

A World Bank Group Flagship Report

WORLD DEVELOPMENT REPORT

2019

THE CHANGING NATURE OF WORK

 WORLD BANK GROUP

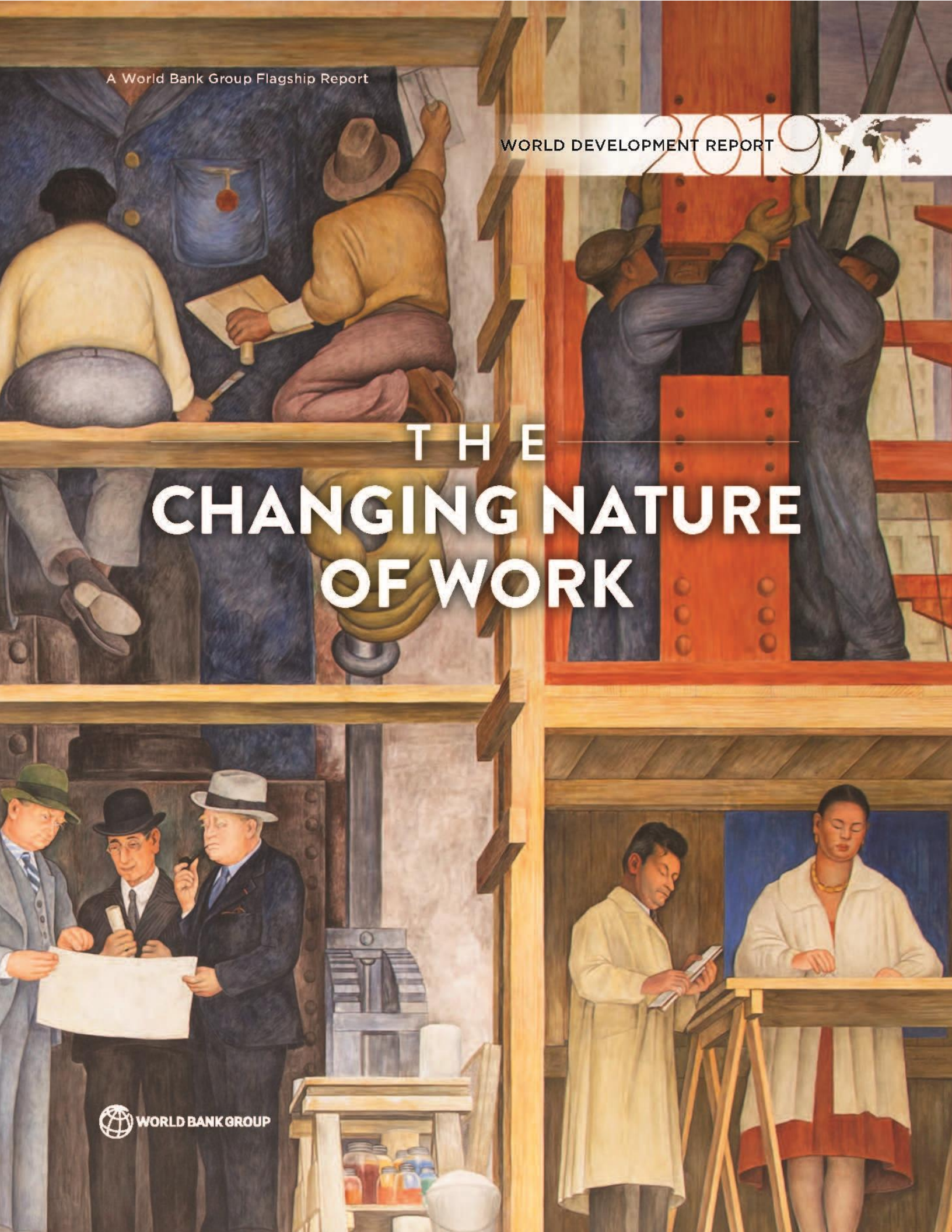


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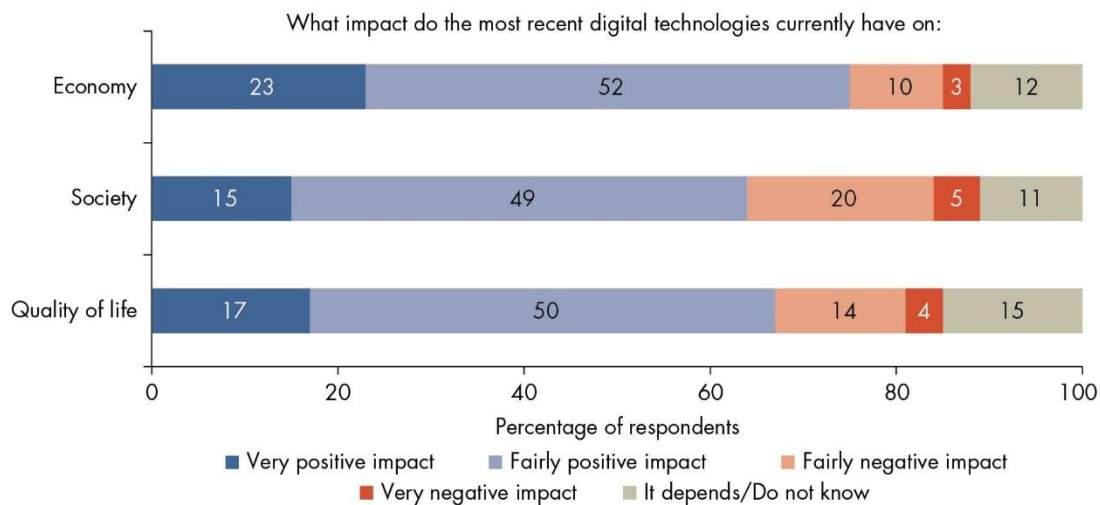
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Overview

1. There has never been a time when mankind was not afraid of the consequences of its talent for innovation. This is especially the case for economists with a professional interest in the future of work. Karl Marx worried that “machinery does not just act as a superior competitor to the worker, always on the point of making him superfluous. It is the most powerful weapon for suppressing strikes.”¹ John Maynard Keynes warned in 1931 of widespread unemployment due to technology,² but innovation has transformed our living standards. Life expectancy has increased, basic healthcare and education are widespread, average incomes have gone up for most people. The world is better connected, aspirations have risen, and citizens’ voices are more likely to be heard.

2. Three quarters of the citizens of the European Union, the world’s lifestyle superpower, believe that technology benefits the workplace, according to a recent survey. Two thirds said it will improve society and improve their quality of life even further (figure 0.1).

Figure 0.1. Technology improves the European economy, society, and quality of life



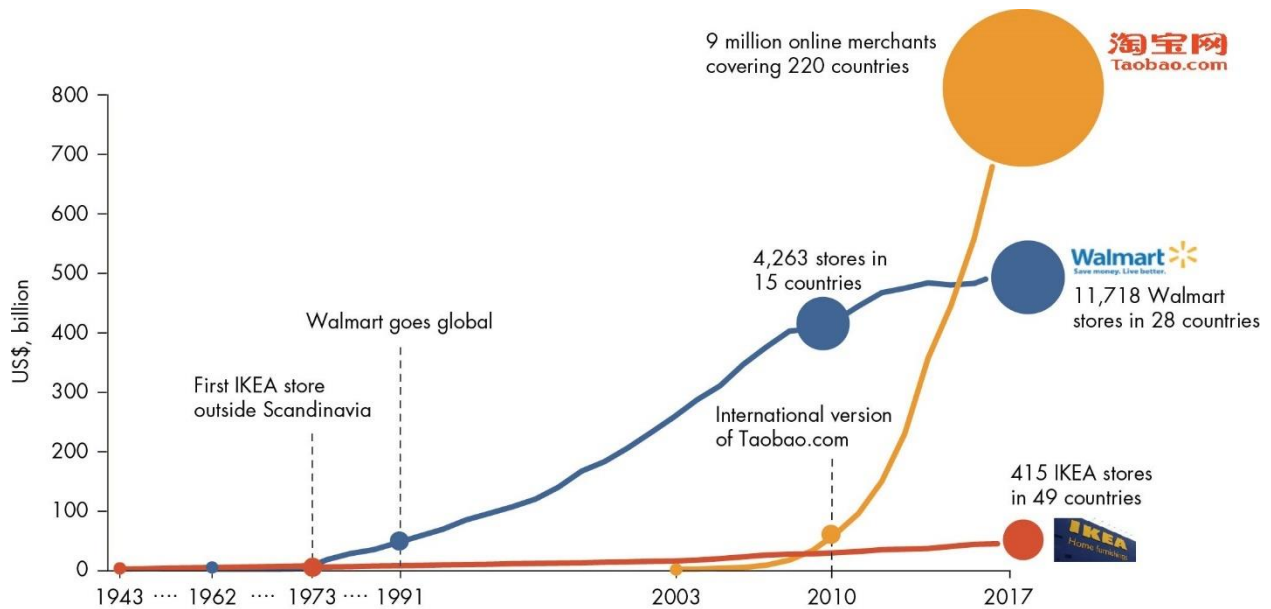
Source: Authors’ calculations based on Special Eurobarometer 460 “Attitudes towards the impact of digitization and automation on daily life,” Question 1, European Commission 2017.

3. And yet concerns about the future 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.

4. We find that this troubling scenario is, on balance, unfounded. It is true that in some advanced economies and middle-income countries manufacturing jobs are being lost to automation. Workers involved in routine tasks that are “codifiable” are most vulnerable to replacement. However, technology provides opportunities to create new jobs, increase productivity, and deliver effective public services. Through innovation, technology generates new sectors or tasks. The forces of automation and innovation will shape employment in the future.

5. Compared to previous major technological innovations such as electricity or the assembly line, some features of the current wave of technological progress are notable. Today’s digital transformation allows firms to scale quickly, blurring the boundaries of firms and challenging traditional production patterns. New business models—digital platform firms—evolve rapidly from local start-ups to global behemoths, often with few employees and tangible assets. (figure 0.2). This new industrial organization poses policy questions in the fields of privacy, competition and taxation. Governments’ ability to raise revenues is curtailed by the virtual nature of productive assets.

Figure 0.2. Recent technological advances accelerate firm growth



Source: Authors’ calculation based on Walmart Annual Reports, Statista.com, IKEA.com, NetEase.com.

6. The rise of platform marketplaces allows the impacts of technology to reach more people quickly than ever before. Individuals and firms need little more than a broadband connection to trade goods and services on online platforms. 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. Automation raises the premium on high-order cognitive skills in advanced and emerging economies.

7. Investing in human capital is the priority to make the most of this evolving economic opportunity. Three types of skills are increasingly important in labor markets: advanced cognitive skills (such as complex problem-solving), socio-behavioral skills (like team work), and skill-combinations that are predictive of adaptability (e.g., reasoning, self-efficacy). Building these skills requires strong human capital foundations and lifelong learning.

8. Human capital foundations, created in early childhood, become more important. Yet, governments in developing countries do not prioritize early childhood development. Human capital outcomes in basic schooling are sub-optimal. The human capital index highlights the link between health and education investments with the productivity of future workers. Climbing from

the 25th to the 75th percentile on the index brings an additional 1.4 percentage annual growth rate for 50 years.

9. Creating more quality jobs is also important to seize the benefits of technological change. In many developing countries large shares of workers remain in low-productivity employment, often in the informal sector with little access to technology. Lack of quality private sector jobs leaves talented young people with few pathways. High-skilled university graduates are making up almost 30 percent of the total unemployed pool of labor in the Middle East and North Africa.

10. Investments in infrastructure are also needed. Most obvious is the need to provide universal, affordable access to the internet to people in developing countries who remain unconnected. Equally important is to increase investments in the road, port and municipal infrastructure needed for firms, governments and individuals to be able to exploit technologies to their full potential.

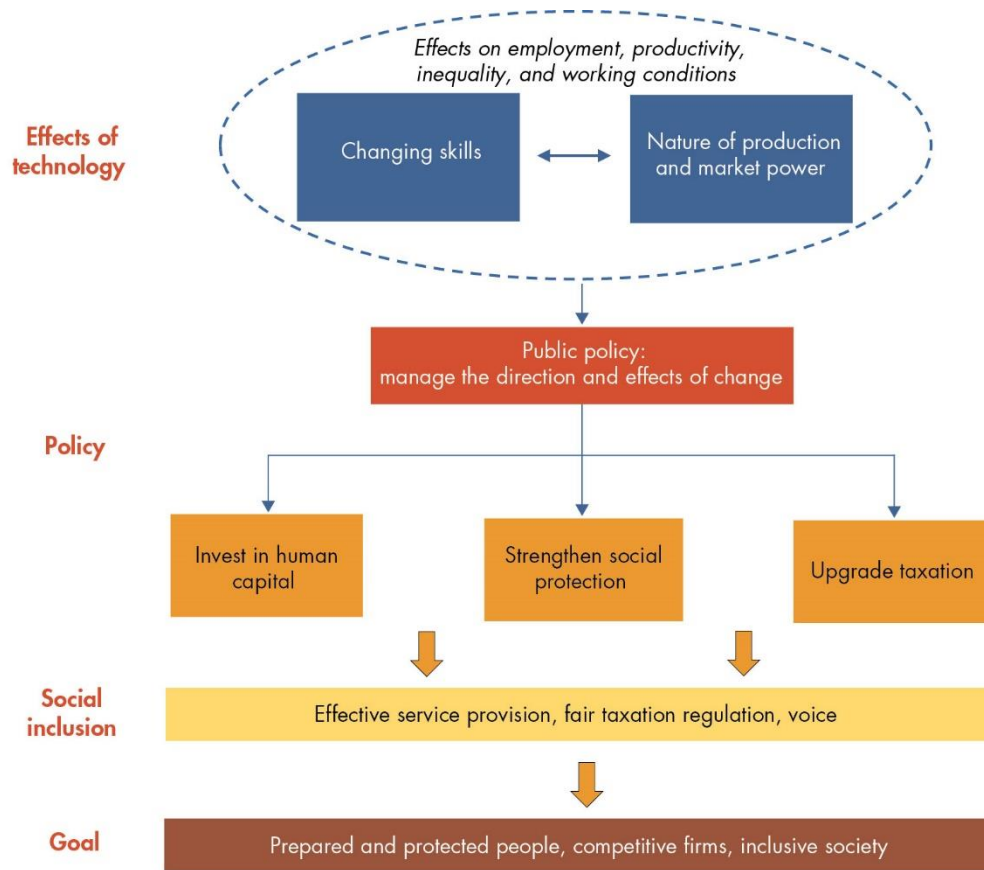
11. Adjusting to the next wave of jobs requires universal social protection. Eight out of ten people in developing countries have no social assistance, while six out of ten works informally and consequently do not benefit from insurance.

12. Even in advanced economies, the payroll-based insurance model is increasingly challenged by working arrangements outside standard employment contracts. New ways of protecting people are needed. A societal minimum that provides support independent of employment is one such option. This model, which would include mandated and voluntary social insurance, could reach substantially larger swaths of the population.

13. Strengthening social protection is possible through an expansion in overall coverage that prioritizes the people most in need. Community health workers on the government's payroll is a step in the right direction. This study investigates universal basic income as a policy but recognizes that it is untested and fiscally prohibitive for developing economies. Enhanced social assistance and insurance 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

14. To benefit from the potential that technology offers, societies need a new social contract centered around larger human capital investments and progressively universal social protection. For this contract to work, social inclusion needs fiscal space (figure 0.3). Many developing countries lack finances because of inadequate tax bases, large informal sectors, and inefficient administration.

Figure 0.3. Responding to the changing nature of work



Source: Authors' calculations

15. There is plenty of room for improvement, for instance through better collection of property taxes in urban municipalities or through the introduction of excise taxes on sugar or tobacco. The latter has direct health benefits too. Indirect taxes and subsidy reforms are other sources of financing. Relevant gains would also come from reducing tax avoidance by global corporations, especially among the new platform companies.

16. The antiquated global tax order permits multinational corporations to engage in base erosion and profit shifting: firms allocate more profits to affiliates located in zero or low tax countries, irrespective of how little business is conducted there. On average, 60 percent of the total income of multinationals is reported in jurisdictions with an effective tax rate of less than five percent.

17. Developing economies are in the midst of a technological shift that brings change to the nature of work. Whatever the future holds, investment in human capital is a no-regrets policy that prepares people for the challenges ahead.

What is Changing in the World of Work

18. Several stylized facts have dominated the discussion on the changing nature of work. This study finds that only some of them are accurate in the context of developing economies.

19. First, technology blurs the boundaries of the firm, as seen in the rise of platform marketplaces. Digital technologies create global platform-based businesses that differ from the traditional production process with inputs provided from one end and output delivered on the other end. Platform companies generate value by creating a network effect, connecting customers, producers and providers, and facilitating interactions and transactions in a multi-sided model.

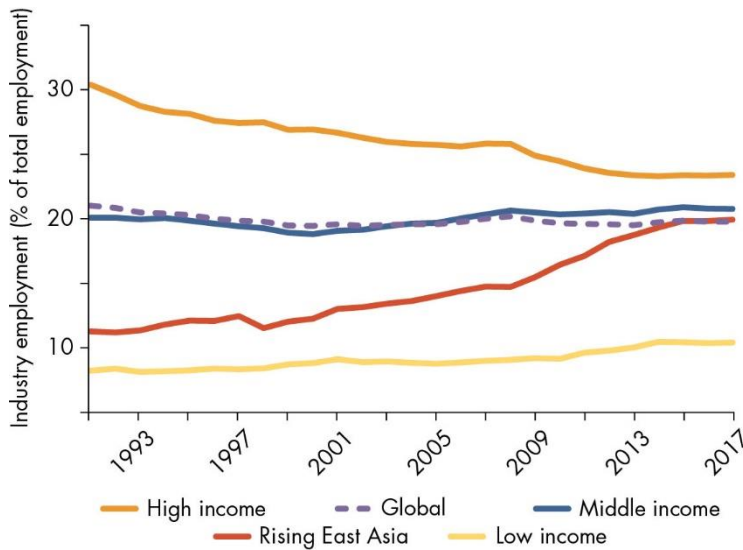
20. Compared to traditional companies, digital platforms scale up faster and at lower cost. IKEA, founded in 1943, took almost 30 years before it began expanding within Europe. After endeavors of more than seven decades, it achieved a global annual sales revenue of \$42 billion. Through digital technology, it took Alibaba 2 years to reach 1 million users and less than two decades to accumulate more than 8 million online merchants and annual sales of \$550 billion.

21. Platform-based businesses are on the rise in every country—such as Flipkart in India or Jumia in Nigeria, allowing technology to reach more people more quickly than ever before. Globally integrated virtual marketplaces also pose new policy challenges in the fields of privacy, competition and taxation.

22. Second, technology is reshaping the skills needed for work. Demand for less advanced skills that are substitutable by technology decreases. Demand for advanced cognitive skills, socio-behavioral skills, and skill-combinations associated with greater adaptability is increasing. This pattern is evident in developed countries. It is starting to be seen in some developing countries as well. In Bolivia, the share of employment in high-skilled occupations increased by eight percentage points during 2000 -2014. In Ethiopia, this increase was 13 percentage points. These changes show up not just through new jobs replacing old jobs, but also through the changing skills profile of existing jobs.

23. Third, scenarios of robots replacing workers strike a societal nerve. But the threat to jobs from technology is exaggerated—history repeatedly teaches us this lesson. Global industrial jobs data do not bear out these concerns (figure 0.4). While advanced economies have shed industrial jobs, the rise of the industrial sector in East Asia has more than compensated for this loss.

Figure 0.4. Industrial jobs are falling in the West, rising in the East



Source: Authors' calculations based on World Development Indicators.

Note: "Rising East Asia" include Cambodia, Indonesia, Lao PDR, Mongolia, Myanmar, Thailand, the Philippines and Vietnam.

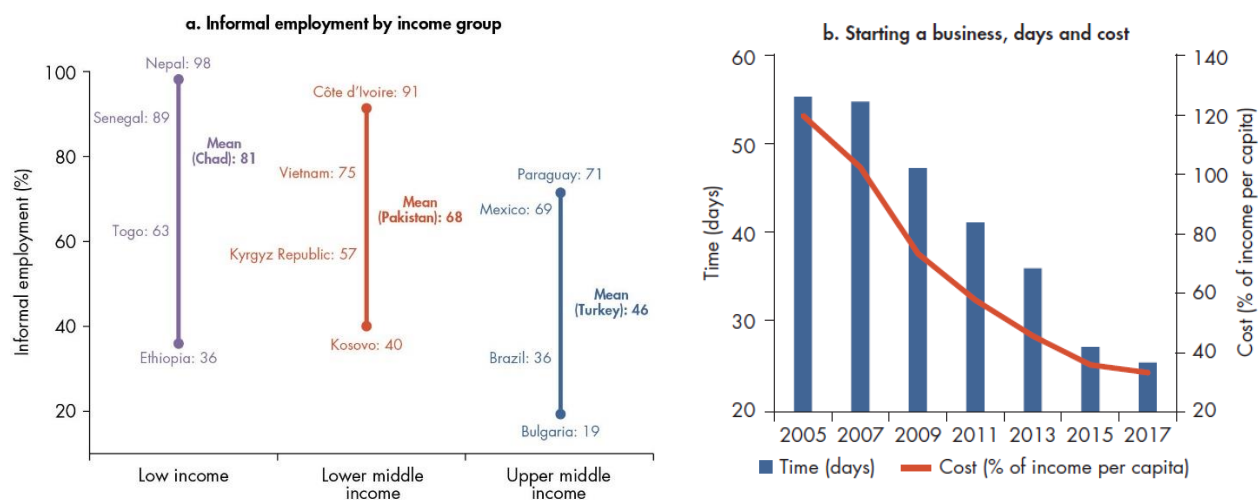
24. The decline in industrial employment in many high-income economies over the past two decades is a well-studied trend. Singapore, Spain, and Portugal are among the countries where the share dropped 10 percent or more since 1991. This change reflects a shift in employment from manufacturing to services. In contrast, the share of industry employment, primarily manufacturing, has remained stable in the rest of the world. In low income countries, from 1991 to 2017, the proportion of the total labor force working in industry has been consistently around 10 percent. The situation was constant in upper-middle income countries too, at around 23 percent. Lower middle-income countries experienced an increase in the proportion of the labor force in industry over the same period, from 16.4 percent in 1991 to 18.8 percent in 2017. This may be due to the interplay between open trade and rising incomes—which generates more demand for goods, services, as well as technology.

25. In some developing economies the share of industry overall is going up. For example, the share of industrial employment in Vietnam has risen from nine percent in 1991 to 25 percent in 2017. In Lao PDR, the share of industrial employment rose from 3.2 percent to 9.7 percent over the same period. These countries have rapidly upgraded their human capital, bringing highly skilled young workers to the labor market who combine with new technology to upgrade manufacturing production. As a result, industrial employment in East Asia continues to rise while in other developing economies it is stable.

26. Two forces interact to create demand for industrial products. On the one hand the decreasing costs of connectivity create more capital-intensive exports from advanced economies and more labor-intensive exports from developing economies. On the other hand, rising incomes bring higher consumption of existing products. The number of new products also expands. These two forces increase the overall demand for labor. A further effect is the increase in financial returns for those who create new products.

27. Fourth, in many developing countries, large shares of workers remain in low-productivity employment, often in informal sector firms with little access to technology. Informality has remained high across regions over the past two decades despite improvements in the business regulatory environment (figure 0.5). The share of informal workers is as high as 90 percent in some developing economies. For countries such as Zambia or Madagascar informality is 80 percent. Around two thirds of the labor force in emerging economies is informal. Informality has remained remarkably stable notwithstanding the changing nature of work: in Peru, for all the attention focused on the issue, informality has remained constant around 75 percent in the last 30 years. In Sub-Saharan Africa informality has on average remained around 75 percent of total employment from 2000-2016. In South Asia, it has increased from an average of 50 percent in the 2000s to 60 percent in the period 2010-2016. Addressing informality and the absence of social protections for many workers across the globe continues to be the most pressing concern for emerging economies.

Figure 0.5. Informality persists in most emerging economies despite improvements in the regulatory environment



Source: Authors' calculations using household and labor force survey data from the International Income Distribution Database (left panel). Djankov et al. 2002; World Bank Doing Business Indicators (right panel).

Note: The figure in the left panel presents the latest available estimates of shares of informal employment for emerging economies. In the sample, a person is identified as informal worker if he or she does not have a contract, social security, and health insurance; is not part of a labor union. Emerging economies include all countries within middle and low-income classification. The sample consists of 68 emerging economies. The figure in the right panel is the estimated time and cost of starting a business for 103 emerging economies.

28. Fifth, technology, in particular social media, affects the *perception* of rising inequality in many countries. People have always desired higher quality of life and participation in the economic growth they see around them. Today, increased information exchange and exposure to different, often divergent lifestyles and opportunities only heighten this feeling. Where aspirations are linked to opportunities, this breeds inclusive, sustainable economic growth. But if there is inequality of opportunity or a mismatch between available jobs and skills, frustration can lead to migration or, fragmentation in the society. The refugee crises in Europe besides the war-pushed migrants from Syria, the Arab Spring, and the recent U.S. election are notable manifestations of this perception.

29. However, this perception is not corroborated by the data on income inequality in developing countries. Inequality in most emerging economies has decreased or remained

unchanged in the past decade. From 2007 to 2015, 37 of 41 emerging economies experienced a decline or no change in inequality (as measured by the Gini coefficient). The four emerging economies where inequality rose are Armenia, Bulgaria, Cameroon, and Turkey.

30. In the Russian Federation, between 2007 and 2015 the Gini measure of inequality fell from 42 to 38. Over the same period there was a decline in the top ten percent of pre-tax income, which dropped from 52 percent to 47 percent. The share of employment in small firms increased over that period, which improved wages relative to large firms. Improvement in overall education levels of workers—mainly among female workers—combined with a reduction in the overall skill premium, also reduced inequality.

31. Yet there is little to celebrate in the fact that income inequality is not, despite perceptions, rising – even less when we consider the two billion people working in the global informal economy, where so many lack all protection. Social insurance is virtually non-existent in low-income countries and even in upper-middle income countries it reaches only 28 percent of the poorest people.

What Can Governments Do?

32. The analysis suggests three takeaways for governments. Actions include:

- Governments need to focus more on disadvantaged groups and early childhood education, and developing skills needed in the modern economy, such as high order cognitive and socio-behavioral skills in addition to foundational skills.
- Governments need to enhance social protection. A solid societal guaranteed minimum and strengthened social insurance, subsequently complemented by reforms in labor market rules in some developing economies would achieve this goal.
- Taxation is in dire need of upgrading in some developing economies to provide fiscal space for public financing of human capital and social protection. Property taxes in large cities, excise taxes on sugar and tobacco, levying carbon taxes are among the ways to increase government revenue. Many global corporations use tax avoidance techniques to increase their profits. Governments can optimize their taxation policy without resorting to tax rate increases.

33. The most significant investments that people, firms and governments make in the changing nature of work is in enhancing human capital. A basic level of human capital, such as literacy and numeracy, is needed for economic survival. The increased role of technology means that all types of jobs (including low-skilled jobs), demand more advanced cognitive skills. The role of human capital is also enhanced because of increasing demand for socio-behavioral skills. Jobs that rely on inter-personal interaction are not readily replaced by machines. However, to succeed at these jobs, socio-behavioral skills—established in early years and shaped throughout our lifetimes—need to be strong. Human capital is important because of the increased premium on adaptability. This ability is shaped through human capital investments, especially in early years.

34. Lacking human capital puts new generations at a severe disadvantage, especially among the poorest. This individual disadvantage aggregates to low economic competitiveness globally. Low investments in human capital are also likely to exacerbate existing inequalities. This inequality puts security at risk, as unmet aspirations lead to unrest.

35. Effective solutions are available. For instance, to get ready for the changing nature of work countries must boost their investment in early childhood development. This is one of the most effective ways to build valuable skills for future labor markets. Further, countries significantly boost human capital by ensuring that schooling translates into learning. Important skills re-adjustments for the changing nature of work are also likely to take place outside compulsory schooling and formal jobs. Countries gain a serious advantage by making use of these opportunities. For instance, by deploying tertiary education and adult learning more effectively.

36. One reason why governments do not invest in human capital is because they lack the political incentives to do so. There is little publicly available data on whether health and education systems are generating human capital. This gap hinders the design of effective solutions, the pursuit of improvement, and the ability of citizens to hold their governments accountable. The World Bank's human capital project is designed to address the issue of low political incentives. By doing so it aims to provide the impetus for investing in human capital.

37. People in developing countries should be protected through social assistance and insurance systems that fit with the changing nature of work. The concept of "progressive universalism" could be a guiding principle in covering more people, especially in the informal economy. Once such protections are in place, flexible labor regulation facilitates work transitions.

38. The current social contract is broken in most developing economies. It looks increasingly out of date for some advanced economies too. A new social contract is needed. Investing in human capital increases the opportunities for workers to find better jobs. Such investment improves the job prospects for newborns or kids in school.

39. Governments need to raise additional resources to invest in human capital and advance social inclusion. The share of tax revenue in developing economies is half of the share in advanced economies (figure 0.6). Investments in human capital, basic social protection, including community health workers in some developing countries, and productive opportunities for youth are likely to have fiscal costs in the order of 6-8 percent of GDP. This is an ambitious, but attainable goal. Increasing tax revenue, however, should go hand in hand with improving public service delivery. If that is not the case, increasing tax rates will only spur further public discontent.

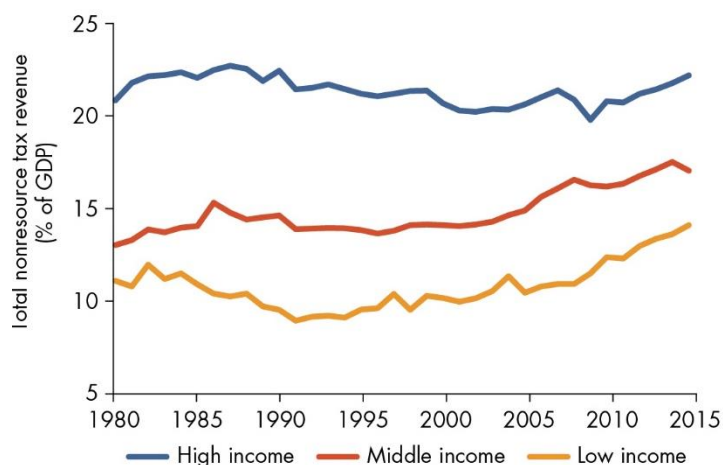
40. Most of the required fiscal resources are likely to come from value-added taxes, specifically through expansion of the tax base. Sub-Saharan African countries, on average, could raise around 3 to 5 percent of GDP in additional revenues through reforms that improve the efficiency of current tax systems.³ Closing tax exemptions and converging toward a uniform tax rate in VAT, could raise further revenues. In Costa Rica or Uruguay such revenues could amount to more than 3 percent of GDP.

41. Other taxes and savings would contribute to the financing of human capital. Saudi Arabia adopted excise tax regulations in 2017: 50 percent on soft drinks, and 100 percent on energy drinks,

tobacco, and tobacco products. It is estimated that nationally efficient carbon pricing policies would raise above 6 percent in China, Iran, Russia, and Saudi Arabia.⁴ Taxes on immovable property could raise an additional 2.9 and 0.9 percent of GDP in middle-income and poor countries, respectively.⁵

42. Age-old tax avoidance schemes could be addressed, too. On average, almost 60 percent of the total income of multinationals is reported in jurisdictions with an effective tax rate of less than five percent. The structure of the global tax system permits multinational corporations to engage in base erosion and profit shifting: firms allocate more profits to affiliates located in zero or low tax to countries, irrespective of how little business is conducted there. Four out of five Fortune 500 companies operate one or more subsidiaries in so-called “tax haven” countries—those perceived to have preferential corporate tax regimes. Governments worldwide miss out US\$100–\$240 billion in lost annual revenues.

Figure 0.6. Tax revenues have to rise in developing economies



Source: Authors’ calculations based on International Centre for Tax and Development (ICTD) and UNU-WIDER Government Revenue Dataset 2017.

43. The increasingly digital nature of business makes tax avoidance worse. Corporate income tax rules, including in bilateral income tax treaties, are founded on the principle of physical presence. This means that digital platform companies located in one (low tax) country which supply services online to a consumer in another (higher tax) country have an unfair advantage over local companies or other foreign companies headquartered in higher tax jurisdictions. Digital companies also generate revenue from new kinds of assets, such as user data or online advertisements, but it is not clear how or where value is created for tax purposes (even in those countries that have a right to tax in the first place). As a result, digital companies carry a smaller tax burden than traditional brick and mortar companies.

44. Governments must put a stop to tax avoidance. The way to do so is to put an end to the divorce between the location of profits and the location of real activities. If firms are digital, the location is most justifiably where goods or services are consumed. Profit-shifting practices that involve syphoning revenues off to affiliates in low tax jurisdictions—ostensibly as payment for using a brand’s intellectual property, for example, should be curbed. Tax breaks for profits

generated through intellectual property should also be revisited. Amending international tax rules, shutting down tax havens, as well as developing new ways to tax the digital economy, should all be on the table.

This Study's Running Order

45. The first chapter of this study focuses on the impact of technology on jobs. In some sectors robots replace workers. Yet technology absorption in many parts of the world is slow, limiting automation's effects. In other sectors, robots enhance worker productivity. In other cases, technology also creates jobs, as it shapes the demand for new, different goods and services. These disparate impacts render economic predictions on technology-induced job losses basically useless. Predictions sensationalize the impact of technology and provoke fear, particularly among middle-skill workers in routine jobs.

46. The data does show, however, that technology changes the demand for skills. Since 2001, the share of employment in occupations intensive in non-routine cognitive and socio-behavioral skills has increased from 19 to 23 percent in emerging economies, and from 33 to 41 percent in advanced economies. Pay-offs to these skills, as well as to combinations of different skill-types are also increasing in those countries. But the pace of human innovation will determine whether new sectors or tasks emerge to counterbalance the decline of old sectors and routine jobs as the cost of technology declines. Meanwhile, whether the cost of labor remains low in emerging economies in relation to capital will determine whether firms choose to automate production or move elsewhere. Chapter 1 sets out a framework of analysis for the changing nature of work.

47. One salient feature of the current wave of technological progress is that it has made firm boundaries more permeable and accelerated the trend toward superstar firms. Superstar firms have a beneficial effect on labor demand by boosting production, and therefore employment. These firms are also large integrators of young, innovative firms, often benefiting small businesses by connecting them with larger markets. But large firms, particularly firms in the digital economy, also pose policy challenges. Regulations often fail to address the challenges created by new types of business in the digital economy. Antitrust frameworks are also challenged by multi-sided markets and the impact of network effects on competition. Tax systems are also in many ways no longer fit for purpose. Chapter 2 examines how technological change affects the nature of the firm.

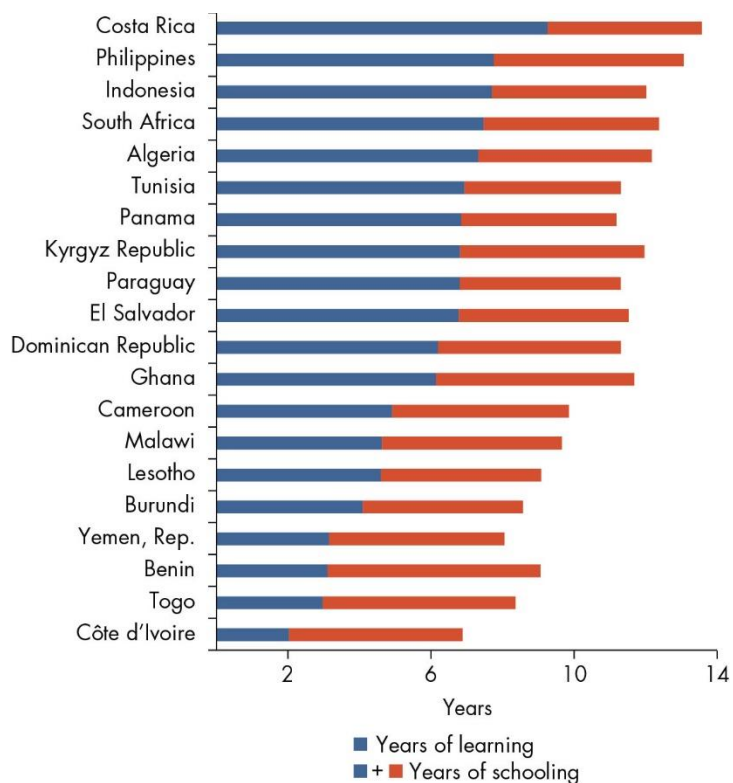
48. At the economy-wide level, human capital is positively correlated with the overall level of adoption of advanced technologies. Firms with a higher share of educated workers do better at innovating. Individuals with stronger human capital reap higher economic returns from new technologies. On the other hand, when technological disruptions are met with inadequately realized human capital, the existing social order may be undermined. The third chapter addresses the link between human capital accumulation and the future of work, discussing why governments need to invest and why they often fail to do so.

49. To ensure effective policy design and delivery, more information and better measurement are needed, even when there is full willingness to invest in human capital. To achieve this goal, the World Bank has launched the human capital project, which is composed of three components: a global benchmark—the human capital index, a program of measurement and research to inform

policy action, and a program of support for country strategies to accelerate investment in human capital.

50. The index is measured in terms of the amount of human capital that a child born today can expect to attain by the end of secondary school, given the risks of poor health and poor education that prevail in the country where she was born. In other words, it measures the productivity of the next generation of workers, relative to the benchmark of complete education and full health. For example, in many education systems, a year of schooling produces only a fraction of the learning that is possible (figure 0.7). Chapter 3 presents index cross-country comparisons for up to 170 economies globally.

Figure 0.7. Learning varies across emerging economies, 2018



Source: Authors' calculations based on Kim 2018 and Filmer et al. 2018.
 Note: The estimates are provisional and are subject to further changes.

51. Part of the ongoing skills re-adjustment is happening outside of compulsory education and formal jobs. Where? Chapter 4 answers this question by exploring three domains—early childhood, tertiary education, and adult learning outside jobs—where people acquire specific skills that are demanded by the changing nature of work.

52. Investments in early childhood, including in nutrition, health, protection, and education lay strong foundations for the future acquisition of higher-order cognitive and socio-behavioral skills. From the prenatal period to the age of five, the brain's ability to learn from experience is at its highest. Individuals who acquire such skills in early childhood are more resilient to uncertainty later in life. Tertiary education provides another opportunity for individuals to acquire the higher-

order general cognitive skills—like complex problem solving, critical thinking, or advanced communication—that are demanded by the changing nature of work but that cannot be acquired through schooling alone.

53. Something must be done with the current stock of workers, too, particularly those that cannot go back to school or university to learn. Reskilling and upskilling workers who are not in school or in formal jobs must be part of the response to technology-induced labor market disruption. But only rarely do adult learning programs get it right. Adults face various binding constraints that limit the effectiveness of traditional approaches to learning. Better diagnosis and evaluation of adult learning programs, better design, and better delivery are needed. Chapter 4 explores these issues in greater detail.

54. Work is the next venue for human capital accumulation after school. Chapter 5 evaluates how successful economies are in generating human capital at work. Advanced economies have higher returns to work than emerging economies. A worker in an emerging economy is more likely to find herself in a manual occupation that is intensive in physical tasks than a worker in an advanced economy. An additional year of work in cognitive professions increases wages by 2.9 percent, while for manual occupations the figure is 1.9 percent. Work provides a venue for a prolonged acquisition of skills after school—but such opportunities are relatively rare in emerging economies.

55. Governments raise the returns to work by increasing formal jobs for the poor; they do this by creating an enabling environment for business, investing in entrepreneurship training for adults, and increasing access to technology. The payoff to women’s participation in the workforce is significantly lower than for men—in other words, women acquire significantly less human capital in work than men do. Bridging that gap requires governments to remove limitations on the type or nature of work available to women and eliminate rules that would limit women’s property rights. Workers in rural areas face similar challenges when it comes to accumulating human capital after school. There is some scope to improve the returns to work by reallocating labor from villages to cities. However, technology can be harnessed to increase payoffs to work, by increasing agricultural productivity.

56. Uncertain labor markets call for strengthening social protection. What are the implications for social assistance, social insurance and labor market institutions? This question is explored in chapter 6 of the study. Traditional provisions of social protection based on steady wage employment, clear definitions of employers and employees, as well as a fixed point of retirement become increasingly obsolete. In developing countries, where informality is the norm, this model has been largely aspirational.

57. Spending on social assistance should be increased and complemented with insurance that does not fully depend on having formal wage employment. Expansions in social assistance should be guided by the principle of “progressive universalism”. As people become better protected through enhanced social assistance and insurance, labor regulation could, where appropriate, be made more balanced to facilitate work transitions.

58. Changes in the nature of work, compounded by rising aspirations, make it essential to increase social inclusion. Hence, social contracts need to place equality of opportunity at their

center. Chapter 7 considers potential elements of the contract, which include – but are not limited to – investing early in human capital; taxing firms; expanding social protection; and increasing productive opportunities for youth.

59. Social inclusion is costly. A new social contract would require additional government revenues in some developing economies. The chapter discusses how governments can create fiscal space through a mix of additional revenues from existing and new funding sources. Potential sources of revenue include value-added taxes, excise taxes, carbon tax, charging platform companies taxes equal to what other companies are paying, and the revisit of energy subsidies.

60. Simeon Djankov and Federica Saliola lead the 2019 WDR team. The core team comprises Ciro Avitabile, Rong Chen, Davida Connon, Ana Paula Cusolito, Roberta Gatti, Ugo Gentilini, Asif Mohammed Islam, Aart Kraay, Shwetlena Sabarwal, Indhira Vanessa Santos, David Sharrock, Consuelo Jurado Tan, and Yucheng Zheng. Michal Rutkowski, Senior Director for the Social Protection and Jobs Global Practice, provides overall guidance.

¹ Marx 1867.

² Keynes 1931.

³ IMF 2018.

⁴ Parry et al. 2014.

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Chapter 1: The Changing Nature of Work

61. From the beginning, robots were construed as worker-replacing machines. Karel Čapek, the Czech writer who invented the word robot in 1920, used the Slavic language for work “robota” to connote what these machines are used for. In the past century, machines have replaced workers in many tasks. On balance, however, technology has created more jobs than it has displaced. Technology has brought higher labor productivity to many sectors by reducing the need for workers in routine tasks. It has opened new sectors, previously only imagined in the field of science fiction.

62. As technology advances, new ways of production are adopted, markets expand, societies evolve. Technology enhances worker productivity. Firms use new technologies to improve capital utilization, overcome information barriers, outsource, and innovate. New technologies allow for more efficient management of firm operations: firms hire workers in one location to produce parts, in another location to assemble, and in a third location to sell. Consumers enjoy more product choice at lower prices.

63. In the digital economy, market opportunities expand for all participants. In some cases, platform firms create new market places to trade goods or services. Even small firms are global in the digital economy. Firms grow faster. The firms selling on eBay in Chile, Jordan, Peru and South Africa are younger than firms in offline markets.¹ Start-ups in China are dominant on the Alibaba platform.² Societies benefit as technology expands options for service delivery and for citizens to exercise their voice to hold governments accountable.

64. In short, workers, firms and governments build new comparative advantages as conditions change. For example, by adopting 3D technologies first, Danish firms strengthened their hold on the global market for hearing aid products in the 2000s.³ The Indian government invested in numerous technical universities across the country, and subsequently became a world leader in high-tech sectors. By integrating into global value chains, Vietnamese workers developed their foreign language abilities, building additional human capital that allows them to expand into other markets.

65. Notwithstanding the opportunities, however, there is still disruption. The declining cost of machines puts particularly at risk those low-skill jobs that are intensive in routine tasks. These are the occupations that are most susceptible to automation. Displaced workers are likely to compete with (other) low-skilled workers for jobs with low wages. Even when new jobs arise retooling is costly and, in many cases, not possible.

66. As a result, the displacement of workers generates anxiety, just as in the past. In 1589, Queen Elizabeth I was alarmed when clergyman William Lee applied for a royal patent for a knitting machine. “Consider thou what the invention would do to my poor subjects,” she replied. “It would assuredly bring them to ruin by depriving them of employment.”⁴ The Qing dynasty fiercely opposed constructing railways in China during the 1880s, arguing that the loss of luggage carrying jobs might lead to social turmoil.⁵ The Luddites sabotaged machines to defend their jobs

in Britain during the early 19th century, despite the overall economic growth fueled by steam power.

67. Fears about robot-induced unemployment have dominated the discussion over the future of work. Nowhere are these fears more pronounced than in the context of the industrial sector. The decline in industrial employment in some high-income economies over the past two decades is an established trend. Singapore, Spain, United Kingdom and Korea are among the countries where the share dropped more than ten percentage points. But this trend mainly reflects a shift in employment from manufacturing to services as those countries develop. In contrast, millions of industrial jobs have been created in developing countries since the late 1980s: the share of industry employment has increased significantly in a few emerging markets such as Vietnam and Cambodia. On average the share of industry employment has remained stable in developing countries, against the numerous predictions of job losses resulting from technology.

68. Nevertheless, technology is disrupting demand for three types of skills. These are general cognitive skills, job-specific skills, and socio-behavioral skills. Globally, private returns to education, at about nine percent a year, remain high despite the significant expansion in the supply of skilled labor. Returns to tertiary education are at almost 15 percent a year. Individuals with more advanced skills take better advantage of new technologies, to adapt to the changing nature of work. For example, returns to primary schooling in India increased during the Green Revolution, with more educated farmers adopting new technologies.

69. Technology has the potential to improve living standards, but these effects are not manifesting equally across the globe. The process of job creation works society-wide—and not just for the few—only when the rules of the game are fair. Workers in some sectors or countries benefit handsomely from technological progress. Workers are displaced in other sectors, having to retool to survive. Platform technologies create huge wealth but place it in the hands of the few.

70. Irrespective of technological progress, persistent informality continues to pose the greatest challenge for emerging economies. Informal employment remains at more than 70 percent in Sub-Saharan Africa and South Asia; it is more than 50 percent in Latin America. In India, the informal sector has remained around 90 percent notwithstanding rapid economic growth or technology adoption. Both wages and productivity are significantly lower in the informal sector. Informal workers live without health insurance or social protection. Many fear that technology will prevent Africa and South Asia from industrializing in a manner that moves workers to the formal sector.

71. What constitutes progress in the context of the formal/informal worker divide must be re-evaluated given the changing nature of work. Future economic growth depends on human capital accumulation, infrastructure that serves education, health, and business needs. Enhanced social protection that applies irrespective of the form of labor contract is also ripe for consideration.

Technology Generates Jobs

72. “They’re always polite, they always upsell, they never take a vacation, they never show up late, there’s never a slip-and-fall, or an age, sex or race discrimination case,” Andrew Puzder, chief executive of Hardee’s restaurant chain with headquarters in Tennessee, says of swapping employees for machines.⁶ Such statements give workers reason to worry.

73. People fear the advent of a jobless economy because tasks traditionally performed by humans are being—or are at risk of being—taken over by robots, especially those enabled with artificial intelligence. Indeed, 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.⁷ Robot density per worker in 2018 is highest in the Republic of Korea, Singapore and Germany. In all these countries the employment rate remains high despite the high prevalence of robots.

74. Young workers can be more affected by automation than older workers. Although robot adoption did not have any substantial net effect on employment in Germany, it reduced hiring for young entrants.⁸ For this reason, the effect of automation can be very different on countries which are ageing and on those which have young populations and expect large numbers of new labor market entrants.

75. Robots replace workers; but 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.⁹ 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 sharpen algorithms for digitized lending.

76. Technological progress directly creates jobs in the technology sector. The internet of things means that people are relying on portable devices to work, organize their finances and have fun. Humans create the online interfaces that drive this growth. With consumer interests changing fast, there are more opportunities for individuals to pursue careers in mobile app development or virtual reality design.

77. Technology has also facilitated the creation of jobs through online work or in the gig economy. Andela has built its business model on the digitization of Africa. It has trained 20,000 software programmers across Africa using free online learning tools. Once qualified, programmers work with Andela directly or join other Andela clients across the world. It aims to train 100,000 African software developers by 2024. Ninety percent of its workers are in Lagos, Nigeria, with other sites in Nairobi, Kenya, as well as Kampala, Uganda.

78. Technology increases proximity to markets, facilitating the creation of new, efficient value chains. Farmerline in Ghana is an online platform that communicates with a network of over 200,000 farmers in their native languages via mobile phone on the weather and market prices while collecting data for buyers, governments and development partners. The company is expanding to include credit services.

79. As part of this process of technology adoption, however, some workers will be replaced by technology. Workers involved in routine tasks that are “codifiable” are most vulnerable. The examples are numerous. More than two thirds of robots are employed in the automotive, electrical/electronics, as well as metal and machinery industry. Foxconn Technology Group, the world’s largest electronics assembler based in Taiwan, China, cut its workforce by 30 percent when it adopted robots into the production process (from 1.3 million in 2012 to 873,467 by the

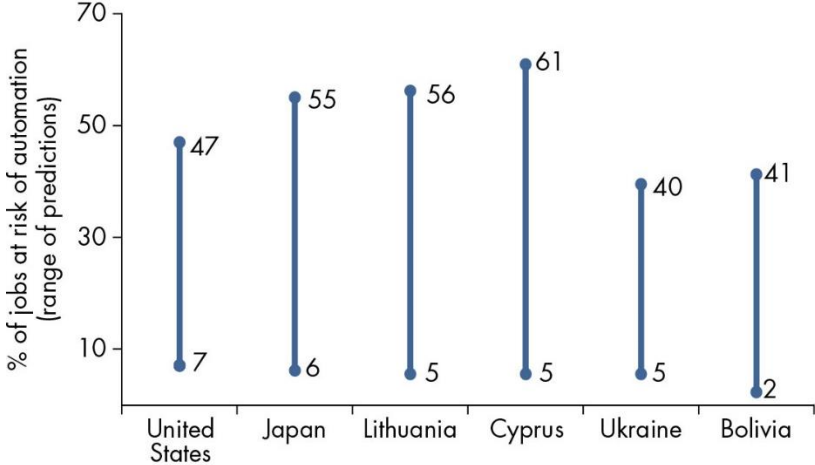
end of 2016).¹⁰ If robots are cheaper than existing manufacturing processes, relocating production closer to consumer markets becomes more appealing to firms. In 2017, 3D printing technologies enabled the German company Adidas to establish two “speed factories” for shoe production in Ansbach, Germany, and Atlanta, United States. The move eliminated more than 1,000 jobs in Vietnam. In 2012, the Dutch multinational technology company Philips Electronics shifted production from China back to the Netherlands.

80. Some service jobs are also susceptible to automation. Mobileye of Israel is developing driverless vehicle navigation units. Baidu, the Chinese technological giant, is working with King Long Motor Group, China, to introduce autonomous buses in industrial parks. Financial analysts, who spend much of their time conducting formula-based research, are also experiencing job cuts: Sberbank, the largest bank in the Russian Federation, relies on artificial intelligence to make loan decisions in 35 percent of cases, anticipating this to increase to 70 percent in less than five years.¹¹ “Robot lawyers” have already substituted for 3,000 jobs in Sberbank’s legal department. The number of back office employees overall has shrunk to 1,000 by 2021, down from 59,000 in 2011. Ant Financial, a fintech firm in China, uses big data to assess loan agreements instead of hiring thousands of loan officers or lawyers.¹²

81. Nevertheless, it is impossible to put a figure on the level of job displacement that will take place overall. Even the best economists have experienced little success with this exercise. In 1930, John Maynard Keynes declared that technology would usher in an age of leisure and abundance within a hundred years. “Everyone would need to do some work if he is to be contented,” he wrote, “but three hours a day is quite enough.”¹³ The world in 2018 is far from this kind of reality.

82. Although quantifying the impact of technological progress on job losses continues to challenge economists, estimates abound. There are wide differences in the job loss predictions that have been released (figure 1.1). For Bolivia, job automation estimates range from two percent to 41 percent. In other words, anything from 100,000 to two million Bolivian jobs in 2018 may be automated. The range is even wider for advanced economies. In Lithuania, five to 56 percent of jobs are at risk of being automated. In Japan, six to 55 percent of jobs are alleged to be at risk.

Figure 1.1. Wide variance in the perceived jobs at risk due to automation



Source: Authors’ calculations based on World Bank 2016a; Arntz, Gregory and Zierahn 2016.

Note: The figures represent the highest and lowest estimate of the percent of jobs at risk of automation for economies that have more than one estimate in different studies. A job is at risk if its probability of being automated is greater than 0.7.

83. The wide range of predictions demonstrates the high uncertainty involved in estimating how technology affects jobs. Most estimates rely on automation probabilities developed by machine learning experts at Oxford University in the United Kingdom. They were asked to categorize a sample of 70 occupations taken from official United States occupational categories as either strictly automatable or not (1-0). Using these probabilities, initial estimates placed 47 percent of U.S. occupations at risk of automation.¹⁴ Basing probabilities on the opinion of experts is instructive but not definitive. Moreover, using one country's occupational categories to estimate possible job losses due to automation elsewhere is problematic.

84. Job loss predictions have also struggled to incorporate technology absorption rates. Technology absorption is often painstakingly slow and differs not only between countries but also across firms within countries—it therefore influences the potential for technology to destroy jobs. For example, usage of mobile phones by people spread much more quickly compared with earlier technologies but among firms, especially in the informal sector, internet usage is low. The uptake of mechanization in agriculture paints a similar picture: persistent trade barriers, the relatively low cost of labor compared to agricultural machines and poor information all contribute to the low rates of mechanization in low and some middle-income countries. Even with the spinning jenny, the relatively low cost of labor in France and India delayed its introduction in those countries: in 1790 there were only 900 jennies in France compared to 20,000 in England.¹⁵ The prevalence of automation versus labor continues to vary across countries depending on the context.

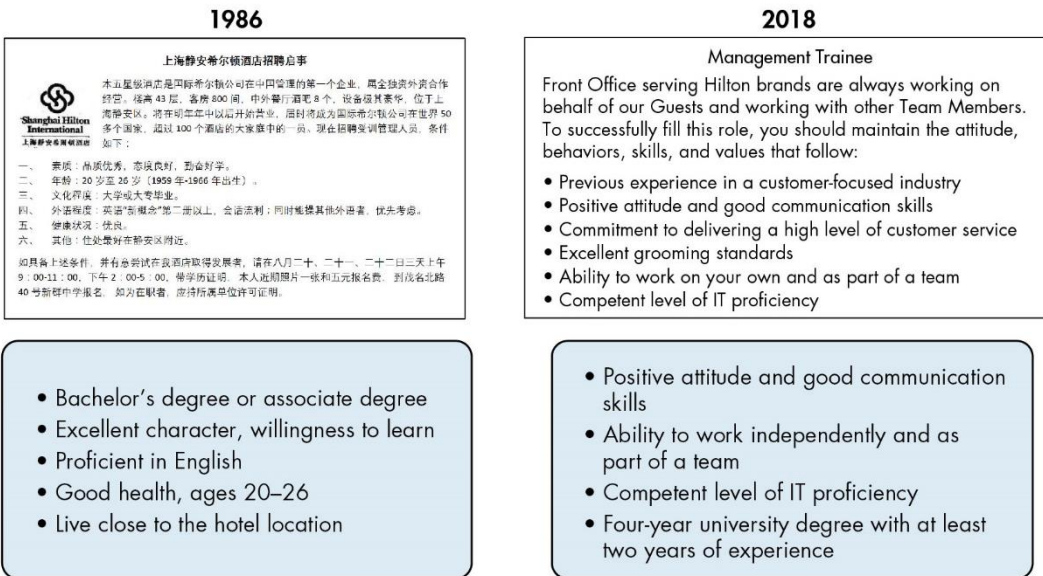
How Work is Changing

85. It is easier to assess how technology shapes the demand for skills and changes production processes. Governments can make policy decisions around such information. First, technology is changing the skills that are being rewarded in the labor market. The premium for skills that cannot be replaced by robots—namely general cognitive skills such as critical thinking, and socio-behavioral skills such as managing and recognizing emotions that enhance teamwork—is rising. These skills make workers more adaptable in labor markets. Second, technology is disrupting production processes by challenging the traditional boundaries of firms, expanding global value chains and changing the geography of jobs. Third, technology is changing how people work, giving rise to the gig economy where organizations contract with independent workers for short-term engagements.

86. Technology is disrupting demand for three types of skills at work. First, demand for non-routine cognitive and socio-behavioral skills appear to be rising, in both advanced and emerging economies.¹⁶ Second, demand for job-specific skills that are routine are declining. Third, pay-offs 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 (figure 1.2).

Figure 1.2. Socio-behavioral skills are becoming more important

Job requirements of Hilton Hotel management trainee in Shanghai, China



Source: Authors' analyses based on Wenhui News and career website.

87. Since 2001, the share of employment in occupations intensive in non-routine cognitive and socio-behavioral skills has increased from 19 to 23 percent in emerging economies, and from 33 to 41 percent in advanced economies. In Vietnam, within a given industry, workers performing non-routine analytical tasks earn 23 percent more; those on interpersonal tasks 13 percent more. In Georgia and Armenia, the earnings premium for problem solving and learning new things at work is close to 20 percent.¹⁷

88. Robots complement workers that engage in non-routine tasks that require advanced analytical, interpersonal or manual skills that require significant dexterity. For example, teamwork, relationship management, people management, care: these activities require people to react to one another based on tacit knowledge. Designing, producing art, conducting research, managing teams, nursing, cleaning have proven hard to automate. Robots have, for the most part, struggled to replicate these skills to compete with workers.

89. Machines, including robots, replace workers most easily when it comes to routine tasks that are “codifiable”. Some of these tasks are cognitive, such as processing payrolls, book-keeping, or arithmetic. Others are manual or physical, such as operating welding machines, assembling goods, operating forklifts. These tasks are easily automated. In Norway, broadband adoption by firms improved employment among skilled workers but worsened it among unskilled workers. The new technology complemented skilled workers in executing non-routine abstract tasks while substituting for unskilled workers.¹⁸

90. Pay-offs to combinations of different skill-types are also increasing. The evolving world of work demands skills-sets that improve the adaptability of workers, allowing them to transfer easily from one job to another. Across countries, both higher-order cognitive (technical) skills and

socio-behavioral skills are consistently ranked among the skills most valued by employers. Employers in Benin, Liberia, Malawi and Zambia rank teamwork, communication, and problem-solving skills as the most important set of skills after technical skills.¹⁹

91. Even within a given occupation, the nature of the skills needed to perform a job is changing. While the job of a personal assistant in 2018, for example, is quite different from what it was 15 years ago, the impact of technology on skills demand within occupations is not always in the direction one may expect. In Chile, the adoption of complex software used for client, production, and business management between 2007 and 2013 reallocated employment from skilled workers to administrative, unskilled production workers. This shift led to an increase in the use of routine manual tasks and a reduction in the use of abstract tasks within firms.²⁰

92. In advanced economies employment has been growing fastest in high-skilled cognitive occupations and low-skilled occupations that require dexterity. In contrast, employment has shifted away from middle-skilled occupations like machine operators. This is one of the factors that may translate into rising inequality in advanced economies. Both middle- and low-skilled workers could see falling wages: the former because of automation; the latter because of increased competition.

93. Few studies have taken place in emerging economies, but some show that similar changes in employment are taking place. In middle-income countries in Europe, for example Bulgaria and Romania, the demand for non-routine cognitive and interpersonal work is rising but there is no increase in low-skilled non-routine manual work.²¹ Routine cognitive work has increased in other countries such as Botswana, Ethiopia, Mongolia, the Philippines and Vietnam.²² Studies observe, in most cases, that the demand for non-routine cognitive and interpersonal skills is rising much faster than for other skills. High-skilled workers are gaining with technological change while low-skilled workers—especially those in manual jobs—seem to be losing out.

94. Other studies show that changes in employment have been positive. In Argentina the adoption of information and communications technology in manufacturing increased employment turnover through the replacement of workers, elimination of occupations, creation of new occupations and a decrease in the share of unskilled workers. However, employment levels increased across all skill categories.²³

95. Technology is also disrupting production processes, challenging the traditional boundaries of firms and expanding global value chains. In so doing technology changes the geography of jobs. Other waves of technological change have done the same. The industrial revolution, which mechanized agricultural production, automated manufacturing and expanded exports led to mass migration of labor from farms to cities. The advent of commercial passenger planes expanded tourism from local holiday destinations in Northern Europe to new, foreign resorts on the Mediterranean Sea. Thousands of new jobs were created in new locations.

96. Improvements in transcontinental communication technologies, along with the fall in transportation costs, have expanded global value chains toward East Asia. Beyond technology, of course, many other factors matter for outsourcing. The Philippines overtook India in 2017 in terms of market share in the call center business at least partly due to lower taxes.

97. Technology enables clusters of business to form in under-developed rural areas. In China rural micro e-tailers began to emerge in 2009 on Taobao.com Marketplace, which is owned by Alibaba and is one of the largest online retail platforms in China. These clusters—referred to as “Taobao Villages”—spread rapidly, from just 3 in 2009 to 2118 across 28 provinces in 2017. In 2017, there were 490,000 online shops. While sales have been strongest in traditional goods such as apparel, furniture, shoes, luggage, leather goods, or auto accessories, sellers are diversifying their offerings to include high-tech goods such as drones.²⁴

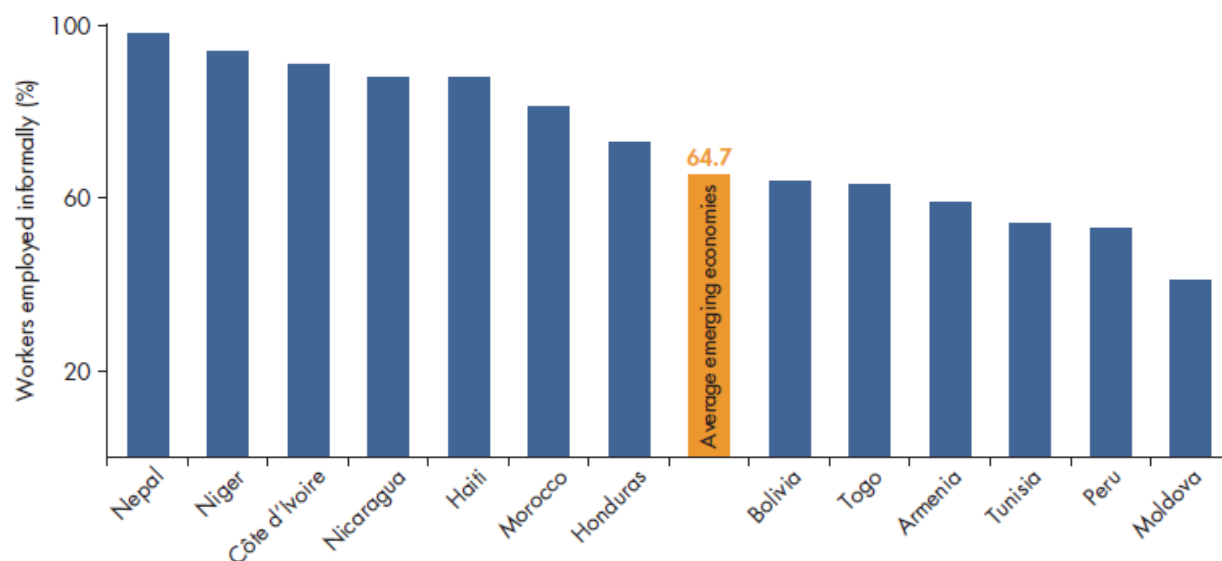
98. Online work platforms eliminate many of the geographical barriers previously associated with certain tasks. Bangladesh contributes 15 percent to the global labor pool online with 650,000 freelance workers.²⁵ Indiez, founded in 2016 in India, takes a team-based approach to online freelancing. The platform provides a remotely distributed community of talent—mainly from India, Southeast Asia, and Eastern Europe—that works together on tech projects for clients anywhere in the world. Clients include the pizza restaurant, Dominos India, as well as the Indian multinational conglomerate, Aditya Birla Group. Wonderlabs in Indonesia follows a similar model.

99. Finally, technology is changing how people work and the terms on which they work. Rather than “standard” long-term contracts, 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. Increased access to digital infrastructure—via laptops, tablets, and smartphones—provides an enabling environment for on-demand services to boom. Examples range from grocery delivery, driving services to sophisticated tasks like accounting, editing, or music production. ASUQU in Nigeria connects creatives and other experts with businesses across Africa. CrewPencil works in the South African movie industry. Tutorama, based in Egypt, connects students with local private tutors. In the Russian Federation, students work as Yandex drivers whenever is most convenient with their university schedules. They identify peak hours in different locations to achieve the highest level of passenger turnover.

100. It is difficult to estimate the size of the gig economy. Where data exist, the numbers are still small. Data from Germany and the Netherlands indicate that only 0.4 percent of the labor force is active in the gig economy. Worldwide, the total freelancer population is estimated at around 84 million—less than three percent of the global labor force (3.5 billion).²⁶ Someone who is counted as a freelancer may also engage in traditional employment. In the United States, for example, more than two thirds of 57.3 million freelancers are also in traditional employment, using freelancing to supplement income.²⁷ The best estimate is that less than 0.5 percent of the active labor force is in the gig economy globally, with less than 0.25 percent in developing countries.

101. Changes to the nature of work are in some ways more noticeable in advanced economies where technology is widespread and labor markets start from higher levels of formalization. But 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—withstanding technological progress. With some notable exceptions in Eastern Europe, informality has been hard to tackle (figure 1.3). In countries such as El Salvador, Morocco or Tanzania only one out of 5 workers is part of the formal sector. On average, two out of 3 workers in emerging economies are informal workers.

Figure 1.3. Two out of three workers in emerging economies are in the informal economy (selected countries)



Source: Authors' calculations using household and labor force survey data from the International Income Distribution Database. Note: The figure presents selected countries with highest rates of informal employment. A person is identified as informal worker if he or she does not have a contract, social security, and health insurance; and is not part of a labor union. The estimates are for the latest available year for each country, ranging from 2010 to 2016.

102. The prevalence of informality predates the new millennium wave of technological change. Various programs for reducing informality, inspired by Hernando de Soto's *The Other Path*, have yielded limited progress. The reason is the interaction of onerous regulations, taxes and social protection schemes, which means that businesses have no incentive to grow.

103. As recent technological developments blur the divide between formal and informal work, there is something of a convergence in the nature of work between advanced and emerging economies. Labor markets are becoming more fluid in advanced economies while informality persists in emerging economies. Most challenges faced by short-term or temporary workers, even in advanced economies, are the same as those faced by workers in the informal sector. Self-employment, informal wage work with no written contracts or protections and low-productivity jobs more generally are the norm in most of the developing world. Workers operate in a regulatory grey area, with most labor laws unclear on roles and responsibilities of the employer versus the employee. This group of workers often lacks access to benefits. There are no pensions, no health or unemployment insurance schemes, or other workers' protections.

104. This type of convergence is not what was expected in the 21st century. Traditionally, economic development is synonymous with formalization. This is reflected in the design of social protection systems and labor regulations. A formal wage employment contract is still the most common basis for the protections afforded by social insurance programs and by regulations such as minimum wages or severance pay. Changes in the nature of work caused by technology shifts the pattern of demanding workers' benefits from employers to directly demanding welfare benefits from the state. These changes raise questions about the continuing relevance of current labor laws.

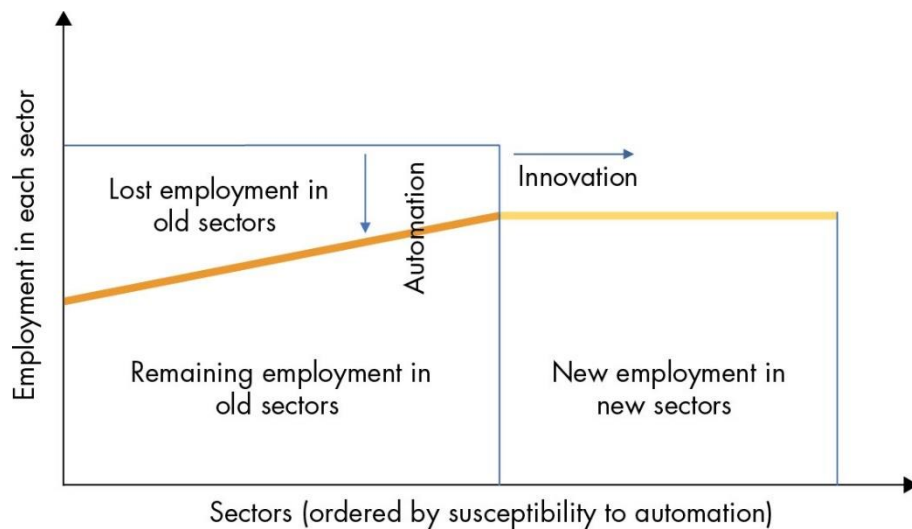
A Simple Model of Changing Work

105. Will robots turn the old Luddite fears of machine-replacing-man into reality? Will massive automation mean that the old path of prosperity-through-industrialization, once taken by England, Japan and China, is closing? How would public policy ensure that the evolution of work produces a world that is both more prosperous and more equitable?²⁸

106. Keynes correctly understood that employment in traditional sectors, especially in agriculture, would decline enormously in the 20th century, but he failed to anticipate the explosion of new products that 21st century workers would produce and consume. Most importantly, he failed to foresee the vast service economy that would employ workers in most wealthy countries.

107. Breakthroughs, like digital technologies, enable firms to automate, replacing labor with machines in production, and to innovate, expanding the number of tasks and products. The future of work is determined by the battle between automation and innovation (figure 1.4). Automation causes the employment in old sectors to decline; innovation causes new sectors or tasks to emerge. The overall future of employment depends on both of them. It also depends on the labor and skills intensity of the new sectors or tasks that emerge. These forces, in turn, affect wages.

Figure 1.4. The forces of automation and innovation will shape employment



Source: Glaeser 2018.

108. For most of the past 40 years, human capital has been a shield against automation, partly because machines have more difficulty replicating more complex tasks. Low-skilled and middle-skilled workers have benefited less from technological change either because of higher susceptibility to automation or because of lower complementarities with technology.²⁹ The ordering of the sectors in figure 1.4 should be understood as running from most automatable to least automatable, or from low-skilled and middle-skilled jobs to high-skilled for the cases where there is a decline in relative demand for some less educated workers.

109. Automation has disproportionately reduced demand for less skilled workers. The innovation process has generally favored the more educated. A big question is whether the workers

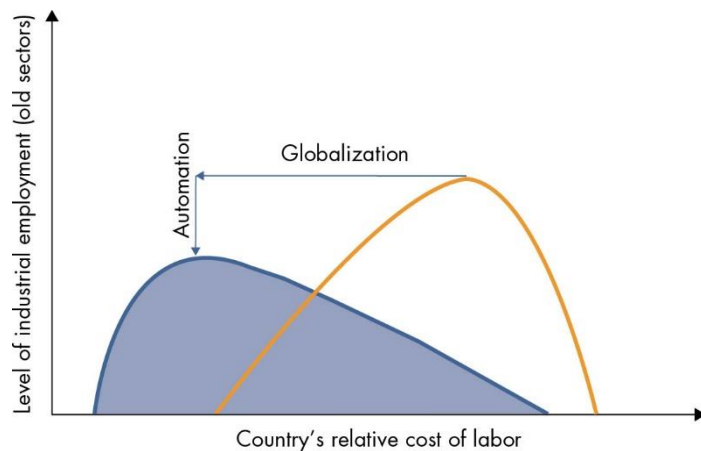
displaced by automation will have the skills needed to work in the jobs created by innovation. This study focuses a great deal on the necessity of human capital for the workforce of the future. Yet it is worth remembering that many innovations, like Henry Ford's assembly lines, increased demand for less skilled workers, while others, like quartz watches, disproportionately destroyed highly skilled jobs.

110. Automation and innovation are largely unexpected by-products of a single breakthrough, like the advent of the internet, or the result of more targeted investments by companies that either seek to reduce labor costs or increase profits in new markets. If public regulations limit innovation, employment is more likely to fall.

111. Automation through dishwashers and washing machines revolutionized homes in the mid-20th century, enabling millions of women to work outside the household. Women often found jobs in the service economy, which grew by providing yet more products, from caffè lattes to financial planning, and enabling an even finer division of labor, with personal trainers and pre-prepared gourmet food. A major question for this century is whether more of these services will become tradeable; and whether service workers will need to work in the same metropolitan area as their clients.

112. The battle between innovation and automation rages not only in the American and European rustbelts. Even though low wage countries may not invest in the development of labor-saving innovations, they import labor-saving ideas from advanced economies. In fact, the mechanization of agriculture in emerging economies represents the largest global shift in work. Cities in emerging countries must generate abundant new jobs to employ the farmers displaced by the industrialization of agriculture. Declining costs of transportation and connectivity, which we call globalization, enables these urban job markets to expand, as long as increased connectivity moves more quickly than the automation of tradable good production. So, while the growth of employment in emerging economies is supported by global value chains, automation may mean that African countries never experience mass industrialization (figure 1.5).

Figure 1.5. The impact of automation and globalization on industrial employment



Source: Glaeser 2018.

Note: The curves are inverse u-shaped to reflect the empirical regularity that manufacturing employment is a larger share of employment in middle-income countries; higher-income countries tend to specialize in services; low-income countries have a relatively higher share of employment in agriculture.

113. High labor costs in relation to capital — beyond a certain level — push firms to automate production or to move jobs to lower cost countries. This reduction in costs is achieved explicitly within a firm or implicitly through competition within a market. The relative cost of labor, rather than income, is emphasized because countries may have labor costs that are not aligned with their income level. This is the case, for example, when low levels of human capital render workers unproductive, reducing exporting potential; or in countries where regulations significantly raise labor costs for formal employers.

114. Globalization leads to more jobs moving to developing world cities, reducing overall relative costs of labor (shifting the curve in figure 1.5 leftward). Automation leads to less demand for manufacturing workers everywhere for relative labor costs (shifting the curve downward). Automation also changes the overall relationship between industrial employment and labor costs as it will happen more quickly in places with high labor costs if incentives dominate other differences between these locations (changing the shape of the curves in figure 1.5 from left-skewed to right-skewed).

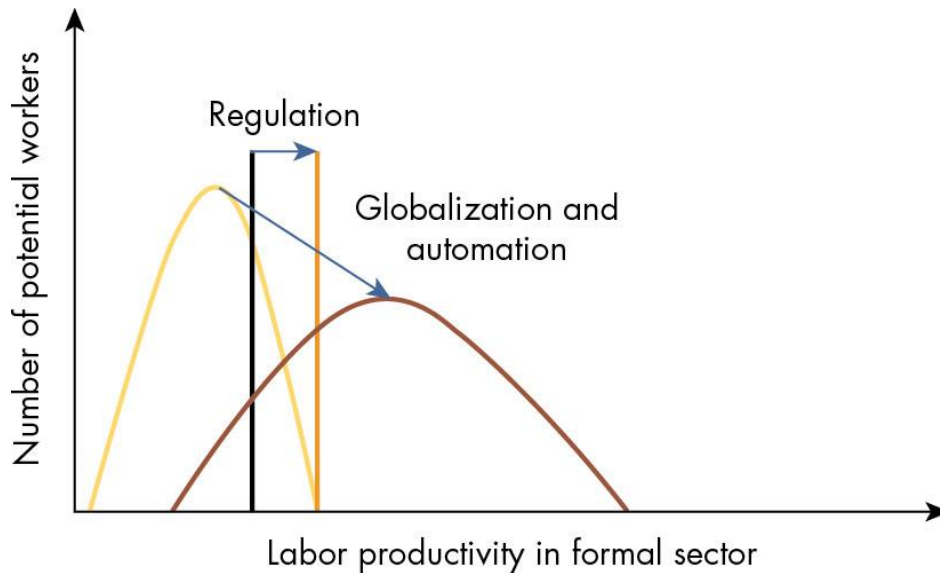
115. The dramatic economic growth experienced by Japan, the Republic of Korea, China, and Vietnam, started with the fruits of globalization: manufacturing exports that competed effectively because of low labor costs. These countries chose policies investments in infrastructure, special economic zones, and above all, human capital, that generated a high-quality labor force connected to the outside world.

116. Shenzhen's transformation from labor-intensive, low-cost manufacturing to high skilled, technologically intense production illustrates the challenge that later industrializers are facing. They must compete not only with the high labor cost, capital-intensive producers of the wealthy west, but also the moderate labor cost, technology-intensive producers of Asia and Eastern Europe. If robust global connections come too slowly to Africa, then industrialization may no longer be a

plausible path for job creation. This threat strengthens the case for investing rapidly in the precursors of globalization—education and transportation infrastructure.³⁰

117. If African cities maintain the current model, employment will remain in a low-wage, informal service sector. Changing the model depends significantly on investments in human capital (figure 1.6). In that case, Africa may urbanize as a service-producing economy, moving away from export earnings based on natural resources and agriculture.

Figure 1.6. The role of human capital in shaping productivity and wages in emerging economies



Source: Glaeser 2018.

118. Globalization increases the returns to human capital through higher labor productivity, because some workers participate in export industries and because the shift of workers to those industries increase the demand for all kinds of labor (figure 1.6). This positive shift is meant to capture the positive experience of a poorer nation that has suddenly gained access to significant foreign direct investment. Naturally, globalization may not always raise productivity across the board.

119. The benefits of globalization will not accrue evenly. The figure also assumes that globalization causes the variance of labor productivity to increase. While productivity for subsistence farmers is low and relatively homogeneous, the returns to participating in a globalized economy are far more mixed. By investing strongly in raising the human capital of their citizens, governments increase their citizens' chances of success in global markets.

120. The vertical lines in figure 1.6 denote the minimum productivity level at which firms find it optimal to employ workers formally, before the move towards globalization. Minimum wages, required benefits, along with other taxes and regulations ensure that informality is appealing for all but the most productive workers before the economy grows. Figure 1.6 illustrates that, if regulations stayed constant, globalization and automation would in many cases pull more workers into the formal sector by increasing their productivity. Yet this formal employment effect may be

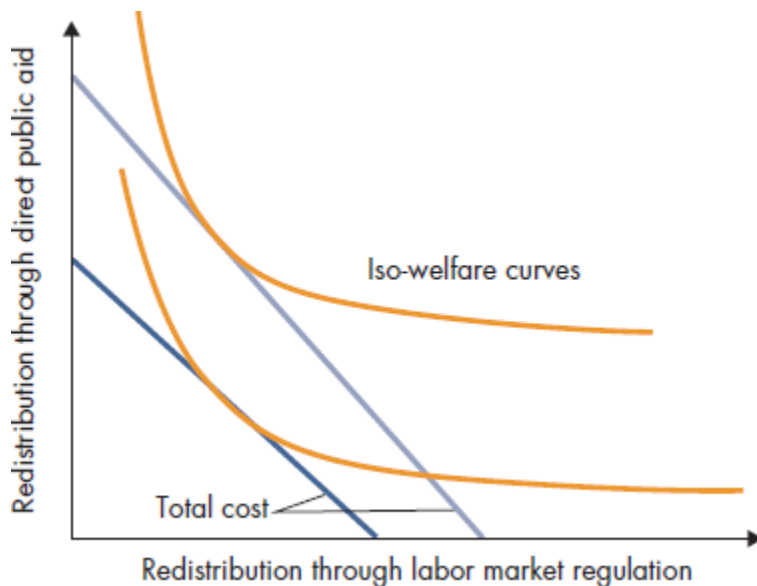
reduced if development leads countries to impose more requirements on firms. Globalization raises incomes, but it may not do much to reduce informality if regulatory aspirations increase along with global connections. Indeed, informality could even rise if globalization sufficiently increases regulation.

121. Finally, policymakers need to think about risk management because of the predominance of informality in developing countries and the higher uncertainty associated with the changing nature of work. The large continuing presence of a vast informal service sector challenges risk management systems that function through employers. 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. Strong requirements also deter formalization.

122. This study emphasizes the need for social inclusion for all workers regardless of how or where they work. Governments try to strengthen social protection and reduce inequality through requirements or subsidies for employer-provided support, such as minimum wages, employer-provided health care or protection against dismissal. Alternatively, governments could pursue the same goals through direct, state-provided support in the form of social assistance programs and subsidized universal social insurance or public jobs, for example, for community health workers.

123. Both types of social policy promote equity. Both have costs. From the state's perspective there are different combinations of regulations and public aid that generate the same level of equity. Direct public aid generates implementation costs through waste and higher tax rates (figure 1.7). Employer requirements deter hiring and could, when too stringent, raise inequity by increasing the share of workers who are either unemployed or in the informal sector.

Figure 1.7. Protecting workers



Source: Glaeser 2018.

124. We show these costs with two cost lines. The dark blue iso-cost line shows the set of points that generate the same level of direct public implementation costs. The line is relatively flat, because a small reduction in the level of direct redistribution reduces these costs by enough to offset a large increase in labor market regulation. The light blue iso-cost line shows the set of points that generate the same level of market distortion costs. In this case, the slope is steep, since a small increase in the level of labor market regulation increases distortionary costs by as much as a large decrease in the public safety net. The total cost curve sums these two cost curves. Social welfare is maximized at the point in which the iso-cost line is tangent to the iso-welfare curve.

125. Many developing world countries initially chose to redistribute primarily through labor market regulations, because the costs of distorting labor markets were low and public capacity for social programs was limited. If automation causes the cost of distorting labor markets to rise, and development improves the efficacy of the public sector, the cost curve becomes steeper. That shift calls for a new social welfare contract that moves away from regulation-based redistribution to direct social welfare support.

126. The future world of work is uncertain. Innovation might outrace automation. Globalization may move quickly enough so that industrialization allows Africa to grow and prosper. Yet, given the considerable uncertainty about the future of employment, governments should rethink policies that deter job creation as well as emphasize policies that protect the vulnerable while still encouraging employment.

¹ eBay 2013.

² Chen and Xu 2015.

³ Freund, Mulabdic and Ruta 2018.

⁴ McKinley 1958.

⁵ Zeng, 1973.

⁶ Kate Taylor. 2016. "Fast-food CEO says he's investing in machines because the government is making it difficult to afford employees," *Business Insider*, March 16.

⁷ International Federation of Robotics.

⁸ Dauth et al. 2017

⁹ Gregory et al. 2016.

¹⁰ Chan, Jennifer. 2017. "Robots, not humans: official policy in China." *New Internationalist*, November 1. <https://newint.org/features/2017/11/01/industrial-robots-china>.

¹¹ Gref, Herman. 2017, September 25. Speaking at the Council on Legislative Support for the Development of the Digital Economy under the Chairman of the State Duma. <http://special.tass.ru/ekonomika/4590924>.

¹² 孙宏超. 2017. "蚂蚁金服彭蕾联合国演讲: 倡议建数字金融创新小组." 腾讯科技.

<http://tech.qq.com/a/20170919/031275.htm?pc>

¹³ Keynes 1931.

¹⁴ An algorithm was then used to extend that sample to categorize the remainder of the 632 US occupational categories based on their task make-up. Where the probability of automation was greater than 0.7, that occupation was considered at risk. Frey and Osborne 2017.

¹⁵ Aspin and Chapman 1964.

¹⁶ Ajwad et al. 2014a and 2014b; Bodewig et al. 2014.

¹⁷ Valerio et al. 2015a and 2015b.

¹⁸ Akerman, Gaarder and Mogstad 2015.

¹⁹ Arias et al. forthcoming.

²⁰ Almeida et al. 2017.

²¹ Hardy et al. 2018.

²² For East Asian countries, see Mason et al. 2018. For others, see World Bank 2016.

²³ Brambrilla and Tortarolo 2018.

²⁴ 阿里研究院, 阿里新乡村研究中心. 2016. "中国淘宝村研究报告: 淘宝村新突破." 北京: 阿里研究院.

²⁵ SM Abrar Aowsaf. 2018. "The cost of getting paid." Dhaka Tribune, March 01.

<http://www.dhakatribune.com/business/2018/03/01/cost-getting-paid/>.

²⁶ This is a sum of various available statistics: 57.3 million in the United States, 2 million in the United Kingdom, 10 million in European Union, 15 million in India. These countries or regions are where freelancing is booming. The aggregated number reflects a sizable portion of the global freelancer workforce.

²⁷ Edelman Intelligence 2017.

²⁸ This section is based on Glaeser 2018.

²⁹ Acemoglu and Autor 2011. In advanced economies, labor replacement due to automation appears concentrated in middle-skilled jobs, leading to the polarization of labor markets. We show in this report that in developing countries, at least so far, there is significant variation across countries in terms of the relative employment growth of different occupations; in many countries, middle-skilled jobs continue to grow in importance.

³⁰ Education improves the ability of countries to take advantage of globalization. For example, successful exporters in developing countries tend to export higher quality products, and high quality requires skills (Verhoogen 2008; Brambrilla et al 2012).

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Chapter 2: The Changing Nature of Firms

127. Firms have, historically, operated within boundaries. The British economist Ronald Coase explained this phenomenon in *The Nature of the Firm*.¹ He observed that firms in Detroit, USA, grow only so long as it is cheaper for them to take on additional transactions rather than it is to complete those transactions on the open market.

128. Firms in 2018 operate within wider boundaries. Free trade agreements and improved infrastructure reduce the cost of cross-border trade. This allows transactions to take place wherever costs are minimized.² New technologies have lowered communication costs. As a result, firms are also less vertically-integrated: managers outsource more tasks to the market. Some platform companies create new markets, for example JD.com in China has nearly 300 million active users, many in rural areas.

129. The wider boundaries of the firm evolved gradually. Compare the Ford Motor Company (Ford) of the 1930s with Inter IKEA Group (IKEA) of 2018. Henry Ford owned the sheep farms that supplied the wool for automobile seat covers. He also owned the iron ore and coal freighters that fed Ford's sprawling River Rouge manufacturing complex. Ford kept most of the transactions needed to manufacture a car in-house because the transaction costs were higher for finding an outside supplier able to customize auto parts.

130. Vertical integration within one country gave ground to globalization in the 1980s and 1990s. The international expansion of IKEA, founded in Sweden in 1943, began with the establishment of small stores in Norway in 1963, then in Denmark in 1969.³ The reduction in tariff or non-tariff barriers allowed IKEA to set up global value chains. The advent of internet technology transformed these chains into global networks: IKEA procures many of its products through online bidding. Firms from around the world become part of IKEA's network of suppliers.

131. The rise of "superstar" firms like IKEA would have made Joseph Schumpeter proud. "Capitalism requires the perennial gale of Creative Destruction," Schumpeter wrote.⁴ He did not worry about whether jobs might be lost in the process. Politicians do.

132. Thanks to digital technologies, which allow for rapid scaling, platform-based businesses are on the rise across the globe. Jamalon, an eight-year-old online books retailer in Amman, Jordan, was able, with less than 100 staff, to establish partnerships with over 3,000 Arabic-language and 27,000 English-language publishers, delivering 10 million titles to the Middle East region.⁵

133. As the boundaries of firms expanded, the corporate labor share declined between 1975 and 2012 in 75 percent of advanced countries and 59 percent of emerging economies.⁶ World Bank evidence based on the use of total labor shares, including the self-employed and government sectors, shows a decline in two-thirds of the 76 developing countries.

134. Governments struggle to respond to this decline and often blame the rise of superstar firms to explain this trend. Politicians try to create jobs by financing programs for the development of small and medium enterprises (SMEs). These programs are rarely cost-effective. They are based on the belief that SMEs create stable jobs. Yet the evidence shows that large firms account for the largest proportion of stable jobs in many economies.⁷

135. A better solution is to ease the barriers for start-ups to encourage competitive markets. Start-ups require a business-friendly environment which does not favor large private firms that have been already in a market for some time (incumbents), state-owned enterprises or firms run by government officials, their associates or relatives. A small number of start-ups will grow to become the next superstar firms. Technological change favors the most productive firms in each industry, incentivizing the reallocation of resources towards them.

136. There is much to celebrate when it comes to the rise of superstar firms. The digital economy allows firms to grow faster as compared with firms of 20 years ago. But there is also much to beware. Negative externalities arise faster in two ways. First, digital markets provide new, different opportunities for firms to stifle competition. Sherwin Rosen, who introduced the concept of superstar firms in 1981, predicted that technology would allow firms to expand markets or crowd out the competition more easily. In many markets, this prediction has proven to be true. Technology has allowed some companies to rise quickly to the top—but prevent others from rising.

137. Second, globally integrated firms, which have “scale without mass”, create new challenges for taxation. It is increasingly difficult to determine where value is created when businesses create value by combining networks of users, ideas and production across borders. International value creation, in turn, gives increased opportunities for firms to divert profits to low-tax jurisdictions. Solutions require coordination at the global level. In the meantime, countries take unilateral steps by extending VAT regimes or creating new taxes for the digital economy. But these taxes still do not tax profits generated through intangible assets, such as user data or advertising space. More traditional tax avoidance schemes, through transfer pricing, are also easier in the digital economy.

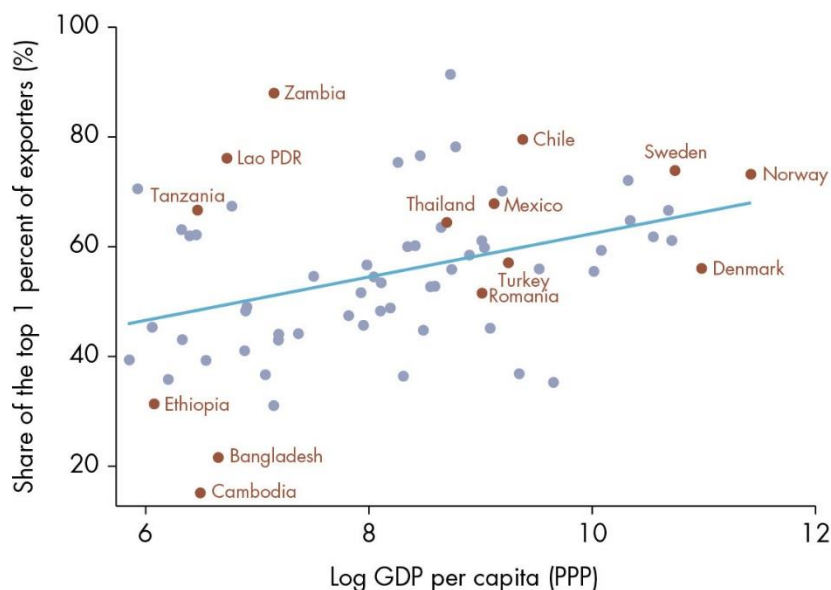
138. Regulations, particularly in relation to competition and taxation, must be updated if they are to keep up with technological innovation in business.

Superstar Firms

139. Large (*superstar*) firms dominate the global economy: 10 percent of the world’s public companies are estimated to generate 80 percent of all profits. Emerging markets account for a growing proportion of these profits. Superstar firms shape a country’s exports. One study across 32 developing countries found that, on average, the five largest exporters in a country account for one third of exports, nearly half of export growth and a third of growth due to export diversification.⁸

140. Superstar growth is particularly strong in markets undergoing rapid technological advances.⁹ Reduced trade barriers also encourage firm growth by increasing access to new imported inputs.¹⁰ The top one percent of exporters account for a larger share of exports—on average, 55 percent (figure 2.1). Reduced informational costs related to price search, free trade agreements, as well as improved infrastructure have reduced the cost of cross-border trade, allowing more transactions to take place.¹¹ The effect of trade on work is the subject of the next World Development Report.

Figure 2.1. The top one percent of exporters account for a larger proportion of exports in rich countries



Source: Authors' calculations based on Exporter Dynamics Database version 2.0 described Fernandes, Freund and Pierola (2016). Note: Oil exports (hydrocarbons such as oil, petroleum, natural gas, coal etc.) are excluded from the calculation.

141. Large firms have a beneficial effect on economic growth. The largest firms accelerate growth in developing economies by pulling resources out of subsistence agriculture. They increase aggregate productivity by upgrading their internal capabilities to become more efficient and drive out unproductive firms. They achieve economies of scale that lower prices for consumers, although the benefits are not always passed through to consumers.¹² They often pay higher wages, too, although evidence indicates that in some advanced economies the large-firm wage premium has been shrinking.

142. These firms are at the forefront of adopting new technologies. The Kuka Group, founded 1898 in Germany, is a major supplier of robot technology, plant and systems to auto manufacturers, allowing them to stream operating data for automated processing and human viewing. The data collected through sensors and actuators is used to optimize operations and maintenance. Tech giants are changing many industries for the better by disrupting them. Didi Chuxing, the leading ride-hailing company in China, has more than 450 million users of its app. Customers preferred the service over the established taxi sector, forcing it to improve.

143. The largest firms account for most formal jobs in an economy.¹³ Firms with more than 100 employees accounted for 60 percent of the total employment share in Malaysia, Myanmar and Vietnam. In Cambodia in 2016 they accounted for 70 percent. This plays out in other regions too: large firms accounted for 53 percent of total employment in Argentina; 46 percent in Bolivia; 54 percent in Ecuador; and 62 percent in the Dominican Republic. In Serbia, workers in the top one percent of manufacturing firms hold a quarter of total employment; the top five percent absorb almost half of the total labor force. Romania presents a similar picture. Superstar firms tend to employ the most workers because they generate the most output, even if they are less labor-intensive than the average small or medium-sized firm.¹⁴

144. They are also large integrators of young, innovative, dynamic firms. Superstars assist small businesses by connecting them with new markets to source inputs, offering convenient payment solutions, and reaching a wider, targeted consumer base. In India, numerous technological startups act as digital partners for global technological companies, providing payment solutions and app development services at a lower cost compared with large firms' in-house capacity. These startups are the largest employers of India's contract workforce.

145. The importance of large firms in driving economic growth is not new. However, the advent of digital platforms changes how this phenomenon unfolds. Digital platforms are the new bricks-and-mortar malls, connecting shoppers with different brand stores, creating efficiencies for brands, and generating revenue for mall owners. But data gathered through platforms is also utilized to improve firm efficiency, at times in different markets to where the data was collected in the first place. JD Financial, a financial company which is part of the Chinese JD.com Group, incorporates transaction data into its loan assessment model that it gains through its marketplace.¹⁵

146. Platform-based businesses are on the rise in every country. Consider VIPKID, a leading Chinese online education firm, founded in 2013, that matches children in China with North American teachers for virtual, one-to-one English learning classes. It links 200,000 students with 30,000 teachers in North America. Jumia is a six-years-old Nigerian e-commerce company that is already present across 23 African countries, bringing electronics, groceries, and fashion to customers. Flipkart in India facilitates sales of consumer electronics between suppliers and customers. Flipkart operates like a market, defying the boundaries of firms as originally described by Ronald Coase.

147. Digital platforms allow for rapid scaling. There are many examples of billion-dollar startups built around platforms. JD.com, China's second-largest e-commerce company, started as a retail business in a tiny booth in Zhongguancun Electronic Shopping Market, Beijing. In July 2018 the JD platform had 320 million active users. Ant Financial, part of the Alibaba Group, is the most valuable fintech firm in the world. It took off within just a few years due to advances in artificial intelligence. It uses big data to disburse loans in less than 1 second from the moment of application. Its famous "3-1-0" online lending model involves a 3-minute application process, 1-second processing time, with zero manual intervention. Since 2014 more than four million small Chinese businesses received loans.

148. Digital platforms create instant business opportunities for entrepreneurs, thereby creating jobs. Since 2009 many clusters of rural micro e-tailers have opened shops on Taobao.com Marketplace, fostering "Taobao Villages" in China.¹⁶ Taobao Village merchants produce consumer goods, agricultural products and handicraft works based on their niche competencies. Taobao Villages has created more than 1.3 million jobs, drawing young people who migrated to cities back to their hometowns to start their own enterprises. Reliable internet connectivity and high smartphone penetration must exist for this kind of e-commerce to grow.¹⁷

149. Platforms expand the business opportunities for service providers, which consolidate services sectors and create more jobs. In 2018, the services sector accounts for most jobs in several countries: its share in total employment is more than 70 percent in Argentina, Saudi Arabia, Uruguay and above 80 percent in Jordan, Israel and Hong Kong SAR, China. There has been a proliferation of platforms that allow freelancers to have simultaneous access to multiple platforms

at low entry costs. Consumers are also more willing to use online services because they trust them as a result of brand certification, digitalized social capital and third-party validations. Consumer trust enables platforms to expand rapidly into other business lines. Grab, a Singapore-based ride-hailing platform, grew to hold 95 percent of the Southeast Asian market before expanding to offer additional services ranging from ordering food to payment systems at the touch of the app. GrabPay extends e-payment opportunities to an estimated two-thirds of people in the region who do not have bank accounts.

150. Some platforms expand the supply of labor by increasing opportunities for new, flexible types of work that complement traditional forms of employment in the gig economy. Data from Germany and the Netherlands indicates that only 0.4 percent of the labor force is active in the gig economy. The global freelancer population is estimated at around 84 million—less than three percent of the labor force (3.5 billion).¹⁸ Workers set their own hours for most platforms. The additional source of income may alleviate reduce income fluctuations for secondary earners. The flexibility inherent in platform work also enables more women to participate in the labor force. But these features blur the line between formal and casual employment. While flexibility is a benefit in some cases, it also raises concerns around stagnant wages, income instability, and protections connected with standard employer-employee relationships, including pension plans, health insurance and paid leave.

151. Finally, digital platforms enable firms to exploit under-used physical and human capacity—transforming dead capital into active. Hernando de Soto in *The Mystery of Capital* explained that capital is created when an asset’s economic potential is fixed into a form that initiates production. Assets that are not fixed in a formal property system are difficult to mobilize in markets: “[t]he formal property system [...] is the place where capital is born.” Property records capture and organize the necessary information required to conceptualize the potential value of an asset, identifying, exploring and combining those assets. Digital platforms do the same. Ride-hailing platforms provide a way for individuals to advertise their free time and spare vehicle capacity—be it a luxury vehicle, a moped, or a tuk-tuk—to generate income. Freelancing websites enable unemployed computer programmers located in remote parts of the world to document their expertise to find remote work with companies abroad.

152. The rise of the digital platform firm—operating globally, existing principally in the cloud and often generating income from the capital of others—marks a shift in the nature of firms more generally. Most regulations are not yet adapted to these changes. Platform firms often operate in regulatory grey areas, but minimum standards of quality, prudence and safety, among other policy goals, must still be upheld by digital business. Data privacy and protection is at the center of the regulatory discussion considering the large amount of data accumulated, employed, and monetized by platform businesses. Zoning or other laws affecting business activity may also be implicated. For example, although Airbnb in many cases shifts tourism away from urban centers and have a positive impact on local businesses, Airbnb locations are often not subject to the same zoning or licensing requirements as other commercial accommodation. Nevertheless, Airbnb might affect neighbors who do not share the benefit of local rental income.

153. Regulation may also be needed if platforms provoke a race to the bottom in working conditions. In Indonesia, drivers with Go-Jek and Grab held large demonstrations in early 2018 demanding an increase in their tariffs. Instead of banning the platforms, the Indonesian government

is amending its laws to require such firms to register as transport companies, comply with safety requirements, and impose a minimum floor price. In early 2018, Egyptian courts suspended the licenses of ride-hailing companies Uber and Careem, in response to a challenge by taxi drivers. Shortly thereafter, in May 2018, the Egyptian government passed a law to regulate ride-hailing companies, allowing Uber and Careem to get back on the road and compete alongside traditional taxis. The short and medium impacts for consumers are yet to be seen.

Competitive Markets

154. The importance to doing business of a physical presence in a market is declining, particularly in the digital economy where intangible products are replicable at little or no cost. Expanded boundaries create opportunities for firms to grow, but in many cases the risk of market concentration increases. Anti-competitive behavior is harder to identify in the digital economy. Network effects often benefit early adopters of technology, facilitating the emergence of monopolies.

155. Governments have an important role to play in ensuring that markets remain competitive—to promote the efficient use of resources while protecting the economic freedom of market participants. Competitive markets require government policies that strike the right balance between ensuring a level playing field in which firms are able to flourish while also patrolling anti-competitive behavior.

156. More start-ups mean more competition.¹⁹ If the business conditions are right, it is more likely that some start-ups will grow strongly, creating jobs. Faced with new competition, less productive firms—so long as they are not state-owned or politically connected—exit the market.²⁰

157. Creating a better business environment allows more successful firms to rise naturally.²¹ The World Bank's Doing Business project lays out the basic regulatory requirements for private initiatives to grow. These data have been used by researchers to study the deleterious effects of burdensome regulation. Poverty is lower in countries that have business-friendly regulations.²²

158. A country with a business-friendly environment has more start-up activity and job creation.²³ When Mexico simplified business registration the number of new businesses increased by five percent and wage employment went up by 2.2 percent.²⁴ The failure of small firms to become larger lowered productivity growth in manufacturing by 25 percent in Mexico and India, compared with the United States.²⁵ Higher start-up costs may also lead to lower overall productivity: in the absence of competition, firms that are already in a market will continue to operate regardless of productivity levels.²⁶

159. Competitive markets require basic infrastructure. Roads, bridges, ports, and airports are required to trade goods efficiently. Lower transport costs, as well as streamlined, cheaper border compliance processes, increase exports.²⁷ Logistics infrastructure facilitates the online trade of non-digital products. The Chinese government invested \$300 million in 200 counties to establish local logistics centers to encourage rural e-commerce.

160. Broadband access is a prerequisite for business in the digital era given that many firms exist in part or even exclusively on the internet. Cell phone access alone is not enough. Broadband technologies push down transaction costs even further in remotely located markets that lack

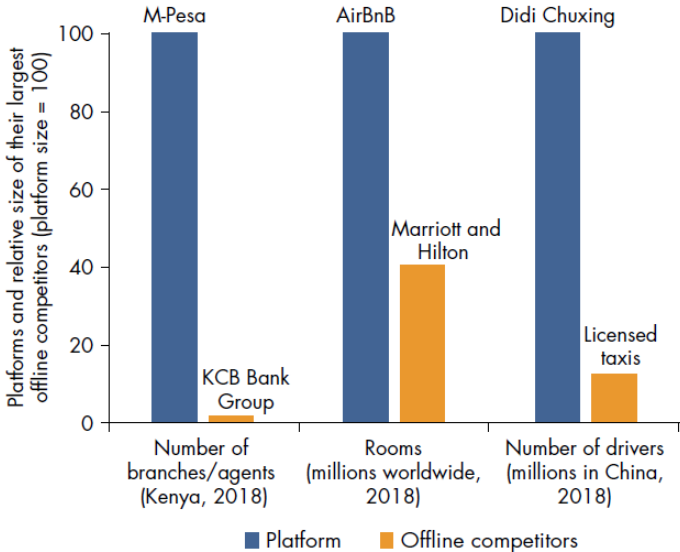
transport infrastructure. Citizens in the Middle East and North Africa region are some of the most underserved: although there are there are over 120 mobile subscriptions for every 100 inhabitants (one of the highest levels in the world), there are less than 10 broadband subscriptions per 100 inhabitants, and bandwidth per subscriber is limited.²⁸ In the end, this means that while citizens in these countries are active on social media, digital finance has barely any presence.

161. Technology allows firms to sharpen their competitive edge by making their operations more efficient and enabling them to create new ways of doing business. Teleroute is a Belgian platform that uses an algorithm to match freight-forwarders and carriers in Europe, reducing empty runs by up to 25 percent. Improved connectivity also enables start-ups to source essential technical expertise through online freelancing platforms. Upwork, a US platform, has, since 2015, connected five million businesses with more than 12 million freelancers. Its fourth largest community of task providers is in Ukraine. Start-ups used to need data centers, IT systems, custom software and a user support infrastructure to take on large conglomerates. In the digital age, entrepreneurs worldwide source these services via the internet.

162. While governments foster competitive markets by creating the right conditions for business, they must monitor markets for anti-competitive behavior. The largest, most productive firms in an economy may ultimately dominate domestic, regional, or global markets, in one or many sectors. New problems arise over time as they become entrenched themselves.

163. The digital economy poses new challenges for competition law, mergers and acquisitions and consumer welfare. The rapid ascent of platform firms raises issues related to market power (figure 2.2). The network effects associated with some online products often lead to significant benefits for early adopters, resulting in market concentration and facilitating the emergence of monopolies. In 2017 Safaricom, Kenya’s largest mobile phone operator with 80 percent of the market, launched M-Pesa, the country’s first mobile money system. A year later M-Pesa commanded the same market share in mobile money.²⁹

Figure 2.2. Platforms vs. their offline competitors



Source: Authors’ calculations, based on data from Safaricom, KCB Bank Group, AirBnb, Marriot International Inc., Financial Times.

164. Platform firms at times exclude competitors by charging higher fees for other networks to interconnect. When Zimbabwe mandated interoperability and infrastructure sharing among e-money operators, it raised the number of subscribers by 15 percent. In Peru, the telecom regulator forced the largest communication networks to offer messaging services to banks that were expanding into e-money.

165. Superstars may rise through mergers and acquisitions. Indian Sun Pharmaceutical Industries became one of the world's largest generics companies because of a series of acquisitions it began to make in the 1990s. In 2017, Indonesia's biggest ride-hailing service Go Jek set out plans to acquire three local financial technology companies which would make it the country's dominant player in the nascent digital payments market.³⁰

166. The digital economy poses challenges for policymakers. Many digital platform companies operate in adjacent, multi-sided markets, bundling or at least connecting different types of services. New types of market power emerge when firms provide services free of charge on one side of the market in exchange for user data, then monetize that data on another side of the market. Most competition rules are not yet built for these situations.³¹

Tax Avoidance

167. With firm boundaries transcending borders and physical assets, it has become easier to shift profits to low tax jurisdictions (tax planning and tax avoidance) and harder for governments to identify illicit financial flows. As a result, billions of dollars of corporate profits go untaxed every year. The international tax system is in need of an update—how to tax businesses in the globalized digital economy and how to distribute value are questions at the center of the debate.

168. The OECD estimates that US\$100-240 billion is lost in revenue annually due to base erosion and profit shifting by multinational companies. This is equivalent to 4-10 percent of global corporate income tax revenue. Another estimate suggests that the level of assets sheltered in tax havens is around 8 percent of global GDP.³² Yet another suggests that multinationals shift around 45 percent of their profits to tax havens, causing a loss of 12 percent of global corporate tax revenues.³³ These losses are not symmetric across countries, however. The United States, Brazil, France, Japan, Australia, India and Mexico, as well as much of Africa, are among the countries estimated to be most hurt due to profit shifting.³⁴

169. A multitude of loopholes exist in tax laws, many created through shrewd corporate lobbying, that allows corporations to increase their tax deductions and move profits to jurisdictions with low or zero corporate income tax—often called “tax havens” or “investment hubs”. In doing so, firms reduce their tax burden. This phenomenon is not new, nor is it illegal, but it is easier in the digital economy. Some companies maintain hundreds of affiliates in low or zero tax economies to take advantage of the fact that taxation of a multinational group is done at the level of individual subsidiaries that operate in different countries. Almost 60 percent of Fortune 500 companies in 2016 have at least one affiliate established in Bermuda or the Cayman Islands, both of which have a zero percent corporate income tax rate.³⁵ The same group of companies is reportedly holding more than US\$2.6 trillion in accumulated profits offshore.³⁶ The Paradise Papers, leaked in late 2017, expose many examples.³⁷

170. The problem is that current rules are based on both source and residence. Source relates to a justification based on the geographic location of the income generating activities (the idea of ‘where value is created’ and linked to the physical presence of labor or capital). Residence refers to the place where the company receiving the income is considered to have its primary location, usually based on where the company is incorporated or effectively managed as per the owner’s linkage to the state (residence, domicile or citizenship—physical presence). Source countries have primary taxing rights over the income from sales. Residence countries tax multinationals’ income from cash investments.

171. In practice, prevailing rules mean that multinational enterprises pay taxes in economies where they locate their affiliates and activities. Firms organize their own internal cross-border production structures between affiliates, declaring different profits for different affiliates, irrespective of direct value generation by each affiliate. It is often difficult to identify when these structures are legitimate and when they are established principally to avoid paying taxes in higher-tax jurisdictions.

172. Given the many opportunities that exist to avoid taxes, it is not surprising that firms do so. In fact, profits have become more sensitive to international tax differentials over time, which means firms are getting better at avoiding taxes.³⁸ Transfer mispricing allows firms to charge lower prices for exports sold from high-tax to low-tax countries, or a higher price for inputs coming from low-tax countries. The strategic location of intellectual property ownership, international debt shifting through intracompany loans, treaty shopping, and tax deferrals are other mechanisms used to avoid taxes. Effective corporate taxation rates have a decisive impact on where affiliates locate.³⁹ A one percentage point larger tax rate differential between two jurisdictions reduces reported pre-tax profits of an affiliate by one percent.⁴⁰ Treaty-shopping is estimated to have reduced revenues in Africa by about 8.5 percent among countries having signed a treaty with an “investment hub”.⁴¹

173. The digital economy poses new challenges: the European Commission estimates that digital businesses in Europe face an effective tax rate of only 9.5 percent, compared with 23.2 percent for traditional business models.⁴² The virtual nature of digital businesses makes it even easier to locate activities in low tax jurisdictions. The provision of goods and services from abroad, without physical presence in countries where consumers are located, escapes traditional corporate tax. Digital firms generate profit out of intangible assets, such as (foreign) user data or advertising. Identifying where value is created is difficult. Governments where consumers are located have no legal basis on which to collect taxes from companies outside the jurisdiction.

174. In 2016 the OECD released a template for collecting value added tax (VAT) from foreign suppliers of digital goods and services. More than 50 countries have adopted the Guidelines’ recommendations for imposing VAT on the direct supply to consumers of services and intangibles by foreign suppliers.

175. The European Union has levied VAT on nonresident suppliers of telecommunications, broadcasting, and electronic services, regardless of scale, since January 2015. Nonresident businesses are required to charge the customer VAT at the rate applying in the customer’s country, removing the competitive advantage held by digital companies located in countries with low VAT rates. This new VAT has raised more than €3 billion in taxes for the EU. Australia adopted a

similar approach in July 2017. Singapore announced in its February 2018 budget that goods and services tax will be imposed on imported services, including digital services like music and movie streaming, starting from January 2020. Other advanced economies with indirect taxes on the digital economy include Japan, Korea, New Zealand, Norway, the Russian Federation, as well as South Africa.

176. Less has been done in emerging economies, where additional tax revenues are most needed. In 2017, Serbia and Taiwan, China, adopted models, extending their VAT regimes to cover digital suppliers. In 2018, Argentina and Turkey did the same. China, Malaysia, and Thailand are among the countries reviewing their tax laws to extend collection to digital profits.

177. As an alternative, a country could introduce a new, free-standing tax on foreign suppliers of digital services. A free-standing tax would do a better job of targeting foreign suppliers directly rather than domestic consumers. It would avoid conflict with existing double taxation agreements by separation from the mainstream income tax system. Arguably a freestanding tax would level the playing field between domestic and foreign suppliers of digital services. As with VAT, collecting this kind of tax is enhanced through a registry of non-resident suppliers of digital services.

178. The Indian Government in 2016 introduced a six percent equalization levy on online advertising revenue paid by Indian companies to nonresident e-commerce companies. The European Commission in March 2018 proposed a tax on the gross revenues from digital activities in which users have a major role in value creation. The tax would apply to revenues from selling online advertising space, intermediary activities that allow users to interact and sell goods and services, and the sale of data.⁴³ The Commission has estimated that a 3 percent tax could raise €5 billion a year.

179. Alongside the adoption of new measures to tax digital business, governments are taking steps to address base erosion and profit shifting, as well as other tax avoidance or evasion schemes, by both digital and traditional business.⁴⁴ The Base Erosion and Profit Shifting (BEPS) initiative launched by the OECD and G20 countries in 2013 brings together more than 100 countries to reduce tax avoidance. Emphasizing the source principle better aligns the location of taxable profits with the location of economic activity and value creation and improves the information available to tax authorities.

180. Further incremental steps to strengthen tax administration include widening the definition of a “permanent establishment” to recognize that companies may conduct considerable business in a country without having much of a physical presence; strengthening transfer pricing and anti-avoidance rules and audit capacity by emerging economies (including in areas such as thin capitalization); adopting some aspects of formulary apportionment when implementing the arm’s length principle; adjusting tax incentives, potentially through regional cooperation agreements; and targeted anti-tax-avoidance measures such as stronger controlled foreign corporation rules.

181. Countries take some steps unilaterally. New anti-diversion rules entered into force in the United Kingdom in 2015, allowing firms to pay taxes up front. The rules were designed to incentivize greater compliance with the mainstream corporate income tax regime. Australia adopted similar rules in 2016. These countries already have a developed transfer pricing capacity,

however, and a sophisticated suite of anti-avoidance measures. The context for emerging economies is rather different—their capacity to address transfer pricing risks is low, so anti-avoidance legislation may not be effective. A more mechanical and targeted anti-diversion rule that is integrated into the corporate tax system could better tackle tax avoidance. Certain minimum criteria as set out in the law could trigger the application of such a rule.

182. Growing public discontent with tax avoidance practices by multinational firms has revived discussions around more significant overhauls to the international tax system. One option is to reform the residence principle in corporate taxation to restore the link between the place of residence or domicile of shareholders and the taxation of corporations.⁴⁵ Such an approach is unlikely, however, since current proposals move strongly towards a source taxation concept, collecting taxes where value is created.

183. Global formulary apportionment is one option that has garnered much interest amongst policymakers, although practically the obstacles to implementation make it unlikely to be adopted. Such a system would divide the tax base between jurisdictions according to the location where “source” activities take place. Countries would have to agree upon a formula to allocate profits based on “allocation keys”, usually tangible assets such as volume of sales to third parties, assets, payroll, and/or headcount of staff in each jurisdiction.⁴⁶ This system is used domestically in countries such as Canada and Switzerland to apportion income amongst states and cantons. It was proposed for the European Union in 2016.

184. Although global formulary apportionment would remove existing incentives for profit shifting to low tax jurisdictions via transfer pricing, it would create other incentives, depending on the allocation formula adopted.⁴⁷ The introduction of formulary apportionment would require an agreement among major economies on the rules used to allocate corporate income, but the divergent interests of countries would make such an agreement difficult to achieve. Emerging economies with less bargaining power may suffer in any such negotiation. Efforts to model the distributional impacts of adopting a formulary system indicate that emerging economies (specifically, Brazil, Chile, China, Colombia, Egypt, India, Malaysia, Mexico, Peru, the Philippines, South Africa and Thailand) only gain when the allocation formula places a heavy weight on employment headcount. They lose if the apportionment factor is based on assets or payroll and come out slightly ahead if the apportionment is by sales. Any unilateral moves to formulary apportionment risk double taxation of some income and non-taxation of other income.

185. Another option is a destination-based cash flow tax (or “border adjusted tax”), which is like formulary apportionment based exclusively on volume of sales, but the tax base is not consolidated. Instead, countries tax net income from sales in the purchaser’s place of residence. Expenses incurred in the same country may be deducted, but not foreign expenses. A key challenge that the destination-based cash flow tax is the need to give tax refunds (or credits) to net exporters whose local expenses will always exceed local revenues. This can be an opportunity for fraud, as well as being politically unpalatable.

186. The international community continues to take steps to mitigate weaknesses in global corporate tax. But much more remains to be done. In its current form, the international tax system disproportionately benefits sophisticated multinational firms. Tax regulation that collects too little tax from the wealthiest in society only contributes to global inequality.

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- ¹ Coase 1937.
- ² Djankov, Freund, Pham 2010.
- ³ <http://inter.ikea.com/en/about-us/milestones/>.
- ⁴ Schumpeter 1942.
- ⁵ <https://www.entrepreneur.com/article/286368>
- ⁶ Karabarbounis and Neiman 2014.
- ⁷ Freund 2016.
- ⁸ Freund and Pierola 2015.
- ⁹ Autor et al. 2017.
- ¹⁰ Goldberg et al. 2010.
- ¹¹ Cirera et al. 2018.
- ¹² Goldberg et al. 2016.
- ¹³ Enterprise Survey, Employment Indicators Database.
- ¹⁴ Freund 2016.
- ¹⁵ Sundararajan 2016.
- ¹⁶ The cluster of rural e-tailers is referred as a “Taobao Village” where 1) those e-tailers operate businesses within an administrative village; 2) annual village e-commerce transaction volume exceeds 10 million yuan (around \$US1.6million); and 3) at least 10% of village households actively engage in e-commerce or there are 100 or more active online-shops, primarily with the use of Taobao.com Marketplace.
- ¹⁷ 梁周倩, 姜雪芬. 2017. “淘宝村超 2100 个! 农村电商已不是你想象的样子.” 搜狐.
http://www.sohu.com/a/209234546_114930
- ¹⁸ This is a sum of various available statistics: 57.3 million in the United States, 1.4 million in the United Kingdom, 10 million in European Union, 15 million in India. These countries or regions are where freelancing is booming. The aggregated number reflects a sizable portion of the global freelancer workforce.
- ¹⁹ Bento and Restuccia 2017.
- ²⁰ World Bank research finds that in Ben Ali’s Tunisia, new firms were prevented from competing with companies connected to the President’s family through restrictions on investment in certain sectors. Rijkers, Freund, and Nucifora 2017.
- ²¹ Nightingale and Coad 2014.
- ²² Djankov, Georgieva and Ramalho 2018.
- ²³ Haltiwanger, Jarmin and Miranda 2013.
- ²⁴ Bruhn 2011.
- ²⁵ Hsieh and Klenow 2014.
- ²⁶ Moscoso Boedo and Mukoyama 2012.
- ²⁷ Martincus, Carballo, and Graziano 2015; Carballo et al. 2016.
- ²⁸ The Economist Intelligence Unit, Inclusive Internet Index 2018.
- ²⁹ Kenya Communications Authority 2017. Second Quarter Sector Statistics Report for the Financial Year 2017/2018 (1 October – 31 December 2017)
- ³⁰ Bloomberg Technology, *Go-Jek acquires three companies to dominate payment in Indonesia*, December 17th, 2017
- ³¹ Filistrucchi et al. 2014.
- ³² Zucman 2015.
- ³³ Tørsløv, Wier and Zucman 2018.
- ³⁴ Beer et al. 2018.
- ³⁵ ITEP and U.S. PIRG Education Fund 2017.
- ³⁶ Institute on Taxation and Economic Policy 2017.
- ³⁷ Obermaier, Frederik and Bastian Obermayer. 2017. “How We Reported the Paradise Papers.” *Süddeutsche Zeitung*, November 5. <https://projekte.sueddeutsche.de/paradisepapers/wirtschaft/answers-to-pressing-questions-about-the-leak-e574659/>. See also: International Consortium of Investigative Journalists. 2017. *Offshore Leaks Database*. <https://www.icij.org/investigations/paradise-papers/icij-releases-paradise-papers-data-appleby/>
- ³⁸ Beer et al. 2018.
- ³⁹ Hebous et al. 2011; Griffith, Miller and O’Connell 2018.
- ⁴⁰ Beer et al. 2018.
- ⁴¹ Beer and Loeprick 2018.
- ⁴² European Commission - Fact Sheet. 2018. “Questions and Answers on a Fair and Efficient Tax System in the EU for the Digital Single Market.” March 21. http://europa.eu/rapid/press-release_MEMO-18-2141_en.htm
- ⁴³ European Commission, “Digital taxation: Commission proposes new measures to ensure that all companies pay fair tax in the EU,” March 21, 2018, http://europa.eu/rapid/press-release_IP-18-2041_en.htm.
- ⁴⁴ According to the OECD base erosion and profit shifting (BEPS) refers to tax planning strategies that exploit gaps in the architecture of the international tax system to artificially shift profits to places where there is little or no economic activity or taxation.

⁴⁵ Fleming et al. 2016.

⁴⁶ Picciotto 2012 and Picciotto et al. 2017.

⁴⁷ Altshuler and Grubert 2008.

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Chapter 3: Building Human Capital

187. The world is healthier and more educated than ever. In 1980, only five in ten primary-school-aged children in low-income countries were enrolled in school. By 2015 this number had increased to 8 in 10.¹ In 1980 only 84 out of 100 children reached their fifth birthday, compared with 94 out of 100 in 2018. A child born in the developing world in 1980 could expect to live for 52 years. In 2018 this number is 65 years.

188. But a large and unfinished agenda remains. Life expectancy in the developing world still lags far behind rich countries like South Korea, where a girl born in 2018 can expect to live more than 85 years. Nearly a quarter of children under five are malnourished. In many places, the working memory and executive functions such as sustained attention of poor children start to lag as early as at six months of age.² Globally, more than 260 million children and youth are not in school. Nearly 60 percent of primary school children in developing countries fail to achieve minimum proficiency in learning.

189. Human capital consists of the knowledge, skills and health that people accumulate over their lives, enabling them to realize their potential as productive members of society. Human capital has large payoffs for individuals, societies and countries. This was true in the 1700s when Adam Smith wrote, “The acquisition of...talents during...education, study or apprenticeship, costs a real expense, which [is] capital in [a] person. Those talents [are] part of his fortune [and] likewise that of society.”³ This is still true in 2018.

190. For individuals, an additional year of school generates eight to ten percent higher earnings on average. These returns are large in low- and middle-income countries, especially for women. However, what children learn matters more than how long they stay in school. In the United States replacing a low-quality teacher in an elementary school classroom with an average-quality teacher raises the combined lifetime income of that classroom’s students by US\$250,000.⁴

191. Returns to education are high when technology is changing. During the Green Revolution in India in the 1970s-80s better educated farmers adopted new technologies.⁵ In Mexico the benefits of increased labor productivity resulting from the North American Free Trade Agreement were concentrated among more skilled workers.⁶ In the current era of technological change human capital is more important than ever. Despite the higher supply of educated workers, returns to investments in education have increased since 2000.⁷ People with higher human capital adapt faster to technological change. Future success depends on working with machines, not fearing them.

192. Developing socio-behavioral skills such as aptitude for teamwork, empathy, conflict resolution and relationship management enlarges a person’s human capital. Globalized and automated economies put a higher premium on human capabilities that cannot be fully mimicked by machines. Abilities such as grit have economic returns that are often as large as those associated with cognitive skills.⁸

193. Health is an important component of human capital. People are more productive when they are healthier. In Nigeria a program providing malaria testing and treatment increased workers' earnings by ten percent in just a few weeks.⁹ A study in Kenya showed that deworming in childhood reduced school absence while raising wages in adulthood by as much as 20 percent, all thanks to a pill that costs 25 cents to produce and deliver.¹⁰

194. Starting at an early age, different dimensions of human capital complement each other. Proper nutrition in-utero and in early childhood improves children's physical and mental well-being.¹¹ Evidence from the United Kingdom shows that healthier diets for school children significantly increased their achievements in English and science.¹² In a multi-country study, underweight as well as obese children had lower IQ scores than healthy weight children.¹³ Providing mathematics-based games to pre-schoolers in India generated enduring improvements in students' intuitive abilities.¹⁴

195. The benefits of human capital transcend private returns, extending to others and across generations. Deworming one child decreases the chances of other children becoming infected with worms, which in turn sets those children up for better learning and higher wages.¹⁵ Maternal education, through increased prenatal care, improves infant health.¹⁶ In Pakistan, children whose mothers have even a single year of education spend an extra hour a day studying at home.¹⁷

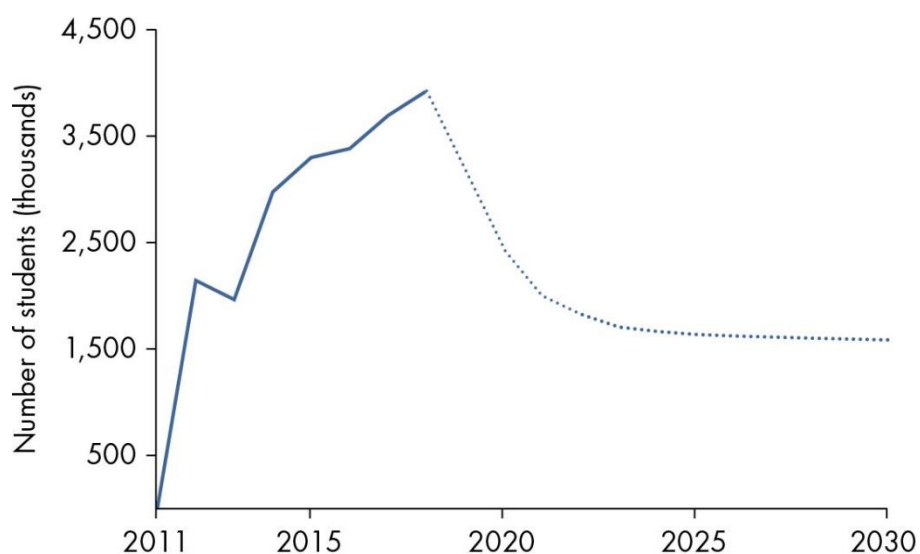
196. These individual returns to human capital add up to large benefits for economies. Between ten and 30 percent of per capita income differences is attributable to cross-country differences in human capital.¹⁸ This percentage could be even higher when considering the quality of education or the interactions between workers with different skills. By generating higher incomes, human capital contributes to reduced poverty.

197. Human capital matters for societies. In the mid-1970s Nigeria introduced universal primary education, sending a large cohort of children through primary school who otherwise would not have gone. Years later those same people were found to be more engaged in political life. They paid closer attention to the news, spoke to their peers about politics, attended community meetings and voted more often.¹⁹ Preliminary evidence from the *National Volunteer Service Program* in Lebanon, an inter-community soft-skills training program, shows that young participants displayed higher levels of overall tolerance. As the scientist Marie Curie once said, "You cannot hope to build a better world without improving individuals".

198. Human capital also fosters social capital. Surveys typically find that more educated people are more trusting of others. Research suggests that the large wave of compulsory school reforms that took place across Europe in the mid-20th century made people more tolerant of immigrants than they were before.²⁰ Social capital in turn is associated with higher economic growth.²¹

199. Human capital is one of the first things to suffer when things fall apart. Wars often prevent whole generations from realizing their potential. Between 2011 and 2017 almost four million Syrian children left school because of the civil war. Many of them are likely never to make up for these lost years of school (figure 3.1).

Figure 3.1. Children not in school due to war in Syria



Source: Authors' calculations.

Note: The number of children not in school between 2011 and 2017 is based on estimates of actual declines in school enrollment relative to pre-war trends and on the assumed impact war posed on student enrolment. The scenario from 2018 onwards explores the long-term consequences of these trends by assuming that school enrollment rates gradually return to pre-war trends and corrects for population dynamics of refugee in-and-out flows; if they follow similar behaviors of past international conflicts. Similar assumptions are also made for Internally Displaced Persons but with higher return rates during the first few years of the end of the war.

Why Government is Needed

200. Individuals and families often neglect human capital because they cannot afford the costs. Even when human capital investments are affordable individual decisions may be shaped by lack of information, or restricted due to prevalent social norms. Individuals also do not consider the wider social benefits for others. For these reasons governments have a crucial role to play in fostering human capital acquisition.

201. Many disadvantaged families cannot afford to invest in better health and education for their children even when they want to. This is clearly seen in how families spend their money once budget constraints are even slightly relaxed. In Sierra Leone, only 3-4 months after the introduction of a public works program that increased income, participating families significantly increased their spending on health services, especially for children.²²

202. Even when education is free the cost of transportation and school supplies, together with foregone earnings while in school, make education prohibitively expensive. Many poor rural families cannot afford the time it takes to travel to the nearest school or medical facility. In Niger only 24 percent of the population lives within a one-hour walk of the nearest medical facility during the wet season.²³

203. In cases like these, government interventions make a big difference. Cash transfers programs have improved the health and education of millions of children in low- and middle-income countries even when they provided only partial subsidies for the cost of schooling. *Shombhob*, a conditional cash transfer piloted in Bangladesh, reduced wasting among children

aged 10-22 months and improved mothers' knowledge about the benefits of breastfeeding.²⁴ The effects of these programs last over time. A two-year conditional cash transfer program in Malawi targeting adolescent girls and young women produced a large increase in educational attainment and a sustained reduction in the total number of births in girls who were out of school at the start of the program. This persisted after the program ended.²⁵

204. Some parents neglect their children's human capital because of social norms. This is particularly evident for girls. Infant mortality among girls increases more than it does for boys during economic downturns.²⁶ Lower investment in girls' health has effects that last a lifetime. A study in Indonesia found that girls—but not boys—whose families experienced adverse income shocks completed less school and ended up poorer as adults.²⁷

205. People also neglect investment in human capital because they do not always know what is in their long-term interest. Young people might not want to stay in school or take care of their health because they lack self-control or do not fully appreciate the benefits. Providing information about human capital has had large effects on behavior. In the Philippines young people were offered a voluntary commitment program in which their savings were returned only if the person passed a smoking cessation test. The program resulted in a significant reduction in smoking.²⁸

206. Human capital investment generates significant social returns, but these are often hard for parents to quantify, let alone factor into their decisions. When deciding to deworm their children, parents may not consider the fact that other children will also be less likely to be infected. Parents deciding to send their children to pre-school may not consider wider future societal benefits such as lower crime and incarceration rates that have been associated with early childhood development programs. A 2010 study of Perry Pre-school, a high-quality program for three- to five-year-olds developed in Michigan, United States, in the 1960s, estimated a return to society over and above the private return of about US\$7-12 for each dollar invested.²⁹ Without government interventions families might not choose to invest enough in these types of programs.

207. Ensuring access to those services closes early gaps in cognitive and socio-behavioral skills.³⁰ By the age of three, children from low-income families have heard 30 million fewer words than their more affluent peers. As children turn into teenagers, interventions to close these gaps become more expensive.³¹

208. Evidence suggests that, for governments looking to make effective investments in human capital, there is no better proposition than investing in the “first thousand days” of a child's life. Without these interventions early in life, it is more likely that a de-equalizing spiral will ensue: the benefits of subsequent public investments in education and health are more likely to benefit people who start out better off. In Mexico, 45 percent of public spending on tertiary education accrues to students from the top income quintile.³²

209. Government actions to support investment in human capital go well beyond spending on health, education and social protection programs. Other public investments play an important complementary role in levelling the field. Evidence from Nepal shows that sanitation significantly contributes to preventing anemia.³³ Housing programs improve the education and labor market outcomes of the most disadvantaged by changing the quality of the peers with whom they interact. The effects tend to be stronger the earlier children are exposed to the better off neighbors.³⁴

Why Governments Often Fail and Why Measurement Helps

210. Governments have a vital role to play in building human capital: as providers of health, education and financing to ensure equitable access to opportunities; and as regulators for accreditation and quality control of private providers. But governments often fail to deliver. Most governments commit a significant share of their budgets to education and health. But public services often fail to deliver the quality needed to generate human capital. Sometimes they fail only the poor. Sometimes they fail everyone—and the rich simply opt out of the public system.

211. Shortfalls in quality persist for two reasons. First, pursuing good policies doesn't always pay off politically. Second, bureaucracies lack the capacity or incentives to convert good policies into effective programs. If public health is not politically relevant until there is a health crisis, politicians have little reason to prepare for future pandemics. Even when there is consensus among politicians and voters on the importance of an issue, there may be disagreement about the solution. Rarely is it popular to fund public health programs by raising taxes or by diverting money from more visible expenditure, such as infrastructure or public subsidies.

212. The government of Nigeria encountered resistance in 2012 when it tried to repeal fuel subsidies to spend more on maternal and child health services. Media focused on the unpopular subsidy repeal and paid scant attention to the much-needed expansion of primary health care. The subsidy was reinstated because of public protests. This happens in some countries because of the power of organized interests that stand to lose from reforms. In others it happens because of a weak social contract: citizens do not trust their government, so they are hesitant to pay taxes which they worry will be misspent. The consequence is that governments favor spending on the politically visible aspects of human capital such as constructing schools and hospitals but spend much less on intangible aspects—such as the quality and competence of teachers and health workers. Campaigning politicians often promise new schools or hospitals but rarely discuss actual learning levels or stunting rates.

213. Human capital investments might not produce economic returns for years, making politicians think of shorter-term ways to burnish their reputations. While people with basic education earn more than people with no education, labor market returns for basic education are not realized until ten-15 years after these investments are made. This is even more the case for investments in early childhood education. The provision of psychosocial stimulation to toddlers increased earnings by 25 percent in Jamaica, but these returns only materialized 20 years later.³⁵

214. One illustration of how technical and political complexities get in the way of delivering human capital interventions is in the area of Early Childhood Development (ECD). There is consensus among scholars that ECD have high internal rates of return. However, there are challenges that make the large-scale implementation of ECD policies a difficult task. First, there is a long time interval between the moment when costs are sustained and when benefits for society materialize. Second, services have to be delivered in a synergic way over a short period of life cycle. Third, multiple departments are involved in the delivery. Still, the experience of countries such as Brazil, Chile and Colombia show that large scale ECD policies are feasible. Chile Crece Contigo, started in 2006, can provide a reference point for middle income countries willing to invest in ECD on a large scale. The program integrates health, education and social protection

services, designed according to the needs of young children through the combination of universal and targeted programs. Rigorous evaluations boost the demand for political commitment.

215. Bureaucracies charged with implementing policies to build human capital often lack the capacity or the incentives to do so effectively. Service Delivery Indicators (SDI) surveys in seven Sub-Saharan African countries (together representing close to 40 percent of the continent's population) found that, on average, three out of ten fourth-grade teachers had not mastered the language curriculum they were teaching. On a positive note: 94 percent of Kenyan teachers had done so. SDI surveys paint an equally mixed picture for healthcare facilities: while about 80 percent of Kenyan doctors could correctly diagnose a basic condition such as neonatal asphyxia, fewer than 50 percent of Nigerian doctors were able to do so.³⁶

216. Better measurement sheds light on political or bureaucratic failures that lead to poor quality delivery of social services. Information is an essential first step for citizens to demand more from their leaders and service providers. In Uganda releasing report cards on the performance of local health facilities galvanized communities to press for service delivery reforms. This in turn led to sustained improvements in health outcomes, including a reduction in mortality for children under five.³⁷

217. Better measurement increases the importance of human capital investment among policy makers, creating momentum for action. Twaweza, a Tanzanian NGO launched a survey to assess children's basic literacy and numeracy. The dismal results—released in 2011—showed that only three out of every ten third-grade students had mastered second-grade numeracy and even fewer could read a second-grade story in English.³⁸ The World Bank's own Service Delivery Indicators, released around the same time, shone a spotlight on the low levels of teacher competence and high levels of absenteeism. Together these results led to substantial public outcry and the introduction of Tanzania's "Big Results Now" initiative, a government effort to track and address low levels of learning. It is already leading to tangible results.

218. More information is needed to design and deliver cost-effective policies, even when there is full willingness to invest in human capital. Peru and Vietnam have implemented ambitious policies to improve human capital. Nevertheless, comparative evidence based on a unique longitudinal dataset—the Young Lives survey—shows that cross-sectional gaps in test scores between these countries are modest at pre-school ages but grow substantially in the first 2-3 years of schooling, indicating that the productivity of the two school's systems are different.³⁹ Only a comprehensive measurement of the factors that contribute to individual learning will shed light on the reasons behind this differential. Once the gaps have been identified, cost-effective policies have to be designed and brought to scale.

The Human Capital Project

219. Credible measurement of education and health outcomes raises the importance of human capital locally, nationally and globally. Measurement spurs the demand for policy interventions to build human capital in countries where governments are not doing enough. Good measurement is essential to developing research and analysis to inform the design of policies that improve human capital.

220. With this goal in mind, the World Bank has launched the human capital project—a program of advocacy, measurement, and analytical work to raise awareness and increase demand for interventions to build human capital. The human capital project has three components: (i) a cross-country metric—the human capital index, (ii) a program of measurement and research to inform policy action, and (iii) a program of support for country strategies to accelerate investment in human capital.

221. The first step in the project is an international metric to benchmark certain components of human capital across countries.⁴⁰ The new Index measures the amount of human capital that a child born today can expect to attain by the end of secondary school, given the risks of poor health and poor education that prevail in the country where she was born. The index is designed to highlight how improvements in current health and education outcomes shape the productivity of the next generation of workers, assuming that children born today experience over the next 18 years the educational opportunities and health risks that children in this age range currently face. Focusing on outcomes—and not inputs such as spending or regulation—concentrates attention on results, which is what really matters. It also makes the human capital index relevant to policymakers who design and implement interventions to improve these outcomes in the medium-term.

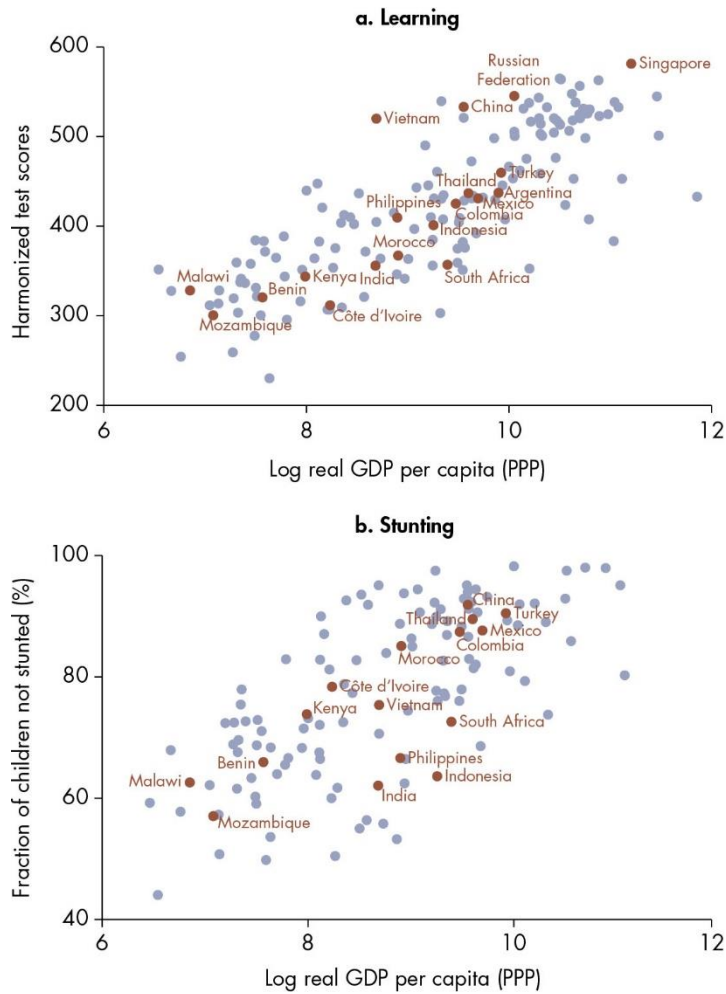
222. The index follows the trajectory from birth to adulthood of a child born today. In the poorest countries in the world there is a significant risk that the child does not even survive to her fifth birthday. Even if she does reach school age there is a further risk that she does not start school, let alone complete the full cycle of education through grade 12 that is the norm in rich countries. The time she does spend in school may translate unevenly into learning, depending on the quality of teachers and schools she experiences or the support she has from her family. When she reaches her 18th year she carries with her the lasting childhood effects of poor health and nutrition that limit her physical and cognitive abilities as an adult.

223. The index quantifies the milestones in this trajectory in terms of their consequences for the productivity of the next generation of workers, using three components: a measure of whether children survive from birth to school age; a measure of expected years of quality-adjusted school, which combines information on the quantity and quality of education (figure 3.2); and two broad measures of health—stunting rates (figure 3.2) and adult survival rates.

224. Survival to the age of five is measured using under-5 mortality rates taken from the UN Child Mortality Estimates. Nearly all children survive from birth to school age in rich countries. But in the poorest as many as one in ten do not see their fifth birthday.

225. The quantity of education is measured as the expected number of years of school that a child can expect to obtain by her 18th birthday, given the prevailing pattern of enrollment rates across grades. This measure is constructed with the assumption that all children should have the opportunity to complete 12 years of primary and secondary school, preceded by two years of pre-school. The best possible outcome occurs when 100 percent of eligible children are enrolled in each level of school, resulting in 14 expected school years. High enrollment rates throughout the school system bring many rich countries close to the 14-year benchmark. But in the poorest countries, children can expect to complete only half that.

Figure 3.2. Two components of the human capital index



Source: Authors' calculations.
 Note: Data are preliminary and subject to revision.

226. The World Bank Group and partners are developing a comprehensive new database of international student achievement test scores covering over 150 countries to benchmark what children learn. The database harmonizes results from international and regional testing programs to make them comparable so that, for the first time, learning is measurable in nearly all countries in the world using the same yardstick.⁴¹ The differences in learning are dramatic. Country-level average test scores range from around 600 in the best-performing countries to below 200 in the worst-performing. To put these numbers in perspective, a score of roughly 400 corresponds to a benchmark of minimum proficiency set by PISA, the largest international testing program. Fewer than half of students in developing countries meet this standard, compared with 86 percent in advanced economies. In Singapore, 98 percent of students reached the international benchmark for basic proficiency in secondary school; in South Africa, only 26 percent of students met that standard. This means essentially that all of Singapore's secondary school students are prepared for post-secondary education and the world of work, while almost three-quarters of South Africa's young people are not.

227. For health there is no single directly-measured, and widely-available metric comparable to years of school as a measure of educational attainment. In the absence of such a measure two proxies for the overall health environment make up this component of the index: adult survival rates and the rate of stunting for children under the age of five. Adult survival rates are a proxy for the range of non-fatal health outcomes that a child born today is likely to experience as an adult if current conditions prevail into the future. Stunting measures the fraction of children who are unusually small for their age. It is broadly accepted as a proxy for the pre-natal, infant and early childhood health environment and it summarizes the risks to good health that children are likely to experience in their early years—with important consequences for health and well-being in adulthood.

228. The health and education components of human capital described have intrinsic value that is undeniably important—but also undeniably difficult to quantify. This makes it challenging to combine the different components into a single index that meaningfully reflects their contribution to human capital. Many existing indexes of human capital and human development resort to arbitrary aggregation of their components. But the components of the index are aggregated by first transforming them into measures of their contribution to worker productivity, relative to a benchmark corresponding to full health and complete education. This approach follows the large development accounting literature.⁴² The size of the contributions of health and education to worker productivity is anchored in the large micro-econometric literature on estimating returns to education and health.

229. The index is measured in terms of the productivity of the next generation of workers, relative to the benchmark of complete education and full health. This gives the units of the index a natural interpretation: a value of x for a country means that the productivity as a future worker of a child born in a given year in that country is only a fraction x of what it could be under the benchmark of complete education and full health (table 3.1). This is divisible into the contributions of the three components of the index, each of which is also expressed in terms of productivity relative to the benchmark and are multiplied together to arrive at the overall index. Differences in human capital have large implications for the productivity of the next generation of workers. In a country around the 25th percentile of the distribution of each of the components, a child born today will be only 44 percent as productive as she would be in the benchmark of complete education and full health.

Table 3.1. Measuring the productivity as a future worker of a child born today

(Maximum productivity = 1)

		<i>A country in the</i> 25th Percentile 50th Percentile 75th Percentile <i>for component , has a value of ...</i>		
1	Component 1: Survival Probability of Survival to Age 5	0.95	0.98	0.99
A	<i>Contribution to Productivity</i>	0.95	0.98	0.99
	Component 2: School Expected Years of School Test Scores (<i>out of approx. 600</i>)	9.9 358	12.2 425	13.9 505
2	Quality-Adjusted Years of School	5.9	8.6	11.2
B	<i>Contribution to Productivity</i>	0.52	0.65	0.80
3	Component 3: Health Fraction of Kids Not Stunted	0.67	0.77	0.90
4	Adult Survival Rate	0.79	0.87	0.92
C	<i>Contribution to Productivity*</i>	0.88	0.92	0.96
	Overall Human Capital Index**	0.44	0.59	0.76

Source: Authors' calculations.

Note: Contribution to productivity measures how much each component of the index, as well as the overall index, contributes to the expected future productivity of a worker of a child born today, relative to the benchmark of complete education and full health. A value of x means that productivity is only a fraction x of what it would be under the benchmark of complete education and full health. Estimates of productivity contributes are anchored in microeconomic evidence on the returns to education and health. Quality-adjusted years of school is product of test score relative to global best times expected years of school.

*: C is calculated as the geometric average of 3 and 4's contributions to productivity.

** : $A \times B \times C$

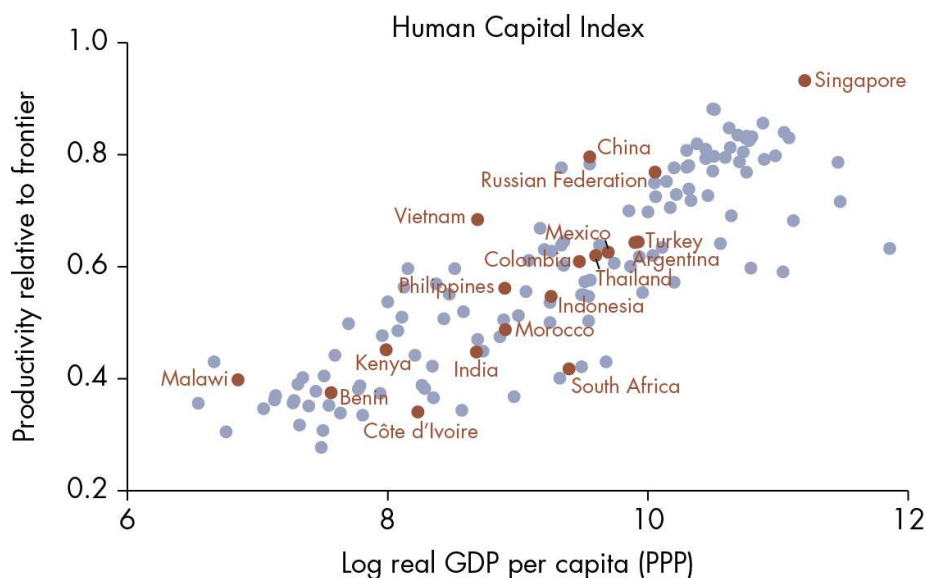
230. The units of the index make it straightforward to connect the index to scenarios for future per capita income and growth. Imagine a *status quo* scenario in which the expected years of quality-adjusted school and health as measured in the index in a given year persist into the future. Over time, new entrants to the workforce with *status quo* health and education replace current members of the workforce, until eventually the entire workforce of the future has the expected years of quality-adjusted school and level of health captured in the current human capital index. It is possible to then compare this scenario to one in which the entire future workforce benefits from complete education and enjoys full health.

231. In the long run per capita GDP in this scenario is higher than in the *status quo* scenario through two channels: (i) direct effects of higher worker productivity, and (ii) indirect effects reflecting greater investments in physical capital that are induced by having more productive workers. Combining these effects, a country with an index score of x will in the long run have per capita GDP in the *status quo* scenario that is only a fraction x of what it could be with complete education and full health. For example, a country with an index of $x = 0.5$ would in the long run have per capita incomes twice as high as the status quo if its citizens enjoyed complete education and full health. What this means in terms of average annual growth rates of course depends on how “long” the long run is. If it takes 50 years—or about two generations—for these scenarios to

materialize, then a doubling of future per capita income relative to the status quo corresponds to roughly 1.4 percentage points of additional growth per year.

232. The index measures the amount of human capital that the average child born today can expect to achieve (figure 3.3). Naturally, averages hide a great deal of variation. Most of the components of the index can be disaggregated by gender for most countries so that differences in the prospects of boys versus girls may be observed. While it is not possible to do so systematically for a large set of countries, in individual countries where data is richer, differences in the components of the index across regions and socioeconomic groups can also be illustrated.

Figure 3.3. Human capital index and GDP per capita



Source: Authors' calculations.

Note: Data are preliminary and subject to revision.

233. The index presented here a prototype: index 1.0. Components of the index such as stunting and test scores are measured only infrequently in some countries, and not at all in others. Data on test scores come from different international testing programs, and the age of test takers and the subjects covered vary across testing programs. Test scores may not accurately reflect the quality of the whole education system in a country to the extent that tests-takers are not representative of the population of all students. Reliable measures of the quality of tertiary education do not yet exist, despite the importance of higher education for human capital in a rapidly changing world. Data on enrollment rates needed to estimate expected school years often have many gaps and are reported with significant lags. Socio-behavioral skills are not explicitly captured. Adult survival rates are imprecisely estimated in countries where vital registries are incomplete or non-existent.

234. One objective of a global human capital index is to call attention to these data shortcomings and to galvanize action to remedy them. Improving data takes time. In the interim, and recognizing these limitations, country positions on the index should be interpreted with caution. The index provides estimates of how current education and health shape the productivity of future workers. It is not a finely-graduated measurement of small differences between countries. Since the index

captures outcomes it is not a checklist of policy actions. The right type and scale of interventions to build human capital are not the same in different countries. Although the index combines education and health into a single measure it is too blunt a tool to inform the cost-effectiveness of policy interventions in these areas—which should instead be assessed based on cost-benefit analysis of specific programs.

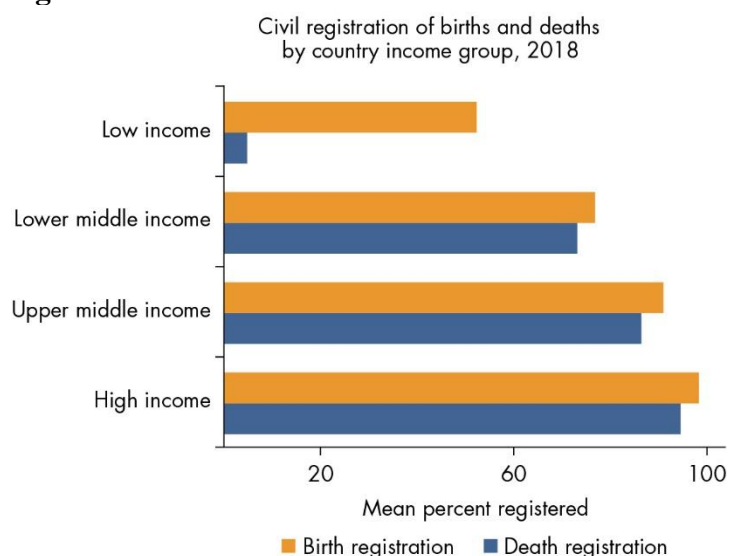
What Comes Next

235. The goal of the index is to increase the importance of human capital for politicians, policymakers and citizens. Although there has been significant progress in the availability of data on health and education outcomes there is still a long way to go. For instance, advanced cognitive skill or socio-emotional skill, which are not incorporated in the index, is an important component contributing to individual productivity. There is a lack of comparable data on early childhood development which lays significant foundation for the quality of future labor force.

236. Even more work needs to be done to measure the intermediating factors that affect these outcomes. While individuals in low- and middle-income countries face similar constraints in the accumulation of human capital, their relevance is often context-specific. Understanding which constraints matter the most is essential to setting priorities across different policy areas.

237. A first step is improving the quality of basic administrative data in education and health. In education, only one in six governments publish annual education monitoring reports. Only about a hundred countries report reasonably-complete and up-to-date data on net enrollment rates at different levels of education to the UNESCO Institute of Statistics—the body that is tasked with compiling this data internationally. Monitoring of even the most basic health information—births and deaths—is inadequate in low- and middle-income countries (figure 3.4). The pace of improvement in these systems has been slow. Worldwide between 2000 and 2012 the percentage of registered deaths changed from only 36 percent to 38 percent. The percentage of children under five whose births were registered only increased from 58 percent to 65 percent.⁴³ High quality basic administrative data is essential for governments to understand their needs and to plan the allocation of public services.

Figure 3.4. Records of births and deaths – still wanting



Source: Authors' calculations.

Note: Estimates for birth and death registration coverage based on available data for 180 and 120 countries, respectively. Birth registration based on United Nations demographic yearbook. For countries with incomplete civil registration systems, birth registration is estimated from mothers' self-report of their children's birth registration status, as collected in household surveys. Death registration data based on WHO estimates.

238. Increasing the number of countries where the learning achievements of children are measured—both those in and out of school—would allow much better tracking of countries' performance for school access and learning. This should include making data on learning fully representative of all children, rather than the selection—often from higher income families—who stay in school. The Annual Status of Education Report is a rare example of a survey that provides an annual assessment of the learning levels of children—in this case in India's rural households—for those who are also out of school.⁴⁴

239. Initiatives that create comparable measures of learning across countries should be supported. The objective should be to bring together stakeholders to agree on a set of common questions to include in learning assessments. This would allow results to be harmonized across different tests. In the short term existing data platforms—national household surveys, Demographic and Health Surveys, Living Standards Measurement Study, and SDI—can be used to increase the availability of data on human capital outcomes in a cost-effective way.

240. Similar efforts are underway in health. To harmonize health measurement, the Health Data Collaborative was launched in 2015 by a group of international agencies, bilateral and multilateral donors, foundations, and governments. Their objective is to improve the coordination of health data collection. New technologies such as the global positioning system and mobile phones are driving down costs and increasing the scope of data collection. The Primary Health Care Performance provides a unique international benchmarking of primary care quality and has the potential to accelerate performance improvement.

241. Second, the many dimensions of skills, health, and the correlation between the two, are not well understood. Socio-behavioral skills are multi-dimensional. There have been efforts to

measure these skills on a large scale among working age individuals through initiatives such as the *Skills Towards Employability and Productivity* surveys and the *Programme for International Assessment of Adult Competencies* surveys. There has not been a similar attempt among school age children—even though there is evidence that skills such as grit and self-regulation matter for learning. Interventions that have reduced iron deficiency anemia have been found to improve student learning outcomes⁴⁵ but the correlation between health status and student test scores has not yet been quantified. The introduction of health modules in school surveys would represent an important first step. Relatively low-cost assessments, such as those of student vision acuity and anthropometric status, can go a long way in improving our understanding of the relationship between learning and health.

242. Vietnam’s experience illustrates the potential benefits of mapping pathways of change. Vietnam’s schoolchildren scored in the top quarter of the mostly high- and middle-income countries that participate in 2012 and 2015 PISA. This performance is remarkable, given Vietnam’s level of per capita income. A study of the PISA results found that observable student- and school-level characteristics could not account for the high test-score performance, suggesting that other more intangible factors were at play in delivering these results.⁴⁶ Understanding these factors could provide important lessons for how to ensure that schooling achieves learning.

¹ World Development Indicators. Figures refer to Adjusted Net Enrollment Rate for primary school.

² Fernald et al. 2011.

³ Smith 1776 as reported in Goldin 2016.

⁴ Chetty, Friedman, and Rockoff 2014.

⁵ Foster and Rosenzweig 1996.

⁶ Hanson 2007.

⁷ Psacharopoulos and Patrinos 2018.

⁸ Heckman, Stixrud, and Urzua 2006, for developed countries; Acosta, Muller, and Sarzosa 2015, for Colombia.

⁹ Dillon et al. 2014.

¹⁰ Ahuja, Baird, Hicks et al. 2015.

¹¹ Heckman 2008.

¹² Belot and James 2011.

¹³ Sandjaja et al. 2013.

¹⁴ Dillon et al. 2017.

¹⁵ Ahuja, Baird, Hicks et al. 2015.

¹⁶ Currie and Moretti 2003.

¹⁷ Andrabi et al. 2012.

¹⁸ Hsieh and Klenow 2010.

¹⁹ Larreguy and Marshall 2017.

²⁰ Cavaillé and Marshall 2017.

²¹ Knack and Keefer 1997.

²² Rosas and Sabarwal 2016.

²³ Blanford et al. 2012.

²⁴ Ferre and Sharif 2014.

²⁵ Baird, Mcintosh, and Ozler 2016.

²⁶ Baird, Friedman and Schady 2011.

²⁷ Maccini and Yang 2009.

²⁸ Giné, Karlan, and Zinman 2010.

²⁹ Heckman et al. 2010.

³⁰ Paes De Barros et al. 2009.

³¹ Cook, Dodge, Farkas et al. 2014.

³² World Bank 2016.

³³ Coffey, Geruso and Spears 2018.

³⁴ Chetty and Hendren 2018.

³⁵ Gertler et al. 2014.

³⁶ Service Delivery Indicators 2015.

³⁷ Björkman, de Walque, and Svensson 2017.

³⁸ Joshi and Gaddis (Eds.) 2015.

³⁹ Singh 2015.

⁴⁰ A description of the methodology, data, and interpretation of the index is provided in a background paper to the WDR, see Kraay 2018.

⁴¹ Analyses based on ongoing research by the World Bank and partners.

⁴² Caselli 2005; Weil 2007.

⁴³ Mikkelsen et al. 2015.

⁴⁴ ASER Centre 2018.

⁴⁵ Chong, Cohen, Field, Nakasone, Torero 2016.

⁴⁶ Glewwe, Dang, Lee and Vu 2017.

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Chapter 4: Lifelong Learning

243. Nelson Mandela, the first president of post-apartheid South Africa, said this: “Education is the great engine of personal development. It is through education that the daughter of a peasant can become a doctor, that the son of a mineworker can become the head of the mine, that the child of a farmworker can become the president of a great nation. It is what we make out of what we have, not what we are given, that separates one person from another.”

244. Automation is reshaping work and the skills needed for work. Demand for advanced cognitive skills¹ and socio-behavioral skills² are increasing. Demand for narrow job-specific skills is waning.³ There is increasing demand for skills associated with ‘adaptability’. These are a combination of specific cognitive skills (critical thinking and problem solving) and socio-behavioral skills (creativity and curiosity) that are transferable across jobs.

245. How well countries cope with the demand for changing skills depends on how quickly and pertinently the supply of skills shifts. Education systems tend to be resistant to change. A significant part of the supply re-adjustment is happening outside compulsory education or formal jobs. Early childhood, tertiary education and adult learning outside jobs are increasingly important in meeting the skill demands of future labor markets. This chapter shows how.

246. Automation—and technology adoption more generally—makes some jobs obsolete. Demand for skills linked to home-appliance repair is decreasing quickly because technology drives down equipment prices and improves reliability. Innovation creates new types of jobs. A large share of children entering primary school in 2018 will work in occupations that do not yet exist. Even in low- and middle-income countries many people are employed in jobs that did not exist three decades ago. India has nearly four million app developers; Uganda has over 400,000 internationally certified organic farmers; China has 100,000 data labelers.

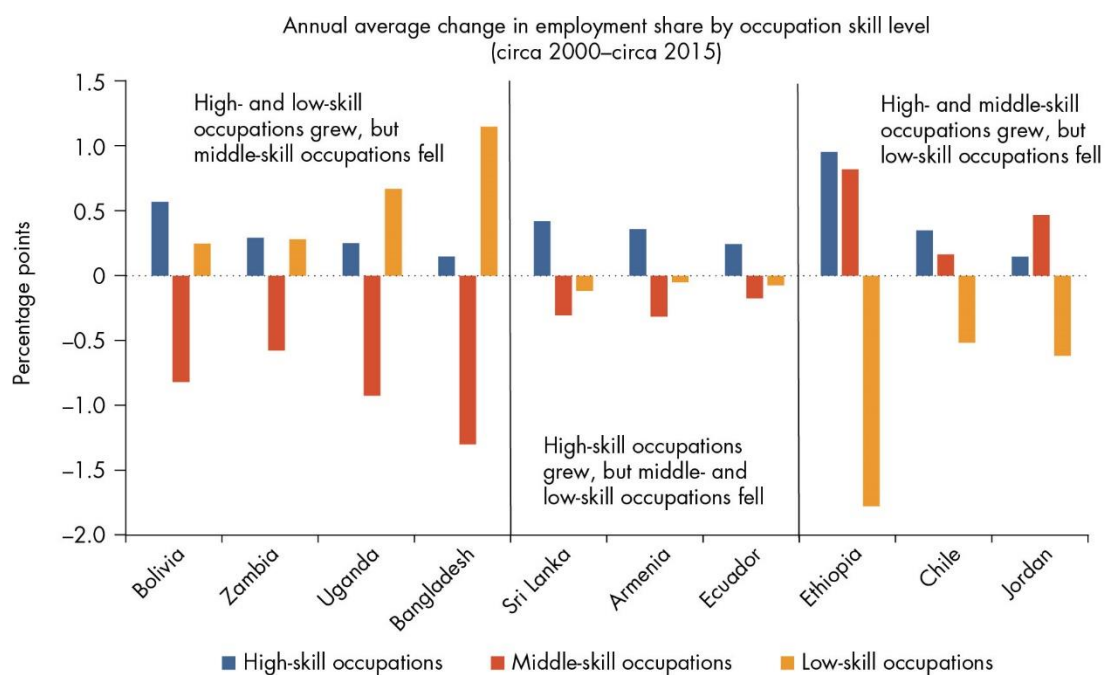
247. But many current jobs are being retooled into new forms, resulting in new and sometimes unexpected skills combinations. In 2018 a marketing professional might well be called upon to write algorithms. A physics graduate may land a job as a quantitative trader in the finance industry. Workers who bring emerging skills into relevant technical fields of expertise—teachers who are good at web design, actuaries proficient in big data analytics—are likely to be in high demand.

248. Which skills are now less in demand? Evidence from developed countries points to job polarization—the expansion of high- and low-skill jobs coupled with the decline of middle-skill jobs. Demand for non-routine cognitive tasks, such as high-skilled research, is increasing. So is the relative demand for non-routine tasks which cannot be automated easily, such as food preparation. Conversely demand for procedural routine tasks, which are often performed in middle-skill jobs such as data entry, is decreasing due to automation.

249. Is the same pattern starting to emerge in low- and middle-income countries? Not quite. In many developing countries, demand for high-skilled workers is increasing (figure 4.1). The share of workers in high-skill occupations increased by eight percent or more in Ethiopia, Bolivia and South Africa from 2000 to 2014. But the change in demand for middle- and low-skill jobs is more

heterogenous across countries. In Jordan the share of employment in middle-skill jobs increased by 7.5 percent between 2000 and 2016. In Bangladesh this share decreased by almost 20 percent during the same period.

Figure 4.1. In many developing countries, share of employment in high-skill occupations has increased



Source: Authors’ calculations based on International Income Distribution Database.

Note: High-skill occupation: (1) managers, (2) professionals, (3) technicians and associate professionals. Middle-skill occupation: (1) clerical support workers, (2) service and sales workers, (3) craft and related trades workers, (4) skilled agricultural, forestry and fishery workers, (5) plant and machine operators, and assemblers. Low-skill occupation: elementary occupations.

250. This change in demand for low- and middle-skill jobs in developing countries is not surprising. What happens at this end of the skills spectrum is likely to be driven by the competing forces of automation and globalization. The rate of technology adoption tends to vary considerably across developing countries. In Europe and Central Asia 26 percent of the population had fixed broadband subscriptions in 2016 compared with just two percent in South Asia. Globalization is bringing the medium and low skill jobs of developed countries to some—but not all—developing countries. Depending on the relative speed of these forces, some developing countries are seeing an increase in middle-skilled jobs; others are seeing a decline.

251. Creating a skilled workforce for the future of work rests on increased demand for advanced cognitive skills, socio-behavioral skills and for the ‘skill’ of adaptability, which is a combination of specific cognitive and socio-behavioral skills. Advanced cognitive skills—especially those that are transferrable across jobs—appear to be increasingly important. These determine how well individuals understand the complex world around them and act based on this understanding.

252. Evidence across low- to high-income countries suggests that jobs are becoming more intensive in cognitive, analytical tasks in recent decades. In Bolivia and Kenya more than 40

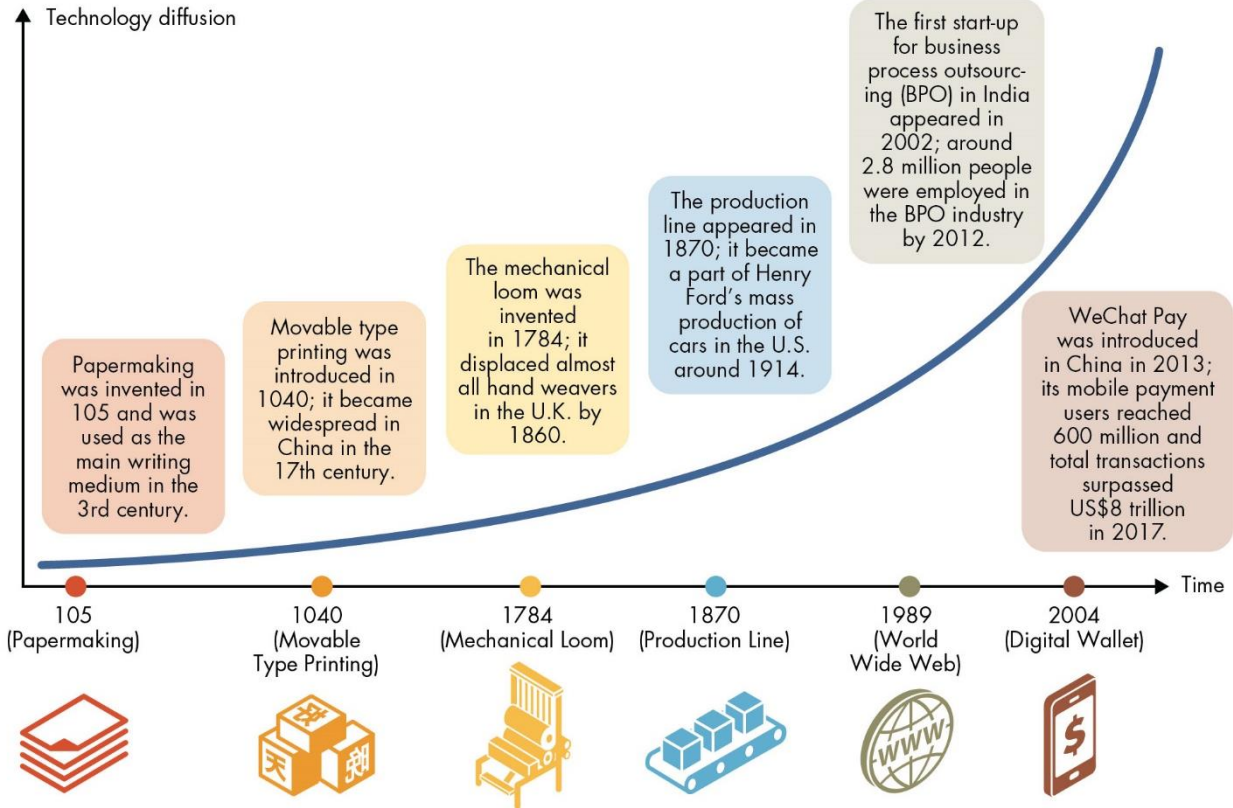
percent of workers using computers perform complex tasks that require advanced programming.⁴ Demand is rising for transferable higher-order cognitive skills like logic, critical thinking, complex problem solving and reasoning. Irrespective of the region of the world, these skills are consistently ranked among the skills most valued by employers.⁵ Analysis covering Denmark, France, Germany, Slovakia, South Africa, Spain, and Switzerland shows that a one standard deviation increase in complex problem-solving skills is associated with 10- to 20-percent higher wage.⁶ In Armenia and Georgia, the ability to solve problems and learn new skills yields a wage premium of nearly 20 percent.⁷

253. Socio-behavioral skills include the ability to recognize and manage emotions, develop caring for others and establish positive relationships. They often cover human capabilities that machines are unable (for now) to replicate. Creativity, innovation and social interaction are likely to remain high in demand. A finer-grained list could include curiosity, emotional intelligence, empathy, leadership, teamwork, conflict resolution and relationship management. Even when medical diagnostics have been taken over by computers, doctors will still play a vital role offering empathy, managing information, and negotiating difficult situations humanely.

254. Demand for socio-behavioral skills is also increasing in developing countries. In Latin America and the Caribbean, the adoption of digital technology has placed more importance on general cognitive skills and increased demand for workers with interpersonal skills.⁸ In Cambodia, El Salvador, Honduras, Lao PDR, Malaysia, the Philippines, and Vietnam more than half of firms report shortages of workers with specific socio-behavioral skills, such as commitment to work.⁹

255. Technological change makes it harder to anticipate which job-specific skills will thrive and which will become obsolete in the near-future. Shifts in skill requirements prompted by technological progress took centuries to manifest in the past (figure 4.2). In the digital era, the advances in technology demand new skills seemingly overnight.

Figure 4.2. Time needed for technological diffusion keeps getting shorter



Source: Authors' calculations.

256. The ability to quickly adapt to changes are increasingly valued by the labor market.¹⁰ The sought-after trait is adaptability—the ability to respond to unexpected circumstances, and to unlearn and re-learn quickly. This requires a combination of certain cognitive (critical thinking, problem solving) and socio-behavioral skills (curiosity, creativity). A study of technical and vocational students in Nigeria showed that the socio-behavioral skill of ‘self-efficacy’ was positively and significantly predictive of career adaptability.¹¹

257. Strong skill-foundations are important for developing these three in-demand skills—advanced cognitive, socio-behavioral, and skills predictive of adaptability. For most children across the world, these skill-foundations are formed through primary and secondary education. Yet the World Development Report 2018 shows that the foundational skill acquisition that one would expect to happen in schools is not occurring in many low- and middle-income countries.

258. Important skills re-adjustments are happening increasingly outside compulsory education (and formal jobs). This chapter discusses three types of skills investments that have the potential for big pay-offs in the changing nature of work: early childhood investments, tertiary education, and adult learning outside jobs. Skills development for the changing nature of work is a matter of lifelong learning. Lifelong learning is especially germane to skills-readjustment amid demographic change—be it the aging populations of East Asia and Eastern Europe or the large youth bulges in Sub-Saharan Africa and South Asia.

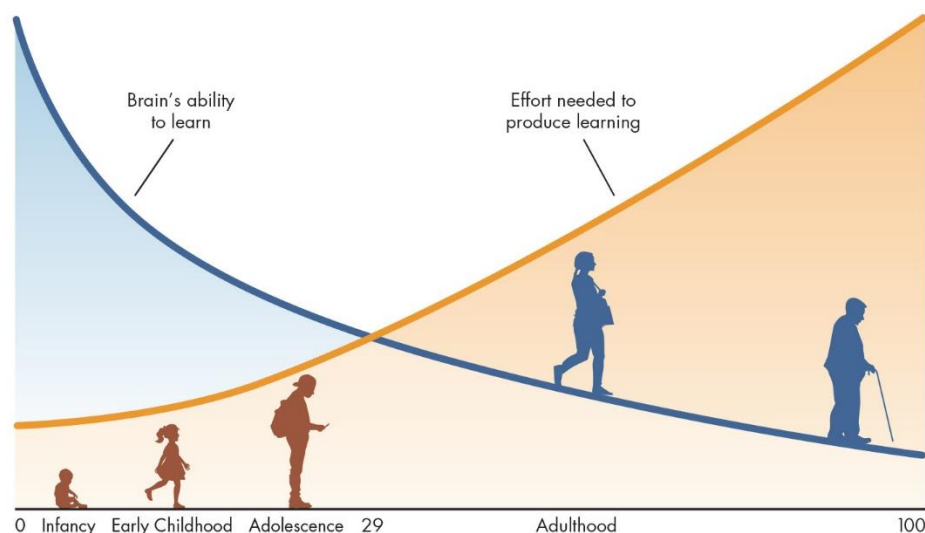
Learning in Early Childhood

259. In France the mandatory school starting age is soon to be reduced from six to three years. According to President Emmanuel Macron this reform is intended to boost equality, improving the ability of children from disadvantaged backgrounds to remain competitive in the education system.

260. The most effective way to acquire the skills demanded by the changing nature of work is to start early. Early investments in nutrition, health, protection, and education lay strong foundations for future acquisition of cognitive and socio-behavioral skills. They also make future skill acquisition more resilient to uncertainty. Early childhood investments are an important channel to improve equality of opportunity. Currently, these investments are underprovided, especially for poor, disadvantaged children who would benefit the most from them. Prioritizing these investments has the potential for significant pay-offs for economies, as long as both access and quality are highlighted.

261. The foundations of brain architecture are set from the prenatal period to the age of five—making this an important stage to develop cognitive and socio-behavioral skills. During this period the brain’s ability to learn from experience is at its highest (figure 4.3). As a result, experiences and learning during this period directly affect achievement in adulthood. If this window is missed, skill-building becomes harder.

Figure 4.3. Brain’s ability to learn from experience decreases with age



Source: Authors’ calculations.

262. Quality early childhood development programs enable children to learn. Investments in nutrition, health, and stimulation in the first thousand days of life build stronger brains. The engagement of parents and caregivers during this phase also matters for the development of children’s language skills, motor and self-regulation skills, as well as social behavior. In Colombia exposure to psychological stimulations through home visits with play demonstrations significantly improved cognitive development of children aged 12-24 months.¹² In Pakistan, the *Lady Health Workers* program, which provided health services in rural areas, led to a decline in infant mortality

from 250 to 79 for every 100,000 live births.¹³ The program generated sustained positive effects on children's cognitive abilities and pro-social behaviors when it provided nutrition supplementation and encouraged mothers to engage in responsive play with children aged up to the age of two.¹⁴

263. From the age of three socialization and more formal early learning become important to prepare children to succeed in primary school. Quality pre-school strengthens children's executive functions (e.g., working memory, flexible thinking, self-control), launching them on higher learning trajectories. In Bangladesh rural children who attended pre-school performed better in early grade speaking, writing and mathematics compared with those who did not.¹⁵ A pre-school reform in rural Mozambique had positive effects on socio-behavioral development—participating children were better at interacting with others, following directions and regulating their emotions under stress.¹⁶ But, to achieve these results, the quality of pre-schools needs to meet thresholds. In some cases, low quality pre-school is worse for child development than no pre-school at all.¹⁷

264. Early childhood investments efficiently produce skills that are relevant to a child's future. Learning is cumulative—skills acquired at an earlier stage facilitate skill formation in subsequent stages. The returns for early investments are the highest and the advantages conferred by these investments grow overtime. An additional dollar invested in quality early childhood programs yields a return of six to 17 dollars.¹⁸

265. Early childhood development programs improve parents' labor force participation. Many women do not work due to time-consuming childrearing responsibilities. In the United Kingdom, half of the stay-at-home mothers would prefer going back to work if they could get high-quality, affordable childcare services.¹⁹ Early childhood development investments alleviate this constraint. In Argentina a large-scale construction program of pre-primary school facilities in the 1990s positively affected maternal employment.²⁰ In Spain during the same period maternal employment increased by 10 percent because of the availability of full-time public care for three-year-old children.²¹

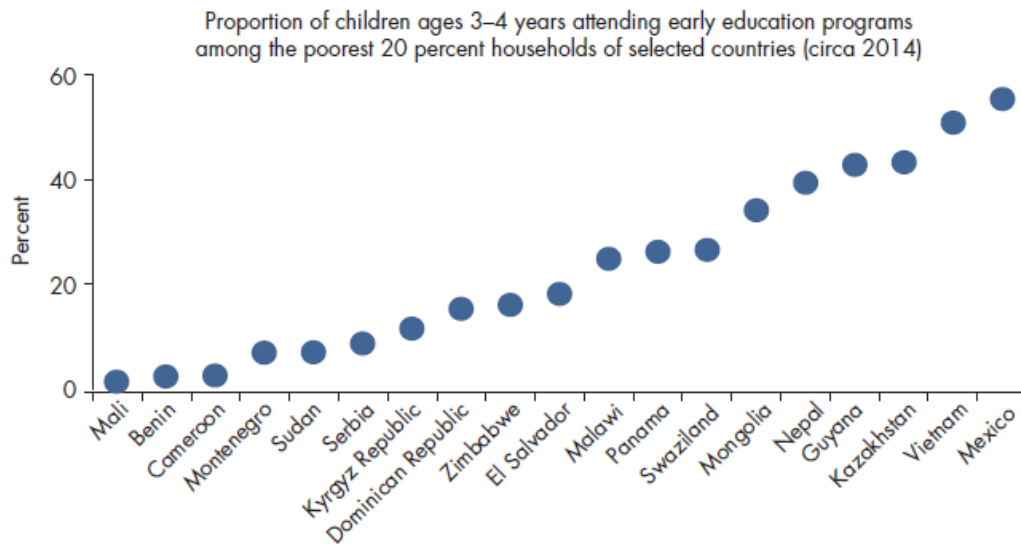
266. Early childhood investments are also effective in increasing equity. For children exposed to poverty and other adverse conditions quality early childhood programs increase adult competence, reduce violent behavior and social inhibition, as well as foster growth in the subsequent generation. In Guatemala an early childhood development nutrition program for poor families significantly increased wages for these children in adulthood.²² In Jamaica early stimulation for infants and toddlers increased their future earnings by 25 percent—equivalent to adults who grew up in wealthier households.²³

267. Early childhood investments are underprovided despite their efficiency in producing important skills. Around 250 million children under the age of five are at risk of not reaching their developmental potential in low and middle-income countries because of stunting or extreme poverty. Worldwide more than 87 million children under the age of seven have spent their entire lives in conflict-affected areas. They suffer from extreme trauma and toxic stress, which impair their brain development and skill enhancement. Only half of all three- to six-year-olds have access to pre-primary education globally—in low income countries this share is one in five.²⁴ In 2012, North America and Western Europe countries spent 8.8 percent of their education budgets on pre-primary education; in Sub-Saharan Africa the share allocated was a paltry 0.3 percent.²⁵

268. Children from poor families are the least likely to attend early childhood development programs (figure 4.4). They are also the ones who would likely benefit the most from such programs. In low- and middle-income countries, approximately 47 percent of wealthiest families have access to early education programs, but for the poorest families this number is 20 percent.²⁶ Rural families are especially disadvantaged. Across a sample of 15 countries rural dwellers consistently have worse access to early childhood development programs compared to those living in urban areas.²⁷

269. Quality is often a concern even for those who have access to care services or early learning. Poor quality early childhood development programs are associated with disappointing results in children’s language development, cognitive skills and sociability. A study of preschools in a Nairobi slum, Kenya, shows that, despite high participation rates, the curriculum and pedagogical approach were not age-appropriate. In the program, three to six-year-olds had to follow academic-oriented instruction and even sit for exams.²⁸ In Peru, while the national *Wawa Wasi* program has provided safe community-based daycare and nutritious diet for children aged six to 48 months in impoverished areas, it failed to improve children’s language or motor development skills due to insufficiently trained care-givers.²⁹

Figure 4.4. In many countries, children from disadvantaged background are least likely to attend early childhood education programs



Source: Authors’ calculations based on data obtained from UNICEF Multiple Indicator Cluster Survey.

270. Effective solutions for early childhood development are available. In some places community-based playgroups have generated sustained outcomes at a low cost. In Indonesia a program positively affected children’s language, sociobehavioral and cognitive skills; children from disadvantaged backgrounds benefited more in both the short and long term.³⁰ In Tonga organizing playgroups for children up to the age of five significantly improved their early grade reading skills.³¹ The Montessori model, characterized by multi-age classrooms, student-chosen learning activities and minimal instruction has been shown to be more effective than conventional education in improving children’s executive functions.³² With successful local adaptations,

Montessori and other child-centered approaches—including Steiner, Reggio Emilia, and Tools of the Mind—can be found in diverse settings from Kenya to Haiti.

271. Research has uncovered several concrete ways to increase take-up of early childhood development investments. Cash transfers that support early childhood development for the poorest children have succeeded in various contexts. Programs have reduced stunting in the Philippines and Senegal, fostered language development in Ecuador and Mexico and improved children’s sociobehavioral skills in Niger.³³ Integrated approaches that combine health, nutrition and stimulation investments have also been highly effective. Chile’s *Crece Contigo* program integrates the services provided by the health, education, welfare and protection services so that a child’s first contact with the system occurs while still in the womb during her mother’s first prenatal control.³⁴

272. However global evidence needs to be adapted to local conditions. A highly successful child nutrition program from Southern India failed to have any impacts in Bangladesh, partly because the program targeted mothers. Decisions about the feeding of young children in Bangladesh were often being made by mothers-in-law, not mothers. Local context matters for effective early childhood development.

273. Ultimately, measurement is necessary to understand where investments are needed, find effective solutions and adapt them locally. The World Bank-supported *Measuring Early Learning Quality and Outcomes* (MELQO) consortium is an effort in this direction. It is developing measurement modules for implementation at scale. Such information improves the quality of early childhood development by targeting those most in need and establish quality assurance systems. So far, eleven low- and middle-income countries have participated in the MELQO pilot. In Mongolia the government used MELQO to assess early childhood development outcomes by socioeconomic status. The findings were used to inform policies that address quality of pre-primary education and cross-region differences. The Nicaraguan government incorporated MELQO results into the design and planning of the country’s preschool measurement system.

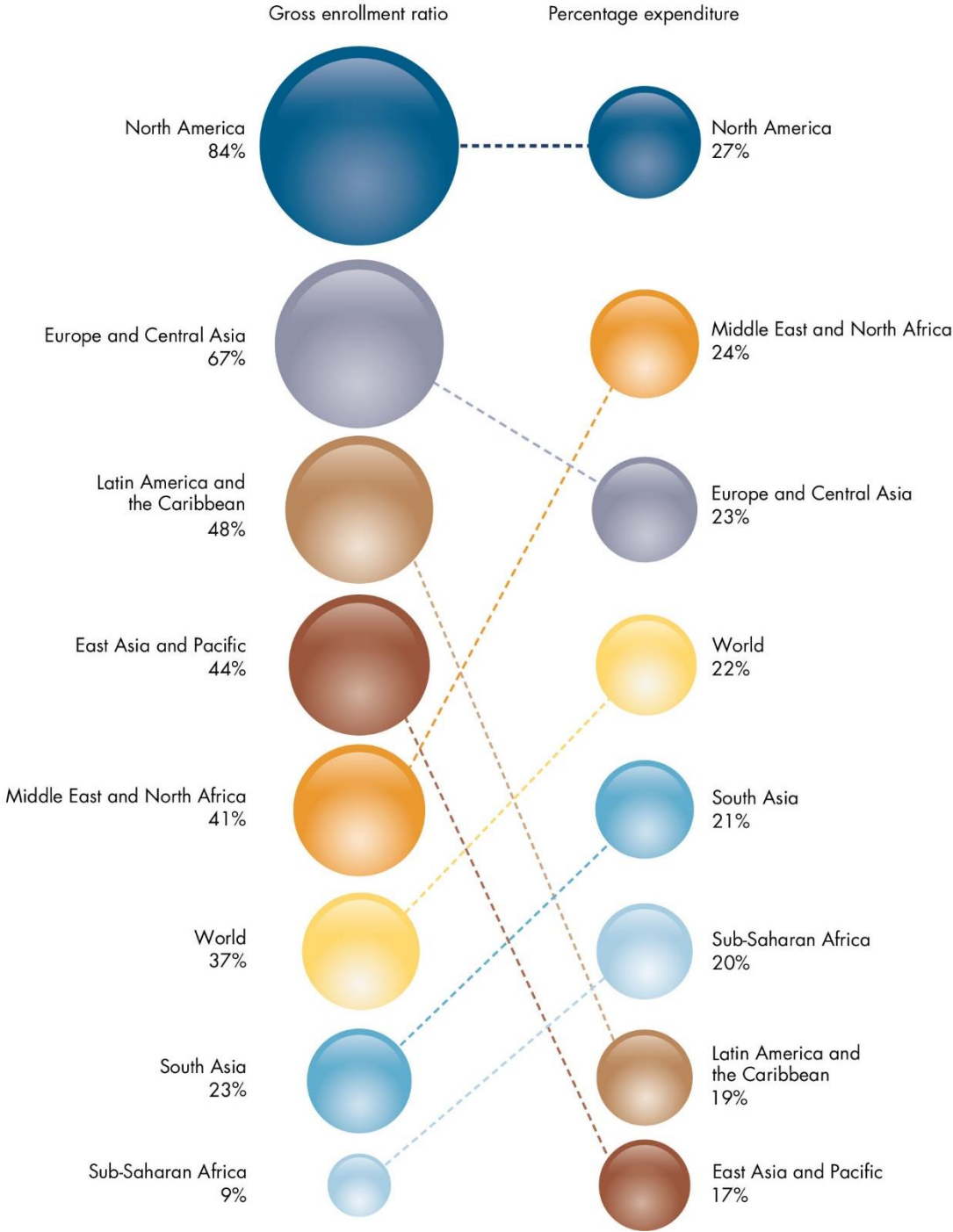
Tertiary Education

274. The Free University of Tbilisi was established in 2007 through a non-profit organization. It has already become the top-performing, most sought-after university in Georgia. This was accomplished through transparent admissions (national competitive entry examinations) as well as a competitive state financing program for individual students based on academic performance. Per capita financing increases the efficiency and transparency of university financing, allowing the government to gradually reduce lump sum payments paid to universities directly. The University offers a high-quality faculty, flexible course offerings, and discussion-based pedagogy. Each year the university attracts hundreds of top-tier applicants while more than 96 percent of its graduates find employment or enroll in further education.

275. More integrated, technology-driven economies appear to value tertiary education. The global average private return to tertiary education is 15.8 percent.³⁵ But these returns are not high for everyone. They depend on a range of factors that include the quality of the provider, student composition and the availability of jobs. Controlling for other factors, students attending a top university in Colombia earn 20 percent more than those who just failed to achieve the score

required for university admission.³⁶ Returns also vary dramatically depending on the specialization. In Chile the return to tertiary education ranges from 4.1 percent for humanities to 125.8 percent for engineering and technology.³⁷ Tertiary enrollment and expenditure also vary considerably by region (figure 4.5).

Figure 4.5. Gross tertiary enrollment ratio and percentage expenditure on tertiary education by region, 2016



Source: World Development Indicators.

Note: Gross Tertiary Enrollment Ratio: The ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to tertiary education. Percentage Expenditure on Tertiary Education: Expenditure on tertiary education expressed as a percentage of total general government expenditure on education. Expenditure on tertiary education data is as of 2013. Data on tertiary education expenditure for Middle East and North Africa is from World Bank (forthcoming).

276. 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—like complex problem solving, critical thinking, or advanced communication that are transferable across jobs but cannot be acquired through schooling alone. Rising demand for these skills has enhanced the wage premiums of tertiary graduates,³⁸ while reducing the demand for less educated workers.³⁹ Second, by increasing the demand for lifelong learning. Workers are expected to have multiple careers, not just multiple jobs over their life-time. Tertiary education—with a wide-array of course offerings and flexible delivery models like 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.

277. The relevance of tertiary education systems for the future of work depends on how well they deliver on these three fronts. Increasingly, skills acquisition is a continuum, not a finite unchangeable path. Flexibility is increased by ensuring that when students open the door to one pathway, the door to other pathways does not close irrevocably. For instance, at the start of tertiary education most students must choose between general education or vocational training. General education such as programs on engineering or economics prepare students in transferable higher-order skills that determine their overall learning-readiness or trainability. On the other hand, vocational training, such as programs on nursing or airport operations, is directly related to specific occupations. Once this choice is made—especially if it is for vocational training—it is typically difficult and expensive to reverse.

278. The relative returns to general and vocational education are changing in unpredictable ways and most economies continue to need both. Technological progress tends to lower the demand for certain occupation-specific skills, making certain vocational degrees obsolete. It also leads to a higher depreciation of narrow job-specific skills compared to general skills. Yet vocational training continues to be pursued by many. In 2012, 63 percent of Dutch higher education students were attending vocational training.⁴⁰ This share was more than 50 percent in Malaysia, and 31 percent in Kenya in 2013.⁴¹ Vocational training meets immediate demand for technical skills, enables faster education-to-work transitions for some, and alleviates pressures on the university system.

279. Three factors make flexibility between general and technical tracks imperative for the changing nature of work. First, the combination of general and technical skills is becoming highly valued. Second, even technical jobs seem to be getting more intensive in higher-order general skills, implying that this type of skills acquisition needs to be accessible before and during working life. Third, people trained in narrow vocational skills need viable options for an unpredictable future. For instance, Congo, Dem. Rep. and Tanzania offer “bridging” arrangements for vocational graduates to continue to university.

280. Close collaboration between industry and vocational education also plays a role. In China, Lenovo is working with tertiary institutes to train vocational students in high-tech areas such as cloud computing, which features practice-based curricula, practitioner-led instruction, along with professional certification. Filling in information gaps enables students to make choices between and within different paths. Chile is establishing online platforms where students can access information on the employability of individuals with various degrees, wage profiles, courses to take for certain occupations.⁴²

281. Tertiary systems have not remained impervious to these changing demands. General and vocational tracks often intersect. There is a wide range of programs offered by universities which have a vocational dimension or orientation—including many in science, engineering and technology. Technology-enabled platforms are making tertiary education more available, especially to those with historically low access. The five largest distance-learning programs are based in lower or middle-income countries. India is the second largest consumer of Massive Open Online Courses (MOOCs).⁴³ XuetangX, China's biggest MOOCs and blended learning portal, crossed ten million students in 2018. Veduca from Brazil launched the world's first open online MBA program in 2013 and offers over 5,000 courses in 2018. MOOCs represent a promising way of delivering flexible, personalized education to a large population. But ensuring quality is a serious challenge. A recent study shows that students who took a course online performed worse than those who followed in-person instructions.⁴⁴ Besides content, many MOOCs fail on student engagement or instructor quality.

282. Tertiary education systems need to guarantee a minimum threshold of transferable cognitive skills—which are the best inoculation against job uncertainty. But not all are effective at producing these skills. In Colombia there is significant variation across universities in their ability to impart foundational higher order skills such as critical thinking, problem-solving and communications.⁴⁵ A study among Chinese undergraduates in engineering and computer science suggests that their cognitive skills did not improve much during the first two years of college.⁴⁶

283. Incorporating more general education in tertiary programs is one way to increase the acquisition of transferable higher-order cognitive skills. An additional year of general education was added in 2012 to undergraduate programs in Hong Kong SAR, China—focusing on problem solving, critical thinking, communication, leadership, and lifelong learning skills. A large majority of students perceive this change as effective in promoting desirable graduate attributes. Another way is through innovative pedagogy. The Faculty of Architecture and Environmental Design at College of Science and Technology-University of Rwanda promoted learning strategies that include open-ended assessment, feedback opportunities, and a progressive curriculum that balances academic challenge with student support. These approaches improved the critical thinking skills of students.⁴⁷

284. Tertiary education also builds transferable socio-behavioral skills such as teamwork, resilience, self-confidence, negotiation and self-expression. In a survey of employers of engineers in India, socio-behavioral skills were ranked at or above technical qualifications and credentials in terms of their significance for the employability of recent graduates.⁴⁸ Employer surveys in Bulgaria, Georgia, Kazakhstan, Poland, Macedonia FYR, the Russian Federation and Ukraine indicate that employers see the lack of socio-behavioral skills at least as problematic as lack of technical skills.⁴⁹

285. Forward-looking universities are finding ways for adult students to acquire socio-behavioral skills. Dutch Vocational Colleges provide entrepreneurial courses with the objective of improving non-cognitive skills such as teamwork and self-confidence.⁵⁰ In Tunisia, introducing an entrepreneurship track that combines business training with personal coaching reshaped behavioral skills of university students.⁵¹ In Spain, cooperative learning strategies (learning in small teams with peers of different ability levels) improved empathy, assertiveness, cohesion and the ability to accept different views and reach agreements among university students.⁵² In China a combination

of cooperative learning and role play enhanced self-educational abilities and communication skills among undergraduate students in pharmacology classes.⁵³ However, to better teach socio-behavioral skills more efforts are necessary to design appropriate curricula and accurate measurement, especially in the contexts of low income countries and rural areas.

286. The role of tertiary education systems as centers of innovation is highly valued too. There are well-known examples of successful university innovation clusters in the developed world—Stanford University, UC Berkley (Silicon Valley) and Harvard-MIT (Boston’s Route 128) in the United States, Cambridge-Oxford-University College London (part of the “golden triangle”) in the United Kingdom. Clusters are also emerging in middle income countries. The University of Malaya has established eight interdisciplinary research clusters during the past decade, covering sustainability science and biotechnology.⁵⁴ Peking University is building *Clinical Medicine Plus X*, a research cluster for precision medicine, health big data, and intelligence medicine.⁵⁵ As part of the *Startup India* initiative, seven new research parks located in different Indian Institute of Technology campuses are established to promote innovation through incubation and collaboration between universities and private sector firms.⁵⁶ In Mexico, the Research and Technology Innovation Park currently houses more than 30 research centers covering R&D in biotechnology, nanotechnology, robotics, seven of which are led by universities.⁵⁷

287. Two main factors matter for a healthy innovation ecosystem. First, prioritize the right university for the right sector. The agglomeration effects of universities vary by sector. University R&D has been shown to be irrelevant for sectors such as furniture.⁵⁸ Second, a healthy innovation ecosystem requires an enabling environment. Just because successful innovation clusters exist does not mean that there is a guaranteed formula for their creation. However, governments are often responsible for creating the enabling environment in which innovation clusters flourish—by providing necessary local infrastructure, increasing expenditure on R&D, assisting universities to attract high-quality researchers and connect with private sector innovation, easing rigid labor market regulations.⁵⁹

Adult Learning Outside Jobs

288. As the nature of work changes, some workers are caught in the cross-hairs of ongoing skills disruptions. As economies adjust skills provision for the human capital of the next generation, the current working-age population becomes anxious over job prospects.

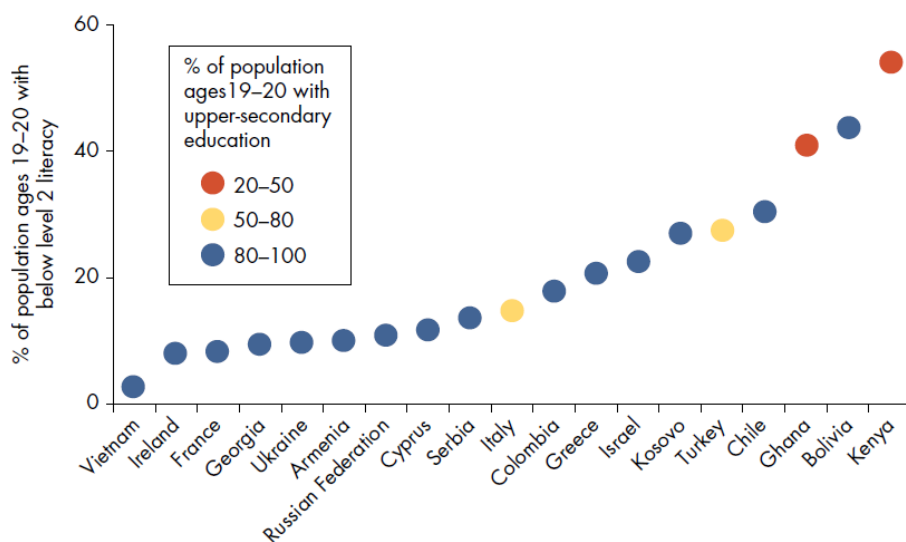
289. One step towards lessening this anxiety is adult learning for reskilling and upskilling workers who are not in school or in jobs. This approach has shown more promise in theory than in practice. Bad design too often gets in the way. There are three ways to improve adult learning: more systematic diagnoses of the specific constraints that adults are facing; pedagogies that are customized 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.

290. Adult learning programs come in many different forms. This section mainly focuses on three types that are particularly relevant in preparing adults for the changing labor markets: programs on adult literacy; skills training for wage employment; and entrepreneurship programs.

291. Worldwide, more than 2.1 billion working-age adults (aged 15-64) have low reading proficiency.⁶⁰ In Sub-Saharan Africa, nearly 61 percent of workers are not proficient in reading; in Latin America and Caribbean this proportion is 44 percent. In India, only 24 percent of 18- to 37-year-olds who dropped out of school before completing primary could read.⁶¹ Low quality education may lead to poor literacy skills even among the educated (figure 4.6). In Ghana, Bolivia and Kenya more than 40 percent of 19- to 20-year-olds with upper secondary education score below basic literacy level, compared to only three percent in Vietnam. This is a problem. Given the future of work, functional literacy is a survival skill. The economic and social cost of adult illiteracy to developing countries is estimated at more than US\$5 billion a year.⁶²

292. Even with basic literacy skills, many people leave school too early to thrive in work or life. This could be because of economic or cultural constraints, the low quality of basic education or both. In 2014 the drop-out rate from lower secondary general education was on average 27.5 percent in low income countries, and 13.3 percent and 4.8 percent in middle and high income countries, respectively.⁶³ It is difficult for early school leavers to find jobs or pursue further education later in life without formal certification and training in skills. Similar constraints are also faced by many adults who stayed in school but received poor quality basic education.

Figure 4.6. In some economies, large share of 19- to 20-year-olds have low literacy skills despite completion of secondary education



Source: Authors' calculations based on Levin et al. forthcoming.

Note: Data on Armenia, Bolivia, Colombia, Georgia, Ghana, Kenya, Kosovo, Serbia, Ukraine and Vietnam are sourced from STEP Skills Measurement Surveys; data on the rest of the economies are based on Program for the International Assessment of Adult Competencies (PIAAC) dataset. Tertiary education is merged with upper secondary education. STEP surveys are representative of urban areas. The PIAAC sample for the Russian Federation does not include the population of the Moscow municipal area.

293. Globally, around 260 million people aged 15 to 24 are out of school and out of work.⁶⁴ A pool of unemployed adults is a political risk as well as an economic concern. In certain cases, it leads to large emigration, social unrest or political upheaval. Insufficient economic opportunities for an increasingly educated population was a major catalyst of the Arab Spring. Changing demographics add additional pressures to the labor market. Many rich countries are trying to equip

a smaller, older workforce with skills to sustain economic growth. Other countries with big youth cohorts struggle with a low-skilled labor force trapped in low-productivity jobs.

294. Adult learning programs upskill, retool and improve the adaptability of older workers. India's *Saakshar Bharat* initiative from 2009 aimed to provide adult literacy to 70 million adults. In Ghana adult literacy programs yielded labor market returns of more than 66 percent.⁶⁵ The Mexican National Institute for Adult Education has developed flexible modules to deliver education programs that are equivalent to primary or secondary education for giving a second chance to out-of-school individuals. Under the World Bank's Nepal *Adolescent Girls Initiative*, vocational training for women increased employment outside of agriculture by 174 percent.⁶⁶ Argentina's *Entra21* program provided adult skills training and internships, creating 40 percent higher earnings for its participants.⁶⁷ Kenya's *Ninaweza* program offered skills training to young women living in informal settlements in Nairobi, leading to a 14 percent increase in the likelihood of obtaining a job, increased earnings and improved self-confidence for participants.⁶⁸

295. But many adult learning programs fail to generate meaningful impact. Adult literacy programs often improve word recognition but fail to improve actual reading comprehension.⁶⁹ In Niger, although an adult education program increased reading speed but not to the level required for reading comprehension (the minimum reading speed for reading comprehension is to one word every 1.5 second).⁷⁰ Entrepreneurship programs often improve business knowledge but do not create employment. In Peru training for female entrepreneurs improved business but did not generate a significant increase in employment.⁷¹ Vocational training for the unemployed often improves short-run earnings but not always long-run employment. The Dominican Republic's *Juventud y Empleo* program improved non-cognitive skills and job formality but did not increase employment.⁷² Turkey's vocational training had no significant impacts on overall employment, while the positive effects on employment quality faded in the long term.⁷³

296. Even among successful adult learning programs, costs are high. In Liberia even though young women with access to job skills training enjoy higher monthly earnings—US\$11 more than the comparison group—the program cost is US\$1650 per person.⁷⁴ It would take 12 years of stable effects for the training program to recoup its costs. It takes a long time for some programs in Latin America to attain positive net present values if the program benefits are sustained: for examples, seven years for *ProJoven* of Peru and 12 years for *Proyecto Joven* of Argentina.⁷⁵ Adult learning is frequently just one expensive component in a comprehensive package, making it difficult to understand its cost-effectiveness. The Chilean Micro Entrepreneurship Support Program boosted self-employment by 15 percentage points in the short run, but it is not clear how much of this is due to the 60-hour business training or the US\$600 capital injection.⁷⁶

297. There are two main reasons for low effectiveness: suboptimal design and incorrect diagnose. Adult brains learn differently—this is not always factored into program design. The brain's ability to learn decreases with age, so adult learning programs face a built-in challenge: acquiring knowledge when the brain is less efficient at learning. Advances in neuroscience suggest how to tackle this. An adult brain's ability to learn is significantly dependent upon how much it is used. Practice is essential to adult learning. Adult learning programs have a better chance of success if lessons are integrated into everyday life. In Niger people who were taught basic operations on their mobile phones as part of an adult education program achieved reading and math scores that were significantly higher than those who were not.⁷⁷

298. Adults face significant stress which compromises their mental capacity—this is not always factored into program design. For adults, emotions are constantly mediated by the demands of family, childcare, and work. These demands compete for cognitive capacity required for learning. Sugar farmers in India were found to have markedly diminished cognitive capacity when they were poorer (during pre-harvest) than when richer (during post-harvest).⁷⁸ Creating emotional cues linked to learning content—such as goal-setting—can be an effective strategy to increase adult learning. But behavioral tools are only rarely integrated into adult learning programs.

299. Adults face specific socio-economic constraints—these are not always factored into program design. Adult learners have high opportunity costs in terms of lost income and lost time with their children, but programs often have inflexible and intensive schedules. In Malawi participation in training resulted in a decline in personal savings for women at a rate nearly double that of men.⁷⁹ Distance to training locations and lack of childcare were significant barriers for women to complete vocational training programs in India.⁸⁰ Dropout rates are often high for adult literacy programs, ranging from 17 percent in Niger to 58 percent in India.⁸¹

300. Low participation in adult learning programs is a sign that they are not always the answer. In Pakistan's *Skills for Employability* program, even among poor households who expressed interest in vocational skills, more than 95 percent did not enroll when given a voucher. Even when government increased daily stipends and moved the training centers to the village, enrollment did not cross 25 percent.⁸² In Ghana, demand for training by informal businesses is low as most managers do not see lack of skills as a constraint.⁸³

301. The potential binding constraints that inhibit participation in adult learning programs often relate to lack of information or lack of credit. Information is an important constraint, especially for young adults, whose decisions about the right skills to acquire may be based on outdated stereotypes or misguided perceptions.⁸⁴ In other cases, cash (or capital) transfers may have a stronger impact on self-employment and long-term earning potential than adult learning programs.⁸⁵ Even when skills are inadequate training alone may not achieve the desirable results unless complemented by cash or capital support. For a group of businesswomen in Sri Lanka a training-only approach did not influence business profits, sales or capital stock. However, the grant-plus-training approach enhanced business profitability.⁸⁶ Similar results have been found in programs for high-risk ex-fighters in Liberia.⁸⁷

302. There are three promising routes to more effective adult learning programs: better diagnosis and evaluation, better design, and better delivery.

303. Systematic data collection before program design identifies the most important constraints for the target population. This information is also useful for purposes of customizing skills training. Administrative data under India's massive *National Rural Employment Guarantee Act* program has offered powerful insights about local labor markets.

304. Another useful approach is small-scale piloting combined with rigorous evaluation before scale-up. This was undertaken by the *Youth Opportunities Project* in Uganda. In evaluating early pilots, it is important to test the relative impact of different training components separately. Policymakers then have greater insight into the most cost-effective bundle of inputs. Evaluations also need to have sufficiently large sample sizes and sufficiently long timeframes. Larger study

samples are needed if we want to look at how training impacts different recipients differently. For instance, to test if a training impacts men and women differently a study needs four times the sample size than if it simply wants to test how training affects the overall population.⁸⁸

305. There is tremendous scope to improve adult learning programs through insights from neuroscience and behavioral economics. Both practical exercises and visual aids are effective in adult learning because they assist memory. Including motivational tools such as financial reward, work experience or frequent feedback have all been shown to boost adult learning. An experiment among young adults shows that offering rewards increases post-training long-term performance gains.⁸⁹

306. Adult learning programs need to be flexible so that adults can learn at their convenience. In a voucher program for vocational training in Kenya nearly 50 percent of women cited proximity to a training center as a determining factor in choosing a course.⁹⁰ Given competing demands on adults' time, training programs with short-modules delivered through mobile applications are particularly promising. Delivering training programs via mobile phones better shields adult learners from potential stigma.

307. Adult learning programs are more successful when they are explicitly linked to employment opportunities. One popular way to do this is through apprenticeships or internships that link training to day-to-day experience and provide motivation through the promise of future economic returns. Skills training programs are more successful when the private sector is involved in developing the curriculum or training methods or in providing on-the-job training via internships or apprenticeships. Colombia's *Jóvenes en Acción* program combined classroom instruction with on-the-job training at private companies. The probability of formal employment and earnings rose in the short term and was sustained in the long run.⁹¹ The program has also demonstrated strong education effects, with participants more likely to complete secondary school and to pursue higher education eight years after the training. The likelihood of their family members enrolling in tertiary education also increased.⁹²

308. Success might also depend on addressing multiple constraints at the same time. Combining training with cash or capital in some cases is a direct way to boost effectiveness. In Cameroon 54,000 people who participated in a program that coupled training with financial assistance found employment.⁹³ Combining skills training with skills certificates, referral letters and better information about job opportunities may enhance effectiveness, especially for women. In Uganda, workers with more certifiable, transferrable skills have higher employment rates, more earnings and greater labor market mobility.⁹⁴ A World Bank program in South Africa is attempting to improve job search through peer support, SMS reminders, and action planning.

309. Incorporating soft-skills or socio-behavioral skills in training design has shown promise. In Togo teaching informal business owners "personal initiative"—a mindset of self-starting behavior, innovation and goal-setting—boosted the profits of firms by 30 percent two years after the program. This approach was much more effective than traditional business training.⁹⁵ For factory workers in India, acquiring skills such as time management, effective communication and financial management increased their productivity.⁹⁶

310. The need for better targeting comes out clearly in the highly variable returns to training. The World Bank's *Youth Employment and Opportunities* project in Kenya is tailoring the design of a youth-friendly entrepreneurship aptitude test. India's *Vikalp Voucher* program incentivizes students to choose between multiple private training providers and courses.

¹ Krueger and Kumar 2004.

² Deming 2017; Cunningham and Villasenor 2016.

³ Hanushek et al. 2017.

⁴ Valerio et al. 2016.

⁵ Cunningham and Villasenor 2016.

⁶ Ederer et al. 2015.

⁷ Valerio et al. 2015a and 2015b.

⁸ Dutz et al. 2018.

⁹ Authors' calculations based on World Bank Enterprise Surveys 2015-2016 data.

¹⁰ Handel 2012; MacCrory et al. 2014.

¹¹ Ebenehi et al. 2016.

¹² Attanasio et al. 2014.

¹³ Global Health Workforce Alliance 2008.

¹⁴ Yousafzai et al. 2014; Yousafzai et al. 2016.

¹⁵ Aboud and Hossain 2011.

¹⁶ Martinez et al. 2012.

¹⁷ Garcia et al. 2017.

¹⁸ Engle et al. 2011.

¹⁹ Save the Children. 2017. "870,000 Stay-At-Home Mums in England Want to Work but Can't Get the Childcare They Need." <https://www.savethechildren.org.uk/news/media-centre/press-releases/870-000-stay-at-home-mums-in-england-want-to-work-but-cant-get-t>.

²⁰ Berlinski and Galiani 2007.

²¹ Nollenberger and Rodríguez-Planas 2015.

²² Hoddinott et al. 2008.

²³ Gertler et al. 2014.

²⁴ UNESCO Institute for Statistics 2014.

²⁵ UNESCO 2015.

²⁶ Black et al. 2017a.

²⁷ UNESCO 2015.

²⁸ Bidwell and Watine 2014.

²⁹ Cueto et al. 2009.

³⁰ Brinkman et al. 2017.

³¹ Macdonald et al. 2017.

³² Lillard and Else-Quest 2006.

³³ Asian Development Bank 2015; Independent Evaluation Group 2016; Fernald and Hidrobo 2011; Fernald et al. 2008; Premand et al. 2016.

³⁴ Araujo et al. 2015.

³⁵ Psacharopoulos and Patrinos 2018.

³⁶ Saavedra 2009.

³⁷ Ferreyra et al. 2017.

³⁸ Psacharopoulos and Patrinos 2018.

³⁹ Autor et al. 2008.

⁴⁰ Hasanefendic et al. 2016.

⁴¹ StudyMalaysia. 2016. "Technical and Vocational Education and Training (TVET) in Malaysia." October 12.

<https://www.studymalaysia.com/education/top-stories/technical-and-vocational-education-and-training-in-malaysia>; Blom et al. 2016.

⁴² Almeida et al. 2016.

⁴³ OECD 2014.

⁴⁴ Bettinger et al. 2017.

⁴⁵ Saavedra and Saavedra 2011.

⁴⁶ Loyalka et al. 2016.

⁴⁷ Schendel 2013.

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- ⁴⁸ Blom and Saeki 2011.
- ⁴⁹ Arias et al. 2014.
- ⁵⁰ Brunello and Schlotter 2011.
- ⁵¹ Premand et al. 2012.
- ⁵² López-Mondéjar and Tomás Pastor 2017.
- ⁵³ Wang et al. 2012.
- ⁵⁴ Altbach and Salmi (eds.) 2011.
- ⁵⁵ Peking University. 2018. “Peking University holds a Plenary Meeting on Clinical Medicine +X Committee.” January 17. http://english.pku.edu.cn/news_events/news/focus/6749.htm.
- ⁵⁶ TNM Staff. 2017. “Indian Government to Set Up Seven New Research Parks across India to Boost Innovation.” *The News Minute*, May 10. <https://www.thenewsminute.com/article/indian-government-set-seven-new-research-parks-across-india-boost-innovation-61795>.
- ⁵⁷ Parque de Investigación e Innovación Tecnológica (PIIT). <http://piit.com.mx/index.php>
- ⁵⁸ Ordóñez de Pablos et al. 2011.
- ⁵⁹ Åslund and Djankov 2017.
- ⁶⁰ World Bank 2018.
- ⁶¹ Kaffenberger and Pritchett 2017.
- ⁶² Cree et al. 2012.
- ⁶³ Based on the “cumulative drop-out rate to the last grade of lower secondary general education” indicator published by UNESCO Institute for Statistics. The data is available for 112 economies.
- ⁶⁴ De Hoyos et al. 2016.
- ⁶⁵ Blunch et al. 2018.
- ⁶⁶ Chakravarty, Lundberg, Nikolov, and Zenker. 2017.
- ⁶⁷ J-PAL 2017.
- ⁶⁸ Alvarez de Azevedo et al. 2013.
- ⁶⁹ Aker and Sawyer 2016.
- ⁷⁰ Aker and Ksoll 2017.
- ⁷¹ Valdivia 2011.
- ⁷² Ibararán et al. 2012; Ibararán et al. 2018.
- ⁷³ Hirshleifer et al. 2016.
- ⁷⁴ Adoho et al. 2014.
- ⁷⁵ Kluge 2016.
- ⁷⁶ Martínez A. et al. 2018.
- ⁷⁷ Aker et al. 2012.
- ⁷⁸ Mani et al. 2013.
- ⁷⁹ Cho et al. 2013.
- ⁸⁰ Maitra and Mani 2014.
- ⁸¹ Aker and Sawyer 2016.
- ⁸² Cheema et al. 2015.
- ⁸³ Darvas and Palmer 2014.
- ⁸⁴ Sabarwal 2013.
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- ⁹¹ Attanasio et al. 2017.
- ⁹² Kugler et al. 2015.
- ⁹³ Haan and Serriere 2002.
- ⁹⁴ Alfonsi et al. 2017.
- ⁹⁵ Campos et al. 2017.
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Chapter 5: Returns to Work

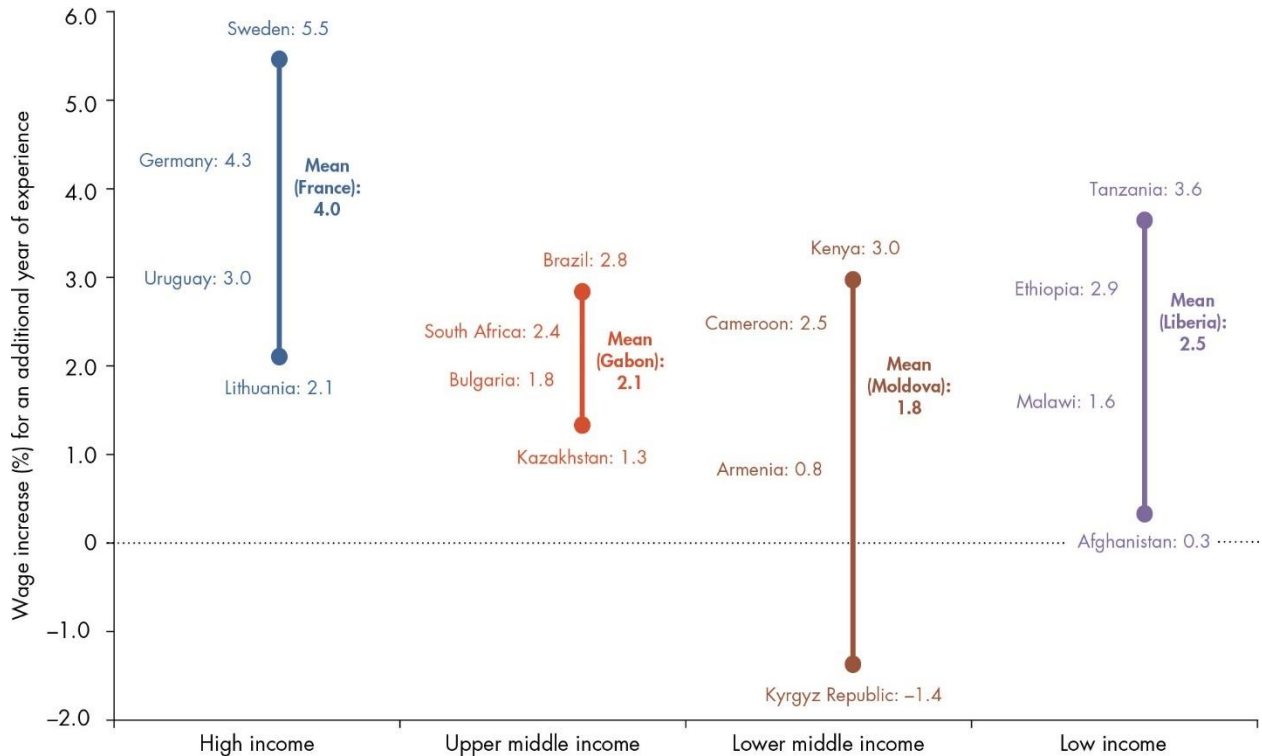
311. Learning does not end in school. Work presents an opportunity to accumulate human capital, but there are obstacles in the way. The first of these is the exclusion of women from work. Next, the poor in emerging economies are concentrated in rural areas in the agriculture sector. Raising their productivity is crucial to making human capital gains. Third is the large informal sector that is such a feature of emerging economies. The informal sector provides unstable sources of income and excludes the poor from social protection. Governments need to create the conditions for formal sector jobs as viable alternatives for the poor. The lack of social protection for informal workers means the social contract between the state and its citizens needs to be revisited.

312. To quantify the payoffs to work and school, let's turn to one of the fathers of labor economics. Before Jacob Mincer's work the common belief among his contemporaries was that luck determined one's ability, which in turn determined payoffs. Mincer proved that earnings differentials are influenced by human capital investments that grow over the life cycle, initially in school and later at work. The payoff of such investments may be measured in terms of increased earnings or "returns" as a result of an additional year spent in school or work.¹ For example, Mincer found that, for white males in non-farm wage jobs, an additional year of education increases earnings by 10.7 percent.

313. Workers in emerging economies face lower payoffs to work than their counterparts in advanced economies (figure 5.1). In the Netherlands and Sweden one additional year of work raises wages by 5.5 percent. In Afghanistan the corresponding figure is 0.3. A worker in an emerging economy is more likely to find herself in a manual occupation that is intensive in physical tasks than a worker in an advanced economy. There is less scope for learning, as well as risk of automation, in manual jobs. Moreover, compared to advanced economies, emerging economies have a poorly educated workforce. Advanced economies, meanwhile, are often at the cutting edge of technology. Their workers tend to be highly educated, formally employed, and have access to a wide range of jobs intensive in non-routine, cognitive tasks. This may explain the higher returns to work in advanced economies than emerging economies.

314. Data shows a positive relationship between self-reported levels of learning at work and the degree of development of an economy.² Comparing returns to work between manual and cognitive occupations shows that an additional year of work in cognitive professions increases wages by 2.9 percent, while for manual occupations the figure is 1.9 percent. Elementary occupations and skilled agriculture have the lowest returns. Professionals, managers and technicians have the highest returns.

Figure 5.1. Returns to experience by income group



Source: Authors' calculations using household and labor force survey data from the International Income Distribution Database. Note: The figure provides estimates of the percentage increase in wages from an additional year of potential experience across 135 economies by income level. The first bar presents the estimates for high income economies. The middle figure presents the mean (4.0 percent). On average an additional year of experience increases monthly wages by 4.0 percent in high income economies. The top figure is the highest estimate for the high income group (Sweden—5.5 percent). Therefore, an additional year of experience raises monthly wages by 5.5 percent in the Sweden. The bottom figure displays the lowest estimate for the high income group (Lithuania—2.1 percent). The same information is repeated for other income groups, as represented by each bar. The top and bottom economies for each region are provided. The methodology follows previous work by categorizing years of experience into bins (Lagakos et al. 2018). The wage growth is estimated for each bin relative to the no-experience bin. The returns to experience is then calculated as an average of these seven bins, using a geometric mean. The top and bottom economy listed for each income group are ranked after the estimates account for income and life expectancy of the economy.

315. Work provides a venue for a prolonged acquisition of skills after school. Nevertheless, work is a complement to schooling, not a substitute. Global differences in school education explain much of the observed variation in earnings. One additional year spent in school produces, on average, the same increase in wages as does spending four years at work. A worker would need to spend three years on the job in Germany, five years in Malawi, and eight years in Guatemala to match the benefit of one extra year of schooling on wages. Policies that raise returns to work are likely to benefit more people in emerging economies, given that many workers are excluded from the school system.

316. Educated workers have greater scope for learning at work than uneducated workers. For each additional year of work experience, poorly educated workers have an annual wage growth of 1.99 percent. Workers with high levels of education, on the other hand, have annual returns to work of 2.44 percent. As a result, countries with poor schools face a double jeopardy. First, young adults graduating from high school are not equipped with the skills to find work. Second, even if they find work they earn less than the more educated individuals.

317. Consider Jordan, a country with low returns both on education (5.85 percent) and experience (1.24 percent), together with below average PISA (Programme for International Student Assessment) scores in math, science and reading. A worker who completes secondary education in Jordan and one year at work would earn less than half of her counterpart in Germany. What is more, by the time she accumulates 30 years of experience, the German worker's wage would already be at least five times higher than for the worker in Jordan.

Informality

318. The informal economy is omnipresent in most emerging economies. Informal employment is more than 70 percent in Sub-Saharan Africa and South Asia and more than 50 percent in Latin America. In Kenya, for example, informal employment stands at a staggering 77.9 percent of total employment. Juma, a bicycle repairman, works in one of the thousand stalls in the open-air space which Kenyans call *Jua Kali* – Swahili for “fierce sun”. Juma's is one of the 5.8 million unlicensed businesses in Kenya's informal sector.³ Three out of four workers are informal, one of the highest rates in the continent.

319. Although informal workers outnumber formal ones, their overall productivity is significantly lower for the typical developing economy. In fact, informal workers are only 15 percent as productive as formal workers.⁴

320. The informal sector is slow to change. Since 1999, India has seen its IT sector boom, become a nuclear power, broken the world record in terms of the number of satellites launched into outer space using a single rocket, and achieved an annual growth rate of 5.6 percent. Yet the size of its informal sector has remained around 90 percent. These patterns are not idiosyncratic to India. Informal sectors in emerging economies are a fixture. In Madagascar the percentage of non-agricultural informal employment workers increased from 74 percent in 2005 to 89 percent in 2012. In Nicaragua the size of informality rose from 72.4 percent in 2005 to 75 percent in 2010.

321. The returns to experience for a worker in the formal sector are higher than the informal sector. For instance, a year spent in the informal sector in Kenya raises incomes by only 2.65 percent a year. In contrast, a worker in the formal sector in Kenya raises her income 4.13 percent every year, which is 1.6 times higher than the informal sector. The difference is potent.

322. The disparity in the payoffs to work between formal and informal jobs is a global phenomenon. In Nepal returns to experience are 1.4 times higher for formal wage workers than informal wage workers. In South Africa they are 1.6 times higher in the formal than the informal sector; in India they are over twice as high as the informal sector. In emerging economies, on average, the earnings increase for an additional year of work for informal wage workers is 1.42 percent. The figure is 1.84 percent for formal wage workers.

323. Millions of informal businesses run by the poor are unlikely to make their owners rich. Typically, they have no paid staff and tend to be barely profitable. In Dakar, Senegal, 87 percent of firms with labor productivity below US\$10,000 per worker are in the informal sector.⁵ Informal firms are run by uneducated owners, serve low-income consumers, and use little capital—informal firms add only 15 percent of the value per employee of formal firms.⁶ They also rarely move to the formal sector.

324. The poor manage to make a lot out of little, but the businesses they run are too small to raise the livelihoods of their owners. These enterprises do not provide a stable income stream, leaving the poor vulnerable to unexpected events. Yet they have no other option. The enterprises of the poor are a way to work when formal employment is unavailable.

325. Creating stable formal private jobs for the poor is an important policy goal. Stable jobs allow poor workers to make commitments to expenditures. Factory jobs dramatically improve the lives of the poor.⁷ Improvements in infrastructure in towns and villages could encourage formal firms to establish themselves near poor workers. While small-scale informal enterprises are unlikely to formalize and grow, the owners of informal firms may obtain formal jobs.

326. Countries with heavier regulation have larger unofficial economies.⁸ Mexico provides a good illustration of what happens when a country streamlines its business regulation.⁹ Starting in May 2002, Mexico implemented the Rapid Business Opening System. The program simplified local business registration procedures. It reduced the average number of days needed to register a business from 30.1 to 1.4. The number of required procedures was reduced from 7.9 to 2.7. The number of office visits required to register a business fell from 4.2 to one. The Federal Commission for Improving Regulation (COFEMER) organized the reform, coordinating with municipal governments since many business registration procedures are set locally in Mexico. Business reforms resulted in informal business owners, who were similar in profile to formal wage workers, to be 22.3 percent more likely to join them in formal employment. The evidence suggests that easing regulation encourages the transition from informal firm ownership to formal wage jobs.

327. In some cases, streamlining business is not enough but has to be carried out in tandem with other policies. In Brazil the Individual Micro-Entrepreneur Program, introduced in 2009, targeted entrepreneurs with at most one employee, and was designed to reduce dimensions of formality costs: (i) registration (entry) costs; and (ii) the costs of remaining formal, by reducing monthly taxes and red tape. The combination of reducing business registration costs in combination with reducing taxes resulted in the formalization of existing informal firms.¹⁰ Industries eligible for tax reduction experienced an increase of 4.8 percent in the number of formal firms. Halving monthly taxes led to a 1.9 percent increase in the registration rate for entrepreneurs, from a baseline rate of 20 percent.

328. Governments can use technology to reduce informality. The introduction of e-payroll was an important factor in the reduction of non-agricultural informal employment in Peru from 75 percent in 2004 to 68 percent in 2012.¹¹ Employers use e-payroll to send monthly reports to the National Tax Authority regarding their workers, pensioners, service providers, personnel in training, outsourced workers and claimants. E-payroll resulted in the registration of 276,000 new formal jobs, after accounting for economic growth.

329. Investments in human capital reduce informal employment. When young people are equipped with the right skills they are more likely to obtain a formal job. A youth training program in Santo Domingo, the capital of the Dominican Republic, targeted youths between 16 and 29 years old who did not attend school and were living in poor neighborhoods.¹² The program offered skills training courses that lasted 225 hours: 150 hours devoted to teaching a wide range of low-skill qualifications such as administrative assistant, hair stylist, and mechanic; and 75 hours devoted to improving the soft skills of participants (mainly, work habits and self-esteem). Courses were

followed by a three-month internship in a private firm. The program's evaluation shows that skills investment in youth training has a significant impact on the probability of securing a formal job and on earnings in an urban labor market. And these gains last over time.

Working Women

330. The mural "Making of a Fresco" by Mexican painter Diego Rivera is chosen as the cover of this study. A communist, Rivera painted a gigantic worker towering over bankers, architects, and artists. But there is only one woman among the 19 people in the painting. Although the status of women in the economy has improved since Rivera's times, a considerable gulf remains in economic opportunity between them and men.

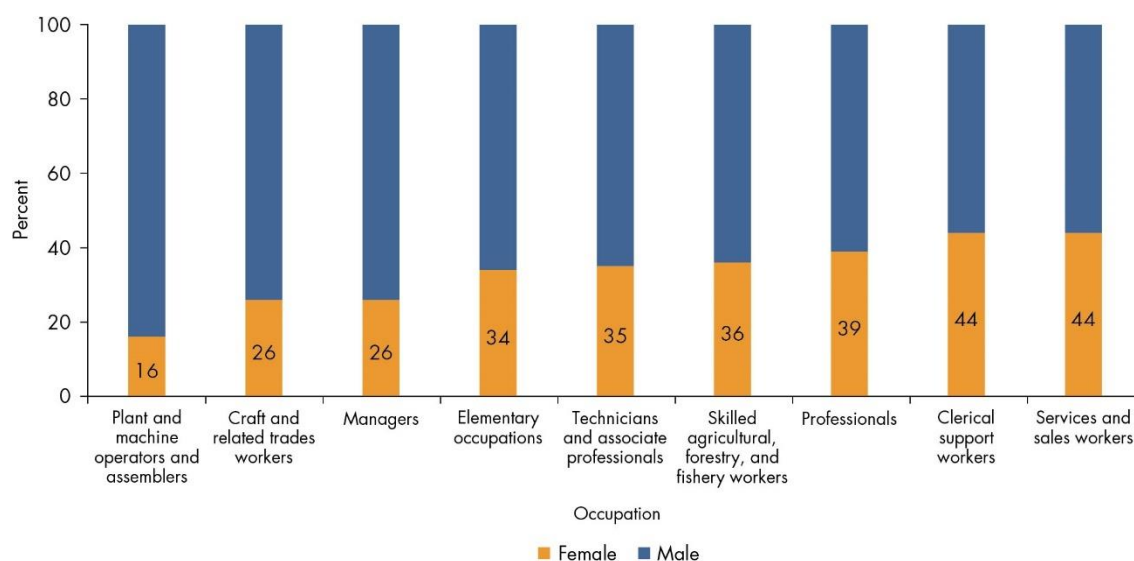
331. Some societies exclude women from work. Across the world, 49 percent of women above the age of 15 are employed, compared with 75 percent of men. Gender imbalances persist in positions of power. Less than a fifth of firms have a woman as the top manager.¹³ These numbers mask wide differences among countries. In Sweden 61 percent of women are formally employed. In Italy, the figure is 40 percent. In India and Pakistan, only 25 to 27 percent of women are in the labor force. Generally, women work in less economically productive sectors, in occupations with potentially lower on-the-job learning opportunities.

332. The inclusion of women in formal economic activity depends on equal property rights. In ancient Greece women could not inherit property rights, while in ancient Rome they had no political rights. In 1804 the Napoleonic Code stated that wives were under the purview of their fathers and husbands. Before 1870 married women in England had no right to claim property and full ownership rights belonged to the husband. Although gender parity has improved around the world, major differences persist.

333. Women face legal restrictions in obtaining jobs across many countries. The restrictions are sector-specific. 65 economies around the world restrict women from mining jobs. Women in 47 economies face restrictions in manufacturing while 37 economies restrict women from construction jobs. Furthermore, in 29 out of 189 economies explored, women cannot work the same hours as men.

334. Men outnumber women in every occupation (figure 5.2). Only a quarter of managers are women. About 39 percent of professionals are women. Across occupations, women have a relatively higher presence in clerical support worker occupations (44 percent) and services and sales workers (44 percent). The lowest is in plant and machinery operators and assemblers, where women constitute just 16 percent. Most female managers of formal firms in emerging economies are in the retail sector.

Figure 5.2. Men outnumber women across all broadly-defined occupations



Source: Authors' calculations using household and labor force survey data from the International Income Distribution Database.

335. Women face lower payoffs from work than men in many countries. The returns to work experience for men is 3.1 percent, compared with 1.9 percent for women. In Venezuela men's wages increase by 2.2 percent, compared with only 1.5 percent for women for each additional year of work. The difference is even larger for countries like Mali, where returns for men are 3.1 percent but only 1.6 percent for women. A woman in Mali would need to accumulate almost two years more experience for every year her male co-worker accumulates to earn the same wage increase. In Denmark, on the other hand, this figure is five percent for men, and 4.98 percent for women.

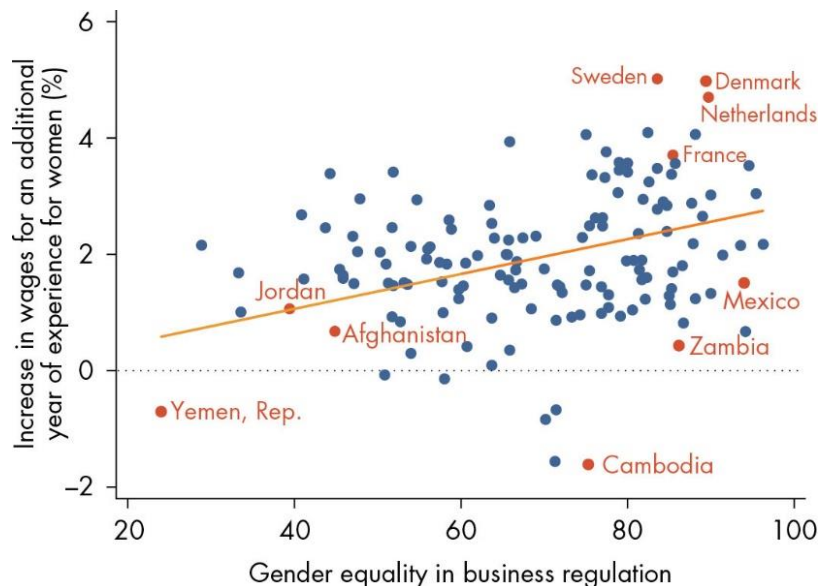
336. There are many reasons to explain these different payoffs between men and women. Consider a working couple from Bangladesh. They are contemplating the decision of conceiving their first baby. However, Bangladesh's laws do not prescribe paid or unpaid parental leave, so an equivalent job position is not guaranteed for the mother after giving birth. Nursing mothers are not entitled to nursing breaks and the law does not allow flexible/part-time schedules. Bangladesh's returns to work experience for women is 0.84 percent—almost half of the returns for men. In contrast, in Spain, Sweden and Portugal—all countries with paid leave for both men and women—the returns on experience are similar across genders.

337. Better information encourages change. As a response, the World Bank began the Women, Business and the Law project in 2008 to document gender legal disparities for 189 economies. Removing legal restrictions for women is powerful. Simply mandating a non-discrimination clause in hiring increases, in terms of gender, women's employment in formal firms by 8.6 percent.¹⁴ Mandating paternity leave to encourage a more equitable distribution of child-rearing activities between men and women raises on average the proportion of women employed in formal firms by 6.8 percentage points.¹⁵

338. The larger the number of legal restrictions women face, the lower the payoff from working (figure 5.3). At one end of the spectrum, France, Sweden and the Netherlands have fewer legal gender restrictions and higher returns to work for women. In Afghanistan and Jordan, where

women and men are treated differently by law, the payoff from work for women is among the lowest. Increasing legal gender-specific restrictions discourages women from both owning and managing firms.¹⁶ It is certainly possible that it is not the changes in the laws that are causing higher returns to experience for women, but something else. Nevertheless, laws are relatively easy to change and should be a natural first step.

Figure 5.3. More legal restrictions on women at work corresponds to lower wages



Source: Author's calculations based on World Bank (2018b) and household and labor force survey data from the International Income Distribution Database.

Note: The World Bank's Women, Business and the Law measure of gender legal equality scores economies based on whether they treat men and women differently. The higher the score, the greater the gender legal equality.

339. Countries are reforming. Following changes to the family code in Congo, Dem. Rep. in 2016, women are allowed to register their businesses, open a bank account, get a loan, sign a contract and register land without a husband's permission. Zambia's Gender Equity and Equality Act of 2015 prohibits gender discrimination in employment. Iraq guarantees workers returning after maternity leave with a similar position and the same wage. China increased paid paternity leave. Afghanistan forbids sexual harassment in employment and education. 65 countries made gender equality reforms between 2015 and 2017.

340. Reforming discriminatory laws and programs that empower women by giving them access to training and assets improve the wellbeing of women. In Bangladesh poor women generally work as maids or agricultural workers and wealthy women rear livestock. A nationwide program changed lives by providing poor women with livestock as well as skills training and advice on their legal, social and political rights. Earnings of many of the women in the program rose, the value of their livestock increased, they accumulated business assets and were more likely to own land. These improvements lasted seven years after the program.¹⁷ A similar program in Uganda provided vocational training to adolescent girls, together with information on sexual health and reproduction to reduce early pregnancy. Four years after the program women were more likely to be engaged in income-generating activities.¹⁸

341. Liberia launched the Economic Empowerment of Adolescent Girls and Young Women project in 2009. It seeks to provide young girls with both in-classroom training—focused on life and technical skills highly demanded in the market—and follow-up job placement support (to either enter a paying job or start a new business). The program significantly improved participants’ lives: employment and earnings increased by 47 and 80 percent respectively; participating women saved US\$35 more; their self-confidence, life satisfaction and social abilities improved. Households with participating women improved their food security by increasing the consumption of high-value proteins while decreasing the likelihood of food shortages.¹⁹

Working in Agriculture

342. Agriculture remains the main economic sector in low income countries, even as the number of jobs it supports decreases as economies develop. In 2017 agriculture accounted for 68 percent of employment in low income economies. Improving agricultural incomes is therefore an effective way of reducing poverty.²⁰ However, the combined forces of automation and open trade work against agricultural employment in developing countries. Capital-intensive agriculture in advanced economies may be reducing import demand.

343. The result is faster urbanization in Africa and South Asia, where the challenges of moving to cities proliferate. On the one hand, earnings could rise: in emerging economies an additional year of city work experience is worth 2.2 percent increase in pay. The returns to work in urban areas are 1.7 more than rural areas, or a premium of 69 percent. This reflects a global pattern. In Indonesia and Mexico, the returns to work are 50 percent higher in urban than rural areas. For India, China and Vietnam payoffs to work in urban areas are double those of rural areas.

344. On the other hand, opportunities in the city can be limited. Workers need to have a level of education to access most of the better jobs in the cities. In several developing economies stringent workplace regulation deters firms from employing less productive workers, pushing them into the informal economy.²¹

345. The constraints faced by the poor in moving to cities have been well illustrated. In India, for instance, workers in Orissa provided several reasons for not staying in the city.²² First, there is no housing—the extreme poor squeeze themselves often into swamps or slums right next to refuse dumps. In contrast, villages offer more open, greener and quieter spaces. There are considerable risks in moving one’s family to a city. If your children fall sick, healthcare is better but will anyone lend you money if it is needed? The connections developed in villages serve as crude safety nets for the vulnerable lives of the poor.

346. Workers in emerging economies experience half of the payoffs to work (about 2 percent) than workers in advanced economies (4 percent). To reduce poverty, governments may be tempted to move poor workers from villages to cities to raise the overall payoffs in the economy. However, this movement is unlikely to considerably narrow the payoff gap between emerging and advanced economies. Improvements in rural areas are necessary to narrow the payoffs gap between emerging and advanced economies. This has been found by studies conducted in Kenya and Indonesia.²³

347. Between the bustling cities and the subsistence-oriented villages lie secondary towns. They serve a special role in facilitating the transition of rural workers to off-farm employment, much of

it related to agriculture. Secondary towns inhabit an important space between villages and cities, enabling movement up and down the value chain. The experiences of Tanzanian migrants confirm this, highlighting the role that secondary towns play in facilitating the transition out of agriculture.²⁴ In the early stages of development, growing secondary towns may do more for rural poverty alleviation than cities. But in later stages of development, the cities take over.²⁵

348. As economies develop, agricultural productivity rises, unlike productivity in the informal sector. But the challenges facing farmers in emerging economies are numerous and governments play an important part in raising agricultural productivity. Smallholders have limited access to agricultural inputs, such as fertilizers and machinery, as well as services that increase their productivity. They are not integrated into value chains. Entrepreneurs face numerous obstacles to their operations. Value chain development allows farmers to capture the urban demand for higher value agricultural products such as dairy, meat, fruit and vegetables. Poverty reduction is faster when agriculture transforms from staple to non-staple crops. This requires raising staple crop productivity well beyond the levels currently achieved in Sub-Saharan Africa. Policymakers have made progress in some areas, such as programs that transfer knowledge, and initiatives that exploit digital technologies to increase access to input, output and capital markets.

349. Training farmers on the best farming techniques has been shown to raise productivity. Some projects expand training programs or collaborations to improve the exchange of information. Sometimes this has been combined with increasing access to finance or provisions of agricultural as an impetus for improving agricultural productivity. Providing resources to cooperatives improves linkages between agri-businesses along the value chain. JD Finance, the fintech arm of JD.com, a leading Chinese e-commerce platform, has been collaborating with cooperatives to provide farmers with microcredits.

350. For example, the *Integrated Growth Poles Project* in Madagascar, which provided training on improved cocoa processing practices and business management skills to farmers, resulted in beneficiaries experiencing an average increase in net revenues of 47 percent. Farmer field schools in Afghanistan, which are part of the National Horticulture and Livestock Project, tripled the income of some participants. Farmer field schools have also been successful in East Africa.²⁶ Government initiatives to link farmers with producer organizations, agribusiness purchasers and financial institutions in the sorghum sector in Northern Cameroon had similar effects.

351. The effectiveness of agricultural training can be improved. One way is by activating social ties in villages to encourage peer learning. A recent study with rural female farmers in Uganda concluded that encouraging them to compete resulted in greater learning in training sessions.²⁷ Agricultural extension services can be improved through low cost videos that leverage the knowledge and participation of local communities.

352. Mechanization has in the past failed to take a foothold in Sub-Saharan Africa, creating skepticism about ambitious predictions of technological transformations in agriculture. Yet, thanks to new technologies focused on information and communication, there are signs that mechanization is happening. Instantaneous measurements allow farmers to make better decisions. Aerial images from satellites, drones and soil sensors improve measurements and crop monitoring. Detailed information informs farmers' decisions on how much fertilizer and irrigation is needed.

353. Many farmers in emerging economies do not know if they are getting the best price for their crops. TruTrade in Uganda is an example of digital technology bridging this information gap. It uses online applications to allow price-setting, to track the movements of produce and payments. TruTrade connects smallholders to buyers while raising quality and transparency. This creates an atmosphere of trust. Farmers receive good prices and reliable access to markets. Traders build relationships as trusted providers, thereby growing their businesses.

354. Mobile technology in Kenya is reducing administrative and assessment costs for insurance schemes. A good illustration of this is the app Kilimo Salama (Swahili for “Safe Farming”). When insurance products are sold, the seller activates the insurance policy using the Kilimo Salama application by scanning a product-specific bar code with the camera phone, entering the farmer’s mobile number, and connecting the farmer to the local weather station. Thirty solar-powered weather stations automatically monitor the weather. An SMS is received to confirm the insurance policy. The indemnity payments are made through the M-Pesa platform. The Kilimo Salama project has evolved into ACRE Africa. By 2017 over a million farmers in Kenya, Tanzania, and Rwanda have been insured.²⁸

355. Orchard farmers in the Kastamonu Province in Turkey face challenges from pests and frost. The government, in collaboration with international donors, established five mini- meteorological stations in rural areas throughout the province along with 14 reference farms to measure rain, temperature and pest cycles. Producers are regularly updated by SMS, allowing them to react to prevailing local conditions. Costs fell dramatically for producers in the first two years of the scheme. Pesticide applications dropped by 50 percent.²⁹

356. For farmers to profit from increased agricultural productivity, they need access to markets, both at home and abroad. Export-oriented agriculture in northern and central Mexico provides on-farm job opportunities to millions of farmers and to many others off-farm in agri-food processing and packaging activities. Alquería, the third-largest dairy company in Colombia, is expanding exports—13,000 small dairy farmers from which Alquería sources raw milk would all benefit from the increased demand overseas. Aside from streamlining export processes, improving trade logistics infrastructure, and increasing food safety compliance capacity, governments can help exporters through training and marketing assistance. For example, the Vietnamese government works with industry organizations to deliver coordinated branding campaigns for tea, coffee and cashew nut.

¹ Mincer 1974.

² Levin et al. forthcoming.

³ Omondi, Dominic. 2016. “Why Informal Sector is the theatre of Survival” The Standard, November 1 <https://www.standardmedia.co.ke/business/article/2000221705/why-informal-sector-is-theatre-of-survival>

⁴ La Porta and Shleifer 2014.

⁵ Benjamin and Mbaye 2012.

⁶ La Porta and Shleifer 2014.

⁷ Foster and Rosenzweig 2007.

⁸ Djankov et al. 2002.

⁹ Bruhn 2013.

¹⁰ Rocha et al. 2017.

¹¹ FORLAC 2014.

¹² Ibarrarán et al. 2018.

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- ¹³ Islam et al. 2018a.
¹⁴ Amin and Islam 2015.
¹⁵ Amin, et al. 2016.
¹⁶ Islam et al. 2018b.
¹⁷ Bandiera et al. 2017a.
¹⁸ Bandiera et al. 2017b.
¹⁹ Adoho et al. 2014.
²⁰ Christiaensen, Demery and Kuhl 2011.
²¹ Divanbeigi and Saliola 2017
²² Banerjee and Duflo 2011.
²³ Hicks et al. 2017.
²⁴ Ingelaere et al. 2018.
²⁵ Gibson et al. 2017.
²⁶ Davis et al. 2012; Larsen et al. 2014.
²⁷ Vasilaky and Islam 2018.
²⁸ Acre Africa. <http://acreafrica.com/services/>.
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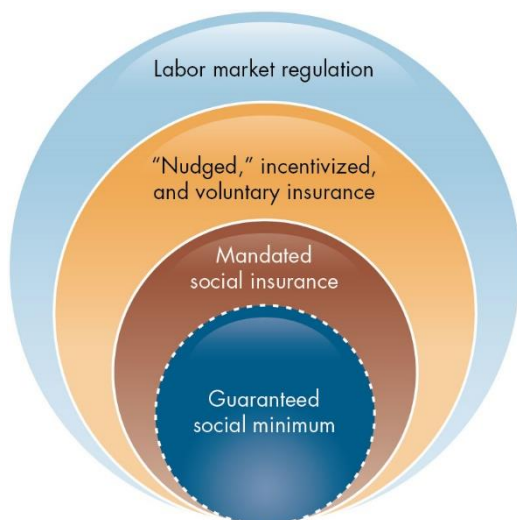
Chapter 6: Strengthening Social Protection and Labor Policies

357. Otto von Bismarck, Germany’s Chancellor in the late 19th century, is widely credited with inventing social insurance as we know it: with benefits to formal workers financed by dedicated taxes on wages. What is less known, however, is that this model was Bismarck’s Plan B. The Chancellor’s original intention was to create a system of pensions financed by taxes on tobacco. As this plan failed, Bismarck resorted to wage-based, contributory financing.

358. While Bismarckian arrangements have served many countries well, in a range of developing countries the model remained mostly aspirational due to informality. Many workers lack formal protection. In low-income countries, social assistance and insurance only cover 18 and two percent of people in the poorest quintile, respectively. The corresponding rates increase to 77 and 28 percent in upper-middle-income settings.

359. This chapter outlines how three main components of social protection systems—a guaranteed social minimum against poverty (with social assistance at its core), social insurance, and labor market regulation—can manage labor market challenges (figure 6.1). The envisioned system reinforces the role of social assistance. Already spurred by equity concerns, expanded social assistance is underscored by increasing risks in labor markets and the need to ensure adequate support irrespective of how a person engages in the labor market. A guiding principle for strengthening social assistance is that of “progressive universalism”. The aim of this approach is to expand coverage while prioritizing the poorest people. This step-by-step expansion occurs while navigating the fiscal, practical and political trade-offs that incremental levels of coverage involve.

Figure 6.1. Social protection and labor regulation for the changing nature of work



Source: Adapted from World Bank 2018c.

360. Social assistance should be complemented with insurance that does not fully depend on formal wage employment. An arrangement of this nature would, first, provide basic universal coverage, subsidizing premiums for the poor. This would top up social assistance. Mandatory

earnings-based contributions would be necessary in addition. This mandate would apply, at least initially, only to formal workers. A lighter mandate could attract greater compliance. Additional insurance could be achieved through voluntary saving schemes “nudged” by the state. Disentangling redistribution from savings would reduce labor costs. This change may reduce incentives to replace workers with robots.

361. Taken together, the expanded coverage of social assistance and the provision of subsidized social insurance imply a stronger role for governments. For instance, the desirable level of spending for a societal minimum in developing countries may, in many cases, be significantly higher than average expenditures in social assistance (currently at 1.5 percent of GDP). Progressive universalism calls for gradual expansion in line with prevailing fiscal space.

362. Enhanced social assistance and insurance 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. For example, if aiming to provide a livable income, countries 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. Similarly, income support to the unemployed may be provided by unemployment benefits rather than via severance pay.

363. Lower labor costs improve the adaptability of firms in the changing nature of work, while encouraging greater formal employment, especially of new labor market entrants and low-skilled workers. Informal workers may also be better protected. However, there needs to be a proper balance between regulation and job creation. Complementary support for reskilling, as well as new arrangements for expanding workers’ voice, become even more important. Effective representation of both formal and informal-sector workers ensures that the ‘security’ element of ‘flexicurity’ is preserved.

Social Assistance

364. “All poor people should have the alternative... of being starved by a gradual process in the home, or by a quick one out of it”. The words of Charles Dickens’ *Oliver Twist* provide a vivid illustration of social assistance practices in 19th Century Britain. The approach, codified in the Poor Laws of 1601 and 1834, established harsh criteria for accessing social assistance. The Laws also influenced thinking about social assistance for centuries. It was only 70 years ago that the “Beveridge Report”, with its recommendations embedded in the 1948 National Assistance Act, marked the end of the era evoked by Dickens.

365. In subsequent decades, social assistance began to spread in developing countries. Trends in social assistance attest to significant global progress: out of 142 countries in the World Bank ASPIRE (the *Atlas of Social Protection Indicators of Resilience and Equity*) database, 70 percent have unconditional cash transfers (UCTs) in place. 43 percent have conditional cash transfers (CCTs). 101 countries have old-age social pensions in place.¹

366. Developing countries are continuously expanding social assistance programs: the coverage of the national CCT scheme in Tanzania increased twentyfold from 0.4 percent of the population in 2013 to ten percent in 2016. An equal level of coverage is achieved by the Productive Safety

Net Program in Ethiopia. About 20 percent of the population is served by the *Pantawid* program in the Philippines and the Child Support Grant in South Africa. Overall, the cumulative coverage of social assistance is 40.1 percent of the 5.1 billion people represented in surveys included in ASPIRE; however, the largest among single programs reaches about ten percent of the population.

367. Social assistance helps on many levels. Empirical studies demonstrate that cash transfers are spent on food, health care, education and other desirable goods.² Transfers are associated with enhanced human capital of current and future generations. A systematic review of 56 cash transfer programs found significant improvements in school enrolment, test scores, cognitive development, food security and usage of health facilities.³ In Mexico, the *Prospera* CCT program improved motor skills, cognitive development and receptive language of children 24-68 months old. In Kenya, secondary school enrollment increases by seven percent for children in the Orphans and Vulnerable Children program. These gains are usually largest for the poorest, rural dwellers, girls and ethnic minorities. Transfers reduce stress and depression, increase mental bandwidth and foster more involved parenting.⁴

368. Social assistance programs also affect household assets and livelihoods. In evaluations in Africa, livestock ownership increased on average by 34 percent and ownership of durable goods by ten percent.⁵ Programs increasingly reinforce livelihood effects by adding elements of awareness-raising on nutritional risks, financial inclusion, entrepreneurship training and asset transfers.⁶ In other words, social assistance, especially “income support plus” interventions, has raised productivity and resilience among informal workers in many cases.

369. In advanced economies social assistance faces the challenge of low uptake amongst eligible beneficiaries. In the European Union only about 60 percent of social benefits are claimed.⁷ This challenge stems from a lack of awareness of benefits, misunderstanding eligibility rules, perceived stigma associated with assistance, bureaucratic obstacles and the opportunity costs of accessing benefits.

370. In some middle-income countries with high levels of coverage, policymakers have weighed the possibility of targeting by “excluding the rich” instead of selecting beneficiaries from the bottom. This approach is often considered in the context of large-scale energy and food subsidy reforms. The political viability of such a proposition may then depend on how the middle-class and various interest groups are set to benefit (and in part pay for) the program as part of a wider social contract.⁸

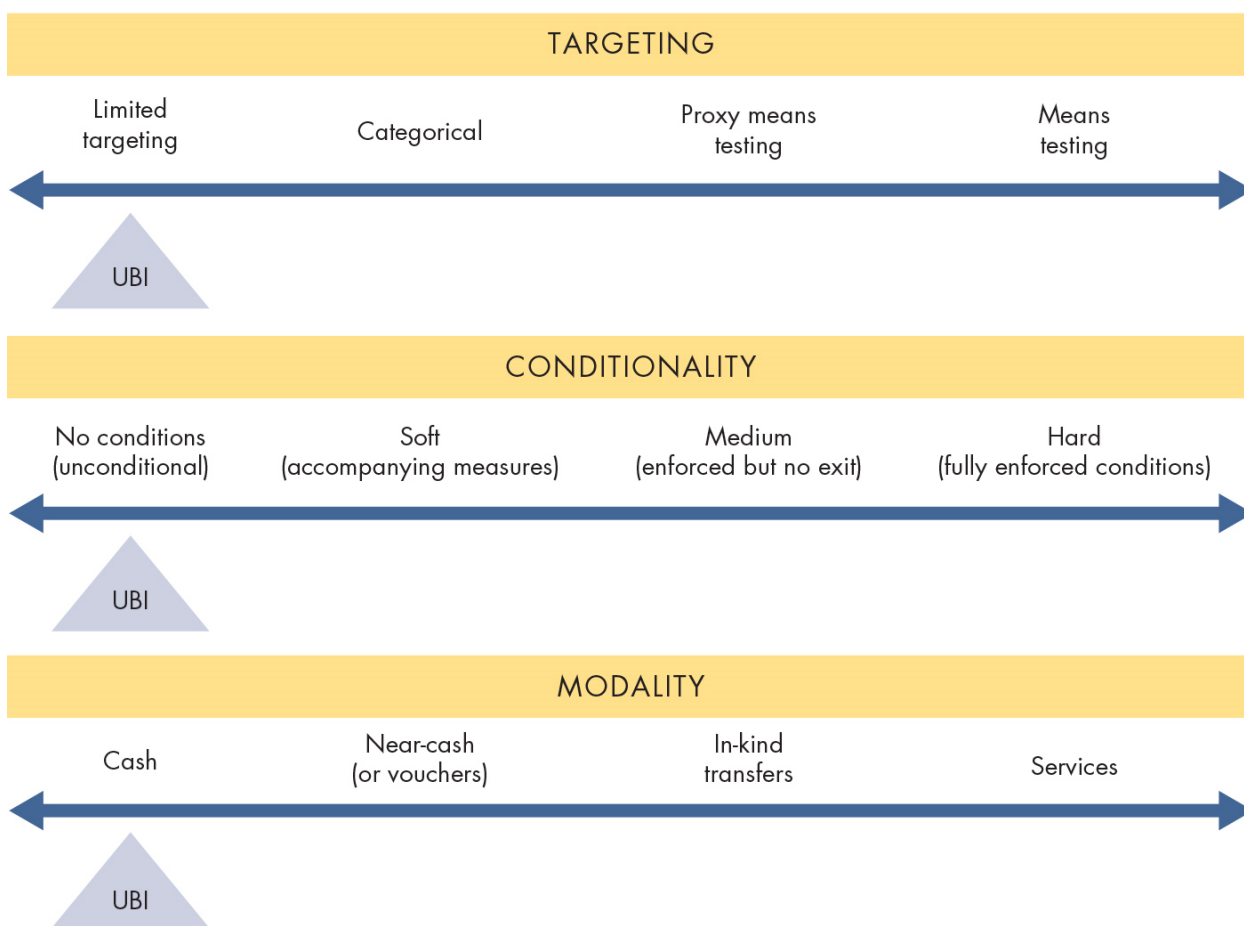
371. Where deprivation is widespread, households across the income distribution face similar levels of need. Continuity in welfare distribution may contrast with sharp, somewhat arbitrary measures of poverty or eligibility criteria.⁹ For instance, in some middle-income countries people living on US\$6 a day, or just above the poverty line, face a 40 percent probability of falling back into poverty.¹⁰ In fact, poverty is often dynamic: in Africa, a third of the population is persistently poor, while another third moves in and out of poverty.¹¹

372. These facts suggest the need for broader and more permanent coverage than most programs currently provide. While the direction of travel towards more universal approaches is desirable, the specific shape of this minimum 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. Expanding social assistance should proceed at the same pace as the capacity of a country’s ability to mobilize the required resources. The choice of larger or smaller tax-transfer policies has different distributional effects as well as diverse roots of political support.

373. As part of the expansion options, a hotly-debated idea is Universal Basic Income (UBI). A UBI enshrines the notion of building a guaranteed social minimum through a single program presenting three design features. First, the program is meant for every individual independently of income or employment status. Second, it is provided in the form of cash instead of in-kind transfers and services. Third, there are no conditions attached or reciprocal co-responsibilities to be fulfilled by participants (figure 6.2).

Figure 6.2. Main design traits of a UBI



Source: Authors’ calculations.

Note: each banner includes illustrative alternative design traits.

374. A UBI is not an alternative to health, education or other social services. The program may be additional to current social assistance programs and more likely to replace some of the programs pursuing income support functions. A UBI may be designed with different objectives in mind, from poverty reduction to ensuring a livable income. The discussion here focuses on the former.

While UBI provides the same level of benefits to the entire population, the money may be recovered from the rich, for example through progressive income tax.

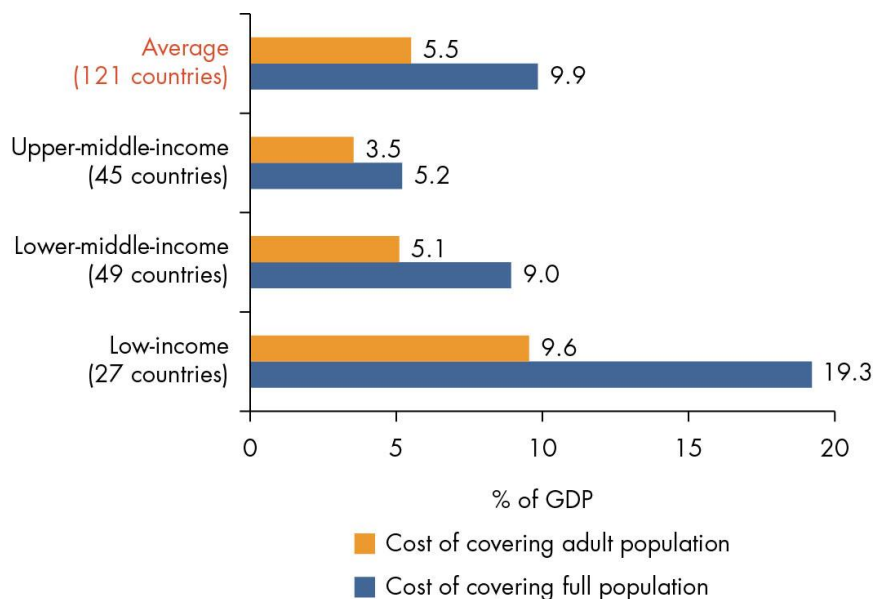
375. India's Chief Economic Adviser, Arvind Subramanian, predicted enthusiastically in 2017 that "... I can bet, within the next two years, at least one or two [Indian] states will implement universal basic income".¹² But we know very little about how UBI works in practice. Only one country, Mongolia, had a short-lived UBI covering the entire population. The program lasted two years (2010-2012) before being dismantled due to fiscal constraints. When mineral prices collapsed, so too did the scheme.¹³ Iran also had a program resembling a UBI for one year: in 2011, energy subsidies were replaced by cash transfers to 96 percent of the population.

376. Local variants of a UBI are in place in a range of resource-dividend schemes. The Alaska Permanent Fund, for example, is designed to redistribute oil revenues to all residents. In 2016, the Fund distributed about US\$2,000 each to 660,000 individuals. There are several small-scale schemes and experiments ongoing in Canada, China, Kenya, the Netherlands, and the United States.¹⁴ While labelled UBI, they are often versions of targeted programs.

377. The fiscal implications of a UBI could be significant. New analysis estimates the costs of providing a UBI in four European countries. UBI transfers were set equal to those of existing cash transfer programs.¹⁵ Results show that the additional cost of a UBI varies significantly, i.e., 13.8 percent of GDP in Finland, 10.1 percent in France, 8.9 percent in the UK, and 3.3 percent in Italy. To cover the additional costs, two funding sources were identified: taxing UBI transfers alongside other incomes and abolishing existing tax allowances. In Finland and Italy, these measures were more than adequate to cover the extra costs of a UBI. In France, those revenues almost offset the cost of a UBI. In the United Kingdom, taxing cash benefits and eliminating tax allowances is not enough to cover for the UBI.

378. Simulations from developing countries also point to significant additional spending for a UBI. In a handful of emerging economies, a UBI set at 25 percent of median income would cost about 3.75 percent of GDP.¹⁶ In comparison, low and middle-income countries spend on average 1.5 percent of GDP on social assistance. In India the government's estimates show that a quasi-UBI excluding the top 25 percent could be largely paid for by replacing existing schemes.¹⁷ While the latter accounts for about 5 percent of GDP, results have been contested.¹⁸ Other simulations are providing further evidence. The cost of a UBI for adults set at the average poverty gap level ranges from 9.6 percent of GDP in low-income countries to 3.5 percent of GDP in upper-middle income countries. If transfer amounts are lower—for example, set at the average level of current benefits—costs would shrink considerably (but would have less impact). Whether a UBI provides sufficient money to close the poverty gap or equates to current transfer levels, the cost of the scheme would nearly double if intended for the entire population instead of for adults only (figure 6.3).

Figure 6.3. Simulated cost of UBI for closing the poverty gap by country income group (percentage of GDP)



Source: Authors' calculations based on World Bank World Development Indicators, World Bank PovcalNet, and United Nations World Population Prospects.

379. A UBI would generate winners and losers among the population. Its effects depend on how the program is financed; if and which existing targeted programs would be replaced; the performance of existing schemes; current tax structures; the size of UBI transfers; and the profile of people receiving it.

380. Estimates for a selection of developing countries that simulate replacing some existing schemes with a UBI found significant distributional effects.¹⁹ In Nepal most people would gain from a UBI. In Indonesia, while a UBI providing the same average amount of benefits of current programs would make most of the population better off, about 40 percent of the poor would receive less. Under the same scenario, simulations suggest that a UBI in South Africa makes most of the elderly and the poor worse off. A similar negative effect on about 40 percent of senior citizens would be observed in Chile.

381. A recurrent concern around UBI is the risk of work disincentives. In theory a UBI only has an income effect: the fact that the program benefits are delinked from earnings or other income may suggest there is no substitution effect.²⁰ Available evidence confirms a limited impact on work incentives. This holds for both UBI and other forms of social assistance.²¹ A study on the Alaskan dividend program shows no impact on employment. Instead, it finds increases in part-time employment of 1.8 percentage points (or a 17 percent increase).²² A study of the Iranian quasi-UBI program found that it did not affect overall labor supply.²³ There was a negative effect among young people, however. It has been argued that a UBI may empower individuals, both within households (e.g., 'making unpaid work pay') and in the labor market (e.g., the power to 'say no').²⁴ These emancipatory effects would likely require more generous benefit levels.

382. An important debate is whether a jobs-guarantee program would offer a better alternative to UBI. India's National Rural Employment Guarantee Act offers 100 days of work every year at the minimum wage. UBI proponents contest public works on the basis that a "right to income" should precede that of work. Conversely, it is contended that the right to work rests on the premise that anyone who wants work could be offered a job, hence conferring on work societal value. Those favoring jobs schemes also point to the range of productive and socially valuable activities implementable beyond labor-intensive tasks (e.g., social care services). A UBI may be an alternative to public works when their overwhelming function is mere income support. However, when more meaningful activity is envisioned, public works emerge as a complementary instrument for those who are fit and able to work. The concept of 'participation income' is a hybrid between a UBI and public works. It envisions providing universal cash transfers tied to some form of civil engagement.²⁵

383. A UBI could generate efficiency gains by reducing program fragmentation. Most countries operate a complex mosaic of social assistance programs: Bangladesh has more than a hundred programs; India has nearly 950 centrally sponsored schemes, with many more provided at the state level. This plethora of programs usually has more historical or institutional roots than solid technical justification. Some degree of consolidation may be appropriate, but the optimal number of programs is certainly more than one.

384. Whichever form of social assistance is selected, technology can be harnessed to improve delivery of social protection programs. In Mexico geospatial mapping tools are used to identify the most vulnerable areas in cities, down to the block-level. Mobile phone data was leveraged to construct poverty maps in Côte d'Ivoire. In Benin, GPS-based data collection located households lacking addresses in urban settlements. Digital technologies also deliver assistance in fragile places. In Lebanon electronic smartcards provide food vouchers to 125,000 Syrian refugee households.

385. Technology improves the credibility of personal identification (ID) systems, which are the first step in the delivery of social protection. In Sub-Saharan Africa the share of the population with national IDs ranges from nearly 90 percent in Rwanda to less than ten percent in Nigeria. Technology improves access to social registries, which in turn improves coordination among different programs. Better coordination generates cost savings by reducing inclusion errors. In Pakistan, the social registry, which includes 85 percent of the population and serves 70 different programs, contributed to savings of US\$248 million. In South Africa and Guinea, a similar process saved US\$157 million and US\$13 million, respectively. Technology reduces costs. In Argentina, linking 34 social program databases to the unique ID number of beneficiaries revealed inclusion errors in eligibility for various social programs. This led to US\$143 million in savings over an eight-year period. In 2016, Thailand eliminated 660,000 applicants out of 8.4 million, based on cross-checking databases using unique national ID numbers.

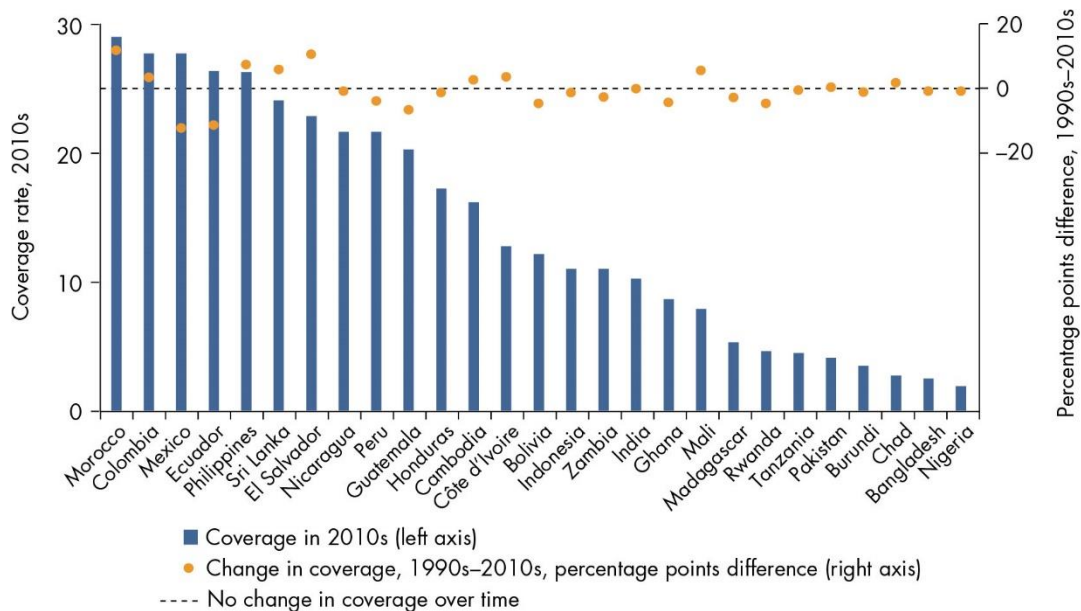
386. Payment technologies make a difference. In Ghana's Labor Intensive Public Works scheme, the digitalization of paper-based transactions and a wider use of biometric machines reduced overall wage payment time from four months to a week. In the Indian state of Chattisgarh, electronic devices for the Public Distribution System of food assistance contributed to a reduction in 'leakages' from 52 percent in 2005 to nine percent in 2012.²⁶

Social Insurance

387. In June 2011, after six years of double-digit growth, Ethiopia introduced a landmark social insurance law. For the first time, the mandate to provide pension and disability benefits was extended to private-sector firms. Firms operating beyond the reach of enforcement could evade and keep their workers uncovered. The policy aimed to expand social protection and reduce poverty. However, the consequent rise in labor costs, together with other factors, induced firms to adopt more technology. As a result, employment among lower-skilled workers dropped, exacerbating the formal-informal divide in the labor market.²⁷

388. The Bismarckian social insurance model of earning-based contributions is premised on steady wage employment, clear definitions of employers and employees and a fixed point of retirement. It relies on levying a dedicated tax on wages. In rich countries this scheme was effective in increasing coverage as workers were steadily absorbed into factories, then into jobs in formal services firms. But this contributory approach is not a good fit for developing countries where formal and stable employment is uncommon. Indeed, because eligibility is based on making mandatory contributions, this form of social insurance excludes informal workers who account for more than two-thirds of the workforce in developing countries and one in ten in India and many countries in Sub-Saharan Africa (figure 6.4). This model is also increasingly unsuitable for a changing world of work where the prevalence of traditional employer-employee relationships is no longer the norm. The traditional financing model of social insurance often makes employing workers more expensive, as illustrated by the case of Ethiopia. Rethinking this model is a priority.

Figure 6.4. Coverage of social insurance remains low in most developing countries



Source: Authors' calculations based on World Bank pension database and World Development Indicators.

389. A reformed system needs to ensure that low-income workers have access to effective risk management tools. The right combination of instruments, subsidized for the poorest, is required to cover losses from livelihood disruptions, longevity, sickness, disability and untimely death.

Instruments that support stable consumption patterns, or are consumption smoothing, are also important. A comprehensive package of protection in pursuit of these goals would contain, first, a guaranteed minimum insurance with subsidized coverage against impoverishing losses. This instrument would complement social assistance by providing coverage against losses that would be too large to cover through transfers. Second, a mandated savings and insurance plan would allow for consumption smoothing. Finally, market-based ‘nudged’ or purely voluntary savings would allow people to contribute more, if desired. Elements of this model already exist in many countries.

390. This approach can, along with a guaranteed minimum income, reduce the size and pure-tax element of mandated contributions. To varying degrees, current social insurance models mingle redistribution with risk-sharing functions and require higher contributions which are perceived by many as taxes on work. The extent of redistribution built into current social insurance schemes is low in countries like Indonesia or Vietnam but is substantial in countries like China or the Philippines. Simulations suggest that a shift like the one proposed here could reduce the payroll tax rate in a country like the Philippines from 18 to 14 percent.²⁸

391. Some countries are already moving in this direction. The significant extension of the rural pension scheme in China is a case in point. Currently, around 360 million rural and urban informal workers are contributing to the scheme. Around 150 million older people are receiving payments.²⁹ Similarly, Costa Rica’s government covers part of the pension contribution for the self-employed. Thailand does the same for informal sector workers that choose to join a special pension scheme aimed at low income workers. Subsidies could be for everyone or just for the poor, or they could be gradually reduced as income grows. The latter is the case in Turkey’s health insurance system. In addition to an almost universal old age pension, Thailand pays part of the social insurance premium for working-age people in the informal sector. The cost of the subsidy depends, of course, on the subsidy level as well as the size of the population to be subsidized.

392. In many emerging economies, social insurance liabilities are limited, since coverage is low. In countries like Bangladesh, Namibia, Lao PDR, Somalia, and South Africa, pensions are not financed through labor taxes but from general revenues. In these cases, decoupling from payroll taxes may be feasible. A significant portion could be replaced with other taxes while broadening the coverage beyond those in contracted and regulated standard employment relationships. These are also countries that could use mobile transactions as a base for consumption taxation.

393. Beyond the basic insurance level, additional policy support is likely to be required to achieve adequate protection. Additional mandated contributions would allow consumption smoothing, for which instruments are often missing in countries with underdeveloped capital and insurance markets. This layer would cover formal workers, but setting the level of insurance is not trivial since a higher mandate leads to higher labor taxes. In some countries these taxes are already high, which affects formal employment. The average payroll tax rate used to finance contributions is almost 23 percent in advanced economies.³⁰ It is also more than 20 percent in countries like China, Egypt and Peru. The mandate could be relaxed by reducing the tax rate or lowering the ceiling on earnings subject to mandatory savings.

394. To complement mandatory contributions, participation in savings or insurance schemes could be the lowest effort, default option. Some measures include adding an “opt-in” default on

business registration and income tax returns. These measures would potentially lower transaction costs. Other approaches that rely on behavioural insights are also instructive in some cases. In Kenya, giving people a golden-colored coin with numbers for each week to keep track of their weekly deposits doubled their savings rate.³¹ Another form of nudging may include “commitment devices” through which, for example, people agree to incur a loss if they do not reach a savings goal. Technology vastly increases possible nudges. For example, it facilitates the defaulting of rounding from mobile money or credit card transactions into savings.

395. There are also larger, national efforts to nudge people—regardless of the way they work—to augment savings and insurance efforts. The “KiwiSaver” program in New Zealand relies on automatic enrolment and offers a limited set of investment choices. The United Kingdom’s National Employment Savings Trust operates similarly. In both programs, although people are allowed to withdraw, incentives dissuade people from doing so.

Labor Regulation

396. In many developing countries, labor regulations were adopted at the time of colonialism. Through conquest, labor law was transplanted throughout Western Europe and the colonies in North and West Africa, Latin America, and parts of Asia. Repercussions are still felt in the 21st Century: civil law countries have significantly more stringent labor regulations than do common law countries, placing more restrictions on how employers and workers interact.³²

397. The more restrictive approach to regulation is ill-fitting to many developing countries’ labor markets as it assumes greater administrative capacity than most governments have. Designed with industrial-era economies in mind and at a time of weak social protection systems, regulations often fail to protect most workers when informality is the norm and work is often out of reach of the authorities. Within formal work, regulation in most countries was written assuming that most working people are in stable, full-time wage employment. In many developing countries these types of jobs are an exception, mostly found in the public sector or among high-skilled workers.

398. Reforms need to address three main challenges of labor market regulations. First, these regulations cover few and only formal workers whose labor is observed by the state. Yet more than half of the global labor force is informal. Second, governments are trying to do too much with labor regulations, expecting these to substitute for a social protection system, including ensuring a minimum income or substituting for unemployment benefits.

399. Third, and as argued in the World Development Report 2013, while regulations address labor market imperfections, they often reduce dynamism in the economy by affecting labor market flows and increasing the length of time spent in both employment and unemployment.³³ At this time of change, stringent regulations make it more expensive for firms to adjust the composition of their workforce, an important condition for adopting new technologies and increasing productivity.³⁴ This happens when regulations are too strict and exclude many, especially young and low-skilled people.

400. However, when too restrictive, regulations impose costs on firms that hamper dynamism.³⁵ In a sample of 60 countries, moving from the 20th to the 80th percentile in job security, in countries with strong rule of law, cuts the speed of adjustment to shocks in terms of employment by a third

and reduces annual productivity growth by one percentage point.³⁶ Productivity-enhancing technology adoption is negatively associated with the strictness of some labor regulations, specifically with burdensome dismissal procedures.³⁷ Technology-intensive sectors are smaller in countries with stricter employment protection regulations.³⁸ More stringent regulations are also associated with lower entry and exit of firms—especially small ones—in industries with higher worker reallocation.³⁹ Within countries, similar evidence is also emerging in some cases.⁴⁰

401. To address this challenge, policymakers need to rethink labor regulations. Some countries are reforming theirs in ways that support firms and workers in adapting to the changing world of work. Italy's recent reforms have been associated with the creation of more permanent jobs.⁴¹ Aiming for a balance of security and flexibility is vital. Many governments have made their labor markets more flexible. However, only a few are making corresponding investments in income support and reemployment assistance to get workers back into work. Increasing flexibility for firms goes hand in hand with strengthened social protection, intermediation and job-search assistance programs and arrangements for expanding workers' voice. Beyond basic regulations, protections would be provided to all working people irrespective of how they engage in the labor market as part of a comprehensive approach to social protection and labor institutions. This approach adds protection to the many workers—often the most vulnerable—who are effectively excluded. This would be a shift away from protecting some jobs to protecting all people.

402. Reasonable notice periods and protections against discriminatory dismissals are important to counter employer market power. However, when rules on firms' hiring and dismissal decisions are too onerous they also create structural rigidities that carry higher social costs in the face of disruption. Bolivia, Oman and Venezuela do not allow contract termination for economic reasons, limiting grounds for dismissal to disciplinary and personal matters. In 32 countries an employer needs the approval of a third party even in cases of individual redundancies. In Indonesia an approval from the Industrial Relations Dispute Settlement Board is required. In Mexico an employer obtains approval from the Conciliation and Arbitration Labor Board. In Sri Lanka an employer must obtain consent of the employee or approval of the Commissioner of Labor.

403. Firms could be accorded more flexibility in managing their human resources contingent on the law mandating proper notice, the presence of an adequate system of income protection and efficient mechanisms to punish discrimination. However, more flexible dismissal procedures ought to be balanced with increased protections outside of the work contract and active re-employment support measures to protect people who lose their jobs. Otherwise, reducing restrictions on hiring and dismissal decisions would shift an unmanageable risk-burden onto workers. The current approach in many countries, however, places too much of this burden on firms and not enough on the state directly. Audits based on the risk of violating the law and applying penalties on employers found at fault may reduce abuse.

404. The provision of financial protection to workers in the case of livelihood disruption is also ripe for reconsideration. Severance pay is the most prevalent form of this protection in most low and middle-income economies. However, it is left over from a time when governments were unable to offer unemployment income support schemes. Some countries have, on paper, extremely generous severance pay. In Sierra Leone the statutory severance pay after ten years of continuous employment equals 132 weeks of salary, 130 weeks of salary in Mauritius and 120 weeks of salary in Bahrain.

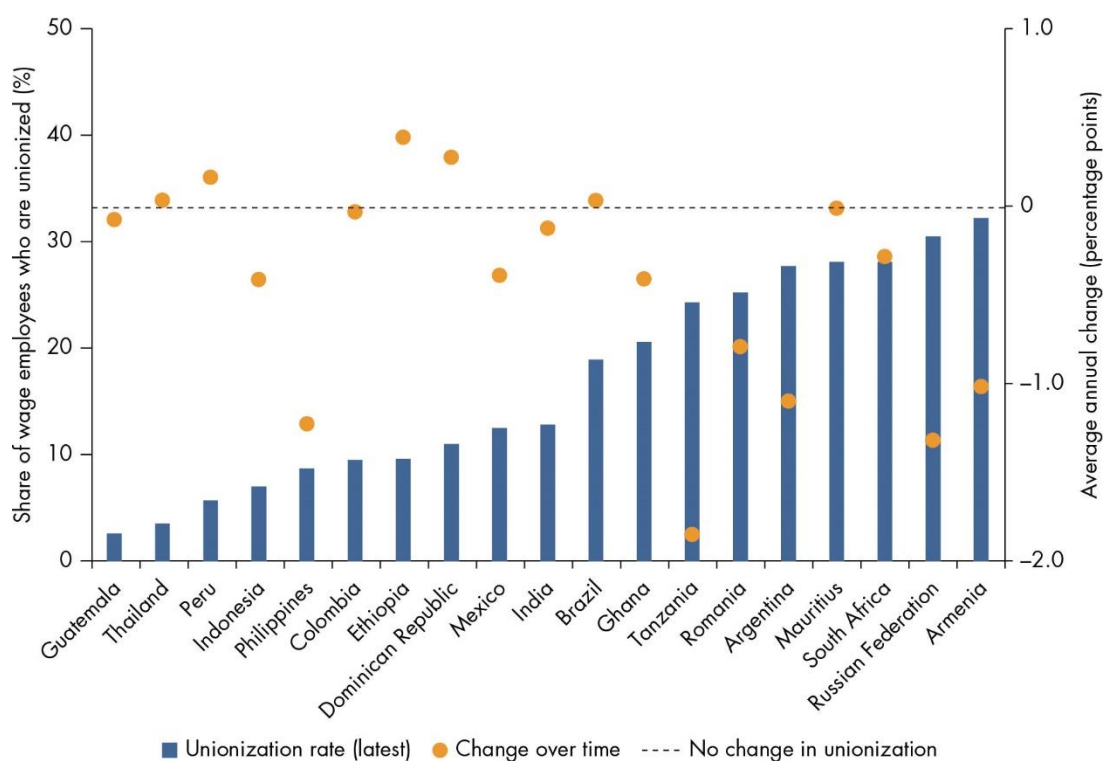
405. Yet, severance pay is an ineffective instrument for income protection since it pools risk at the firm or industry level where shocks and losses are correlated.⁴² Employees also face a high risk of not receiving payments if their employers have liquidity constraints or go out of business. Placing greater reliance on unemployment benefits organized nationally would give workers more reliable options. National, rather than firm-based arrangements also open this form of protection to all, no matter where or how they work. To ensure sufficient protection while preserving work incentives, unemployment benefit systems would rely both on individual savings and redistribution.⁴³

406. Savings could be drawn upon in case of unemployment or for retraining. If people do not draw on all their savings the remainder would be available upon retirement. Workers without enough savings would be able to rely on the minimum income guarantee financed through general revenues. Chile and Jordan have individual savings accounts for unemployment. Singapore has individual accounts for housing or education.

407. As industrial-era employment protections are scrutinized, so too should rigid, possibly outdated laws regarding work arrangements. Some new forms of work blur the distinction between being an employee and being a “dependent” self-employed: is a Yandex driver a Yandex employee? Labor codes need to define more clearly what it means to be an employee in current labor markets to ensure the basic set of protections discussed above. This definition would be based, for example, on the extent to which the worker determined her working conditions (e.g. when to work). It is important to ensure convergence in the types of benefits and protections that workers receive, regardless of the length of time they spend with an employer.

408. Finally, there is also a need to strengthen the enforcement of labor laws and mechanisms to expand workers’ voice. Moving to a simpler core contract would require strengthened collective bargaining structures as fewer protections are pre-specified in the law. But their significance is declining: across high-income countries, on average, the share of workers covered by a collective agreement has shrunk from 37 percent in 2000 to 32 percent in 2015; 24 percent of employees are members of trade unions, down from 30 percent in 1985. In developing countries, where there is high informality, unions and collective bargaining tend to play a limited role (figure 6.5). Unionization rates vary from between 15 and 20 percent of workers in Brazil, Moldova, Senegal, or Tunisia to less than ten percent of workers in countries like Ethiopia, Guatemala, Indonesia or Turkey.

Figure 6.5. Rates of unionization are low and declining in many developing countries



Source: Authors' calculations, based on ILOSTAT.

409. Digital technologies strengthen the voice of workers. Digital technologies improve systems which rely heavily on labor inspectors. They also bring down enforcement costs by more cheaply monitoring compliance with laws. In Brazil the Annual Social Information report is used to monitor compliance with the Apprentice Law. Oman has a Worker Protection Scheme that allows for monitoring wage payments. Social media plays a role in voicing complaints about employers and working conditions, putting pressure on authorities but also on employers due to reputational risks. Governments could, through results-based contracts, outsource to third parties the development of online platforms for submitting, managing and resolving labor complaints.

¹ World Bank 2018a.

² Evans and Popova 2017.

³ Bastagli et al. 2016

⁴ Akee et al. 2018.

⁵ Ralston et al. 2017.

⁶ Banerjee et al. 2018.

⁷ European Union 2015.

⁸ Desai and Kharas 2017.

⁹ Brown et al. 2017.

¹⁰ Lopez-Calva and Ortiz-Juarez 2011.

¹¹ Dang and Dalaban 2018.

¹² The Economic Times. 2018. "1 or 2 states may roll out universal income in two yrs: CEA Arvind Subramanian." January 29. <https://economictimes.indiatimes.com/news/economy/policy/1-or-2-states-may-roll-out-universal-income-in-two-yrs-cea-arvind-subramanian/articleshow/62696689.cms>.

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- ¹³ Yeung and Howes 2015.
- ¹⁴ A pilot in Finland was discontinued for various reasons before the publishing of the evaluation. See: <https://www.nytimes.com/2018/04/24/business/finland-universal-basic-income.html>
- ¹⁵ Browne and Immervoll 2017.
- ¹⁶ IMF 2017. See Harris et al. 2018 for a discussion on financing a UBI via VAT.
- ¹⁷ Government of India 2017.
- ¹⁸ Khosla 2018.
- ¹⁹ Gentilini et al. forthcoming.
- ²⁰ However, substitution could occur through an increase in taxes.
- ²¹ Baird et al. 2018.
- ²² Marinescu 2018.
- ²³ Salehi-Isfahani and Mostafavi-Dehzoeei 2017.
- ²⁴ Birnbaum and De Wispelaere 2016.
- ²⁵ Atkinson 2015.
- ²⁶ Alderman et al. 2017.
- ²⁷ Shiferaw et al. 2017.
- ²⁸ World Bank 2018b.
- ²⁹ Dorfman et al. 2013.
- ³⁰ OECD Taxing Wages 2017.
- ³¹ Akbas et al. 2016.
- ³² Botero et al, 2004.
- ³³ Betcherman 2012.
- ³⁴ Adhvaryu et al. 2013.
- ³⁵ Acharya, Baghai and Subramanian 2013; Almeida and Aterido 2008.
- ³⁶ Caballero et al. 2013.
- ³⁷ Packard and Montenegro 2017.
- ³⁸ Bartelsman, Gautier and De Wind 2016.
- ³⁹ Bottasso et al. 2017.
- ⁴⁰ Brambilla and Tortarolo 2018.
- ⁴¹ Sestito and Viviano 2016.
- ⁴² Holzmann et al. 2012.
- ⁴³ Robalino and Weber 2014.

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Chapter 7: Ideas for Social Inclusion

410. New ideas are demanded by old and new pressures on social contracts. Cracks in current social contracts are evident in the lack of efficient public services for most of the poor. On the other hand, the changing nature of work is generating fears about mass unemployment. These trends are straining the relationship between citizens, firms, and governments across the globe.

411. Technological developments in the digital era merit the injection of new ideas into public debates about social inclusion. Two elements require particular attention. While some of these fears appear to be exaggerated, there are indeed reasons to be concerned.

412. First, technology opens new avenues to reach society. Governments have new ways to reach the poor as well as others who lack access to quality services or tools to manage risks. Many work informally without access to protections in low-productivity jobs, making it difficult to escape or remain out of poverty. Informality limits the reach of social insurance systems that are based on formal earnings contributions declared to the state.

413. Second, the adjustment costs arise from the changing nature of work. Technology has varying impacts on different skills and their demand in the labor market. Depending on the technology, some skills (and their workers) are becoming more relevant than others in the world of work. Advanced skills—like complex problem solving or critical thinking—are becoming more valued in labor markets. With these skills, individuals work more effectively with new, changing technologies. Socio-behavioral skills—like empathy, teamwork, conflict-resolution—are also becoming more valuable in labor markets because they cannot easily be replicated by machines.

414. This is the right time to think about how to improve social inclusion. The politics of some of the reforms needed are complex, given the potential trade-offs involved between, for example, investments in the current generation of workers versus future generations. Public spending would need to become more efficient. Additional sources of revenue need to be identified. This is urgent given rising aspirations, especially among the youth. Social media and urbanization contribute to these rising aspirations. When aspirations are met they foster opportunity and prosperity. But when aspirations are unfulfilled they can lead to frustration, or even fragility in some countries. The sustainability of a social contract therefore hinges on a sense of fairness.

415. A social contract envisions the state's obligations to citizens and what the state expects in return. This basic conception has evolved over time. For much of history social contracts have been imposed by force or the threat of it. Rulers governed by "divine law", wherein protection was provided in return for obedience. This idea was challenged in the 1600s by Thomas Hobbes and John Locke, who embedded the relationship between state and citizens in rational thought rather than religion. A social contract imposes an obligation on citizens to respect and obey the state in exchange for security. In most societies the obligation of the state extends beyond simply providing safety. It includes broad provisions around services, jobs and public goods.

416. The sustainability of social contracts hinges on how fair it is perceived to be. This echoes John Rawls' need for a veil of ignorance regarding one's place in society, traits, or skills when thinking about the social contract. Similarly, in his 1762 book "On the Social Contract; or, Principles of Political Rights", Jean-Jacques Rousseau posits that everyone will be free because

all forfeit the same number of rights and are imposed the same duties. This is the view this chapter takes of the social contract: a policy package that aims to contribute to a fairer society.

417. This chapter addresses three questions: how can society frame a new social contract in the context of informality and the changing nature of work? If the government is given a mandate to prepare a social contract aimed at improving fairness in society, what could its basic ingredients be? Related to this is how can the State finance these proposed reforms? This exercise sets out a scenario for politicians to consider as part of legislative processes and national consultations. The package described here is not meant to be exhaustive. Instead, the discussion lays out a menu of policies that could ignite a renewed societal dialogue.

A New “New Deal”?

418. “The social contract is broken... there is a culture of not participating, of not caring, of silence”, was one of the comments received from areas affected by insecurity in Mexico.¹ Cracks in current social contracts are already evident in, for example, the events surrounding the ‘Arab Spring’ and a backlash against globalization that is reflected in rising protectionism. In many developing countries a dysfunctional social contract may lead to less demand being exerted on the state to improve public service provision. As a result, evidence from developing countries suggests that the middle class “send their children to private schools, use private healthcare, dig their own boreholes for water and buy their own generators”.²

419. Mechanisms to ensure equal opportunity, which ensure social inclusion, often fall short. Countries are neglecting investment in the early years of children’s lives, particularly among disadvantaged groups. In Latin America per capita government spending on children under five is one-third that for children aged between six and eleven. In Sub-Saharan Africa, only two percent of the education budget goes to pre-primary education.³ Tax and social protection systems in developing countries redistribute income to a limited extent. This is because revenue collection is too low.

420. Persistently high levels of informality are a symptom of the erosion of social contracts. Informal employment is more than 70 percent in Sub-Saharan Africa and South Asia. In Latin America it is more than 50 percent. Informal workers are beyond the reach of the state with respect to provision, protection, and redistribution. People operating in the informal economy evade their obligations to the state by not paying taxes. Informality is an opt-out option when social contracts are considered unfair. Informality reflects a lack of trust in the State.⁴

421. Recent examples of substantially new social contracts and their elements include “flexicurity” in Denmark, which has its roots in the nineteenth century. These new social contracts combine labor market flexibility with strong social security and active labor market programs. Other examples include the economic reforms introducing market principles that began in 1978 China; the Balcerowicz Plan in Poland in 1989; and the Hartz reforms in Germany in 2003. Arguably, however, when people think about social contracts that involve significant reforms associated with the world of work, the New Deal under Franklin Roosevelt’s presidency of the United States is a common yardstick for ambition. The reference evokes the need to subsidize employment (or tax robots) in response to technological progress. The allusion, however, is disingenuous.

422. Between 1929 and 1933, with the Great Depression the unemployment rate rocketed from three percent to 25 percent. Industrial output halved. Given the dismal state of the economy, in 1932 Franklin Roosevelt pledged “a new deal for the American people” as he accepted his party’s presidential nomination. The “New Deal” came to encompass the various programs and reforms his administration put in place from 1933 to 1938 to lift the country out of the Great Depression.⁵

423. The New Deal, albeit bold and comprehensive, was a response to a problem that is different to that faced in 2018 in the context of informality in developing countries or the changing nature of work everywhere. Most notably, while the Great Depression was largely a transitory shock to the American economy, changes to the nature of work and persistent informality are anything but transitory. Some of the measures included in the New Deal—such as the Federal Deposit Insurance Corporation or the Supplemental Nutrition Assistance Program—addressed not only the temporary shock of the Depression but also a permanent need for protections beyond the crisis. However, the largest programs, especially those subsidizing employment or earnings were temporary—as was appropriate to the circumstances.

424. Public works activities may go beyond infrastructure. Currently a number of essential social activities are provided voluntarily by individuals. Informal care, or caregiving provided for a household member with severe disabilities or long-term illness, is widespread. Recent estimates show that more than two million people in the UK are in receipt of informal care. This tends to have a gender dimension. Evidence shows that women are more likely than men to experience an unexpected move into providing it. As a result, they face difficulties in balancing care provision with labor market engagement. As well as lost income, this can generate negative socio-behavioral impacts on the wellbeing of informal providers.⁶

425. Effective social care entails reimagining a role for the state in reducing involuntary unemployment by providing services in several areas. These include childcare, disability and old-age care, psychological support to the long-term unemployed, supporting social kitchens and rehabilitation from drugs and violence. Interventions like *Kinofelis* in Greece and the Expanded Public Works Program in South Africa provide examples of activities of this nature.

426. An area for enhanced public service provision is community-based primary health care. This extends preventive and curative health services beyond health facilities into communities and households. A review of empirical studies show that this approach is effective in enhancing nutrition, immunization, controlling pneumonia and various diseases like malaria, as well as preventing and treating HIV.⁷ Equipped with less comprehensive training than professional health workers, community health workers provide basic hospital care, have solid referral capabilities and develop trust in the communities that they serve. In some countries, they are equipped with iPads to be able to consult the internet on disease symptoms.

427. The changing nature of work requires puts equality of opportunity at the center. Equality of opportunity requires creating jobs and making early childhood investments. One estimate suggests that expansion of early childhood development in the United States could reduce inequality by seven percent and increase intergenerational income mobility by 30 percent.⁸ In addition it means boosting social protections, including social assistance and insurance, in ways that are compatible with work. These elements of the social contract echo the three freedoms discussed by the Nobel Prize winner Amartya Sen in “Development as Freedom”: political

freedoms and transparency in relations between people; freedom of opportunity; and economic protection from abject poverty.

428. Beyond some core elements, aspects of a new social contract would need to be tailored. One clear area of customization relates to demographic trends. By 2050 more than half of global population growth will occur in Sub-Saharan Africa, where annual growth rates of the working-age population are projected to be over 2.7 percent.⁹ In contrast, the populations of East Asia and the Pacific are rapidly aging: more than 211 million people over the age of 65 live in this region, accounting for 36 percent of the global population in this age group. By 2040, the working-age population will shrink by 10-15 percent in Korea, China, and Thailand.¹⁰ Countries in Sub-Saharan Africa and South Asia would therefore have to be particularly responsive to the needs of large youth cohorts entering the labor market to ensure the sustainability of the social contract. Social contracts in Eastern Europe or in East Asia would also need to create mechanisms to ensure the sustainable financing of elderly protection and care.

Possible Elements of a New Social Contract

429. A society with equality of opportunity is often defined as a society that manages to give all its members an equal chance to attain economic and social well-being. This only happens if everyone has access to some minimum level of health, education and social protection. This basic human capital puts everyone on an equal footing to pursue their goals.

430. The labor market increasingly values advanced cognitive and socio-behavioral skills, which complement technology and make workers more adaptable. This means that inequality will increase unless everyone has a fair shot at acquiring these skills. In fact, given the changing nature of work, education is likely to be one of the strongest mechanisms for transmitting inequalities from one generation to the next. A new social contract would level the playing field for skills acquisition. The most direct way to provide fairness is to support early childhood development. Guaranteeing that every child has access to adequate nutrition, health, education and protection in her early years ensures a solid foundation for skills development in the future. As skills acquisition is cumulative, returns to early investments is the highest.

431. The changing nature of work turns basic literacy and numeracy into survival skills. They are required for simply navigating life—for buying medication, applying to jobs and interpreting campaign promises. The ability to read and manipulate numbers also serves as a prerequisite for acquiring advanced skills. But, for too many children, schooling does not translate into learning. Millions of children in low- and middle-income countries attend school for four to five years without acquiring basic literacy and numeracy. Consequently, guaranteeing access to basic education is not enough.

432. A social contract for early childhood development would ideally have three components. The first component ensures that children have the essential inputs so they are healthy, well-nourished and stimulated during their first thousand days (from conception to 24 months of age). This means access to prenatal healthcare, immunizations, micronutrients and information for parents on the importance of breastfeeding and early stimulation. The second component ensures access to quality early learning during their “next thousand days” (25 months to 60 months). This means at least one year of quality preschool so that they are ready for primary school. These pre-

primary programs need to be designed for young children with age-appropriate curricula and qualified teachers. The third component is birth registration, whereby children are recognized by the State and equipped with the ability to access essential services throughout their lives. The elements outlined above—prenatal healthcare, birth assistance, immunizations, micronutrients, information for parents, quality pre-school and birth registration—present a basic package to address children’s early development and learning needs. A more comprehensive package would include investments in safe water and adequate sanitation. Investments to improve air quality are increasingly also important and research into cost-effective programs is ongoing.

433. Some countries are already trying to deliver this type of social contract. In Cuba’s early childhood development program, children’s growth and development are regularly monitored. At the beginning of each school year the education sector identifies families who need specific attention. Chile’s *Crece Contigo* includes a *programa de acompañamiento familiar*, which works with families, pregnant women and children under grade four who are at social and health risk. Peru has simplified the birth registration process for easier access to early childhood development services. It supports parents in monitoring children’s growth and health and engaging in early stimulation activities. France passed a law in 2018 to ensure that all children have access to pre-school starting at the age of three.

434. A social contract on literacy and numeracy would ensure that students master these skills by grade three (approximately age ten). By this stage students need to be able to read to access the school curriculum. Children who cannot read by grade three struggle to catch up, eventually falling so far behind that no learning takes place at all. The core ingredients of this element would include: learning assessments at the end of grade three to identify children at risk, and early grade reading and math assistance for students in grades one to three who need additional support. A more comprehensive package would add items including ensuring a pupil-teacher ratio of no more than 40:1 in primary grades and providing adequate learning materials with a target of one pupil with one textbook in primary grades.

435. There are good models for supporting literacy and numeracy by grade three. Research has shown that early grade reading and teaching at the right level interventions are both cost-effective and scalable, even where resources are limited. In Liberia and Malawi, training teachers to better evaluate their students combined with additional materials significantly improved learning in early grades. In Singapore, all students are screened at the start of grade one. Children who do not attain appropriate early literacy skills will be supported through the Learning Support Programme. These are straightforward approaches. They train teachers to assess their students through ongoing, simple measurements of their abilities to read, write, comprehend and do basic arithmetic. Children who need additional support are provided with support through targeted activities and materials. These models have been tested with success in India, Ghana, Kenya and Jordan. They form a basis of precise design and budget estimates.

436. The new social contract would also include elements of social protection. Increased risks in the world of work make it imperative to adapt how societies protect workers. A new social contract could provide a minimum income, combined with basic universal social insurance, that is decoupled from how or where people work. A minimum could take many forms. It could be achieved through a series of programs or by expanding individual interventions. Each of these

modalities present different comparative advantages, fiscal, political, and administrative implications.

437. Low and middle-income countries have made significant headway in social assistance. In Tanzania, spending on conditional cash transfers increased ten-fold between 2013 and 2016. The program currently reaches 16 percent of the population and claims 0.3 percent of GDP. Spending on conditional cash transfers in the Philippines grew five-fold over 2009-2015: the *Pantawid* program covers 20 percent of the population at a cost of 0.5 percent of GDP. These trends mirror the growth in categorical or age-based programs like the Child Support Grant in South Africa. The scheme's coverage increased from a million beneficiaries in 2001 to 11 million in 2014, absorbing from 0.2 to 1.2 percent of GDP respectively.

438. Current experiences offer a wide range of tested programs that could be considered for expanding. Whether they are new or old, programs should share the notion of 'progressive universalism'. This principle deliberately aims at higher levels of coverage while ensuring that the poor would benefit more and before others. Where exactly in the income distribution one becomes a net beneficiary instead of a net payer is a choice that countries and governments should make for themselves.

439. Social insurance systems that cover old age and disability pensions are based on a standard employer-employee relationship with limited suitability for developing countries. New forms of work increasingly challenge this model in advanced economies as well and, as a result, informal workers often lack access to this kind of support. The system is financed by labor taxes that raise the costs of hiring workers. As social contracts are reimagined, subsidizing a basic level of social insurance—especially for the poor—can be considered. Such a reform could also reduce labor costs, as the financing of the system is at least partly shifted away from labor taxes towards general taxation.

440. Providing economic opportunities for young adults is a critical element of social contracts. But the pace of jobs creation for new labor market entrants has often been slow. For many young people persistent gaps in access to productive assets (adequate skills) are barriers to employment. International experiences of 'productive inclusion' of poor and vulnerable young people show that a wide array of programs is available for connecting them to waged and self-employment. Interventions may include wage subsidies, public works schemes, entrepreneurship grants and asset transfers (often part of 'graduation' models), coaching, apprenticeships, internships and various forms of training. Empirical evidence shows that these programs have mixed effects, with profiling, design and their particular contexts shaping their cost-effectiveness. For instance, wage subsidies may be appropriate in peri-urban contexts with large industrial parks, while graduation schemes are largely devised for rural populations (including the transfer of assets like livestock, etc.).

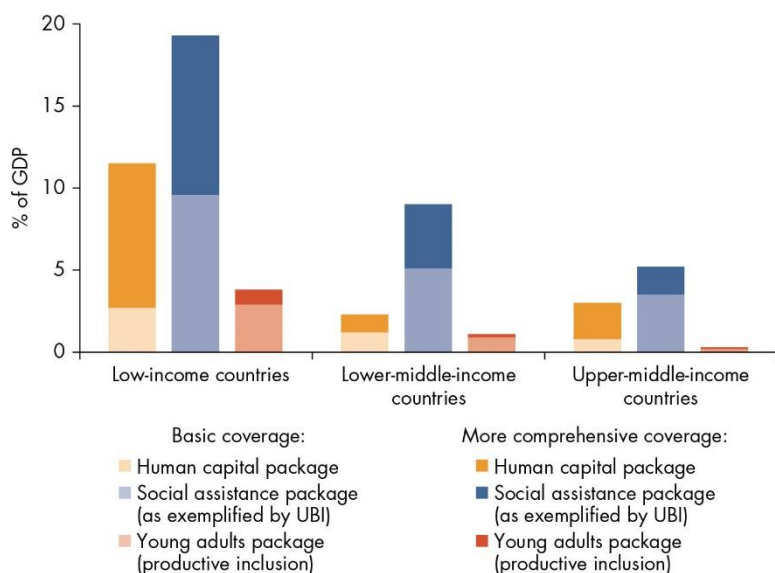
Financing Social Inclusion

441. Social inclusion is costly. Simulations suggest that the component of building human capital, including early childhood development and support for literacy and numeracy by grade three, would cost around 2.7 percent of GDP in low income countries and for lower middle-income countries 1.2 percent. Costs for a more comprehensive human capital package are estimated at

11.5 and 2.3 percent in low income and lower middle-income countries respectively. These estimates are based on fully-costed models in developing countries, combined with data-driven assumptions. These are the costs of delivering the human capital package, irrespective of income level or coverage of existing programs.

442. The actual costs could be lower for countries that choose to build on existing programs. Estimates are provided for three scenarios, a low-income country (Mali), a lower middle-income country (Indonesia), and an upper middle-income country (Colombia) (figure 7.1).

Figure 7.1. Estimated costs of selected elements of a renewed social contract (% of GDP)



Source: Authors, based on preliminary results (for Human Capital Package, see Zheng and Sabarwal 2018).

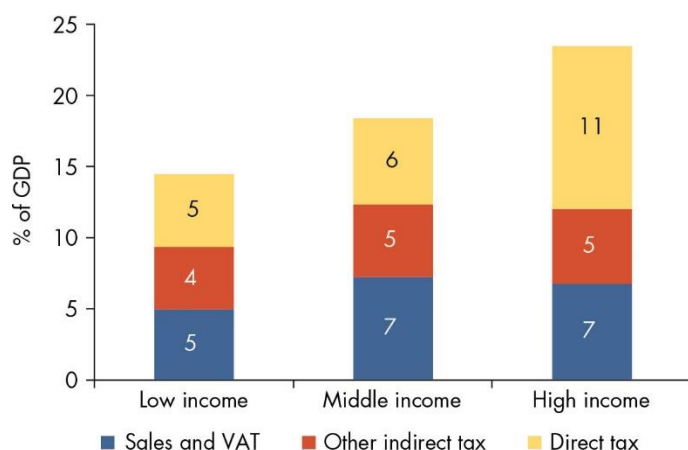
Note: The basic human capital package includes (1) supporting early childhood development, including prenatal healthcare, birth assistance, immunizations, micronutrients, parental outreach, birth registration, and at least 1 year of quality pre-school for every child; (2) learning assessments at end of grade 3 to shine a light on those who are at risk; (3) early grade reading and math assistance for students in grades 1-3 who need additional support. The more comprehensive human capital package includes, in addition to the basic package, the following elements: (1) access to safe water and adequate sanitation; (2) a pupil-teacher ratio of no more than 40:1 in primary grades; (3) one pupil one textbook in primary grades. Element-specific unit costs are derived from rigorous studies of relevant in-country programs, where available. Alternatively, the most recent cost estimates appropriate for the country’s income level are considered. Beneficiary calculations are based on population data from United Nations World Population Prospects. Other country-level data such as GDP, access to safe water and sanitations, and prevailing proficiency rates are derived from World Development Indicators and other studies. The basic social assistance package includes UBI for adults set at the average poverty gap level. The more comprehensive social assistance package includes UBI for the full population set at the average poverty gap level. See chapter 6 for more details on the UBI costing. Estimates are based on specific countries for each country grouping. As such, results are meant to be indicative. See endnotes for young adults estimates method.

443. How much it costs to provide a guaranteed minimum would vary according to the context and design choices. A UBI could illustrate the option that would attain the highest coverage and have the highest cost. A “basic” social assistance package would cost 9.6 percent of GDP in low income countries, 5.1 percent in lower middle-income countries, and 3.5 in upper-middle income countries. These estimates use a UBI set at the average poverty gap level, aimed at adults. A more ambitious package, illustrated by a UBI that reaches everyone including children, would cost nine and 5.2 percent of GDP in lower and upper middle-income countries respectively; in the poorest countries the cost of this package would be in the double-digits.¹¹

444. There are a billion young adults – between 20 and 29 years of age¹² – and, depending on the human capital package’s contents, average intervention costs range from US\$831 to US\$1,079 per participant.¹³ The total cost for reaching vulnerable young adults, or 12.8 percent of the age cohort,¹⁴ would amount to between 2.9 and 3.8 percent of average GDP in low-income countries; in lower-middle income countries the cost would be between 0.9 and 1.1 percent, while in upper middle-income countries the cost would range from 0.2 to 0.3 percent.

445. A new social contract would therefore require significant revenue mobilization by most governments around the world. Taxation patterns today 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, in contrast, rely more on indirect taxes, such as consumption and trade taxes (figure 7.2).

Figure 7.2. Direct and indirect taxes as percentage of GDP, 2018



Source: Authors’ calculations based on Government Revenue Database of the International Centre for Tax and Development (<http://www.ictd.ac/dataset/grd/>).

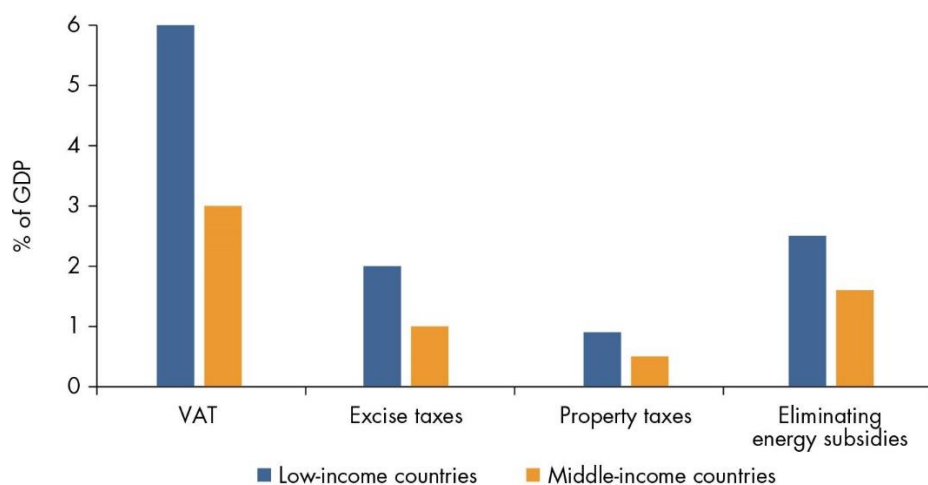
Note: Average values by income group. Data is for 113 countries (year 2015 circa).

446. 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.¹⁵

447. Governments can reduce tax policy and compliance gaps across a number of fiscal instruments (figure 7.3), including value added (VAT), excise, personal and corporate income and property taxes, as well as through fiscal regimes for extractive industries in resource-rich countries.

448. Often a first line of reform for developing countries, VAT is a potential major source of revenue. Yet, VAT is not in place in a few countries, such as the Maldives and Myanmar. Many others, particularly in Sub-Saharan Africa, also continue to rely on sales taxes. These include Angola, Comoros, Guinea-Bissau, Liberia and Sao Tome and Principe. Introducing a VAT 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.

Figure 7.3. Potential resources for financing social inclusion (% of GDP)



Source: Authors' calculations, based on Government Revenue Database of the International Centre for Tax and Development, Norregaard (2013), and IMF (2015).

Note: For VAT and excise taxes, estimates are based on the difference between the average tax revenue collected as a percentage of GDP for the top three countries in the income group and the average for all countries in the group. The VAT category includes VAT and sales taxes. For property taxes, the focus is on taxes on immovable property; estimates for middle-income countries are from Norregaard (2013) which uses a similar methodology as the one we follow for VAT and excise taxes. For low-income countries, where no systematic data is available, we use a conservative estimate of 0.5 percent of GDP to reflect the lower capacity to tax property in low-income countries where complete registries are rare. For the potential tax revenue from improved compliance, we rely on IMF (2015) which reports potential gains from improved compliance in VAT in Latin America of around 15 percent or around one percent of GDP. We use this as the lower bound for potential gains from improving compliance in the whole tax system. For energy subsidies, estimates are based on the IMF dataset on country-level estimates (data is for 2015). *Contrary to taxes, resources from eliminating energy subsidies would only be available to countries that have such subsidies; hence, this revenue source may not be relevant for some countries.

449. Where VAT is already in place in emerging economies, there are compliance problems stemming from flawed design and poor implementation. Raising VAT thresholds in countries that already have it, by closing tax exemptions and converging toward a uniform tax rate, could raise significant revenues. In Sub-Saharan Africa, Lesotho, Mauritius, Senegal, and South Africa do not have many exemptions. In contrast, Cameroon, Malawi and Zambia, have extensive lists of exemptions.¹⁶ For Costa Rica, Honduras, the Dominican Republic and Uruguay, tax expenditures related to VAT are estimated to cost more than three percent of GDP in forgone revenue.¹⁷ In Vietnam, moving to a uniform VAT rate of ten percent and significantly narrowing the list of exemptions could increase tax revenues by 11 percent.¹⁸ Informal firms are more likely to pay VAT when it is combined with measures to promote payment, such as enquiry services, targeted outreach, and incentives that reward compliance.

450. VAT is often considered regressive relative to income, since the poor spend a larger share of their income than the rich on consumption. But while consumption taxes are regressive when measured as a percentage of household income, they are either proportional or slightly progressive when measured as a percentage of household expenditure.¹⁹ Many countries exempt basic food products like milk, bread, and some medical products from VAT to ensure that poor people have access to them at lower costs. Simulations for four low and middle-income countries—Ethiopia, Ghana, Senegal and Zambia—show that, although preferential VAT rates reduce poverty, they do not target poor households effectively. As a result, a UBI funded by 75 percent of the revenue

gains from a broader VAT base—despite being untargeted—could create large net gains for poor households.²⁰

451. Excise taxes are another relatively accessible source of potential revenue. They are simple to implement and compatible with most taxation systems. 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. There are wide differences in excise collection across Sub-Saharan Africa, with several countries, including Benin, Ivory Coast, Madagascar, Mozambique, Nigeria and Sierra Leone, collecting excise revenues of less than one percent of GDP.

452. 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 items such as alcohol, tobacco, unhealthy food products and pollution emissions. Some of these taxes are deemed regressive as the poorest families tend to allocate larger shares of their budget to them. This should be weighed against longer-term benefits such as lower medical expenses and longer, healthier working lives.

453. Carbon taxes have become increasingly prevalent. It is estimated that nationally efficient carbon pricing policies could raise substantial amounts of revenue—above six percent in China, Russia, Iran, and Saudi Arabia.²¹ One study across the top 20 CO₂-emitting countries found that, on average, potential revenues raised from nationally efficient CO₂ pricing are almost two percent of GDP.²² If revenues from nationally efficient carbon prices were used to reduce the burden of the broader tax system, the net benefits from carbon pricing could increase substantially. Carbon taxes are currently in place in nearly every large economy except Brazil and the United States, although there is wide variance in the rates.²³ Gradually increasing carbon prices can mitigate short-term effects on the productive competitiveness of developing economies.

454. Carbon taxes could be paired with the elimination of energy subsidies for consumption. Globally, government spending on these subsidies amounts to \$333 billion. Fiscal gains from dismantling energy subsidies could be substantial: in many countries, their overall level is higher than public spending on social assistance (countries on the right side of the 45-degree line in figure 7.4). Average spending on energy subsidies in the MENA region is three times higher than on social assistance. Nevertheless, the removal of energy subsidies must undergo a poverty impact analysis, especially for fuel sources most intensively used by poor households, such as kerosene.

455. In addition to taxes on goods and services, personal and corporate income taxes can play an important role in increasing fiscal space in developing countries. The erosion of the corporate tax base affects many countries, mostly due to a combination of exemptions (tax incentives) and avoidance loopholes in the international corporate tax system. Effective tax rates can be increased by streamlining tax expenditures and introducing robust anti-avoidance rules (such as controlled foreign corporation regimes, limiting interest deductibility and withholding taxes on payments for services). The latter are becoming more relevant with the increasing global presence of platform and other firms with a significant digital presence and relatively few tangible assets.

456. Just as technology improves delivery systems for social protection programs, it can also facilitate tax collection by increasing the number of registered tax payers and social security contributions. Tighter personal income taxes can be achieved by making rates more progressive.²⁴

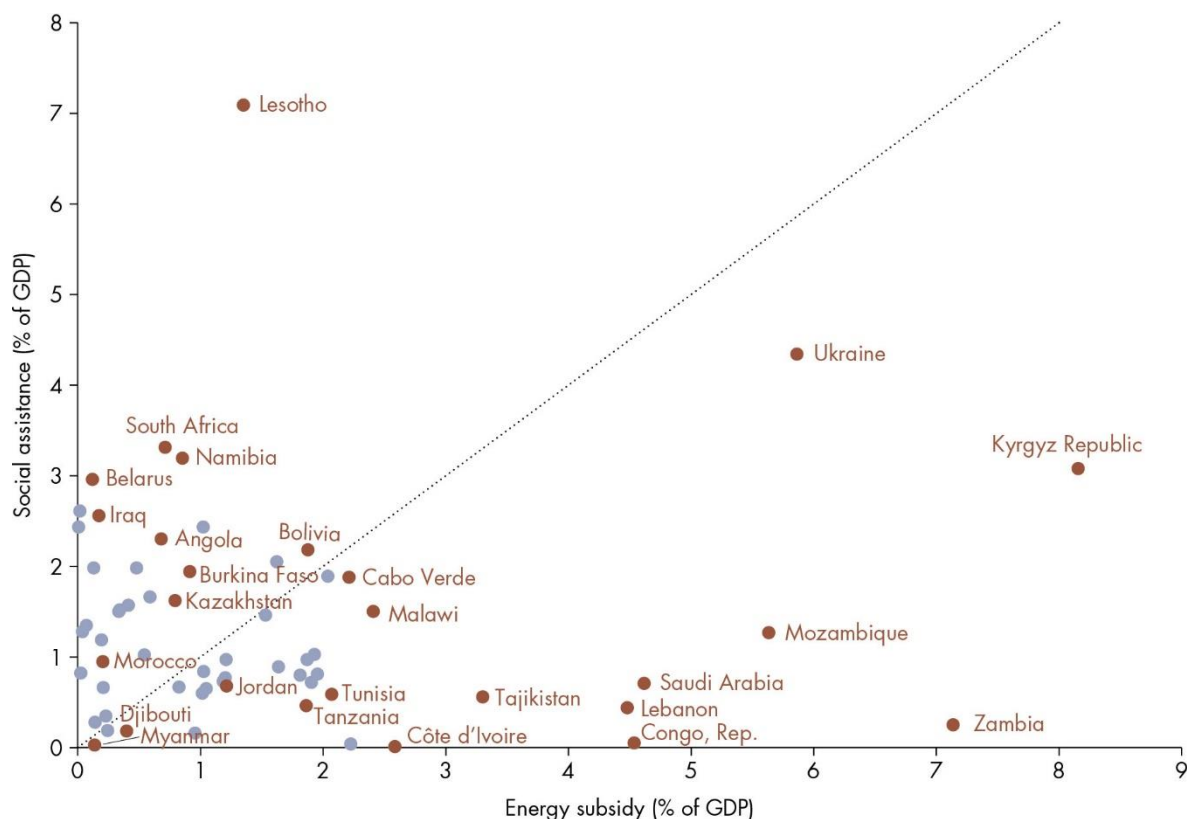
Specialized government departments that focus audits on high net-worth individuals could also generate significant revenues, given the associated compliance risks with this segment of the population.²⁵

457. Other forms of recurrent taxation that can be tapped for further resources in most developing countries include immovable property taxes. These do not distort labor markets, human capital accumulation, or innovation decisions. Property taxes also provide a stable source of revenue that is less susceptible to short term economic fluctuations and is difficult to evade. On average, high-income countries raise 1.1 percent of GDP from immovable property taxes. In middle income countries, these taxes yield about 0.4 percent of GDP.²⁶ Yet property taxes represent untapped revenue potential for all countries. This revenue gap is estimated to be 0.9 percent of GDP in middle income countries and as much as 2.9 percent in high income countries.²⁷ Governments in Sub-Saharan Africa are estimated to be missing out on revenues as large as 0.5-1 percent of GDP due to the absence of property taxes. Although property taxes are becoming more common in Sub-Saharan Africa, Botswana, Lesotho, Malawi, Swaziland, and Zimbabwe still rely on one-time payments. Countries are taking steps to expand the tax base: Vietnam adopted a tax on non-agricultural land in 2010 and China is considering the imposition of a residential property tax.

458. Securing broad compliance with property taxes is almost impossible in countries without clear property laws or land cadasters. Formally registered land constitutes less than one percent in Cameroon and Rwanda. But limited registration capabilities have not prevented the use of specific property taxes in most of Sub-Saharan Africa. For instance, property taxes may be levied on leasehold rights, as in the case of Zambia, or other types of limited property rights, such as concessions in Cameroon and the Democratic Republic of the Congo.²⁸

459. Technology can improve property tax collection by digitalizing property registration systems. If accompanied by rigorous enforcement, the adoption of new technologies leads to a significant boost in revenues. In 2010 the rate of tax collection on urban immovable property in Lahore, Pakistan, was one of the lowest in the world—0.03 percent of the state's GDP. The average for large cities in developing countries stands at 0.6 percent. The digitization of Lahore's property records in 2012-13 led to the addition of 1.7 million previously unregistered properties. Municipal property tax receipts have increased by 102 percent.

Figure 7.4. Public spending on energy subsidies and social assistance, select countries (percent of GDP)



Source: Authors' calculations based on World Bank (2018d) and IMF database on country-level estimates.
 Note: data refers to latest available estimates.

460. Finally, some resource-rich developing countries may be able to gain further fiscal space by introducing or improving regimes applicable to extractive industries. Natural resource taxes and government royalties on oil, gas and mining can make a substantial contribution to the revenue needs of many emerging economies. Estimates of the impact of increased production on government revenues are approximately one percent of 2011 GDP for Sub-Saharan Africa (assuming a 50 percent government share in rents). The revenue potential is even larger in other countries: 27 percent of GDP in Mozambique due to gas exploration and 147 percent in Liberia due to iron ore and petroleum exploration.²⁹

¹ Fisher, Max and Amanda Taub. 2017. "The Social Contract is Broken: Inequality Becomes Deadly in Mexico." New York Times. https://www.nytimes.com/2017/09/30/world/americas/mexico-inequality-violence-security.html?_r=0.

² Desai and Kharas 2017.

³ World Bank 2018.

⁴ Saavedra and Tommasi 2007.

⁵ For more details on the job-creation programs, see: Harvey 2007.

⁶ McDonald and Powdthavee 2018.

⁷ Black et al. 2017b.

⁸ Daruich 2018.

⁹ Africa's Population Boom: Will It Mean Disaster or Economic and Human Development Gains? World Bank 2016

¹⁰ Trotsenburg 2015. "How can rapidly aging East Asia sustain its economic dynamism?"

<http://blogs.worldbank.org/eastasiapacific/how-can-rapidly-aging-east-asia-sustain-its-economic-dynamism>

¹¹ The level of international poverty lines used in the simulations vary by country income categories.

¹² Estimates for 2015 from the UN World Population Prospects 2017.

¹³ The maximum frontier cost would include a typical multi-program graduation package, the cost of which (i.e., \$1,079) is calculated as the average from 6 developing country interventions (Banerjee et al. 2015); the lower-cost package is based on vocational training programs, the average cost of which (i.e., \$831) is calculated from 8 developing country experiences with such schemes (McKenzie 2017).

¹⁴ Given the lack of youth poverty data, the figure refers to the estimated global unemployment rate among youth in 2016, or 12.8 percent, which equals 135 million young adults in low and middle-income countries (O'Higgins 2016).

¹⁵ IMF 2018.

¹⁶ Ibid.

¹⁷ World Bank 2017a.

¹⁸ World Bank 2017b.

¹⁹ IMF 2011.

²⁰ Harris et al. 2018.

²¹ Parry et al. 2014.

²² Ibid.

²³ Djankov 2017.

²⁴ Mansoor et al 2018.

²⁵ McLaughlin and Buchanan 2017.

²⁶ Norregaard 2013.

²⁷ Ibid.

²⁸ Franzsen and McCluskey 2017.

²⁹ IMF 2012.

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