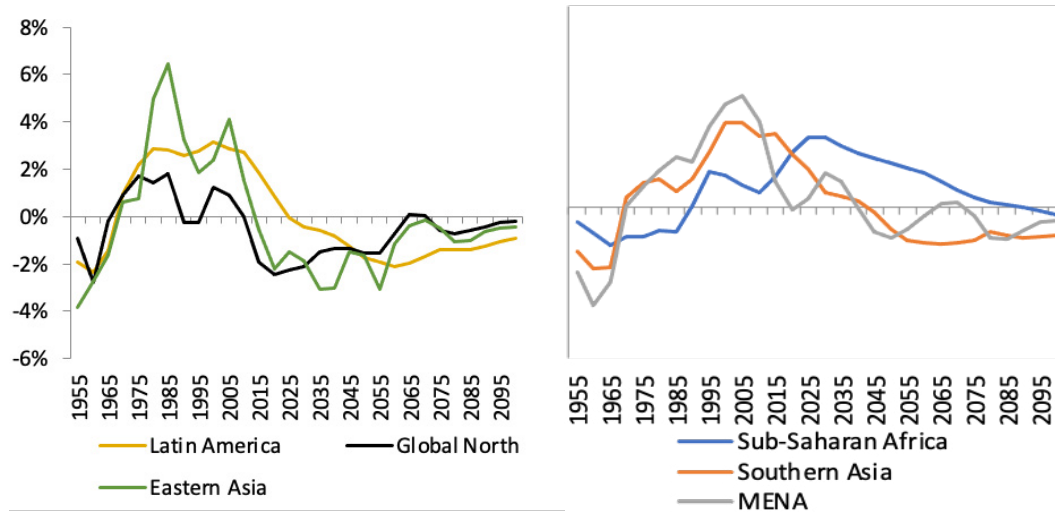
faster pace than others, such as Argentina and the United States.

In Sub-Saharan Africa (SSA), lower mortality rates have resulted from better and more available health care services and greater awareness of safer living practices.⁴³ However, the birth rate has remained high, and the population is thus growing at a fast pace relative to the decline in the mortality rate. With no clear decline in fertility rates and the region's particular cultural and religious characteristics, the region is witnessing a unique demographic transition.⁴⁴ In fact, the demographic transition is said to be "stalled" in many countries in SSA because fertility rates have remained the same over many years, raising a unique set of policy challenges for which there is little precedent.

In the Middle East and North Africa (MENA), the peak in the young working-age population has passed in most countries of the region.⁴⁵ However, pressures on the labor market are likely to intensify very soon because of the so-called echo

Figure 5

Differences in 5-year growth rates in working ages and in total population, by region, 1955-2100



Source: UN World Population Prospects 2019

of the youth bulge.⁴⁶ A second, smaller wave will enter their youth years within the coming decade, composed of children of the first wave. The MENA region has a second chance to take advantage of a demographic dividend if it learns from the past and adjusts its policies accordingly.⁴⁷

In the case of Latin America (LAC), demographic trends have two central features: i) a demographic bonus that is still in process but will be relatively short compared to today's developed countries, and ii) substantial heterogeneity between and within countries.⁴⁸ Most of the region will be completing the so-called demographic bonus in the coming decades. In this context, an absolute increase in the working-age population is projected in the next three decades, which will total around 45 million, where growth will be concentrated in workers over the age of 40.⁴⁹

Finally, many countries in Asia, especially the more developed economies, have already entered either the stage of the aged or the aging society. In these countries, demography was key to explaining the sharp acceleration in growth and welfare improvements that led to the "Asian miracle" previously described. At the same time, a number of developing countries in Asia, particularly in East Asia, are experiencing rapid shifts in the age structure of their populations because of declining fertility and improved mortality.⁵⁰ This includes not only the upper-middle-income economies, but poorer countries as well. In South Asia, meanwhile, many countries are in the early demographic dividend stage, meaning that the working age population is growing fast and the labor market will expand in the next two or three decades.⁵¹

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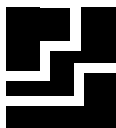
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