

Main Messages

Concerns about the future of work seem more acute today than ever. In advanced economies there is anxiety about the sweeping impact of technology on employment. There is a widely-shared view that rising inequality, compounded by the advent of the gig economy, is encouraging a race to the bottom in working conditions.

On balance, these concerns appear to be unfounded. It is true that in some advanced economies and middle-income countries manufacturing jobs are being lost to automation. But **technology provides opportunities to create new jobs, increase productivity, and deliver effective public services**. Through innovation, technology generates new sectors and tasks. Overall, innovation has transformed our living standards.

Compared to previous major technological innovations, some features of the current wave of technological progress are notable. Digital technology allows firms to innovate and scale quickly, challenging traditional production patterns and blurring the boundaries of firms. New business models—digital platform firms—evolve rapidly from local start-ups to global behemoths, often with few employees and tangible assets. This new industrial organization poses policy questions in the fields of privacy, competition and taxation.

The rise of platform marketplaces allows the impacts of technology to reach more people more quickly than ever before. This “scale without mass” brings economic opportunity to millions of people who do not live in industrialized countries or even industrial areas. This means that the changing demand for skills also reaches these same people.

Technology has disproportionately reduced demand for less skilled workers while raising the premium on high-order cognitive skills. Building the skills in demand in the labor market requires strong human capital foundations and life-long learning. **Investing in human capital is the priority** in order to make the most of the changing nature of work.

More information and better measurement are needed to raise awareness and increase demand for interventions to build human capital. To achieve this goal, the Human Capital Index measures the link between health and education investments and the productivity of future workers, across countries.

Current and future labor market risks require governments to rethink social protection systems. Social assistance should be enhanced, including via **a guaranteed social minimum**. Social insurance maintains a vital role. Yet the relevance of the typical Bismarckian model is waning or remains aspirational for many countries, especially due to pervasive informality. Once universal protection is in place, more flexible labor regulation can facilitate work transitions.

Social inclusion—through larger human capital investments and enhanced social protection—is costly. The share of tax revenue in emerging economies is half that of advanced economies, but the investments needed are likely to have fiscal costs in the order of 6-8 percent of GDP. **Most governments worldwide will need to mobilize significant revenues.** Medium-term revenue strategies that reduce tax policy and compliance gaps are possible in most countries and can grow tax revenue over the long-run.

What Is Changing in the World of Work?

Fears about robot-induced unemployment have dominated the discussion over the future of work. The number of robots operating worldwide is rising rapidly. By 2019 there will be 1.4 million new industrial robots in operation, taking the total to 2.6 million worldwide. Robot density per worker in 2018 is highest in the Republic of Korea, Singapore and Germany. Yet in all these countries **the employment rate remains high, despite the high prevalence of robots.**

While it is true that robots are replacing workers, it is far from clear to what extent. Overall, technological change that replaces routine work is estimated to have created more than 23 million jobs across Europe from 1999 to 2016—almost half of the total employment increase in the same period. Recent evidence for European countries suggests that while technology may be substituting workers in some jobs, overall it is raising labor demand. Instead of hiring traditional loan officers JD Finance, a leading fintech platform in China, created more than 3,000 risk management or data analysis jobs to refine algorithms for digitized lending.

Technology is disrupting production processes by challenging the traditional boundaries of firms, expanding global value chains, and changing the geography of jobs. Free trade agreements and improved infrastructure reduce the cost of cross-border trade, enabling transactions to take place wherever costs are lowest.² Technology accelerates this process. Firms use new technologies to improve capital utilization, overcome information barriers, outsource and innovate. Digital technologies are lowering communication costs. Some platform companies create new markets themselves. The firms selling on eBay in Chile, Jordan, Peru and South Africa are younger than firms in offline markets. Start-ups in China are dominant on the Alibaba platform. Online work platforms eliminate many of the geographical barriers previously associated with certain tasks. Bangladesh contributes 15 percent to the global online labor pool with 650,000 freelance workers.

Technology is changing the skills being rewarded in the labor market. First, the demand for nonroutine cognitive and sociobehavioral skills appears to be rising in both advanced and emerging economies.³ Second, the demand for job-specific skills that are routine is declining. And, third, payoffs to combinations of different skill types appear to be increasing. These changes show up not just through new jobs replacing old jobs, but also through the changing skills profile of existing jobs. Since 2001, the share of employment in occupations intensive in non-routine cognitive and sociobehavioral skills has increased from 19 to 23 percent in emerging economies, and from 33 to 41 percent in advanced economies.

Finally, **technology is changing how people work and the terms on which they work.** Instead of the once standard long-term contract, digital technologies are giving rise to more short-term work, often via online work platforms. These so-called gigs make certain kinds of work more accessible to every individual on a more flexible basis, but they raise concerns around income instability and the lack of social protection. Where data exist on the prevalence of the gig economy, it shows that the numbers are still small. Data from Germany and the Netherlands indicate that only 0.4 percent of the labor force of those countries is active in the gig economy. Worldwide, the total freelancer population is estimated at around 84 million, or less than 3 percent of the global labor force of 3.5 billion.

In many ways, changes to the way people work are more noticeable in advanced economies where technology is widespread and labor markets start from higher levels of formalization. However, emerging economies have been grappling with many of the same issues for decades, even if not related to technological change. **Informality persists on a vast scale in emerging economies**—as high as 90 percent in some low- and middle-income countries—notwithstanding technological progress. Two out of three workers in emerging economies are informal workers. In advanced economies, digital technology is blurring the lines between formal and informal work. The prevalence of informality predates the new millennium wave of technological change.

What Can Governments Do?

The analysis suggests three areas for policy action:

1. *Human Capital and Lifelong Learning.* Governments need to invest more in human capital. More focus is needed on disadvantaged groups and early childhood education, and on developing the cognitive and socio-behavioral skills needed in the current markets.

2. *Social Protection and Labor Policies.* Governments need to enhance social protection. A solid societal guaranteed minimum social protection, subsequently complemented by reforms in labor market rules in some emerging economies, would achieve this goal.

3. *Revenue mobilization.* Taxation is in dire need of upgrading in some emerging economies to provide fiscal space for public financing of human capital and social protection. Property taxes in large cities, curbing tax avoidance by global corporations, excise taxes on sugar and tobacco, and carbon taxes are just some of the options available to increase government revenue.

1. Human Capital and Lifelong Learning

In the current era of technological change, human capital is more important than ever. Evidence shows that returns to education are high when technology is changing. Health is another important component of human capital. Starting from an early age, different dimensions of human capital complement each other.

Individuals and families often neglect human capital due to lack of information, social norms or prohibitive costs. For these reasons governments have a vital role to play in building human capital: as providers of health, education and financing; and as regulators for accreditation and quality control of providers. Globally comparable measurement of education and health outcomes can help as part of this process. **The World Bank's new human capital project raises awareness and increases demand for interventions to build human capital.** Importantly, the project includes an international metric to benchmark certain components of human capital across countries.

But how countries cope with the changing nature of work in the short term depends on how quickly and pertinently the supply of skills shifts. Education systems tend to be resistant to change, so a significant part of the supply re-adjustment has to happen outside compulsory education. Early childhood, tertiary education and adult learning outside jobs are increasingly important in meeting the skill demands of future labor markets.

The most effective way to acquire the skills demanded by the changing nature of work is to start early. Early investments in nutrition, health, social protection, and education lay strong foundations for the future acquisition of cognitive and sociobehavioral skills. They also make future skills acquisition more resilient to uncertainty. Early childhood investments are an important way to improve equality of opportunity. An additional dollar invested in quality early childhood programs yields a return of six to 17 dollars.⁶ Currently, these investments are underprovided, especially for poor, disadvantaged children, who would benefit from them the most. Prioritizing these investments could pay off significantly for economies, as long as both access and quality are highlighted.

Tertiary education becomes more important as economies become more globally integrated and technologically advanced. The global average private return to tertiary education is 15.8 percent.

The changing nature of work makes tertiary education more attractive in three ways. First, technology and integration have increased the demand for higher-order general cognitive skills that are transferable across jobs but cannot be acquired through schooling alone. The rising demand for these skills has enhanced the wage premiums of tertiary graduates, while reducing the demand for less educated workers. Second, tertiary education increases the demand for lifelong learning. Workers are expected to have multiple careers, not just multiple jobs over their lifetime. Tertiary education—with its wide array of course offerings and flexible delivery models such as online learning and open universities—meets this growing demand. Third, tertiary education—especially universities—becomes more attractive in the changing world of work by serving as a platform for innovation.

As the nature of work changes, some workers are caught in the cross-hairs of ongoing skills disruptions. The current working-age population becomes anxious over job prospects. One step towards lessening this anxiety is adult learning for reskilling and upskilling workers who are not in school or in jobs. But

this approach has shown more promise in theory than in practice—bad design too often gets in the way. There are three ways to improve adult learning: more systematic diagnosis of the specific constraints that adults are facing; education, training and instruction that is tailored to the adult brain; and flexible delivery models that fit well with adult lifestyles. Adult learning is an important channel for skills readjustment in the future of work but it needs a serious design rethink.

2. Social Protection and Labor Policies

Adjusting to the next wave of jobs requires enhanced social protection. Traditional provisions of social protection based on steady wage employment, clear definitions of employers and employees and a fixed retirement age are increasingly waning. In advanced economies, the payroll-based insurance model is increasingly challenged by working arrangements outside standard employment contracts. Financing pensions and other forms of insurance through payroll taxes that are levied on formal workers does little good if these workers represent only a small share of the workforce. **New ways of protecting people are needed.**

Informality, which currently accounts for up to 90 percent of labor markets in developing countries, is a major bottleneck. Most workers—especially the poor—are engaged in informal sector activities with no or little access to social protection. Given the endemic nature of the challenge and the slow progress being made to combat it, most people will likely be better off with a social protection system that does not depend on their work situation.

There is a need for broader and more permanent coverage than most social assistance programs currently provide. While more universal approaches are desirable, the specific shape of social assistance carries different technical, budgetary and political challenges. Universal approaches typically reduce or eliminate hurdles around program fragmentation, eligibility determination and social tensions, but they require significant additional resources. Universal Basic Income (UBI), for example, could help overcome some hurdles, but it is fiscally prohibitive for many emerging economies. **Expanding social assistance should proceed at the same pace as the mobilization of necessary resources.**

With guaranteed, solid basic protections in place, people could keep upgrading their level of security with various layers of progressively-subsidized schemes—with contributory social insurance where conducive conditions exist, but also an array of voluntary options where the state and markets can offer them.

Enhanced social assistance and insurance would reduce the burden of risk management on labor regulation. As people become better protected through enhanced social assistance and insurance systems, labor regulation could, where appropriate, be made more flexible to facilitate movement between jobs. Governments aiming to provide a livable income could choose to use more social assistance to supplement earnings and relax pressure on minimum wages that are set at levels that exceed labor productivity. **Yet, the minimum wage remains a vital tool for balancing negotiating power between firms and workers.** The provision of income support to the unemployed could be rendered by unemployment benefits rather than via severance pay.

3. Revenue Mobilization

Achieving social inclusion in the changing nature of work is costly. Investments in human capital, basic social protection, including community health workers in some emerging economies, and productive opportunities for young people are likely to have fiscal costs in the order of 6-8 percent of GDP. Although the actual costs could be lower for countries that choose to build on existing programs, governments need to create fiscal space. Many emerging economies lack finances because of inadequate tax bases, large informal sectors, and inefficient administration.

Current taxation patterns reveal large differences, especially between low-, middle-, and high-income countries. High-income countries collect a much larger share of their national output in taxes—specifically, direct taxes—than do lower-income countries. Low- and middle-countries, by contrast, rely more on indirect taxes such as consumption and trade taxes.

Additional revenue mobilization is possible in most countries. Estimates suggest that Sub-Saharan African countries could raise between three and five percent of GDP in additional revenues through a combination of reforms that improve efficiency, harness new technologies to improve compliance and create new sources of taxation.

Governments can reduce tax policy and compliance gaps across a number of fiscal instruments, including the value added tax, excise tax, personal and corporate income taxes, and property taxes, as well as through fiscal regimes for extractive industries in resource-rich countries.

Often a first line of reform for developing countries, the value added tax is a potential major source of revenue. Yet a few countries do not have a value added tax. Many others, particularly in Sub-Saharan Africa, also continue to rely on sales taxes. Introducing a value added tax instead of general sales taxes avoids tax cascading (tax paid on tax) by taxing only the value added at each stage of the value chain. That said, even if a value added tax were in place in emerging economies, it may have only a limited impact on revenue generation. Poor fiscal capacity often results in compliance problems related to flawed implementation.

Other taxes and savings would contribute to the financing of human capital and enhanced social protection. Excise taxes are often used by governments to achieve social welfare or environmental sustainability objectives, by pricing in the social cost of negative externalities from the consumption of certain goods. Sub-Saharan African countries in 2015 collected less than half the level of excise taxes as compared to Europe, at just 1.4 percent of GDP. Nationally efficient carbon pricing policies could raise substantial amounts of revenue. Carbon taxes could be paired with the elimination of energy subsidies for consumption, pending a rigorous poverty impact analysis. Eliminating subsidies on fuel sources most intensively used by poor households, such as kerosene, could have unintended consequences.

In addition to taxes on goods and services, personal and corporate income taxes can play an important role in increasing fiscal space in emerging economies. Tax avoidance schemes persist. The erosion of the corporate tax base affects many countries, but effective tax rates can be increased by streamlining tax expenditures and introducing robust anti-avoidance rules. Withholding taxes on payments for services are becoming more relevant with the increasing global presence of digital firms that have relatively few tangible assets. Technology can facilitate the collection of personal income taxes by increasing the number of registered tax payers. Taxes on immovable property, and introducing or improving regimes applicable to extractive industries, are other routes to increasing fiscal space.