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WORLD DEVELOPMENT REPORT

2019

THE CHANGING NATURE OF WORK

World Development Report 2019

**THE CHANGING NATURE OF
WORK**

Working Draft

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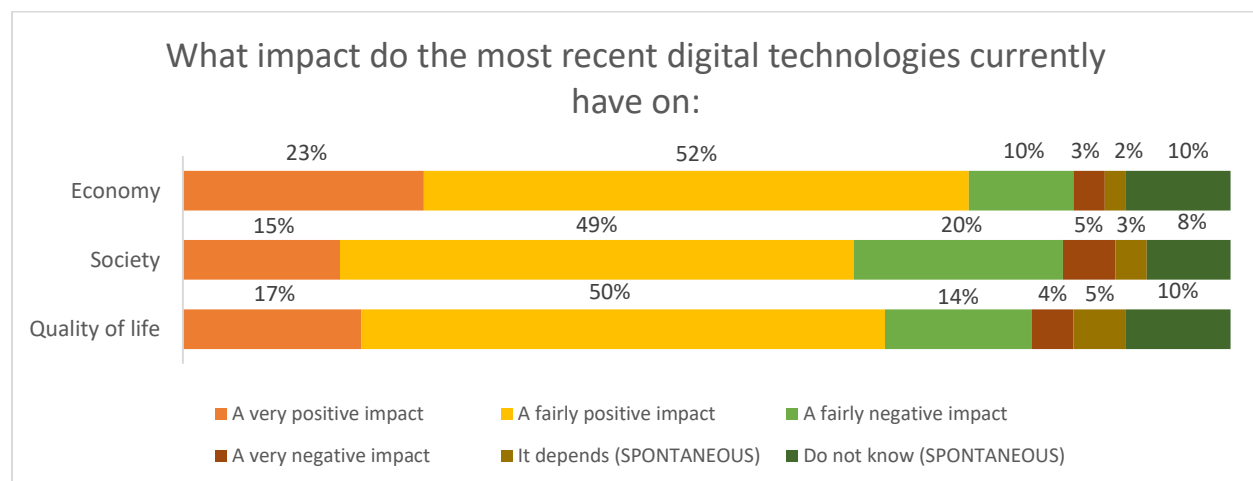
Overview

1. Concerns over technology-led disruption are far from new. 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 Economist John Maynard Keynes warned in 1931 of widespread unemployment due to technology.²

2. The balance of evidence in this study does not suggest the world is, in 2018 any more than it was in 1867 or 1931, on the cusp of an era of widespread, technology-induced unemployment. Technological change creates new opportunities. Improved digital infrastructure extends the market for services, new sectors are created, productivity of workers is enhanced, and firms use new technologies to overcome information barriers, and innovate.

3. Technological innovations have also improved living standards globally. Life expectancy has increased, basic healthcare and education are widespread and average incomes have soared. The world is better connected, aspirations have risen and voices are more likely to be heard. In a March 2017 survey conducted in the European Union, 74 percent of the respondents envisioned technology beneficial to jobs and 64 percent thought technology would improve society while 67 percent thought the quality of life would rise (figure 0.1). Individuals, firms, governments and society can prepare for the adjustments ahead.

Figure 0.1. Impact of technology on the economy, society, and quality of life



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

4. Jobs will be lost due to automation. Workers involved in routine tasks that are “codifiable” are most vulnerable to replacement. The adjustment to this loss will be especially challenging because many of the new jobs require significantly higher levels of human capital.³ In the absence of countervailing policies, some workers are likely to be pushed into lower-wage jobs or temporary spells of unemployment.

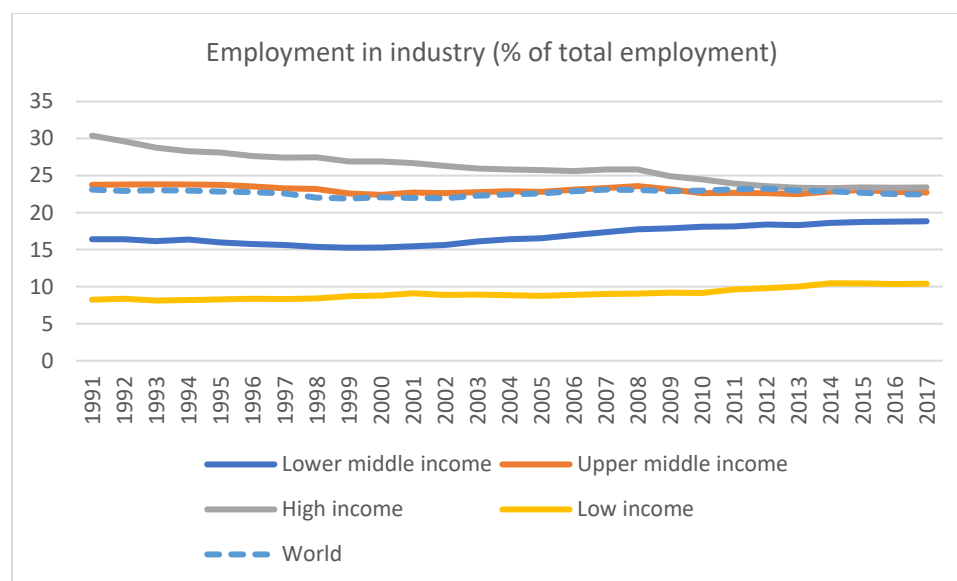
5. In the changing nature of work, the forces of labor supply and demand collide. In some developing countries, particularly in Africa and South Asia, tens of millions of young people join the labor market looking for jobs. But those workers face uncertain demand. Large formal private firms are still too few. Their growth is often stunted due to trade barriers, domestic bias towards state-owned or politically connected firms, the slow pace of technology adoption, or stifling regulation.⁴

What is Changing in the World of Work

6. Five stylized facts have dominated the discussion on the changing nature of work. This study finds that only two of them are accurate.

7. First, doomsday scenarios on robots replacing workers continue to strike a societal nerve. However, the threat to jobs from technology is exaggerated. History repeatedly teaches us this lesson. The data on global manufacturing jobs do not bear out these concerns (figure 0.2). While advanced economies have shed some manufacturing jobs, the rise of the manufacturing sector in China has more than compensated for this loss.

Figure 0.2 Manufacturing Employment is Steady at the Global Level



Source: World Development Indicators.

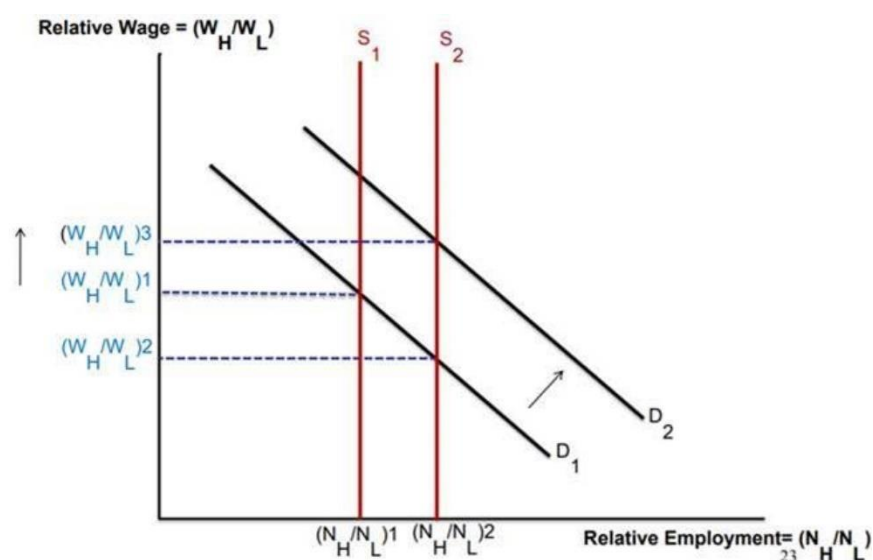
8. The decline in manufacturing employment in many high-income economies over the past two decades is a well-known trend. Singapore, Spain, and Portugal are among the countries where the share dropped 10 percentage points or more since 1991. This change mainly reflects a shift in employment from manufacturing to services. In contrast, the share of industry employment, primarily manufacturing, has remained remarkably stable in the rest of the world. In low income countries, between 1991 and 2017, the proportion of the total labor force working in industry has been consistently around 10 percent. The situation was relatively 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 increase may be due to the interplay between open trade and rising incomes – which generates more demand for goods and services – and technology.

9. In some developing economies the share of manufacturing overall is going up. For example, between 1991 and 2017 the share of industrial employment in Vietnam has risen from 9 to 25 percent. In Lao PDR, the share of industrial employment rose from 3.2 percent to 9.7 percent over the same period. Concurrently, both countries have rapidly upgraded their human capital, bringing highly skilled young workers to the labor market. These workers combine with new technology to upgrade manufacturing production. As a result, manufacturing employment in these countries continues to rise while in other developing economies it is stable.

10. Second, technology is reshaping the skills needed for work. Demand for cognitive skills, job-specific skills, and socio-emotional skills is undergoing significant disruptions. Technology changes the relative demand for skills in some sectors, increasing demand for high-skilled workers, with rising wages for these workers while wages for other workers stagnate (figure 0.3).

Figure 0.3. The Pay Gap between High- and Low-Skill Workers

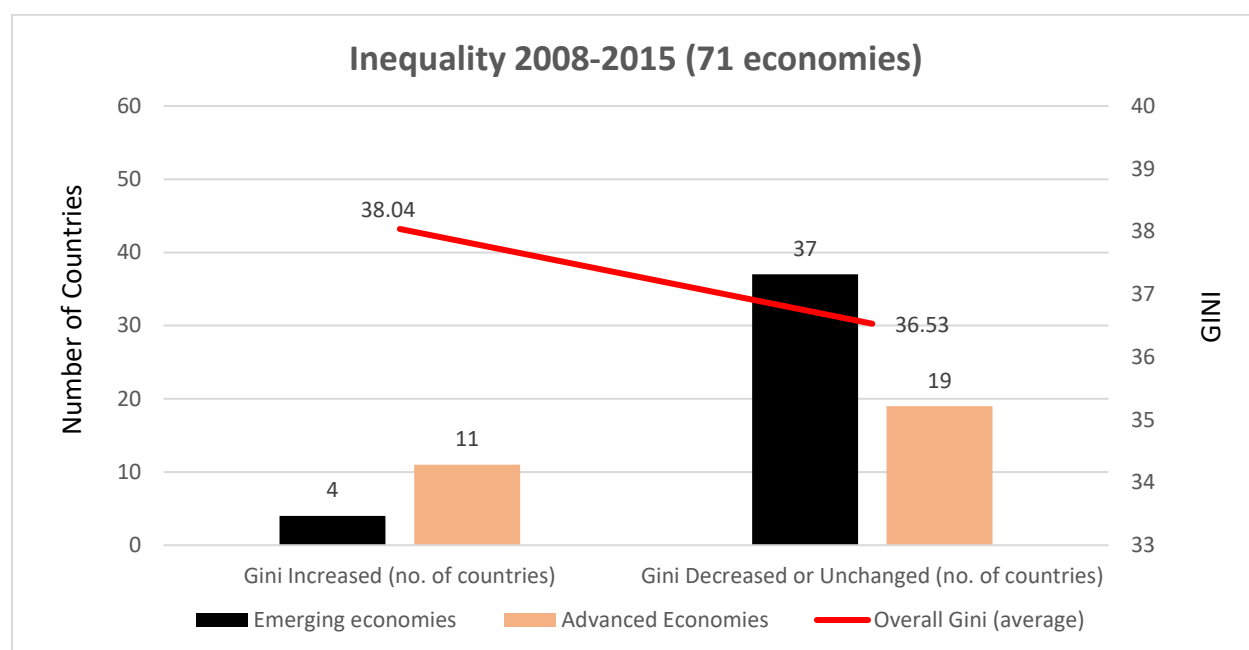


Source: Adapted from Goldin and Katz (2008).

Note: As the supply of high-skilled labor increases (S_1 to S_2), the relative wage between high-skilled and low-skilled labor is expected to decrease [$(W_H/W_L)_1$ to $(W_H/W_L)_2$]. However, the demand for high-skilled labor continues to increase (D_1 to D_2), resulting in higher relative wage between high skilled and low-skilled labor [$(W_H/W_L)_1$ to $(W_H/W_L)_3$].

11. Third, technology impacts the *perception* of rising inequality in many economies. This perception is not corroborated by the data on income inequality. The latest estimates suggest that inequality in most emerging economies has decreased or remained unchanged in the past decade (figure 0.4).⁵ Specifically, between 2008 and 2015, 56 of 71 economies studied experienced a decline or no change in inequality (as measured by the Gini coefficient).

Figure 0.4. Inequality has decreased or remained flat in emerging economies



Source: Authors' calculations based on the World Bank's World Development Indicators, accessed May 13, 2018.

Note: The figure presents the number of countries for which inequality increased, declined, or remained unchanged. For example, four emerging economies experienced an increase in inequality between 2008 and 2015, while for 37 emerging economies inequality declined or remained unchanged. "Unchanged" inequality is defined as movements of the Gini coefficient that are within one percentage point. The year of reference may not be exact – countries identified for the year 2008 include Gini estimates from 2006 to 2010. Estimates for the year 2015 include estimates between 2013 and 2016. The overall Gini is the average of all the unweighted country Gini coefficients. Emerging economies that experienced increasing inequality include: Armenia, Bulgaria, Cameroon, and Turkey. Advanced economies that experienced an increase in inequality include: Cyprus, Denmark, Estonia, Greece, Hungary, Italy, Lithuania, Slovak Republic, Slovenia, Spain, and Sweden. Emerging economies that experienced no change or a reduction in inequality include: Argentina, Belarus, Bolivia, Brazil, Colombia, Costa Rica, Croatia, Dominican Republic, Ecuador, El Salvador, Georgia, Guatemala, Honduras, Islamic Republic of Iran, Kazakhstan, Kyrgyz Republic, Mauritania, Mexico, Moldova, Mongolia, Montenegro, Nicaragua, Pakistan, Panama, Paraguay, Peru, Philippines, Romania, Russian Federation, Rwanda, Serbia, South Africa, Sri Lanka, Thailand, Togo, Ukraine, and Vietnam. Advanced economies that experienced no change or a reduction in inequality include: Austria, Belgium, Chile, Czech Republic, Finland, France, Germany, Iceland, Ireland, Latvia, Luxembourg, Netherlands, Norway, Poland, Portugal, Switzerland, United Kingdom, United States, and Uruguay.

12. In Brazil, for example, the Gini measure of inequality declined from 60.12 to 51 between 1993 and 2014. Over the same period, there was a decline in the top 10 percent share of the pre-tax income (from 56 percent to 55 percent). A higher stock of human capital, driven by the expansion of secondary and tertiary education, explains part of this downward trend. More formal jobs also contributed to decreasing inequality. Research shows that a reduction in the formal-informal wage gap between 1995 to 2012 was an important contributor.⁶ Meanwhile, the expansion of social safety nets supported the poor.

13. The Russian Federation shows a similar trend. Between 2007 and 2015, the Gini measure of inequality fell from 42 to 38. Again, over the same period there was a decline in the top 10 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 those workers' wages relative to workers

in large firms. Improvement in overall education levels of workers, mainly amongst female workers, combined with a reduction in the overall skill premium, also reduces inequality.⁷

14. There are some developing economies where inequality has risen over the last decade. In Cameroon, between 2007 and 2014, the Gini measure of inequality rose from 43 to 47 percent. Weak business environment, poor investment climate, low agricultural productivity, as well as an increased concentration of fossil fuel exports, contributed to widening inequality.

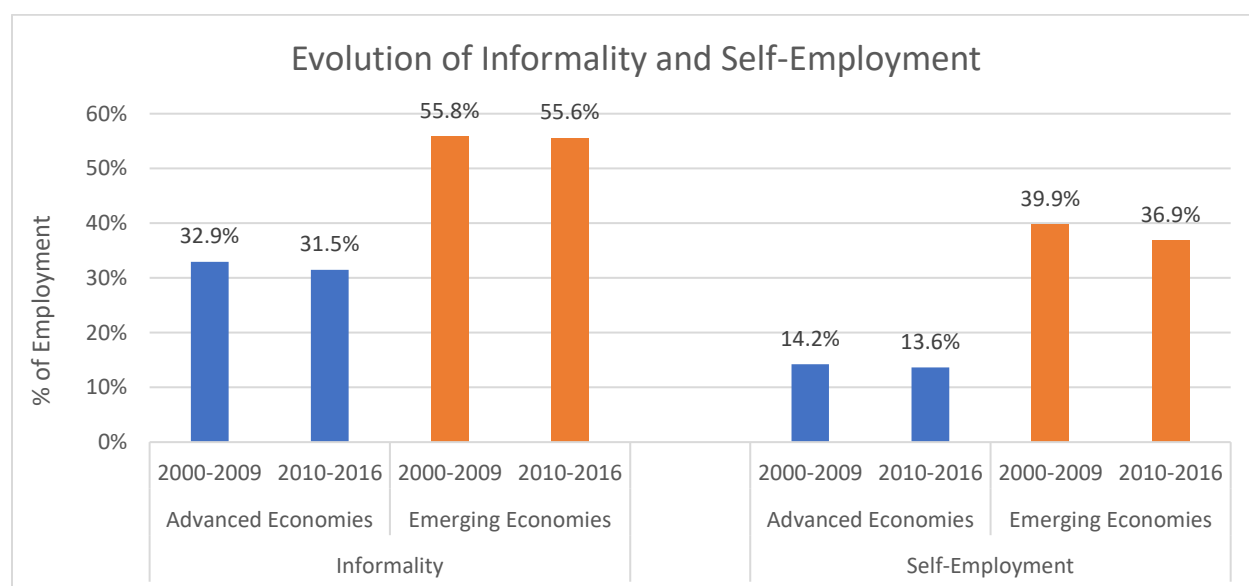
15. Third, workers worry about the rise of the gig economy, where organizations contract with independent workers for short-term engagements. The gig economy provides opportunities for distant or flexible work, but strips workers of many social protections.

16. How many people work in the gig economy, where organizations contract with independent workers for short-term engagements, is difficult to estimate. Where data exist, the numbers are small. Data from Germany indicates that only 0.8 percent of the labor force is active in the gig economy.⁸ Worldwide, the total freelancer population is estimated at around 84 million—less than 3 percent of the global labor force (3.5 billion).⁹ What's more, someone who is counted as a freelancer may also engage in traditional employment. This is the case in the United States, for instance, where more than two thirds of the 57.3 million freelancers are also in traditional employment, using freelancing to supplement their income.¹⁰ One of the largest global online freelancing platforms, Freelancer of Australia, has around 15 million registered users. But only about 10 percent of registered workers are active. The best estimate is that less than one percent of the active labor force is in the gig economy globally.

17. Instead, the rise in gig work, albeit a small proportion of the overall workforce, highlights traditional problems. People have no better alternatives. Wages from traditional employment are not enough. Still, jobs in the gig economy are taken-up voluntarily, which is because they are better than the other options available—oftentimes, that means jobs in the informal sector.

18. Fourth, informality is as high as 90 percent in some developing economies. For countries such as Zambia and Madagascar informality is around 80 percent. Around 55 percent of the labor force in emerging economies is informal. Moreover, informality has remained remarkably stable notwithstanding the changing nature of work: in Perú, for example, informality has remained relatively constant around 75 percent in the last 30 years despite all the attention focused on the issue. 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).

Figure 0.5 Informality Persists in Most Developing Economies



Source: Authors' calculations using household and labor force survey data from the International Income Distribution Database. Note: The figure on the left compares informality for Advanced and Emerging economies between the years 2000-2009 and 2010-2016. 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; and works for a firm size with 10 or less employees. Advanced Economies are defined as countries within World Bank's high-income group classification, whereas Emerging Economies include all countries within middle and low-income classification. Final sample consists of 28 Advanced and 57 Emerging Economies with at least one survey in both periods where informality criteria are available. The figure on the right compares self-employment for Advanced and Emerging economies between the years 2000-2009 and 2010-2016. In the sample, a person is considered as self-employed if is currently working and identifies himself as self-employed. Advanced Economies are defined as countries within World Bank's high-income group classification, whereas Emerging Economies include all countries within middle and low-income classification. Final sample consists of 30 Advanced and 79 Emerging Economies with at least one survey in both periods where self-employment criteria are available.

19. Finally, alongside the rise of technology, social backlashes like the Occupy Movement have emerged to challenge the wealth accumulated by global corporations, as well as some individuals. The share of the top one percent in total income has risen in some countries, such as Poland, Singapore, and South Africa, between 1993 and 2010. This portion of the population benefits from technological progress, with returns to their capital rising. Some of this accumulating wealth escapes taxation.

What Can Governments Do?

20. The analysis suggests three takeaways for governments, including as part of a broader social contract. Actions include:

- Individuals, firms and governments need larger investments in human capital. This investment is under-provided in many countries, especially in the early formative years of a child. Investing in human capital is the main mechanism to ensure that the next generation of workers is ready for the changing nature of work.

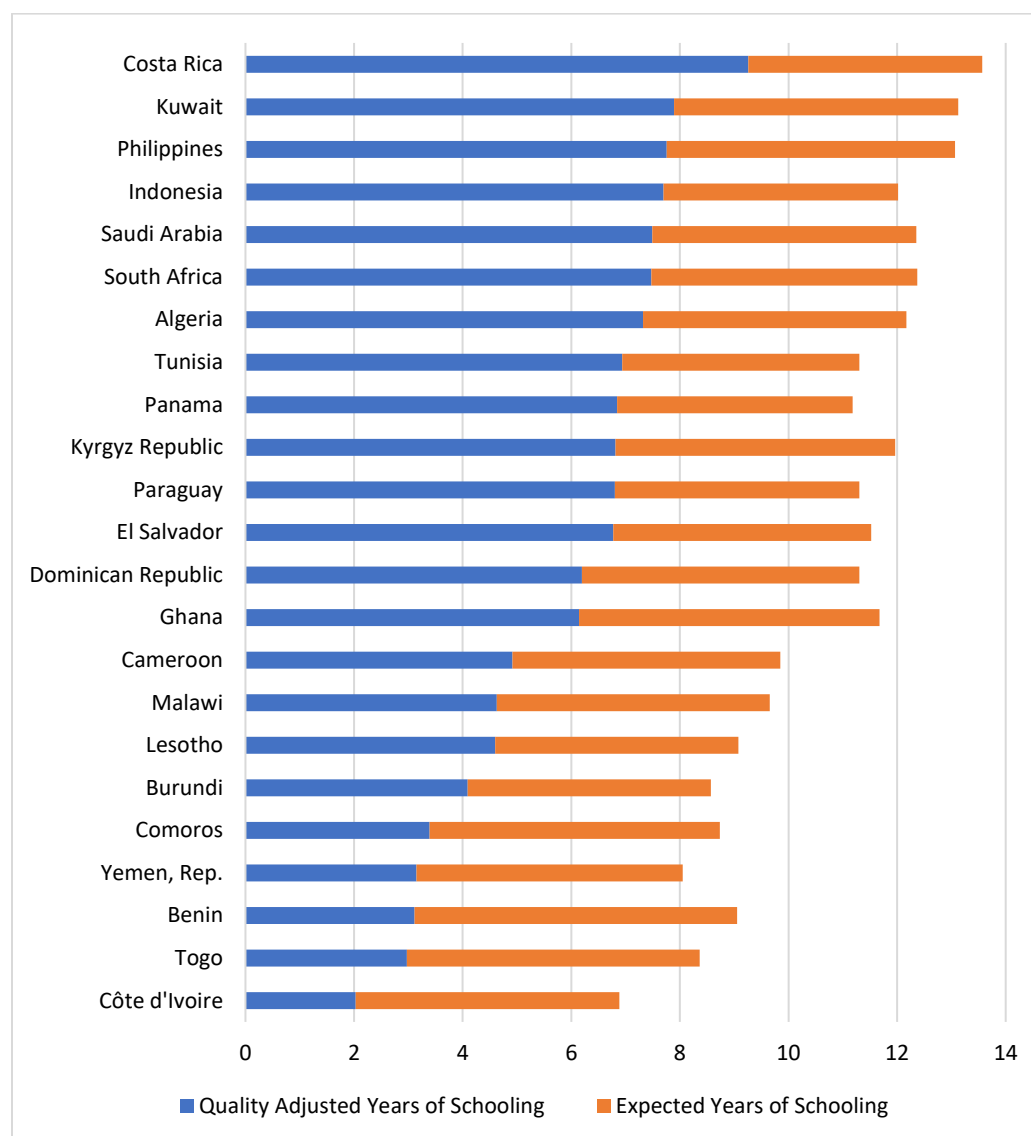
- The global corporate tax regime is in dire need of upgrading. Many global corporations, especially among the new platform companies, use tax avoidance techniques to increase their profits. Collecting the mandated tax rate in every country of operation can go a long way to finance a new social contract.
- Governments need to enhance social protection. A societal guaranteed minimum and strengthened social insurance, complemented by reforms in labor market institutions, work towards achieving this goal.

21. First, the most significant investments that people, firms and governments can make is in enhancing human capital. This is for several reasons. In today's world, a basic level of human capital, such as literacy and numeracy, is needed for sheer 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-emotional skills. Jobs that rely on inter-personal interaction will not be readily replaced by machines. However, to succeed at these jobs, socio-emotional skills – established in early years and shaped throughout our lifetimes – need to be strong. Finally, human capital is important because of the increased premium on adaptability. Adaptability is the ability to learn new skills quickly. This ability is shaped through human capital investments, especially in early years.

22. Many countries under-invest in human capital. This under-investment will become more expensive for economies as the nature of work changes. Sub-optimal human capital puts new generations at a severe disadvantage, especially among the poorest. This individual disadvantage aggregates to low economic competitiveness on the global arena. Low investments in human capital are also likely to exacerbate existing inequalities. This will put security at risk, as unmet aspirations can lead to unrest.

23. 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 can significantly boost human capital by ensuring that schooling actually translates into learning. In many education systems, a year of schooling produces only a fraction of the learning it can (figure 0.6). Important skills re-adjustments for the changing nature of work are also likely to take place outside compulsory schooling and formal jobs. Countries can gain a serious advantage by making use of these opportunities. For instance, by deploying tertiary education and adult learning more effectively.

Figure 0.6. The human capital produced by a year of school varies significantly across countries



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

24. One reason why countries do not invest enough in human capital is because they lack the political incentives to do so. This is partly tied to the lack of measurement. 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 help address the issue of missing political incentives. By doing so it aims to provide the impetus for enhancing investment in human capital.

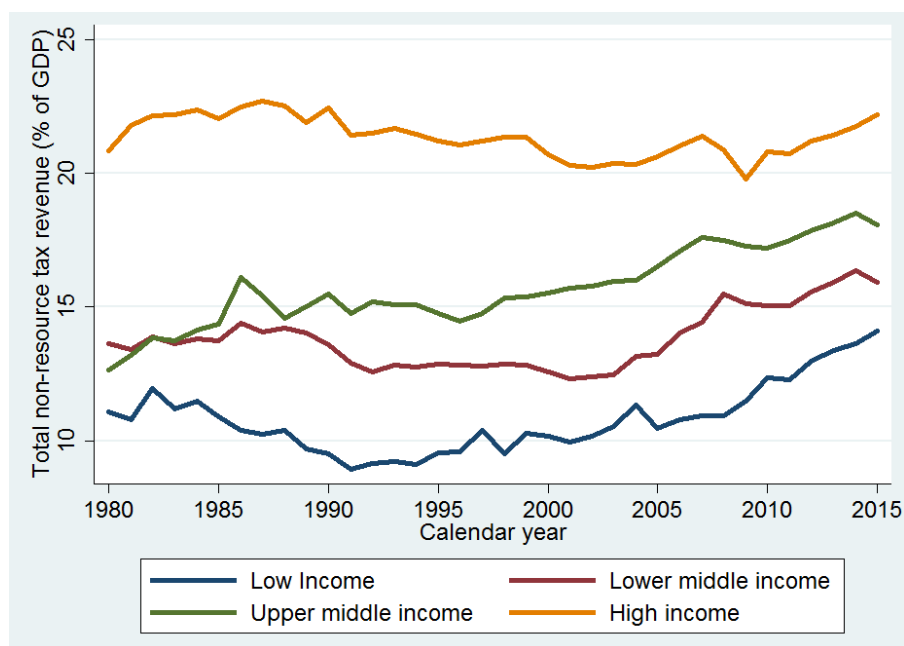
25. Second, rising global incomes have expanded markets, as have digital platforms. But age-old tax avoidance schemes have flourished too. On average, almost 60 percent of the total income of multinationals is reported in jurisdictions with an effective tax rate of less than five percent. The structure 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. This option is not open to small firms that have locations in only one country. Of the Fortune 500 companies, at least 366 companies operate one or more subsidiaries in tax haven countries. The OECD estimates that governments worldwide miss out on between US\$100 and \$240 billion in annual lost revenues. Lower income economies are the hardest hit, given their relatively smaller source of personal income and consumption taxes.

26. The increasingly digital nature of business makes this situation 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 located in higher tax jurisdictions. Digital companies also generate revenue from new kinds of assets, such as user data and 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.

27. Governments have to put a stop to tax avoidance. The only way to do so, in the words of the G20 Group, is “to put an end to the divorce between the location of profits and the location of real activities.” Governments need to revisit tax laws to attribute income for tax purposes to the location where business activities are performed. 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, and developing new ways to tax the digital economy, should all be on the table.

28. The share of tax revenue in developing economies is half of the share in advanced economies (figure 0.7). With such revenues, governments are unable to deliver the current social contract. The solutions are known: impose or increase tobacco and carbon taxes, make platform and other global companies pay their equal share of corporate taxes in every country, eliminate VAT exemptions in some countries, eliminate energy subsidies in other countries.

Figure 0.7. Tax Revenues Have to Rise in Developing Economies



Source: International Centre for Tax and Development (ICTD) and UNU-WIDER Government Revenue Dataset 2017.

29. Third, strengthening social protection systems is a priority. People should be protected through social assistance and insurance systems that fit with the changing nature of work. As systems expand, the concept of “progressive universalism” could be a guiding principle for country-specific pathways. Once fundamental protections are in place, labor markets can be made more flexible to facilitate work transitions.

30. In sum, social contracts are about equality of opportunity. The current social contract is broken in most developing economies, and looks increasingly out of date for most 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.

31. Social contracts are also about inclusion. For such inclusion to succeed, the rich have to pay their share of taxes. As simple as this proposition sounds, it is still not followed in many countries. Governments can do better.

32. The politics of the new social contract are straight-forward too. Government have a choice between favoring a handful of tobacco, energy, or digital companies and their owners at the expense of their citizenry; or sharing the benefits of growth in a fair way.

This Study’s running order

33. 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 changes the demand for skills.

34. Ongoing technological disruptions have increased the premia on human capital. At the economy-wide level, human capital is positively correlated with overall levels of research, innovation, and the adoption of advanced technologies. Firms with a higher share of educated workers do better at innovating and exploiting new technologies. 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, existing social order may be undermined. The second chapter addresses the link between human capital accumulation and the future of work, discussing why governments need to invest, why they often fail to, and how better measurement can address this problem.

35. Part of the ongoing skills re-adjustment is happening outside compulsory education and formal jobs. Where? Chapter 3 answers this question by exploring three domains—early childhood, tertiary education, and adult learning outside jobs—that are increasingly central to the acquisition of specific skills that the changing nature of work demands.

36. Work is the next venue for human capital accumulation after school. Chapter 4 evaluates how successful economies are in generating human capital at work. Advanced economies have higher returns to work than emerging economies. Governments can raise the returns to work by Increasing formal jobs for the poor, enabling women's economic participation, and expanding agricultural productivity in rural areas. There is little scope for emerging countries to improve the returns to work by reallocating labor from villages to cities.

37. Chapter 5 explores how technological change affects the nature of the firm. Technological progress has made firm boundaries more permeable. New digital technologies accelerate 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 super large firms, particularly firms in the digital economy, also call for caution and pose policy challenges. Regulations often fail to address the negative externalities that can be created by new types of business in the digital economy. Tax systems are also in many ways no longer fit for purpose.

38. What are the implications for social assistance, social insurance and labor market institutions? As the nature of work becomes more fluid, traditional provisions of social protection through formal employers become increasingly obsolete. In developing countries, where informality is the norm, this model has been largely aspirational. The combination of old and new labor market challenges calls for adapting social protection and labor market institutions. These can build on a range of significant innovations in social protection programs, including in lower income settings. These policies are discussed in chapter 6 of the Report.

39. Changes in the nature of work, compounded by rising aspirations, make it essential to rethink social contracts. New elements of the social contract need to respond to rising concerns around inequality and unfairness. Chapter 7 considers potential elements of the contract, how

technology can be used in implementation, and how to finance them in the context of the changing nature of work.

Chapter 1: The Changing Nature of Work

40. 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. Technology has brought higher labor productivity to many sectors by reducing the need for workers in routine tasks and allowing them to dedicate time to other tasks. It has opened new sectors, previously only imagined in the field of science fiction. On balance, technology has created more jobs than it has displaced.

41. As technology advances, new ways of production are adopted, markets expand, societies evolve. Workers, firms and governments build new comparative advantages as conditions change. For example, Vietnamese workers learned foreign languages when the country began integrating into global value chains. Danish firms became the global exporters of hearing aid products in the 2000s by adopting 3D technology first.¹¹ The Indian government became a world leader in high-tech sectors after it invested in numerous technical universities across the country.

42. Other factors beyond technology influence the changing nature of work, too. Aging affects labor force participation, increasing pressure on active members of the population who remain in the workforce. Aging populations also increase the demand for healthcare and auxiliary services such as tourism, driving growth in these sectors. Climate-related disasters can disrupt global value chains. Urbanization poses its own challenges and opportunities for workers and jobs.

43. Between 1999 and 2017, mobile phone penetration (number of unique subscribers) in Sub-Saharan Africa increased from 10 to 66 percent.¹² Increasing access to digital infrastructure—via laptops, tablets, and smartphones—is providing a boost to on-demand services. Social media is flourishing, overhauling the way information is disseminated in society. The role of robots is rising in production processes that involve well-defined routine tasks.

44. Opportunities are expanding as a result of this technological change. Technology can enhance the productivity of workers, and consumers enjoy more product choice at lower prices. In addition, firms use new technologies to improve capital utilization, overcome information barriers, outsource, and innovate. Online trade platforms expand market opportunities for firms, with some platform companies becoming markets themselves. Even small firms can be global. The firms selling on eBay in Chile, Jordan, Peru and South Africa are younger than firms in the offline markets.¹³ In the Alibaba platform, start-ups in China are well-represented.¹⁴ New technologies enable firms to more efficiently manage operations across a variety of locations, hiring workers in one location to produce parts, in another location to assemble, and in a third location to sell. Societies benefit more broadly as technology expands options for service delivery and for citizens to exercise their voice to hold governments accountable.

45. Notwithstanding these opportunities, there is disruption, too. The displacement of workers generates anxiety, just as it did 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.”¹⁵ 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.¹⁶ Despite the economic growth fueled by steam power and industrial machinery, Luddites sabotaged machines to defend their jobs in Britain during the early 19th century.

46. Industrial change also led to mass migration of labor from farms to cities for factory jobs, as agricultural production mechanized. Women entered the labor force in record numbers in the second half of the twentieth century as educational attainment improved and legal protections against discrimination increased. In the United States, the number of women in the labor force rose from 18 million in 1950 to 66 million in 2000. Since the early 1990s, the percentage of the labor force working in agriculture in East Asia (excluding high income countries) has decreased from 55 percent to 29 percent. Labor markets, predominantly in urban areas, have absorbed these workers. Productivity has increased, economies have grown. There is no reason to think that this time is different. Fears about robot-induced unemployment are exaggerated.

47. In contrast, concerns around wealth inequality are warranted, even if income inequality is not yet on the rise in most emerging economies. Income seems to be shifting disproportionately to capital owners instead of workers. Technology complements high-skilled workers by making them more productive. Meanwhile, workers in low or middle-skilled, routine jobs are being replaced by robots. Middle-skilled, routine occupations have been losing ground in places such as Guatemala, South Africa or Turkey. In Mexico, clerking occupations decreased at an annual rate of 2.5 percent from 2000-2010.¹⁷ Although service jobs may offer an alternative path for low- and middle-skilled workers, these jobs are typically low paid with little upward mobility. For workers that are displaced by technology and for whom it is not that easy to find new jobs, the transition is difficult. Unless appropriate protections are put in place, the result may eventually be higher inequality.

48. The disruptive effect of technology does not manifest equally across the globe, however. In emerging economies, persistent informality continues to pose the greatest challenge. Despite technological advances, informal employment remains at more than 70 percent in Sub-Saharan Africa and South Asia, and more than 50 percent in Latin America. In India, the informal sector has remained around 90 percent notwithstanding rapid economic growth. Many informal workers face limited prospects. Both wages and productivity are significantly lower for informal workers. They live without health insurance or social protection.

49. The next sections examine the impact of technology on jobs, how the nature of work is changing and how it is not, and why policymakers everywhere need to act.

Technology Generates Jobs

50. “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.¹⁸ Such statements give workers reasons to worry.

51. People start to fear the advent of a “jobless economy” when tasks previously performed by humans are taken over by robots, especially those enabled with artificial intelligence. Data for the United States shows that one additional robot per thousand workers reduces the employment to population ratio by approximately 0.18-0.34 percentage points, and wages by 0.25-0.5 percentage points.¹⁹ 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.²⁰ Robot density per worker in 2016 was highest in Republic of Korea, Singapore and Germany.

52. These robots replace workers. Workers involved in routine tasks that are “codifiable” are most vulnerable to replacement. The examples are numerous. More than two thirds of robots are employed in the automotive, electrical/electronics and metal and machinery industry segments. 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).²¹ If robots are cheaper than existing manufacturing processes, firms can reshore or relocate production in order to be closer to consumer markets. In 2017, 3-D printing technologies enabled the German company Adidas to establish two “speed factories” for shoe production in Ansbach, Germany and Atlanta, United States, eliminating more than 1,000 jobs in Vietnam.²² In United States, the share of parent companies’ employment out of multinational companies’ total employment has started to slowly increase since 2013, implying more jobs are being relocated back to home countries. In 2012, the Dutch multinational technology company Philips Electronics shifted production from China back to the Netherlands.

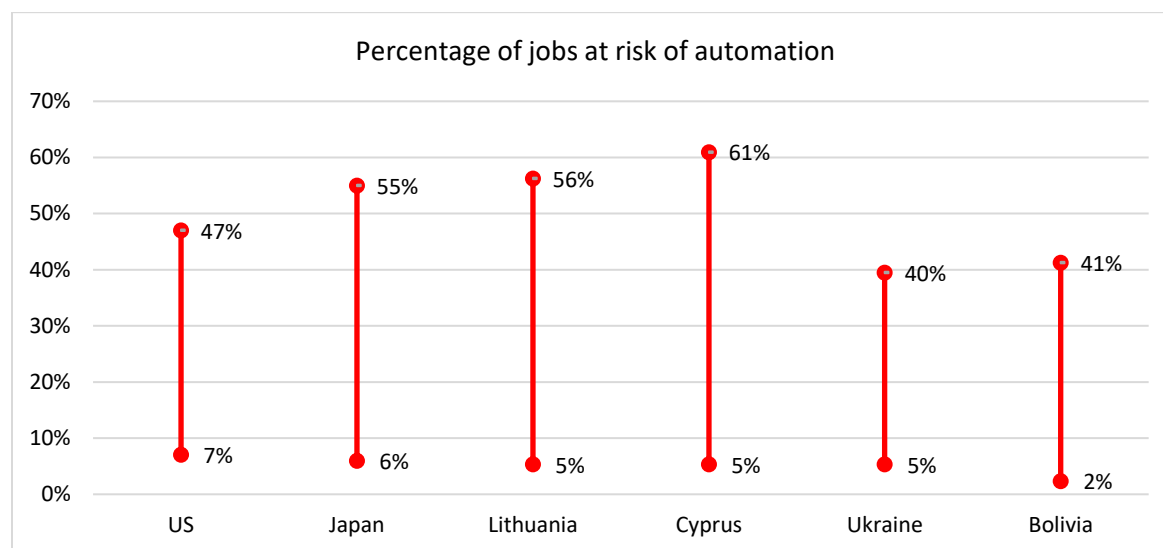
53. Some service jobs are also susceptible to automation. Israeli company Mobileye is developing driverless vehicle navigation units.²³ The Chinese technological giant, Baidu, is working with King Long Motor Group, China, to introduce autonomous buses in industrial parks. South Korea is opening a 360 thousand square meters facility known as k-city, to test driverless cars.²⁴ Financial analysts, who spend much of their time conducting formula-based research, are also experiencing job cuts—Sberbank, the largest bank in Russian Federation, relies on artificial intelligence to make loan decisions in 35 percent of cases, anticipating that this will increase to 70 percent in less than five years.²⁵ “Robot lawyers” have already substituted for 3,000 jobs in Sberbank’s legal department. Such efforts reduce the number of back office employees overall 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.²⁶

54. Although some workers are already being replaced by robots, it is difficult to put a figure on the level of job displacement that will be experienced overall. Indeed, economists are notoriously bad at predictions, even the best economists. In 1930, John Maynard Keynes predicted that technology would usher in an age of leisure and abundance within 100 years. “Everyone would

need to do some work if he is to be contented,” he wrote, “but three hours a day is quite enough.”²⁷ The world in 2018 is far from this kind of reality.

55. Some economists make predictions on the number of jobs that will be lost in the current wave of technological advancement. Wide differences stand out between those predictions (figure 1.1). For Bolivia, job automation estimates range from 2 percent to 41 percent. In other words, anything from 100,000 to 2 million Bolivian jobs in 2018 are likely to be automated. The range is even wider for advanced economies. In Lithuania, 5 to 56 percent of jobs are at risk of being automated. In Japan, 6 to 55 percent of jobs are at risk.

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



Source: Authors' calculations based on World Bank (2016) and Arntz et al. (2017).

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, following Frey and Osborne (2017).

56. The wide range of predictions demonstrates the high uncertainty involved in estimating how technology will affect jobs. Most estimates rely on automation probabilities developed by machine learning experts at Oxford University in the United Kingdom. Those experts were asked to strictly 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.²⁸ Basing probabilities on the opinion of experts is instructive but not definitive. Moreover, using U.S. occupational categories to estimate possible job losses due to automation elsewhere is problematic.

57. Job loss predictions have also struggled to incorporate technology absorption rates. Technology absorption can be 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, mobile phones and the internet use spread amongst individuals much more quickly as compared to earlier technologies. But among firms, especially in the informal sector, internet use 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, for example, there were only about 900 jennies in France compared to 20,000 in England.²⁹ The prevalence of automation versus labor will continue to vary across countries depending on the context.

58. One study, done by experts at the World Bank in 2015, adjusted the automation probabilities from Oxford University for differing technology absorption rates. It concluded that over 60 percent of jobs are susceptible to automation from a technological standpoint in Argentina, and over 50 percent in Angola.³⁰ Two years later, another World Bank study that implicitly incorporated technology absorption rates concluded that less than 10 percent of Argentine jobs are at risk.³¹ The divergence in these results prompts skepticism around their reliability.

59. New jobs are created through technology, too. Overall, technological change that replaces routine work is estimated to have created more than 11 million jobs across Europe between 1999 and 2010, almost half of the total employment increase in the period. Recent evidence for European countries suggests that while technology may be substituting workers in some jobs, overall, it is raising labor demand.³² JD Finance, a leading fintech platform in China, instead of hiring traditional loan officers, created more than 3,000 risk management jobs to manage database and sharpen algorithm for digitized lending.

60. Technological progress directly creates jobs in the technology sector. Thailand's software industry has grown by 160 percent since 2013.³³ The internet of things means that people are relying on portable devices to work, organize their finances, and have fun. The sector is expected to grow to US\$457 billion by 2020, at 28.5 percent per annum growth rate.³⁴ Humans are central to the creation of the online interfaces that will drive this growth. With consumer interests changing fast, there will only be more opportunities for individuals to pursue careers in mobile app development or virtual reality design.

61. Technology has also facilitated the creation of jobs through online work or in the gig economy. Andela, for example, has built its business model on the digitization of Africa. It has trained 20,000 software programmers across Africa using free online learning and training 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, and Kampala, Uganda.³⁵

62. Also important is how new technologies increase productivity. When technology raises productivity, workers focus on more creative tasks. Just as bank tellers in the past altered their task content towards more relationship-building in the dawn of ATMs, clerks can be retrained to include tasks that involve data analysis. Heightened productivity leads to spillovers in the tradable and non-tradable sectors as rising incomes increase demand for goods and services, thereby increasing jobs. For example, in Sub-Saharan Africa, the food industry is expanding to feed the growing middle class. The extent of these spillovers cannot realistically be accounted for in future job loss predictions. Moreover, these trends are less strong in emerging economies, where incomes are still catching up with consumption needs.

63. 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, market prices, while collecting data for buyers, governments, and development partners. The company is expanding to include credit services.

64. The non-tradeable goods and services sectors—usually intensive in non-routine manual skills—are also growing as incomes rise. Precisely due to the unique characteristics that humans offer, such sectors will continue to rely on workers as the primary factor of production for the foreseeable future. Automation’s comparative advantage is its ability to optimize routine tasks. In contrast, jobs involving social interaction, such as teamwork, care, relationship management, and leadership, rely on humans due to the tacit knowledge involved in these interactions. Creative disciplines, such as the arts, or sectors that rely heavily on innovation or analysis, such as policy making, also draw upon innately human skills that have not yet been satisfactorily replicated by robots. In sectors that rely on such skills, sectoral growth leads to job growth.

65. For example, jobs in healthcare may present one of the top career choices in the future, given current demographic trends. By 2030 global aggregate demand for health workers will reach 80 million.³⁶ With a current stock of just 43 million health care workers worldwide, this forecast opens the possibility of 40 million new jobs. In Asia, the number of older people is increasing faster than anywhere else in the world: by 2030, the over 60 population will increase from 57 percent in 2017 (549 million) to 60 percent (857 million) of the world’s total. In Latin America, the number of people over 65 will quadruple between 2013 and 2050.

66. Governments can capitalize on increasing demand for tourism to generate jobs. Emerging economies increased their global market share from 30 percent in 1990 to 45 percent in 2016; it is expected to reach 57 percent by 2030, equivalent to over 1 billion international tourist arrivals. Arrivals in emerging destinations are increasing at twice the rate of those in advanced economies. In countries with high population growth, teachers become even more important. Estimates suggest that at least 69 million new teachers worldwide are needed if supply is to keep up with population growth. Africa has the world’s largest teacher shortage—by 2030, 19.6 million primary and secondary teachers will be needed in Africa, 17 million of which will be in Sub-Saharan Africa.³⁷

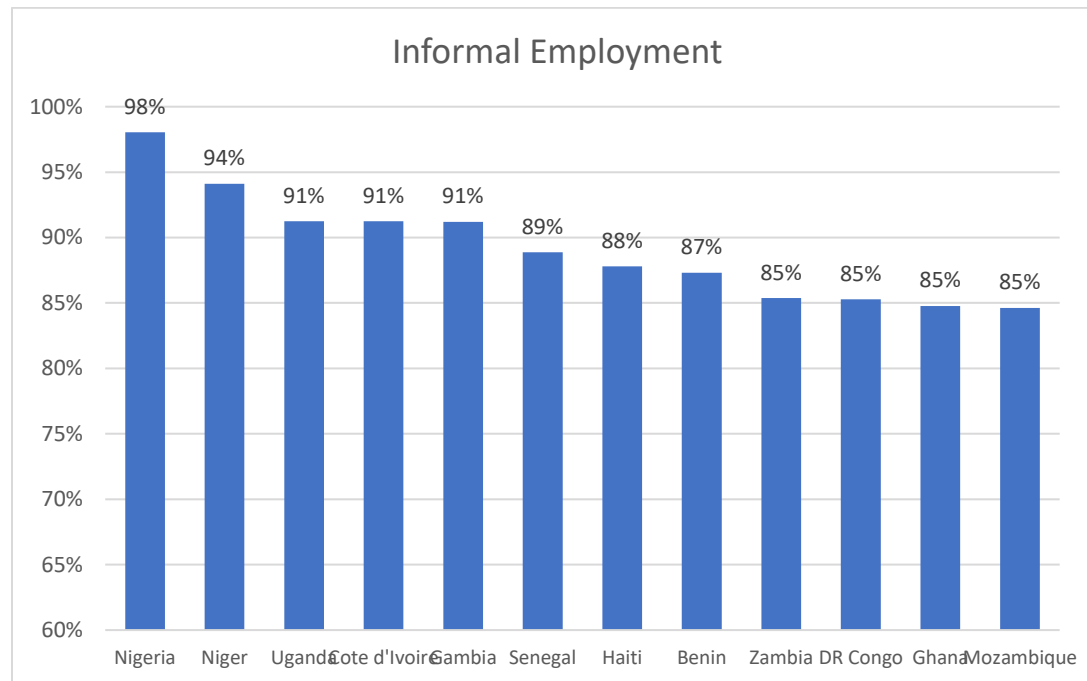
67. Healthcare is another sector that is expected to experience significant job growth given demographic trends. By 2030, the global aggregate demand for health workers is expected to reach 80 million while the current stock is about half these levels.³⁸ The number of older persons is expected to grow fastest in Africa, where the population aged 60 or over is projected to increase more than threefold between 2017 and 2050, from 69 to 226 million. Africa is followed by Latin America and the Caribbean, where the older population is projected to increase more than twofold between in the same period to 198 million. Asia also is expected to experience a twofold increase in the number of older persons, from 549 million in 2017 to nearly 1.3 billion in 2050.³⁹

How the Demand for Skills is Changing

68. The impacts of technology on the demand for skills are diverse across the world. First, the decline in manufacturing employment is often attributed to technological change. Second, technology is changing the skills that are being rewarded in the labor market. The premium for skills that cannot be replaced by robots and improve worker adaptability—namely general cognitive skills such as critical thinking, and socioemotional skills such as managing and recognizing emotions that enhance teamwork—is rising. Third, technology is disrupting the production process, by challenging the traditional boundaries of firms, expanding global value chains and changing the geography of jobs. Fourth, technology is changing how people work, giving rise to the gig economy, where organizations contract with independent workers for short-term engagements.

69. These changes are 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. Specifically, informality persists on a vast scale in emerging economies—as high as 90 percent in some low and middle-income countries—notwithstanding technological progress. With some notable exceptions in East Asia, informality has been hard to tackle (figure 1.2). Most workers in developing countries are either self-employed (65 percent) or on informal wage employment (20 percent). They are often farmers or own accounts workers in informal, low productivity activities. Even outside of agriculture, 8 out of 10 workers remain unregistered or in small-scale private unincorporated enterprises, in countries such as Bolivia, Indonesia or Tanzania. Only 15 percent of the labor force in middle and low-income countries is in formal wage employment.

Figure 1.2 Over Half of Workers Are in the Informal Economy (selected countries)

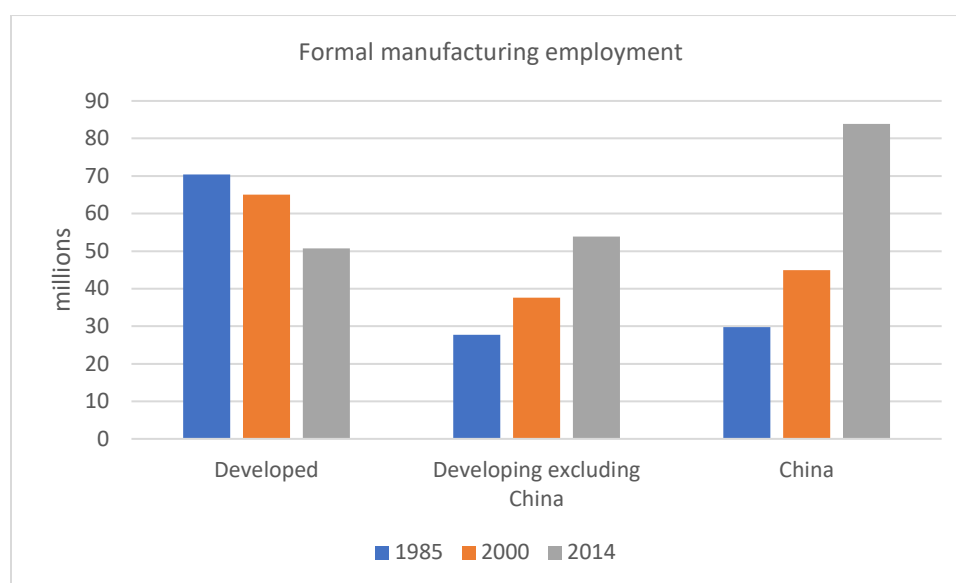


Source: Authors' calculations using household and labor force survey data from the International Income Distribution Database. Note: A person is identified as informal worker if he or she does not have a contract, social security, and health insurance; is not part of a labor union; and works for a firm size with 10 or less employees. The estimates are for the latest available year for each country, ranging from 2010 to 2016.

70. The prevalence of informality was the case before the new millennium wave of technological change, and continues to be the case. In fact, recent technological developments blur the divide between formal and informal work in some sectors in advanced economies. Thus, in some parts of the world, especially in low and middle-income countries, the nature of work is remarkably stable for the majority of workers. 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.⁴⁰

71. The rise of the robot is discussed most frequently in the context of the manufacturing sector. The decline in manufacturing employment in many 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 10 percentage points. This trend mainly reflects a shift in employment from manufacturing to services. In contrast, millions of manufacturing jobs have been created in developing countries since the late 1980s (figure 1.3). The share of manufacturing employment has increased significantly in a few emerging markets such as Vietnam and Cambodia. On average, the share has remained stable in developing countries. This may be due to the interaction between open trade and rising incomes – which generate more demand for goods and services – and automation – which in some industries reduces employment.

Figure 1.3. Millions of manufacturing jobs have been added in developing countries



Source: Authors' calculations based on data from Wood 2018.

Note: The calculation includes 78 countries where data are available in 1985, 2000 and 2014.

72. Technology is also disrupting demand for three types of skills at work. First, returns to non-routine cognitive and socio-emotional skills appear to be rising, in both advanced and emerging economies.⁴¹ Second, returns to job-specific skills that are routine are declining. Third, pay-offs to combinations of different skill-types appear to be increasing.

73. Since 2000, the share of employment in occupations intensive in non-routine cognitive and socio-emotional 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 nonroutine 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.⁴²

74. 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, analysis and 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.

75. Meanwhile, 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, bookkeeping, or doing arithmetic. Others are manual or physical, such as operating welding machines, assembling goods, operating forklifts. These tasks can be easily automated. For example, in Norway, broadband adoption in firms improved employment among skilled workers and worsened it among unskilled workers. The new technology complemented skilled workers in

executing nonroutine abstract tasks, and substituted for unskilled workers in performing routine tasks.⁴³

76. Pay-offs to combinations of different skill-types is also increasing. A rapidly evolving world of work demands skillsets 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 socioemotional skills are consistently ranked among the skills most valued by employers. Employers in Benin, Liberia, Malawi and Zambia rank teamwork and communication, and problem-solving skills, for example, as the second and third most important set of skills after technical skills.⁴⁴

77. Even within a given occupation, the nature of the skills needed to perform a job is changing. For example, the job of a personal assistant in 2018 is quite different from what it was 15 years prior. However, the impact of technology on skill 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 and unskilled production workers. This shift led to an increase in the use of routine and manual tasks and a reduction in the use of abstract tasks within firms.⁴⁵

78. The changing skills content of jobs has been documented extensively in advanced economies.⁴⁶ That is, employment has been growing most rapidly in high-skilled cognitive occupations and low-skilled occupations that require dexterity. In contrast, employment has shifted away from middle-skilled occupations, such as 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.⁴⁷

79. Fewer studies have taken place in emerging economies, but some show that similar compositional changes in employment are taking place. In middle-income countries in Europe, for example Bulgaria and Romania, while the demand for nonroutine cognitive and interpersonal work is rising, there is no increase in low-skilled nonroutine manual work.⁴⁸ Routine cognitive work has increased in other countries such as Botswana, Ethiopia, Mongolia, the Philippines, and Vietnam.⁴⁹ Studies observe, in most cases, that the demand for nonroutine 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.⁵⁰

80. Other studies show that compositional changes in employment have not had a negative impact overall on employment levels. In Argentina, for example, 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.⁵¹

81. Beyond the skills content of jobs, technology is changing the geography of jobs. It does this by disrupting production processes, challenging the traditional boundaries of firms, and expanding global value chains. Other waves of technological change have done the same. The

industrial revolution, which mechanized agricultural production, automated manufacturing, and expanded exports, also led to mass migration of labor from farms to cities. The advent of commercial passenger planes, for example, 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 industries, in new locations.

82. Improvements in transcontinental communication technologies and the fall in transportation costs have allowed the dramatic expansion of global value chains. This has supported the outsourcing of jobs to the developing world. Robots offer the possibility of “reverse offshoring”, where automation in advanced countries, replaces workers in jobs that would otherwise been outsourced. 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.

83. Online trade is another example of how technology shapes the geography of jobs. Technology can enable 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, one of the largest online retail platforms in China owned by Alibaba. 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.⁵² While sales have been strongest in traditional goods such as apparel, furniture, shoes, luggage and leather goods, and auto accessories, sellers are diversifying their offerings to include high-tech goods such as drones and robots.⁵³

84. Online work platforms eliminate many of the geographical barriers previously associated with certain tasks. UpWork, a U.S. based freelancing website, notes that nearly two thirds of United States companies had remote workers in 2017, primarily to ensure they can attract top talent in a flexible manner that accords with their needs.⁵⁴ Bangladesh, for example, contributes about 16.8 percent to the global labor pool online with around 650,000 freelance workers.⁵⁵ 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.

85. 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 and 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. A student can also work as a Yandex driver in the Russian Federation whenever is most convenient with their university schedule. She can identify peak hours in different locations where she can achieve the highest level of passenger turnover.

86. Rising technology and the increased role for capital in production processes is also associated with shortening job tenures. In European countries, younger workers are most affected by the rise in temporary contracts. For example, the share of 25-29 year old dependent workers with job tenures less than one year increased from 16 to 24 percent in Austria between 2003 and 2015. In the same period, job tenures among this age group increased from 19 to 28 percent in Ireland.⁵⁶ Part-time employment is also on the rise in many places: since 2000, part-time employment went from 5 to 17 percent of total employment in Chile, and from 17 to 22 percent in Germany. A similar trend can be observed in temporary employment. In Poland, for example, temporary employment increased from 12 to 27 percent of total dependent employment in the past 15 years. These trends are likely the result of not only technological change, but also other changes such as demographic change or globalization.

87. Many of these changes amount to a convergence in the nature of work between advanced and developing economies. Labor markets are becoming more fluid in advanced economies, while informality persists in emerging economies. The majority of 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 and protections, and low-productivity jobs more generally, are the norm in most of the developing world. Such 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.

88. This type of convergence is not what was expected for the past century. Traditionally, economic development was almost synonymous with formalization and the development of the manufacturing sector. This is reflected in the design of social protection systems and labor regulations, for example. To this day, a formal wage employment contract is the most common basis for the protections afforded by social insurance programs and by regulations such as minimum wages and severance pay. Changes in the nature of work caused by technology shifts the "standard" pattern of demanding workers' benefits from employers to directly demanding welfare benefits from the state. While these changes are most profound in advanced economies, the same conditions exist already in emerging economies, raising questions around the continuing relevance of current labor laws and institutions, forcing a debate on the need for a new social contract.

The Concern of Rising Inequality

89. "Concerns about inequality trump all other dangers, and the gap between the rich and the poor is increasingly considered the world's top problem". This was the finding by the Pew Research Center when asking respondents in advanced economies about the "greatest danger in the world".⁵⁷ In Latin America, public opinion polls show that over 70 percent of people perceive income distribution to be unfair or very unfair.⁵⁸ Field experiments with over 50,000 respondents in 11 high-income and developing countries reveal high levels of concern about inequality.⁵⁹

90. Technology improves overall living standards. However, the process can be bumpy or disruptive. Economic prosperity is the result of economic dynamism: research shows that firm death rates are higher in richer developing countries than poorer ones.⁶⁰ The process of job creation

and destruction works society-wide – and not just for the few – when rules of the game are fair. While the extent to which technology affects inequality is an empirical question,⁶¹ there is some cause for concern.

91. Inequality across health, education, wealth, and opportunity remains high in many countries around the world.⁶² However, the perception of its rise over recent years is not empirically based. Between 2008 and 2015, 56 of 71 economies studied experienced a decline or no change in inequality as measured by the Gini coefficient (figure 1.3).

92. In Cambodia, for example, against the backdrop of fast economic growth at an average rate of 7.8 percent between 2004 and 2014, the livelihoods of the poor improved. The poorer population took advantage of opportunities by participating in higher-return, commercial agricultural activities, as well as reaping the employment opportunities in the expanding sectors such as garment and tourism. As a result, inequality declined. Similarly, in Tanzania, the increase in manufacturing and retail trade since 2007 has created more opportunities for lower-skilled workers, which contributed to falling income inequality.⁶³

93. In contrast, in South Africa inequality remains stubbornly at elevated levels (a Gini of 63 between 2009 and 2015). Part of this persistent divide is explained by labor market that can split into two parts – highly paid formal sector jobs and informal low paying jobs. High paying jobs are likely to be nearly five times the average low-paying jobs. The difference in skill premiums between high and low-skilled workers are reflected in high wage inequality. Education, gender, and race are important reasons for inequality in South Africa.⁶⁴

Figure 1.3 Income inequality has declined or remained stable for most economies since 2008



Note: The figure presents the number of countries for which inequality increased, declined, or remained unchanged. For example, 4 emerging economies experienced an increase in inequality between 2008 and 2015, while for 37 emerging economies inequality declined or remained unchanged. “Unchanged” inequality is defined as movements of the Gini coefficient that are within one percentage point. The year of reference may not be exact – countries identified for the year 2008 include Gini estimates from 2006 to 2010. Estimates for the year 2015 include estimates between 2013 and 2016. The overall Gini is the average of the all the unweighted country Gini coefficients. Emerging economies that experienced increasing inequality include: Armenia, Bulgaria, Cameroon, and Turkey. Advanced economies that experienced an increase in inequality include: Cyprus, Denmark, Estonia, Greece, Hungary, Italy, Lithuania, Slovak Republic, Slovenia, Spain, and Sweden. Emerging economies that experienced no change or a reduction in inequality include: Argentina, Belarus, Bolivia, Brazil, Colombia, Costa Rica, Croatia, Dominican Republic, Ecuador, El Salvador, Georgia, Guatemala, Honduras, Iran, Islamic Rep., Kazakhstan, Kyrgyz Republic, Mauritania, Mexico, Moldova, Mongolia, Montenegro, Nicaragua, Pakistan, Panama, Paraguay, Peru, Philippines, Romania, Russian Federation, Rwanda, Serbia, South Africa, Sri Lanka, Thailand, Togo, Ukraine, and Vietnam. Advanced economies that experienced no change or a reduction in inequality include: Austria, Belgium, Chile, Czech Republic, Finland, France, Germany, Iceland, Ireland, Latvia, Luxembourg, Netherlands, Norway, Poland, Portugal, Switzerland, United Kingdom, United States, and Uruguay.

94. Technology shifts demand in favor of high-skilled workers, while reducing the need for low-skilled, and often even middle-skilled workers. Technology is augmenting the productivity of many high-skilled workers, as reflected in rising returns to advanced cognitive and socioemotional skills. Globally, private returns to education, at about 9 percent per year, remain high despite the significant expansion in supply. Returns to tertiary education are the highest at almost 15 percent per year.⁶⁵ Individuals with more advanced skills can take better advantage of new technologies and adapt to the changing nature of work. In fact, the more volatile the state of technology, the more productive education could be.⁶⁶ For example, returns to primary schooling in India increased during the Green Revolution, with the more educated farmers adopting new technologies.⁶⁷

95. In many countries, low and middle skilled workers are concentrated in occupations that have a high content of routine tasks. These are the occupations that are most susceptible to automation and offshoring. Displaced workers are likely to compete with (other) low-skilled

workers for jobs with low (and possibly decreasing) wages. Even when new jobs arise, retooling is costly, and in many cases, not possible.

96. This is concerning since jobs have traditionally been a key avenue for reducing poverty. In 10 out of 18 Latin American countries, more than half of poverty reduction came through jobs.⁶⁸ Despite this potential, there are already today many workers that remain poor given their low-paying jobs: for example, between 54 and 63 percent of workers in Africa and Asia live on less than US\$2/day.⁶⁹ The concern going forward goes beyond income. After all, a job is more than earnings: having a job can shape psychological wellbeing, identity-shaping, civic engagement, and social cohesion.

97. Finally, many global corporations, including many in the platform economy, are getting ever more profitable but, often, not contributing a fair share of taxes. Evidence on tax-avoidance by platform companies has brought into question their “don’t be evil” social imprint. Corporations such as the Alibaba Group in China or oil and gas service company Willbros (Offshore) Nigeria Limited shift profits to places where corporate taxes are low. Again, this phenomenon is centuries old. “The bourgeoisie are today evading taxes by bribery and through their connections; we must close all loopholes,” Lenin stated in 1918.⁷⁰

98. According to the latest figures, almost 60 percent of total income of multinationals is reported in low-tax jurisdictions. Corporation shareholders benefit while all others lose. An estimated US\$8.7 trillion, 11.5 percent of the entire world’s GDP, is held offshore by companies and wealthy households (who in turn benefited from investments in companies) in a handful of tax shelters. The collection of taxes on this income should be a priority for governments and international institutions. These additional revenues can go a long way towards funding a new social contract.

99. A new social contract is required to address anxiety about lack of equal opportunity for the next generation of workers. Governments can play a significant role in ensuring that the benefits from technological progress are widespread. The rest of the report discusses how.

Chapter 2: Building Human Capital

100. The world is healthier and more educated than it has ever been. In 1980, only 6 in 10 children in the developing world were enrolled in school. By 2015, this number had increased to 8 in 10. In 1980, only 84 out of 100 children reached their fifth birthday, while today, nearly 94 out of 100 do. A child born in the developing world in 1980 could expect to live for 52 years, today this number is 65 years. In fact, by 2030, a girl born in South Korea in 2018 is expected to live to 91 years.⁷¹

101. However, a large unfinished agenda remains. Nearly a quarter of children under 5 are malnourished.⁷² In many contexts, poor children start to lag behind in terms of working memory and executive functions (such as sustained attention) as early as 6 months of age.⁷³ 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.

102. Building human capital is the right thing to do. It is also an investment with large payoffs for individuals, for economies, and for societies. This was true in the 1700s when Adam Smith said, “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.”⁷⁴ This is still true in 2018.

103. On average, one additional year of schooling generates 9 percent more in earnings. These returns are especially large in low- and middle-income countries. They are also higher for females relative to males.⁷⁵ But human capital is not just about how long children stay in school. What matters more is how much they actually learn. In the United States, for example, replacing a low-quality teacher in an elementary school classroom with an average-quality one will raise the combined lifetime income of that classroom’s students by US\$250,000.⁷⁶ Other dimensions of human capital also count. There is well-established evidence that when people are healthier, they tend to be more productive.⁷⁷ In Nigeria, a program providing malaria testing and treatment increased worker earnings approximately 10 percent in just a few weeks.⁷⁸ A study measuring the impact of interventions in Kenya showed that deworming in childhood reduced school absences, and raised wages in adulthood by as much as 20 percent, all of this from a pill that costs about a quarter of a dollar to produce and deliver.⁷⁹

104. Different dimensions of human capital complement each other, starting at an early age. For instance, healthier children learn more. Proper nutrition, in-utero and in early-childhood, has been shown to improve people’s physical and mental well-being.⁸⁰ Evidence in the United Kingdom shows that providing a healthier diet for school children significantly increased their achievements in English and Science.⁸¹ In a multi-country study, both underweight and obese children had lower IQ scores than healthy weight children.⁸² Gaps in cognitive and socioemotional skills that open-up at an early age—disproportionally falling on the poor—can be closed later. But as children turn into teenagers, these interventions become more expensive.⁸³ It is no surprise then that investing in human capital during the “first 1,000 days” of a child’s life is both the most effective and equitable investment governments can make.

105. Human capital benefits transcend private returns.⁸⁴ Deworming one child also decreases the chances of other children becoming infected with worms, which in turn sets those children up for better learning and higher wages.⁸⁵ Some of the benefits from improved human capital also go beyond the generation that makes those investments. Maternal education, through increased prenatal care, improves infant health.⁸⁶ In Pakistan, children whose mothers have even a single year of education spend an extra hour a day studying at home.⁸⁷

106. For all these reasons, human capital feeds—both directly and indirectly—into poverty reduction. Between 10 and 30 percent of per capita income differences can be attributed to cross-country differences in human capital.⁸⁸ This fraction could be even higher if we take into account the quality of education and the interactions between workers with different skills.⁸⁹

107. The positive effects of human capital also persist over time, economy-wide. For example, one hundred years after the state of Sao Paulo, Brazil, encouraged the immigration of educated Europeans to specific settlements, those very settlements continue to have higher school attainment, a progressive shift of employment from agriculture to manufacturing, and higher per capita income.⁹⁰

108. Returns to human capital may be even higher during periods of high uncertainty, as in the current era of rapid technological change. For instance, despite higher supply of schooling, there has been an increase in the returns to schooling since 2000.⁹¹ Those with higher human capital can better complement new technologies, an ability that is increasingly important.⁹² Future success depends on working with machines, instead of fearing them. Those with higher levels of human capital are better able to do this; thereby better adapting to the changing nature of work.

109. During the Green Revolution in India in the 1970s-80s, it was the more educated farmers who could adopt new technologies.⁹³ In Mexico, the benefits of increased labor productivity resulting from the North American Free Trade Agreement were concentrated among more skilled workers.⁹⁴ Not surprisingly therefore, ongoing technological disruptions have increased the premia on human capital. Firms with a higher share of educated workers do better at innovating and exploiting new technologies.⁹⁵ At the economy level, human capital is positively correlated with overall levels of research, innovation, and the adoption of advanced technologies.⁹⁶ A recent cross-country study suggests that a one standard deviation increase in the density of engineers in 1900 is associated with a 16 percent increase in income and 10 percent increase in patenting capacity.⁹⁷

110. The understanding of human capital has expanded to include not just cognitive skills, but also socioemotional skills. The ability for teamwork, empathy, conflict resolution, and relationship management are recognized as skills that can be developed as a part of human capital. The importance of these skills in the labor market has increased.⁹⁸ This is because increasingly 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 ones.⁹⁹ Cognitive and socio-emotional skills reinforce each other. Providing mathematics-based games to preschoolers in India generated enduring improvements in students' intuitive abilities.¹⁰⁰

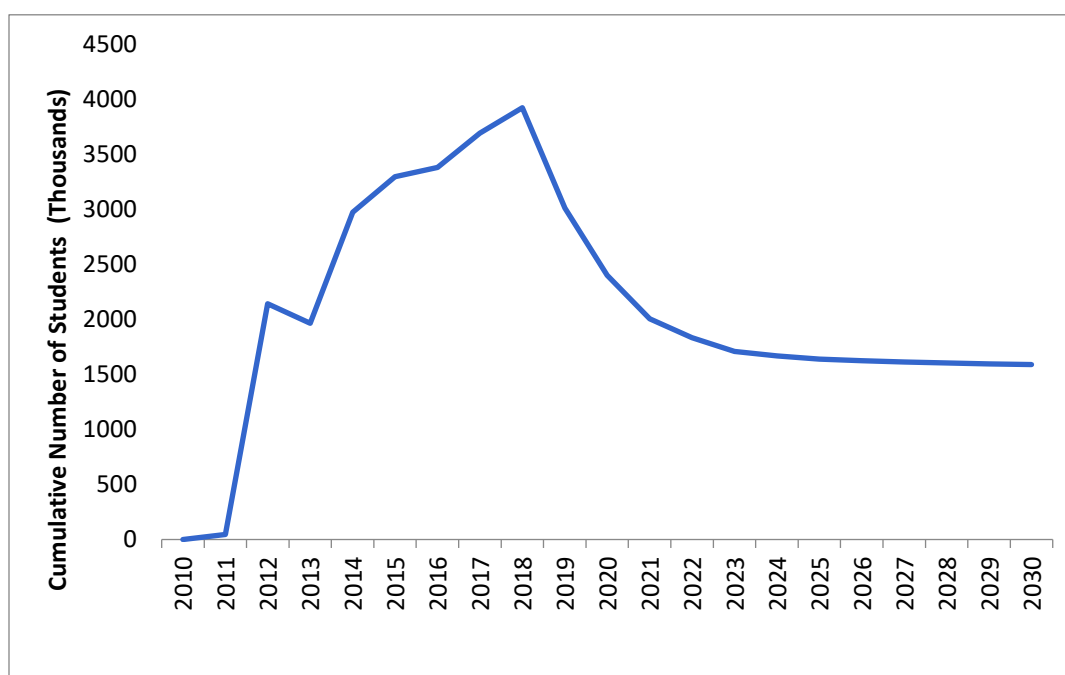
111. Human Capital matters for societies. For example, in the mid-1970s, Nigeria introduced universal primary education, sending a large cohort of people through primary school who otherwise would not have gone. Years later, those same people were found to be more engaged in political life. They paid closer attention to the news, spoke to their peers about politics, attended community meetings, and voted more often.¹⁰¹ Human capital can also play an important role in generating trust and building “social capital.”¹⁰² Social capital in turn is associated with a number of positive societal and economic features, including higher economic growth.¹⁰³ Surveys typically find that more educated people are more trusting of others. Research also 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.¹⁰⁴

112. Increased human capital also reduces crime.¹⁰⁵ In Mexico, high school dropouts are significantly more likely to be caught up in the violence of the war on drugs.¹⁰⁶ In Liberia men at risk of committing violence when enrolled into a cognitive behavioral therapy program intended to stimulate skills such as recognizing emotions, improved their self-control, and ability to navigate difficult emotional situations. When combined with a small cash transfer, the program significantly reduced the chance that these men would fall back into a life of crime.¹⁰⁷ Recent research suggests that people who are educated but underemployed are more likely to support violent extremism.¹⁰⁸

113. Conversely, failing to protect human capital might affect societal cohesion significantly. A recent analysis of the impact of the spread of the Ebola epidemic throughout Western Africa found that newly-affected areas had less trust in authorities and were more likely to be subject to riots and violence.¹⁰⁹ Even less severe conditions such as malaria can have an impact: malaria outbreaks across the African continent have been shown to increase the incidence of riots and protests, as the prospect of a life full of ill health and the shock to people’s incomes reduces the opportunity cost to participating in violence.¹¹⁰ The stakes can be even higher than this: evidence suggests that a country’s disease environment, particularly its exposure to epidemics, greatly increases its chance of tipping into civil conflict.¹¹¹

114. Human capital is also one of the first things to suffer when societies fracture. Wars can prevent whole generations from realizing their potential. World Bank estimates for Syria show that between 2011 and 2017 almost four million children left school because of the civil war, and many of them are likely never to make-up for these lost years of school (figure 2.1).

Figure 2.1. Children Not in School Due to War in Syria



Source: World Bank 2017a.

Note: Background analysis for World Bank 2017 “The Toll of War: The Economic and Social Consequences of the Conflict in Syria”. 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.

115. While this gap in opportunity leads to an erosion of social capital, policies to bolster human capital accumulation counteract this trend. Cash transfers conditional on human capital investments led to increased social capital and trust in local government.¹¹² Social insurance programs such as India’s *National Rural Employment Guarantee Scheme* have been linked to decreased violence by offering up alternative sources of income to those who might be tempted to join local insurgencies.¹¹³ Preliminary evidence from the National Volunteer Service Program in Lebanon, an inter-community soft-skills training program supported by the World Bank, shows that young participants displayed higher levels of overall tolerance.¹¹⁴

Why Governments Need to Invest

116. Polish-French scientist Marie Curie said, “You cannot hope to build a better world without improving the individuals.” Governments need to support investing in human capital when individuals and families underinvest. Many disadvantaged families would like to invest in better health and education for their children, but cannot afford it. Even when education is free, large direct costs on transportation and materials, as well as opportunity costs such as the fact that children in school cannot work to earn extra income can be prohibitive. Many poor rural families cannot afford the time it takes to travel to the nearest school or medical facility. For instance, in

Niger, only 24 percent of population lives within a 1-hour walk of the nearest medical facility during the wet season.¹¹⁵ In such cases, government interventions can make a big difference. Cash transfer programs have improved the health and education of millions of children in low- and middle-income countries. *Shombhob*, a conditional cash transfer piloted in Bangladesh, has been found to reduce wasting among children between 10 and 22 months of age and improve mothers' knowledge about the benefits of breastfeeding.¹¹⁶ The effects of these programs last over time. For example, 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, which persisted after the end of the program.¹¹⁷

117. Some parents may underinvest in their children because of social norms. While the preference for sons has been documented both in developed and developing countries, the extent of the discrimination is dramatic in certain areas. There is evidence that these girls receive much less parental investment both in terms of health and education.¹¹⁸

118. People may also underinvest in human capital because they do not always do 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 information on the benefits, or they do not feel that the decision is particularly salient. There is evidence that providing information about the returns on investments in human capital or mechanisms of self-control can have large effects on learning. For example, in the Philippines, young people were offered a voluntary non-smoking commitment program in which their savings were returned only if the person passed a smoking cessation test. The program changed behaviors, leading to a significant reduction in smoking.¹¹⁹

119. Human capital investment generates significant social returns but these are often hard for parents to quantify, let alone internalize. For instance, in deciding whether to deworm their children, parents consider the perceived private return—the health of their children. But they do not always think of the social return, i.e., the fact that other children are less likely to be infected. For instance, early childhood development programs have wider societal benefits such as lower crime and incarceration rates. A 2010 study of Perry Preschool, a high-quality program for 3- to 5-year-olds developed in Michigan, United States, in the 1960s, estimated a return to society of between about US\$7 and US\$12 for each dollar invested.¹²⁰ Without government intervention or incentive, families might not choose to invest enough in these types of programs.

Why Governments Often Fail

120. Despite the important role for public action, governments often fail to deliver because politicians do not have sufficient incentives to pursue technically sound policies; or because bureaucracies do not have the capacity to deliver.

121. Politicians may lack the incentives to invest because, for example, public health is not sufficiently politically relevant until there is a health crisis. Even when there is consensus among politicians and voters on the importance of an issue, there may be disagreement on the optimal solution. Politicians who rely on popular support may find themselves particularly constrained when they must fund health programs by diverting resources from more noticeable services such

as infrastructure or public subsidies, or by raising taxes. The government of Nigeria, for example, ran into significant resistance when it tried to repeal fuel subsidies to spend more on maternal and child health services. In some countries, this resistance is partly explained by a weak social contract: citizens do not expect—or do not trust—governments to perform, so they are hesitant to make sacrifices or provide taxes that they worry will be misspent.

122. As a result, they might underspend or favor spending on the politically visible aspects of human capital like school and hospital buildings; but much less on the less visible aspects—such as teacher and health worker effort and competence. Election campaigns often promise a new school or hospital; but rarely discuss actual learning levels or stunting rates.

123. Another reason for lack of political incentives is that human capital investments might not produce economic returns until years later. While those with basic education earn more than those with no education,¹²¹ labor market returns for basic education might not manifest until 10-15 years after these investments are made. This is even more the case for investments in early childhood education. For instance, the provision of psychosocial stimulation to toddlers increased earnings by 25 percent in Jamaica, but such returns only materialized 20 years later.¹²²

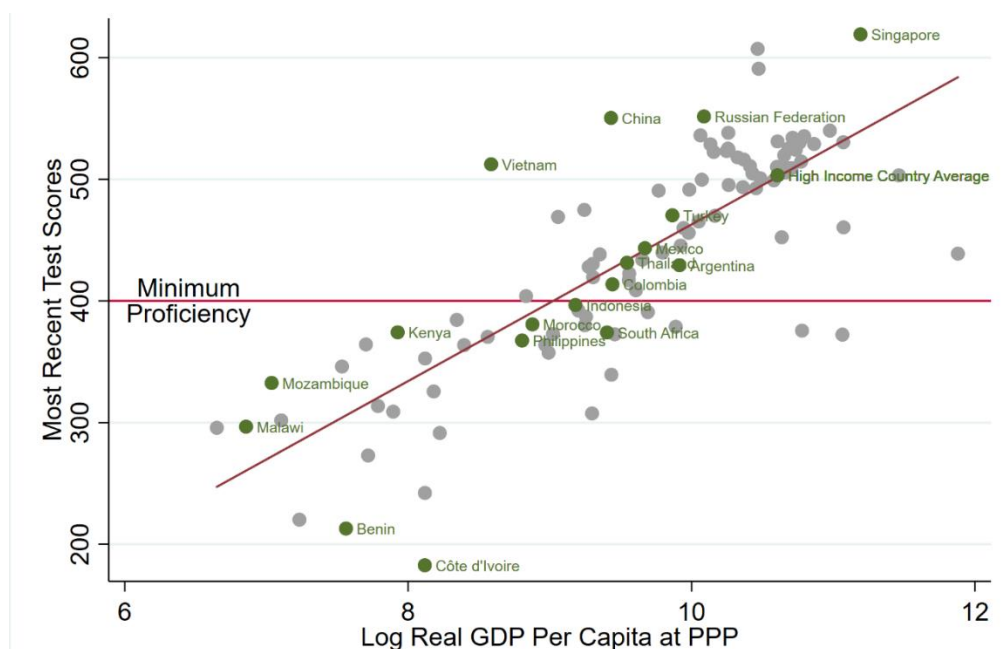
124. Even when countries invest significant share of their budgets, often public services fail to be of sufficient quality to actually generate human capital. Sometimes, they fail only the poor. Sometimes they fail everyone—and the rich simply opt out of the public system.¹²³

125. Human capital investments often do not reach the poorest. In many countries, the richest 20 percent of the population benefit 5-10 times more from public education resources than the poorest quintile.¹²⁴ Gaps in spending for the poor show up as gaps in outcomes for the poor. In Lao PDR, 75 percent of children from the wealthiest quintile complete lower secondary education, while this share is only 3 percent among the poorest quintile.¹²⁵ In India, infant mortality rate among the poorest versus richest wealth quintiles is 82 and 34 per 1000 births, respectively.¹²⁶

126. In many contexts, school quality is systematically worse in poor neighborhoods. This reinforces—or even exacerbates—existing inequalities. Individuals who live in high-poverty areas fare worse than those who live in lower-poverty neighborhoods on a range of educational outcomes.¹²⁷ In fact, the fraction of childhood spent in a high-poverty area is negatively correlated with outcomes such as high-school completion,¹²⁸ and every year spent in a better area during childhood increases college attendance rates and earnings in adulthood.¹²⁹

127. Because of individual and government failures, children (especially in the most disadvantaged countries) are failing to achieve the level of competencies that are needed to project them into more competitive labor markets. On the widely implemented PISA, a score of roughly 400 corresponds to minimum proficiency: less than half of students in developing countries meet this standard, while 86 percent do so in advanced economies (figure 2.2). 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 that all of Singapore's secondary school students have sufficient cognitive skills for the world of work, while almost three-quarters of South Africa's youth are, effectively, functionally illiterate.

Figure 2.2. Harmonized test scores

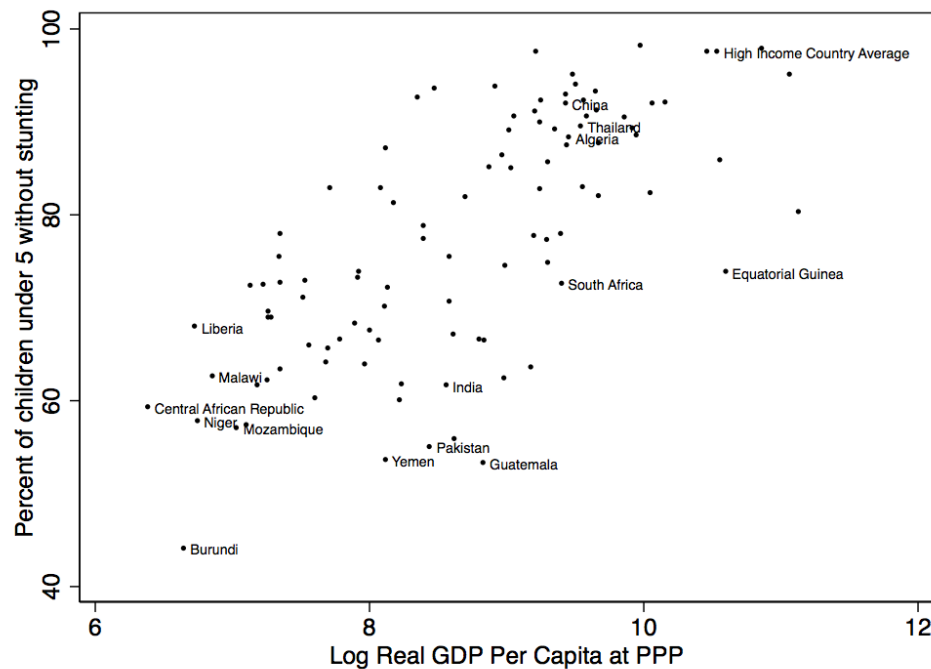


Source: Authors' calculations. Data for China refer to PISA tests administered to students in Beijing, Shanghai, Guangdong and Jiangsu.

128. To benchmark the learning of children from rich and poor countries, the World Bank Group and partners are developing a comprehensive new database of international student achievement test scores, harmonizing results from international, regional, and national testing programs covering over 160 countries so they are comparable to an international assessment scoring standard.¹³⁰

129. Learning outcomes measured by standardized assessments are the result of a cumulative process, where health, cognitive and socioemotional skills start evolving during early childhood, complement and reinforce each other over the life cycle.¹³¹ There is well established evidence that health in early life has long term impact on individual well-being.¹³² Nevertheless, stunting rates—one of the key markers of child development—remain extremely high in some parts of the world (figure 2.3). Over one-third of children under age 5 in South Asia have low height for age,¹³³ which reflects chronic malnutrition and severely limits the ability to learn. In countries such as Somalia, Chad, Central African Republic, Sierra Leone, Mali and Nigeria, more than 10 percent of children born in 2016 never see their fifth birthday.¹³⁴

Figure 2.3. Percentage of children under 5 without stunting



Source: UNICEF, WHO, and World Bank 2017a.

130. Better measurement and access to information are the first step that can improve what citizens demand from their leaders and service providers. For example, 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 5.¹³⁵ In 2000, when Germany was subject to its first assessment under the Program for International Student Assessment (PISA), disappointing scores—known as the “PISA shock”—dominated public discussions and led to significant reforms that improved learning.

131. Better measurement also creates a shared understanding of reality and momentum for action. In Tanzania, the NGO Twaweza, supported by the World Bank, launched a nationally-representative 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.¹³⁶ The World Bank’s own Service Delivery Indicators, released around the same time, shined 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. The World Bank has been supporting these reforms through a program linked specifically to learning outcomes, which is already leading to tangible results.

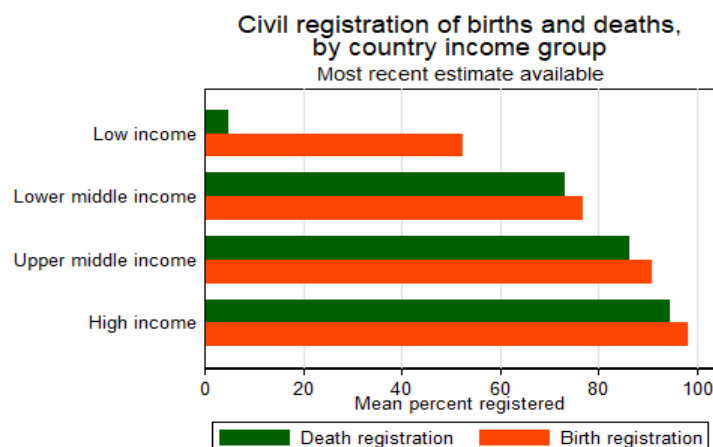
132. Better information can also provide technical guidance for policy reforms. A review of community accountability interventions in public sector primary schools in low- and middle-income countries identified 11 mechanisms through which these operate to improve school performance.¹³⁷ These types of interventions, which include community scorecards and citizen report cards, can improve local representatives' understanding of local needs and their confidence in advocating for them. These can also identify discrepancies between entitlements and the provision of services, prompting local citizens to demand actions for improvement. As part of the World Bank-funded READ PNG program, an early grade reading assessment revealed that Papua New Guinea's elementary students had difficulty with basic reading skills. In response, the Papua New Guinea government piloted a reading program, including teacher training. An evaluation of the program found that it improved students' reading comprehension. These results went on to inform the government's standards-based curriculum.¹³⁸

133. In a resource-constrained world, it is also important to understand who to target first and carefully evaluated pilots improve the planning of a targeted scale-up. For example, in Indonesia, the World Bank has partnered with the government to understand issues affecting the human capital development of the youngest children. This project included a rigorous impact evaluation of the country's Early Childhood Education and Development project, which ran from 2009-2013 and provided 3,000 villages in 50 districts across the country a package of interventions to improve children's school readiness. The project established 6,000 child centers and trained 12,000 teachers. Children in villages that benefited from the project displayed better outcomes. After three years, students from more disadvantaged families in these villages had higher degrees of social competence, emotional maturity, and cognitive development than children in villages without the project.¹³⁹

134. However, information on human capital outcomes is scarce. In education, only 1 in 6 governments publish annual education monitoring reports.¹⁴⁰ Many countries, especially the poorest, do not regularly participate in internationally comparable assessments of student learning. Across 121 countries for which data was available, nearly a third lack any data on reading and mathematics proficiency for children at the end of primary school.

135. Monitoring of even the most basic health information—births and deaths—is inadequate in low- and middle-income countries (figure 2.4) and the pace of improvement in these systems has been slow. Between 2000 and 2012, worldwide, the percent of deaths registered changed little from 36 percent to 38 percent and the percentage of children under 5 whose births were registered only increased from 58 percent to 65 percent.¹⁴¹ This prevents governments from accurately understanding the health needs of their populations and complicates proper planning for the allocation of public services.

Figure 2.4. Low- and middle-income countries have inadequate civil registration systems for recording births and deaths



Source: Authors' calculations based on data from Global Health Observatory.

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.

136. 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 how countries are performing in terms of both school access and learning. The Annual Status of Education Report survey, a rare example, provides an annual assessment of learning levels of children in rural households in India, capturing both youth in and out of school.¹⁴²

137. One way to increase data on learning outcomes relatively cheaply is by adding learning modules to household surveys that are undertaken routinely in most countries. This would have the added advantage of also covering children who are out of school. In addition, it would allow learning data to be linked to household characteristics, including poverty. Another way is to bring together stakeholders to agree on a common core of questions to include in the existing learning assessments, to allow results to be harmonized across different tests.

138. Similar efforts are underway in health. To harmonize health measurement, the Health Data Collaborative was launched in 2015 by a large group of international agencies, bilateral and multilateral donors, foundations, and governments, with the objective of improving the coordination of health data collection.¹⁴³ New technologies such as tablets, global positioning system, and the diffusion of mobile phones are driving down costs and increase the scope of data collection.

139. It is also important to look not just at outcomes, but also pathways of change. There is a need to improve our understanding of how doctors' and teachers' knowledge and effort influence children's health and learning, to inform more targeted efforts to invest in human capital. Exploring these determinants elucidates, for example, the discrepancy between relatively high average years of schooling yet relatively low student achievement in Latin America.¹⁴⁴ A recent

assessment in Madhya Pradesh, India found that people from poor households in poor villages were more likely to visit health care providers with low levels of knowledge and that, on average, 49 percent of accessible providers had no formal medical training.¹⁴⁵ An emerging body of research shows provider effort and competence as two critical factors driving poor quality in health.¹⁴⁶ Similarly, unqualified and unmotivated teachers are detrimental to student learning.¹⁴⁷

140. Measurement enables policymakers to design more effective, context-specific solutions. Early research on determinants of student performance concluded that school and teacher quality matter even more for primary school achievement in low- and middle-income countries than in high-income countries.¹⁴⁸ A recent meta-analysis of school-based learning interventions in low- and middle-income countries found the largest impacts for: interventions using computers or instructional Computer Assisted Learning, teacher training, smaller class sizes, and grouping students by ability level.¹⁴⁹ A large body of literature on social determinants of health shows the many factors that affect health and development—including appropriate nutrition, clean water, safe roads, adequate housing, safe working conditions, and social support, among many other factors.¹⁵⁰ These health determinants must be tackled through effective policies in a wide range of sectors and cannot be sufficiently addressed through health policies alone.

Better Measurement Helps – The Human Capital Project

141. Generating new information on the economic benefits of human capital is key to making the case to governments that these interventions are worthy of investment, particularly to Ministries of Finance that typically spend more time worrying about stocks of debt than stocks of human capital. The 2018 “Changing Wealth of Nations” study has produced estimates of the monetary value of human capital, based on a comprehensive analysis of how earnings respond to education for individuals.¹⁵¹ Demonstrating the beneficial effects of investing in human capital on economic growth can get policymakers to worry as much about what is happening in their schools as what is happening in their current account.

142. Stepping up measurement and analysis in these different areas is core to the Human Capital Project. The first step of this process is developing an international metric that captures key elements of human capital and can underscore its saliency in the political debate. The new Human Capital Index (HCI) 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 HCI is designed to highlight how investments that improve health and education outcomes affect the productivity of the next generation of workers. It measures current education and health outcomes since they are salient to policymakers and can be influenced by current interventions to improve the quantity and quality of education and health.

143. The design of HCI is intuitive. Imagine the trajectory from birth to adulthood of a child born in 2018. 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 age 18, she carries with her lasting effects of poor health and nutrition in childhood that limit her physical and cognitive abilities as an adult.

144. The goal of the HCI is to quantify the key stages in this trajectory and their consequences for the productivity of the next generation of workers. Accordingly, it has three components: survival, as measured by under-5 mortality rates; Expected Years of Quality-Adjusted School which combines information on the quantity and quality of education; and health.

145. The quantity of education is measured as the expected number of years of school that a child can expect to obtain by age 18 given the prevailing pattern of enrolment rates across grades. The quality of education measure in the HCI reflects new work at the World Bank and with partners to harmonize test scores from major international student achievement testing programs.¹⁵²

146. For health, there is no single broadly-accepted, directly-measured, and widely-available metric that is analogous to years of school as a metric of educational attainment. In the absence of such a measure, two proxies for the overall health environment are used to populate this component of the index: adult survival rates and the rate of stunting for children under age 5. In addition to the fatal outcomes directly captured by this measure, adult survival rates can also be interpreted as a proxy for the range of non-fatal health outcomes that a child born in 2018 would experience as an adult if current conditions prevail into the future. Stunting is broadly accepted as a proxy for the pre-natal, infant and early childhood health environment, and so 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.

147. The health and education components of human capital described above all have intrinsic value that is undeniably important but difficult to quantify. This in turn makes it challenging to combine the different components into a single HCI. One solution that permits aggregation is to interpret each component in terms of its contribution to worker productivity, relative to a benchmark corresponding to full health and complete education. This aggregation strategy builds on the large literature of development accounting.¹⁵³ Conversely, the contributions of health and education to worker productivity are anchored in the large micro-econometric literature on estimating returns to education and health.

148. The HCI is measured in terms of the productivity of 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 particular 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 2.1). This can be decomposed into the contributions of the three components of the HCI, each of which is also expressed in terms of productivity relative to the benchmark, and are multiplied together to arrive at the overall HCI.

Table 2.1. Human Capital Index—the productivity as a future worker of a child born today

(Maximum productivity = 1)

		A country in the 25th Percentile 50th Percentile 75th Percentile for component __, has a value of ...		
	Component 1: Survival			
1	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	10.3	12.4	13.5
	Test Scores (out of approx. 600)	354	421	510
2	Quality-Adjusted Years of School	6.0	8.6	11.3
B	<i>Contribution to Productivity</i>	0.53	0.65	0.81
	Component 3: Health			
3	Fraction of Kids Not Stunted	0.67	0.75	0.89
4	Adult Survival Rate	0.78	0.85	0.91
C	<i>Contribution to Productivity*</i>	0.88	0.91	0.95
	Overall Human Capital Index**	0.44	0.58	0.76

Source: Authors' calculations.

Note: Contribution to productivity measures how much each component of the HCI, as well as the overall HCI, 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.

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

149. The units of the HCI 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 HCI 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. This scenario can then be compared with one in which the entire future workforce benefits from complete education and enjoys full health. 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 capital induced by having more productive workers.

150. Benchmarking countries against their growth potential—and against each other—is only the first step in the HCP. The overall goal is much wider. It includes understanding the contributing factors that affect human capital accumulation and their levels within the population. It also includes linking human capital more rigorously with economic growth.

Chapter 3: Lifelong Learning

151. The first president of post-apartheid South Africa, Nelson Mandela said this on learning: “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 mine worker can become the head of the mine, that the child of farm worker 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.”

152. Automation, platforms, and social media are reshaping not just work but the skills needed for work. Part of the ongoing skills re-adjustment is happening outside compulsory education¹⁵⁴ or formal jobs. Three domains—early childhood, tertiary education, and adult learning outside jobs—are increasingly important in meeting the skill-demands of future labor markets. Together, they highlight the idea that skills acquisition today, more than ever before, is a matter of lifelong learning. In a rapidly changing world, people need several opportunities to re-skill or up-skill throughout their lifetimes. As Thomas Friedman has said, “Learning is so much more important than knowing when change happens fast.” Not only does this approach align with the changing nature of work; it also aligns with the changing nature of populations, whether it be rapidly aging populations on the one hand or youth bulges on the other.

153. In terms of skills for the future, two concerns have heightened. First is inequality of opportunity. Within advanced countries, job polarization—the expansion of high- and low-skill jobs coupled with the decline of middle-skill jobs—is well documented.¹⁵⁵ Yet whether these changes will unfold in low- and middle-income countries in the same way remains to be seen. Except for Indonesia, Mexico, and Brazil, job polarization has not been observed so far.¹⁵⁶ Second, linked to job polarization, is the trade-off between skills adjustments in the current labor market vs. skills adjustments among those who enter the labor market in the next decade.

154. Against this backdrop, demand for three types of skills—acquired throughout one’s lifetime—is undergoing significant disruptions. These are general cognitive skills, job-specific skills, and socio-emotional skills. General cognitive skills determine how well individuals understand the world around them and act based on this understanding. These skills are transferable across jobs and include critical thinking, problem solving, reasoning, to name a few. Job-specific skills refer to the knowledge related to a particular field. Socio-emotional skills include the ability to recognize and manage emotions, develop caring for others, and establish positive relationships.

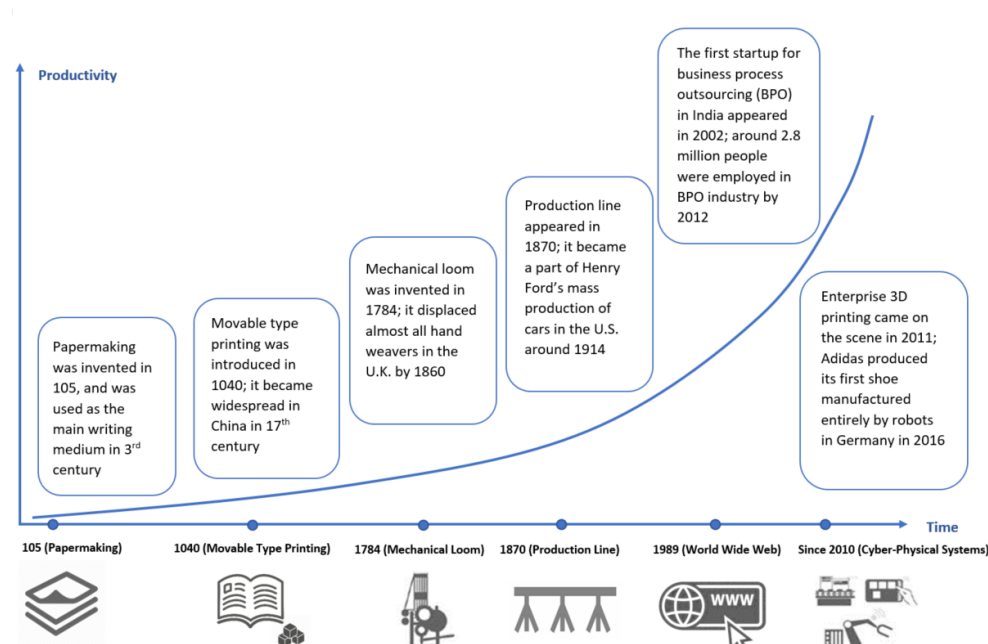
155. The demand for these three skill-types changing. First, labor market returns to general cognitive and socio-emotional skills appear to be rising. Second, returns to job-specific skills are increasingly uncertain¹⁵⁷—with returns increasing for some jobs and declining (often dramatically) for others. For example, the demand for home electronics repairing skills is decreasing because technology drives down equipment prices and improves reliability. On the other hand, the rising renewable energy sector is increasing its demand for the specific skill of building and operating power-generation installations. Third, pay-offs to the combination of different skill-types appear to be increasing.¹⁵⁸ In this category, particularly important is skill of adaptability – which itself is a combination of cognitive and socio-emotional skills.

156. Given these changes, three types of skills investments can have big pay-offs: early childhood investments, tertiary education, and adult learning outside jobs. This is in addition to skill acquisition in primary and secondary schools and jobs. Skill acquisition during basic schooling remains important, as discussed in World Development Report 2018.

157. The increase in returns to transferable cognitive skills is due to rising job uncertainty. 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 young people are employed in jobs that did not exist three decades ago. India has nearly 4 million app developers;¹⁵⁹ Uganda has over 400,000 internationally certified organic farmers;¹⁶⁰ China will need 100,000 genetic counselors.¹⁶¹ In such a rapidly transforming context, it makes sense to invest in skills that can easily be transferred from one type of job to another.

158. Higher-order cognitive skills that are transferable across jobs appear to be in demand. This is because of the specific demands of an increasingly technological world—that keeps changing. In the past, shifts in skill demands prompted by technological advancements took centuries to manifest (figure 3.1). The advances in technology taking place as part of “industry 4.0” demand new skills seemingly overnight.¹⁶² Consequently, demand for transferable higher-order cognitive skills like logic, critical thinking, complex problem solving, and reasoning is rising. In fact, it is expected that nearly all jobs of the future will be more intensive in higher-order cognition.¹⁶³ Irrespective of the region of the world, higher-order cognitive skills are consistently ranked among the skills most valued by employers.¹⁶⁴ 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.¹⁶⁵

Figure 3.1. Time needed for technological diffusion keeps getting shorter



Source: Authors' calculations.

159. Socio-emotional skills often cover human capabilities that machines are unable (for now) to replicate. Creativity, innovation, and social interaction are some examples of the skills that are likely to remain high in demand.¹⁶⁶ A finer-grained list could include elements like curiosity, emotional intelligence, empathy, leadership, teamwork, conflict resolution, and relationship management. For example, even when medical diagnostics have been taken over by computers, doctors and nurses will still play a vital role given the need to offer empathy, manage information, and negotiate difficult situations humanely. In Latin America and the Caribbean, adoption of digital technology has not only placed more importance on general cognitive skills, but also increased demand for workers with interpersonal skills.¹⁶⁷ In the United States, labor market returns to socio-emotional skills are much higher in the 2000s than they were in the mid-1980s.¹⁶⁸ These returns will continue to grow.

160. A new trend is the increasing importance of skill combinations.¹⁶⁹ Technological change seems to be less about completely replacing old skills with new skills—and more about combining skills in new ways. For instance, a marketing professional might well be called upon to write algorithms. A physics graduate may land a job as quantitative trader in the finance industry. Those who can bring emerging skills into relevant technical fields of expertise—such as teachers good at web design, or actuaries proficient in big data analytics—are likely to be increasingly valued.¹⁷⁰ The sought-after trait is adaptability—the ability to respond to unexpected circumstances, and to un-learn and re-learn quickly. Developing this ability takes a combination of general cognitive, socio-emotional, and even job-specific skills.

161. This chapter discusses how skill acquisition outside compulsory schooling and jobs can be effective for equipping workers with general cognitive skills, socio-emotional skills, and the ability to combine skills in new ways. This is through three avenues: early childhood investments, tertiary education, and adult learning outside jobs. Their increasing importance signals that skills for the future are truly a matter of lifelong learning.

Learning in Early Childhood

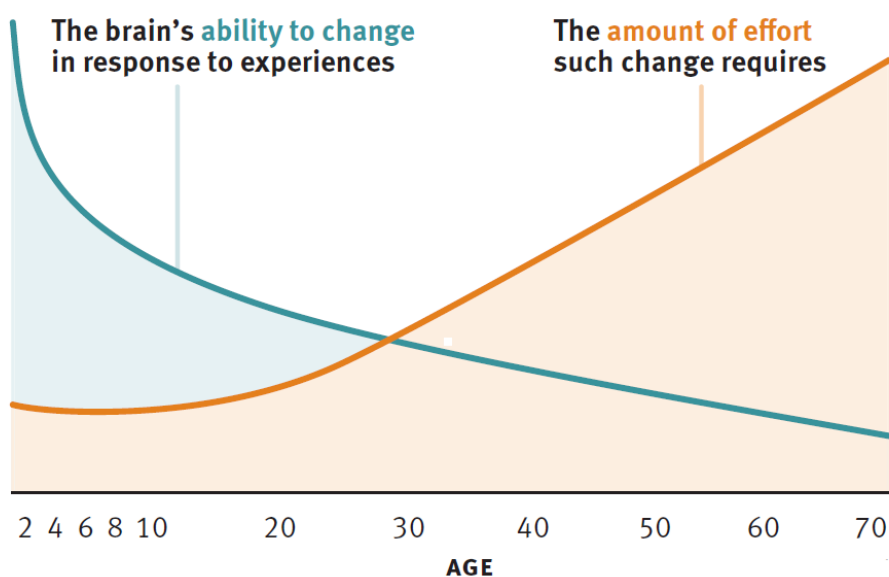
162. In France, the mandatory school starting age is soon to be reduced from six to three years. According to French President Emmanuel Macron, this reform is intended to boost equality, improving the ability of children from disadvantaged backgrounds to remain competitive in the education system.¹⁷¹

163. 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-emotional skills. They also make future skill acquisition more resilient to uncertainty. Early childhood investments are an important channel improve equality of opportunity. Currently, these investments are underprovided, especially for poor and disadvantaged children who can benefit the most from them. Prioritizing these investments can have big pay-offs for economies, as long as both access and quality are emphasized.

164. The foundations of brain architecture are set in from prenatal period to age 5—making it an important stage to develop cognitive and socio-emotional skills.¹⁷² During this period the

brain’s ability to learn from experience—its “plasticity”—is the highest. This ability decreases with age (figure 3.2). This means two things. First, by impacting brain architecture—early childhood investments can influence the ability to acquire skills. As a result, experiences and learning during this period directly impact achievement in adulthood. Second, if this window is missed, skill-building becomes harder. Building more advanced skills on weak foundations is more difficult than getting the foundations right.

Figure 3.2. Brain’s ability to learn from experience decreases with age



Source: Center on the Developing Child at Harvard University 2016.

165. Quality early childhood development programs enable children to “learn to learn.” Investments in nutrition, health, and stimulation in the first 1,000 days of life builds stronger brains. Engaged parents and caregivers during this phase also matter for the development of children’s language skills, motor, and self-regulation skills, as well as various social behaviors.¹⁷³ In Colombia, for example, exposure to psychological stimulations through home visits with play demonstrations significantly improved cognitive development of children aged 12-24 months.¹⁷⁴ In Pakistan, *Lady Health Workers* program, which provided health services in rural areas led to a decline in infant mortality from 250 to 79 per 100,000 live births.¹⁷⁵ When the program provided nutrition supplementation, and encouraged mothers to engage in responsive play with children aged 0-2 years, it generated sustained positive effects on children’s cognitive abilities and pro-social behaviors.¹⁷⁶

166. As children age, around age 3, socialization and more formal early learning become important to prepare children to succeed in primary school. Quality preschool at this stage further strengthens children’s executive functions (e.g., working memory, flexible thinking, and self-control), launching them on higher learning trajectories.¹⁷⁷ In Bangladesh, rural children who attended preschool performed better in first- and second-grade speaking, writing and mathematics, compared to those who did not.¹⁷⁸ Besides improvement in cognitive and motor skills, a preschool reform in rural Mozambique had positive effects on socio-emotional development—participating

children were better at interacting with others, following directions, as well as regulating their emotions under stress.¹⁷⁹ But for these results, the quality of pre-schools needs to meet certain thresholds. There is evidence that low quality preschool can be worse for child development than no preschool at all.¹⁸⁰

167. Early childhood investments produce future-relevant skills efficiently. This is because learning is cumulative—skills beget skills. Skills acquired at an earlier stage facilitate skill formation in subsequent stages.¹⁸¹ Hence, the returns for early investments are the highest and the advantages conferred by these investments grow overtime.¹⁸² It is estimated that an additional dollar invested in quality early childhood programs can yield a return of 6 to 17 dollars.¹⁸³

168. In addition to having long-lasting benefits on children, early childhood development programs improve labor force participation of parents. 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.¹⁸⁴ Early childhood development investments can alleviate this constraint. In Argentina, a large-scale construction program of pre-primary school facilities in the 1990s positively impacted maternal employment.¹⁸⁵ During the same period, in Spain, offering full-time public care for three-year-old children increased maternal employment by 9.6 percent.¹⁸⁶

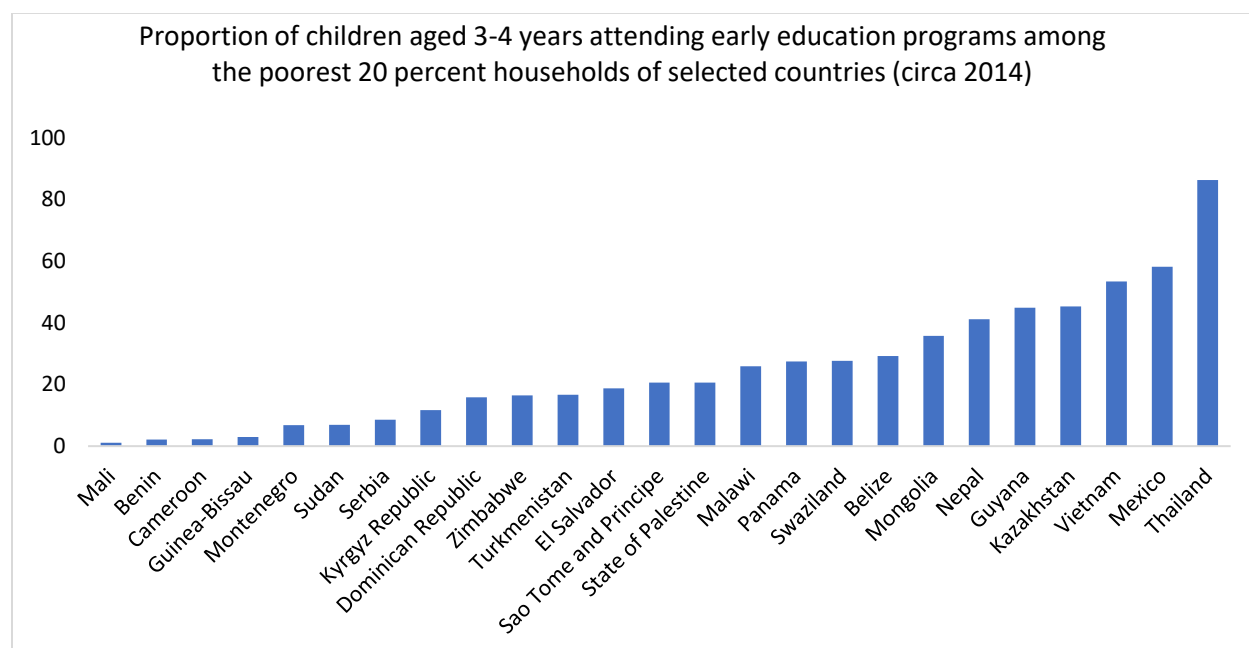
169. Early childhood investments are also effective in increasing equity. They close developmental gaps between children from different socioeconomic backgrounds.¹⁸⁷ For children exposed to poverty and other adverse conditions, quality early childhood programs can increase adult competence, reduce violent behaviors and social inhibition, as well as foster growth in the subsequent generation.¹⁸⁸ For example, in rural Guatemala, an early childhood development nutrition program for poor families significantly increased wages for these children in adulthood.¹⁸⁹ In Jamaica, early stimulation for infants and toddlers increased their future earnings by 25 percent—equivalent to adults who grew up in wealthier households.¹⁹⁰

170. Despite their strong efficiency in producing important skills, early childhood investments are underprovided. Around 250 million children under age five are at risk of not reaching their developmental potential in low and middle-income countries because of stunting or extreme poverty.¹⁹¹ Worldwide, more than 87 million children under age seven have spent their entire lives in conflict-affected areas.¹⁹² They suffer from extreme trauma and toxic stress, which impair their brain development and skill enhancement. On the other hand, 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.¹⁹³ In 2012, North America and Western Europe 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.¹⁹⁴

171. Children from poor families are the least likely to attend early childhood development programs (figure 3.3). They are also the ones who can 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.¹⁹⁵ 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.¹⁹⁶

172. Even for those who have access to care services or early learning, quality is often a concern. Poor-quality early childhood development programs can lead to disappointing results in children’s language development, cognitive skills, and sociability.¹⁹⁷ A study of preschools in a slum of Nairobi, Kenya shows that despite high participation rates, the curricula and pedagogical approach were not age-appropriate. In the program, 3- to 6-year-olds had to follow academic-oriented instruction and even sit for exams.¹⁹⁸ In Peru, while the national *Wawa Wasi* program has provided safe community-based daycare and nutritious diet for children aged 6 to 48 months in impoverished areas, it failed to improve children’s language or motor development skills due to insufficiently trained care-givers.¹⁹⁹

Figure 3.3. 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.

173. Effective solutions for early childhood development are available. In some contexts, community-based playgroups have generated sustained outcomes at a low cost. In Indonesia, one such program positively affected children’s language, socioemotional and cognitive skills; those from disadvantaged backgrounds benefited more in both short and long term.²⁰⁰ In Tonga, organizing playgroups for children aged 0-5 significantly improved their early grade reading skills.²⁰¹ The Montessori model, characterized by multi-age classrooms, student-chosen learning activities, and minimal instruction, have been shown to be more effective than conventional education in improving children’s executive functions.²⁰² 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.²⁰³

174. Research has uncovered several concrete ways to increase take-up of early childhood development investments. For example, cash transfers can support early childhood development

for the poorest children. Such programs have reduced stunting in the Philippines and Senegal, fostered language development in Ecuador and Mexico, and improved children's socioemotional skills in Niger.²⁰⁴ Integrated approaches that combine health, nutrition, and stimulation investments can be highly effective as well. For instance, Chile's *Crece Contigo* (ChCC) program integrates the services provided by the health, education, welfare, and protection services—so that a child's first contact with the system occurs in utero, during her mother's first prenatal control.²⁰⁵

175. However, the need for local adaptation of global evidence remains strong. A highly successful child nutrition program from Southern India failed to have any impacts in Bangladesh. Why? 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.²⁰⁶

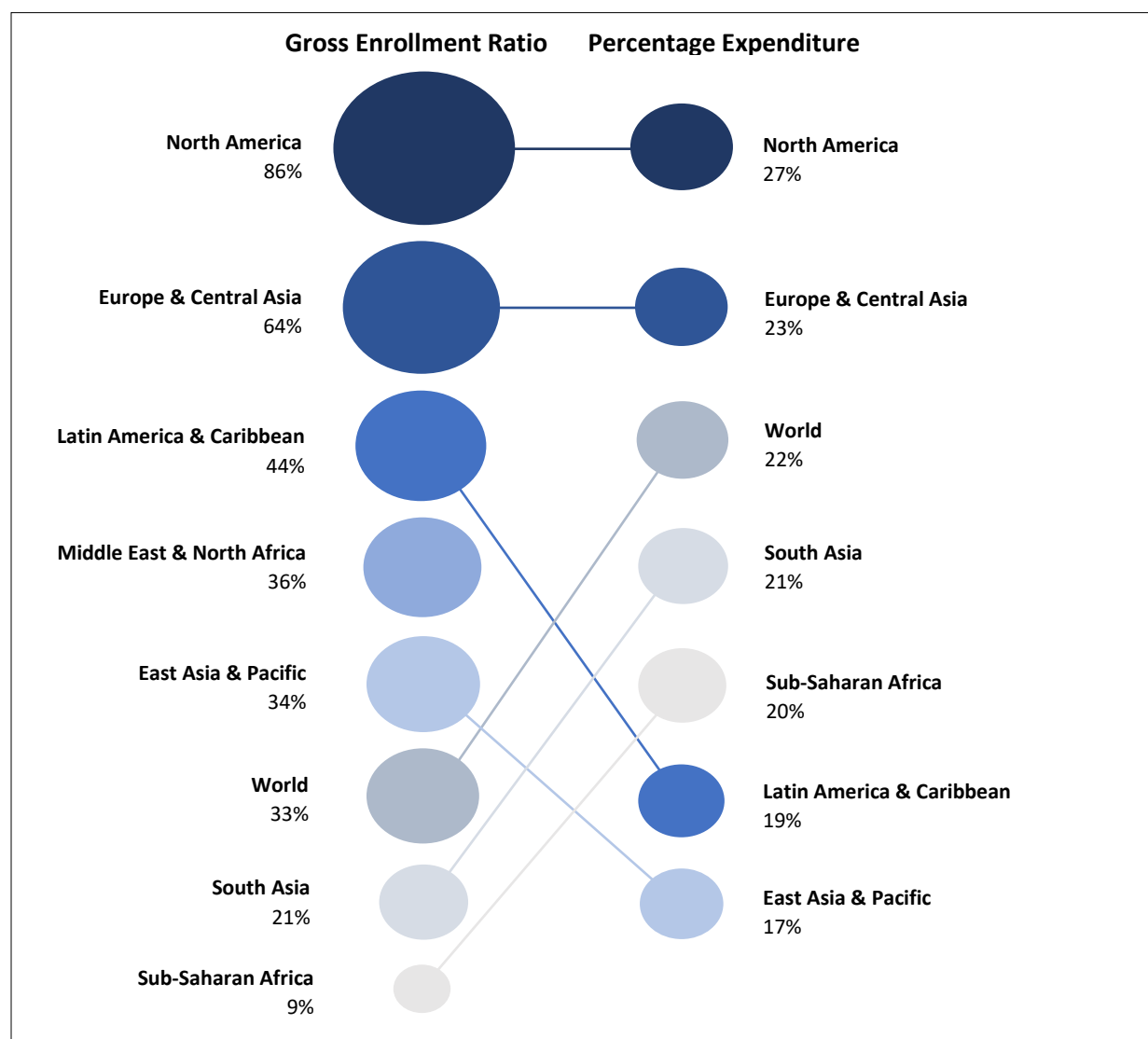
176. Ultimately, concrete measurement is necessary to understand where investments are needed, find effective solutions, and adapt them locally. The World Bank-supported *Measuring Early Learning Quality and Outcomes* (MELQO) consortium is an effort in this direction. It is developing measurement modules that can be implemented at scale. Such information improves the quality of early childhood development, target those most in need, as well as establish quality assurance systems. So far, eleven low- and middle-income countries have participated in 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.²⁰⁷ The Nicaraguan government incorporated MELQO results into the design and planning of the country's preschool measurement system.

Tertiary Education

177. Tertiary education is a worthwhile investment only if it is configured to meet the specific demands of the future. It can provide the complex skills demanded by the changing nature of work. But to do this, three specific system-level adaptations are called for: more flexible choices within tertiary systems; more focus on skills that are transferable across jobs; and more support for innovation.

178. More integrated and technology-driven economies appear to reward tertiary education.²⁰⁸ The global average private return to tertiary education is 15.8 percent.²⁰⁹ But these returns are not high for everyone. They depend on a range of factors including the quality of the provider, student composition, 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 meet the cut-off.²¹⁰ Returns also vary dramatically based on the field of specialization. In Chile, for example, the return to tertiary education ranges from 4.1 percent for humanities to 125.8 percent for engineering and technology.²¹¹ Tertiary enrollment and expenditure also vary considerably by region (figure 3.4).

Figure 3.4. Gross tertiary enrollment ratio and percentage expenditure on tertiary education by region, 2013



Source: World Development Indicators sourced from UNESCO Institute for Statistics.

Note: Expenditure on tertiary education data is unavailable for Middle East & North Africa region. 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.

179. 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 skills²¹²—like complex problem solving, critical thinking, and advanced communication that are transferable across jobs but cannot be acquired through schooling alone. Rising demand for these skills has enhanced the wage premia of tertiary graduates,²¹³ while reducing the demand for less educated workers.²¹⁴ 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, become more attractive in the changing world of work by serving as platforms for innovation. As “knowledge hubs,” universities can be engines for developing new capabilities, innovation, and high-tech entrepreneurship.²¹⁵

180. 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 decision-tree. To better serve this model, tertiary systems would need to become more flexible, more effective at producing transferrable higher-order skills, and more actively facilitate innovation.

181. 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. Students need to choose one or the other and once this choice is made—especially if it is for vocational training—it can be difficult and expensive to reverse. This rigidity in tertiary systems is inefficient and inequitable given the future of work.

182. The trade-offs between 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.²¹⁶ At the same time, vocational training continues to be pursued by many. In 2012, 63 percent of Dutch higher education students were attending vocational training.²¹⁷ This share was more than 50 percent in Malaysia, and 31 percent in Kenya in 2013.²¹⁸ Vocational training meets immediate demand for technical skills, enables faster education-to-work transitions for some, and alleviates pressures on the university system.²¹⁹

183. Against this backdrop, 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 work-life. Third, those trained in narrow vocational skills need viable options for an unpredictable future. A straightforward way to do this is by introducing “bridging” arrangements allowing vocational students to continue their studies at universities. For instance, Congo, Dem. Rep. offers “bridging” arrangements for vocational graduates to continue to university.

184. Close collaboration between industry and vocational education can also play a role. For example, 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, and professional certification. In addition, filling in information gaps enables students to make choices between and within different paths. Chile, for instance, is establishing online

platforms where students can access information on employability of various degrees, wage profiles, courses to take for certain occupation, and so on.²²⁰

185. Greater flexibility is also needed within course formats. Demand for lifelong learning implies that the working population needs to top up existing skills with just-in-time qualifications. This demand calls for flexible delivery models that allow individuals to access tertiary education while working. Also, for sharper, self-directed, and practical training—a greater mix of degrees and shorter courses. It is possible to imagine future tertiary education systems that provide “stackable credentials” in which qualifications can be fitted together in flexible and customizable ways.

186. It is not as if tertiary systems have remained static or impervious to these changing demands. They have responded. 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 the sciences, engineering and technology. In addition, technology-enabled platforms are making tertiary education more agile and responsive, especially to those with historically low access. This is seen in the increase in distance learning (or online learning) and open universities (i.e. universities with minimal or no entry requirements). In the mid-1990s, the five largest distance-learning programs were based in lower or middle-income countries. India is the second largest consumer of Massive Open Online Courses (MOOCs).²²¹ XuetangX, the major MOOCs and blended learning portal from China, crossed 2.7 million students in May 2016.²²² However, some caution is warranted. A recent study shows that the return on investment of online courses for post-secondary education is lower than that of brick and mortar education when labor market returns and opportunity cost are considered.²²³

187. Tertiary education systems need to guarantee a minimum threshold of transferable cognitive skills—which are the best inoculation against job uncertainty. But many tertiary education systems are not effective at producing these skills. For example, 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.²²⁴ 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.²²⁵

188. Incorporating more general education in tertiary programs is one way to increase acquisition of transferable higher-order cognitive skills. In 2012, an additional year of general education was added to undergraduate programs in Hong Kong SAR, China—focusing on problem solving, critical thinking, communication, leadership, and lifelong learning skills.²²⁶ A large majority of students perceive this change as being 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.²²⁷ Another channel is through better metrics that reliably assess student gains in complex cognitive skills at the higher education level.²²⁸

189. Tertiary education may also build transferable socio-emotional skills—such as teamwork, resilience, self-confidence, negotiation and self-expression. In a survey of employers of engineers in India, socio-emotional skills were ranked at or above technical qualifications and credentials in terms of their significance for the employability of recent graduates.²²⁹ Employer surveys in Bulgaria, Georgia, Kazakhstan, Poland, Macedonia FYR, Russian Federation, and Ukraine indicate that employers see the lack of socioemotional skills at least as binding as technical skills.²³⁰

190. Socio-emotional skills can be acquired in adulthood. Forward-looking universities are finding ways to do this. In the United States, the University of California, San Diego developed an interactive course on “Learning How to Learn,” which is offered at the Coursera platform. Dutch Vocational Colleges provide entrepreneurial courses with the objective to improve non-cognitive skills such as teamwork and self-confidence.²³¹ In Tunisia, introducing an entrepreneurship track that combines business training with personal coaching reshaped behavioral skills of university students.²³² 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.²³³ In China, a combination of cooperative learning and role play enhanced self-educational abilities and communications skills among undergraduate students in pharmacology classes.²³⁴ However, to better teach socio-emotional skills, more efforts are necessary to design appropriate curriculum and accurate measurement, especially in the contexts of low income countries or rural areas.²³⁵

191. Tertiary education systems often serve as epi-centers of innovation—this role will be increasingly valued in future economies. In industries such as pharmaceuticals and electronics, more than 10 percent of the new products and processes have been commercialized thanks to academic research.²³⁶ One study suggests that universities and research institutes, rather than firms, have driven scientific advances in sectors like biotechnology.²³⁷ In Sub-Saharan Africa, nearly 45 percent of the university research output focused on health sciences, grappling with the most pressing issues of the region.²³⁸ Further, knowledge spillovers from university activities remain strong. In Sweden, the presence of university research contributes to 0.5 percent more patents awarded in labor markets each year.²³⁹ In Chile and Colombia, firms are more likely to introduce new products and patent them if they collaborate with universities.²⁴⁰

192. To prepare students for the changing labor market, more and more tertiary institutes are offering entrepreneurship trainings, creating business incubators, or hosting venture capitalists. Stellenbosch University in South Africa has generated 24 spin-out companies, and filed 290 patents from 2000 to 2018.²⁴¹ Since its establishment in 2000, *SIDBI Innovation and Incubation Center* at Indian Institute of Technology (IIT) Kanpur has incubated 53 start-ups, and disbursed seed funds of 500 million rupees.²⁴² Egypt, Arab Rep. launched its first university incubator, *Venture Lab*, in 2014.²⁴³

193. For some countries, a regional-cooperation approach has proved more optimal. Regional “centers of excellence” can be a great way to build regional specialization, concentrate limited top-level faculty, generate knowledge spillovers, and meet private sector demand for skills. This has been successful in Sub-Saharan Africa under the Africa Centers of Excellence project supported by the World Bank. Under the project the West Africa Center for Infectious Bio Pathogens at the

University of Ghana obtained international accreditation; as did at least 12 other programs in Development Impact Systems and Power Engineering. Through its “matching grant” approach, at least five centers have won research grants in crop science, genomics of infectious diseases, oil and gas. The project has supported at least 1,000 PhDs and 5,000 master students. Similar regional collaborations exist in the European Union, ranging from building pan-European research infrastructure to forming research partnerships to address common challenges such as Alzheimer.

194. There are well-known examples of successful university innovation clusters in the developed world—innovation clusters around Stanford University (Silicon Valley) and Harvard-MIT (Boston’s Route 128) in the United States, Cambridge-Oxford (“Golden Triangle”) in the United Kingdom, to name a few. Such clusters are also emerging in middle income countries. In Malaysia, the University of Malaya has established eight interdisciplinary research clusters during the past decade, covering sustainability science and biotechnology.²⁴⁴ In China, Peking University is building *Clinical Medicine Plus X*, a research cluster for precision medicine, health big data, and intelligence medicine.²⁴⁵ As part of the *Startup India* initiative, seven new research parks located in different IIT campuses will be established to promote innovation through incubation and collaboration between universities and private sector firms.²⁴⁶ In Mexico, the Research and Technology Innovation Park currently houses more than 30 research centers covering R&D in biotechnology, nanotechnology, robotics; seven of them are led by universities.²⁴⁷

195. But building university-based innovation hubs is not easy. There seems to be standard ingredients to create an innovation center: a “hot” industry, a research university, a technology park, subsidies and incentives for companies to relocate, and a pool of venture capital. However, simply applying this formula does not always work. Beyond the hard infrastructure, many other “soft” elements are important but difficult to create. Such elements include strong human capital supply, close ties between university research and private sector innovation, sufficiently developed capital market, and even innovation-friendly cultural norms (such as de-stigmatization of failure). In short, successful university-based innovation cluster is a rare breed.

196. Two main factors matter for a healthy innovation ecosystem. First, prioritize the right university for the right sector. Establishing university-based innovation clusters is a complex process, costing sizeable financial resources, requiring highly-skilled employees, and often taking a long time.²⁴⁸ An appropriate mix of research quality, budget, culture, as well as institutional arrangements is essential for a good university candidate.²⁴⁹ The agglomeration effects of universities vary by sector. For example, university R&D has been shown to be irrelevant for sectors such as furniture.²⁵⁰

197. Second, create an enabling environment. Just because successful innovation clusters exist, does not mean that government can create them. However, they “set the table”—providing necessary local infrastructure, increasing expenditure on R&D, facilitating universities to attract high-quality researchers and connect with private sector innovation, easing rigid labor market regulations, to name a few.²⁵¹

Adult Learning Outside Jobs

198. As the nature of work changes, some workers are caught in the cross-hairs of the 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.

199. One step towards lessening this anxiety is adult learning for reskilling and upskilling those who are not in school and not in jobs. This approach has shown more promise in theory than in practice. Too often bad design 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 readjustments in the future of work, but it needs a serious design re-think.

200. 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. These are programs on adult literacy, skills training for wage employment, and entrepreneurship programs.

201. Worldwide more than 2.1 billion working-age adults (aged 15-64) have low reading proficiency.²⁵² In Sub-Saharan Africa, nearly 61 percent of workers are not fully reading proficient; in Latin America and Caribbean this proportion is 44 percent. Even in middle income countries like India only 24 percent of 18- to 37-year-olds who dropped out of school before completing primary could read.²⁵³ 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.²⁵⁴

202. 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 or low quality of basic education²⁵⁵ or both. In 2014, the drop-out rate from lower secondary general education is on average 27.5 percent in low income countries, while such share is 13.3 percent and 4.8 percent in middle and high income countries, respectively.²⁵⁶ Lacking in formal certification and trainings of other necessary skills, it is difficult for early school leavers to find jobs or pursue further education later in life. Similar constraints are also faced by many adults who stayed in school but were failed by poor quality of basic education.

203. Concerns about unemployment and underemployment also continue to be pressing. Globally, around 260 million youth aged 15 to 24 are out of school and out of work.²⁵⁷ A pool of unemployed adults is not only an economic concern, but also a political risk. It can lead to large emigration, social unrest, and political upheaval. Insufficient economic opportunities for an increasingly educated population was seen to be a major catalyst for the Arab Spring.²⁵⁸ Changing demographics add additional pressures to the labor market. With population ageing, 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.

204. 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.²⁵⁹ To give out-of-school individuals a second chance, the Mexican National Institute for Adult Education has developed flexible modules to deliver education programs that are equivalent of primary or secondary education. Under the World Bank's Nepal *Adolescent Girls Initiative*, vocational training for women increased their non-farm employment by 174 percent.²⁶⁰ The Argentinean *Entra21* program provided adult skills training and internships, leading to 40 percent higher earnings among participants.²⁶¹ 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.²⁶²

205. But many adult learning programs fall short of impact. Adult literacy programs often improve word recognition but fail to improve actual reading comprehension.²⁶³ In Niger, although an adult education program increased the number of words that participants can read, it did not improve their reading speed to one word per 1.5 second—the speed needed for comprehension.²⁶⁴ Entrepreneurship programs often improve business knowledge but not income or employment.²⁶⁵ In Peru, training improved business practices among the targeted female entrepreneurs, but did not generate significant impacts on employment.²⁶⁶ In France, a program comprising of collective business training, individual coaching as well as financial support had no impact on business creation or employment.²⁶⁷ Vocational training for the unemployed often improves short-run earnings but not always increases long-run employment. The Dominican Republic's *Juventud y Empleo* program improved non-cognitive skills and job formality, but did not increase employment.²⁶⁸ Turkey's vocational training had no significant impacts on overall employment, while the positive effects on employment quality faded in the long term.²⁶⁹

206. Even among the 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.²⁷⁰ It would take 12 years of stable effects for the training program to recoup its costs. For some programs in Latin America it takes a long time to attain positive net present values if the program benefits sustain: 7 years for *ProJoven* of Peru and 12 years for *Proyecto Joven* of Argentina.²⁷¹ Adult learning is frequently one part of a comprehensive package, which makes it difficult to understand the cost-effectiveness of that—frequently more expensive—component. The Chilean Micro Entrepreneurship Support Program (MESP), boosted self-employment by 15 percentage points in the short run.²⁷² However, it is not clear how much of this can be attributed to the 60-hour business training, as opposed to the US\$600 capital injection.

207. There are two main reasons for low effectiveness: suboptimal design and incorrect diagnoses. Adult brains learn differently—this is not always factored in program design. The brain's ability to learn decreases with age.²⁷³ Therefore, 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. Adult brain's ability to learn is significantly dependent upon how much it is used. Practice is central to adult learning.²⁷⁴ Consequently, adult learning programs have a greater chance of success if lessons can be integrated into everyday life. For instance, in Niger, those who were taught basic operations on their mobile phones as part of an

adult education program had reading and math scores that were significantly higher than those who were not.²⁷⁵

208. Adults face significant stress which compromises their mental capacity—this is not always factored in program design. For adults, emotions are constantly mediated by demands of family, child care, and work. These demands compete for cognitive capacity required for learning. Sugar farmers in India, for example, were found to have markedly diminished cognitive capacity when poorer (during pre-harvest) than when richer (during post-harvest).²⁷⁶ Creating emotional cues linked to learning content—such as goal-setting—can be an effective strategy to increase adult learning.²⁷⁷ Such behavioral tools are only rarely integrated in adult learning programs.

209. Adults face specific socio-economic constraints—these are not always factored in program design. Adult learners have high opportunity cost—in terms of lost income, lost time with children. However, 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.²⁷⁸ Distance to training locations and lack of child care were significant barriers to vocational training program completion for women in India.²⁷⁹ Dropout rates are often high for adult literacy programs, ranging from 17 percent in Niger to 58 percent in India.²⁸⁰

210. One sign that adult learning programs are not always the answer is the low participation in these programs. 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, moved the training centers to the village, and actively mobilized the population, enrollment did not cross 25 percent.²⁸¹ In Ghana, demand for training by informal businesses is low as most managers do not see skills as a constraint.²⁸²

211. In some cases, the binding constraint might be lack of information—not lack of skills. Information is an important constraint, especially for young adults, whose decisions about which skills to acquire may be based on outdated stereotypes or misguided perceptions.²⁸³ Qualitative work from Uganda shows women in female-dominated trades were frequently mistaken regarding the earnings of women in male-dominated trades.²⁸⁴ In Sub-Saharan Africa, youth entrepreneurs in the informal economy have limited information about relevant training programs.²⁸⁵ Further, lack of information about labor market needs may also constrain youth from making informed choices. In India, a program that raised rural women's awareness of and access to jobs in the business process outsourcing sector, led to significant increase in young women's employment in this sector. These women went on to invest more in relevant skills training.²⁸⁶

212. In some cases, the binding issue might be lack of credit—not lack of skills. Compared to adult training programs, cash (or capital) transfers in some contexts have a stronger impact on self-employment and long-term earning potential.²⁸⁷ Even when skills are inadequate, training alone may not achieve the desirable results unless complemented by cash or capital support. In Sri Lanka, among a group of businesswomen, the training-only approach did not influence business profits, sales or capital stock. However, the grant-plus-training approach enhanced business profitability.²⁸⁸ In Liberia, *Action on Armed Violence* program provided 3-4 months of agricultural training plus US\$125 worth of tools and materials to high-risk ex-fighters. While both farm

employment and profits increased for participants who received the whole package, men who only attended trainings but received no capital did not increase their farming.²⁸⁹

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

214. Systematic data collection before program design identifies the most important constraints for the target population. Such information can be used to customize skills training as well. For example, through its Skills Towards Employability and Productivity Skills Measurement Surveys, the World Bank has facilitated collection of skills-related data from employers and working-age populations in 17 developing countries; these datasets enable policymakers to identify the extent and main features of any skills mismatch. In addition, the World Bank supported jobs diagnostics in Bangladesh, Congo, Dem. Rep., Tajikistan and Zambia to assess what skills investments make the most sense in each context. Systematic data collection during implementation can generate cost-effectiveness estimates for these programs. It may also provide insights on how to improve design and delivery. Administrative data under India's massive *National Rural Employment Guarantee Act* program has offered powerful insights about local labor markets.

215. Another useful approach is small-scale piloting combined with rigorous evaluation before scale-up. This was undertaken by the World Bank-supported *Youth Opportunities Project* in Uganda. In evaluating early pilots, it is important to test the relative impact of different training components separately. Policymakers can then determine the most cost-effective bundle of inputs. Evaluations also need to have sufficiently large sample sizes and sufficiently long-time frames. 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 4 times the sample size than if it simply wants to test how training impacts the overall population.²⁹⁰

216. For greater effectiveness, adult learning programs need to be explicitly tailored to adult brains and lifestyles. There is tremendous scope to improve adult learning programs through insights from neuroscience and behavioral economics. Because adult brains learn through practice, it needs to be a core part of such programs. Both practical exercises and visual aids can be effective in adult learning since they assist memory. Explicitly including motivational tools such as a financial reward, work experience, or frequent feedback have all been shown to boost adult learning. An experiment among young adults shows that offering rewards not only improves short-term memory, but also increases post-training long-term performance gains.²⁹¹ In fact, insights from behavioral science suggest that even small modifications to the way choices are presented can have large impacts on participation in adult learning programs. A business training program in Kenya found that demand for training was low partly because the language used in the invitation to the training may have been too complicated for poor, uneducated women.²⁹²

217. 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 for choosing the preferred training center and course.²⁹³ Given competing demands on adults' time, training programs with short-modules delivered through mobile applications are particularly promising. In the United States, *Cell-Ed*, a mobile-based adult literacy program, provides 400 micro training modules, and allows participants to learn

through phone calls, text messages as well as interactive quiz. Adults made significant progress in their reading skills—in four months, they reached a level that would normally take school children two years to achieve. The program also positively impacted participants’ self-esteem.²⁹⁴ Delivering training programs via mobile phones can also shield adult learners from potential stigma.

218. Adult learning programs are more successful when they are explicitly linked to employment opportunities. One popular way to do this is through apprenticeships and internships. They link training to day-to-day experience and provide motivation through the promise of future economic returns. Evidence suggests that 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. For instance, 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 sustained in the long run.²⁹⁵ The program has also demonstrated strong education effects—participants were 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.²⁹⁶

219. Success might also depend on addressing multiple constraints at the same time. In some cases, combining training with cash or capital can be a direct way to boost effectiveness. For instance, in Cameroon, 54,000 people who participated in a program that coupled training with financial assistance found employment.²⁹⁷ Combining skills training with skills certificates, referral letters, and better information about job opportunities may enhance effectiveness—especially for women. For example, in Uganda, workers with more certifiable and transferrable skills have higher employment rates, more earnings, as well as greater labor market mobility.²⁹⁸ A World Bank supported program in South Africa is attempting to increase support job search through peer support, SMS reminders, and action planning.

220. Incorporating soft-skills or socio-emotional skills in training design has shown a lot of promise. In Togo, teaching informal business owners “personal initiative”—a mindset of self-starting behavior, innovation, goal-setting—boosted firm profits by 30 percent two years after the program. This approach was much more effective than traditional business trainings.²⁹⁹ For factory workers in India, acquiring soft skills such as time management, effective communication as well as financial management increased their productivity.³⁰⁰

221. The need for better targeting comes out clearly in the highly variable returns to training.³⁰¹ For instance, a study from Germany shows the important role played by personality traits such as locus of control in influencing adults’ investments in training.³⁰² Similarly, the World Bank’s *Kenya Youth Employment and Opportunities* project is tailoring the design of a youth-friendly entrepreneurship aptitude test. Finally, governments might be more effective as facilitators—but not actual deliverers of training. For instance, India’s *Vikalp Voucher* program incentivizes students to choose between multiple private training providers and courses—paid for using a voucher.

Chapter 4: Returns to Work

222. Zhou Qunfei was born in 1970 in Xiangxiang, China, the youngest of three children. Ms. Zhou grew up in poverty. She was the only one of her siblings to attend secondary school. Despite excelling as a student, she dropped out of school at the age of 16 due to economic necessity. Zhou worked in a glass factory for watch lenses while taking part-time courses at the university. At the age of 20, she was promoted and continued to move up the ranks in the years that followed. By 1993, Ms. Zhou started her own glass workshop overseeing every aspect of the business. In 2003, she expanded from watch lenses to mobile phone lenses. In 2018, Ms. Zhou, the owner of Lens Technology, is one of the world's richest self-made women.³⁰³

223. The experience of Ms. Zhou illustrates two points. First, learning in school goes hand in hand with learning in work. School enhances what can be learned at work. Second, work continues to build human capital after school—*work is school*. Skills built through work advance a person's capacity to work successfully in the future. Just as different subjects in school dispense different knowledge, different jobs lead to the acquisition of different skills. Such skills are not simply confined to cognitive skills. Engaging co-workers, working in teams, managing employees—all build essential socio-emotional skills not easily acquired at school.

224. But opportunities to learn at work may not always materialize. If Zhou Qunfei had not been able to move from her village near Changsha to Guangdong, she may not have afforded the same opportunities. If the only type of work available is subsistence farming, then the scope of learning is limited. If society does not promote gender equality, many women would not be able to work.

225. To quantify the payoffs to work and school, one must turn to one of the fathers of labor economics—Jacob Mincer. Born in 1922 in Poland, he was ready for school at the age of 5. The director of the school, impressed by his reading, agreed to admit him to school if the birth certificate indicated that he was born in 1920. This “white lie” would turn out to be significant, as Jacob's early entrance into school allowed him to begin university early, thus avoiding the fate of his family under the Nazis. In 1957, Mincer obtained a PhD in economics from Columbia University titled “A Study on Personal Income Distribution.”

226. Before Mincer's work, the common belief among his contemporaries was that luck determined one's ability, which in turn determined one's payoffs. Mincer confronted this viewpoint by showing that earnings differentials are determined by deliberate investments in human capital. Human capital grows over the life cycle by means of investments, initially in school, later at work. One can measure the payoff of such investments—an additional year spent in school or work in terms of increased earnings or “returns.”³⁰⁴ For example, a 10.7 percent returns to education, as found by Mincer for white males in non-farm wage jobs in the United States, means that an additional year of education increases earnings by 10.7 percent.

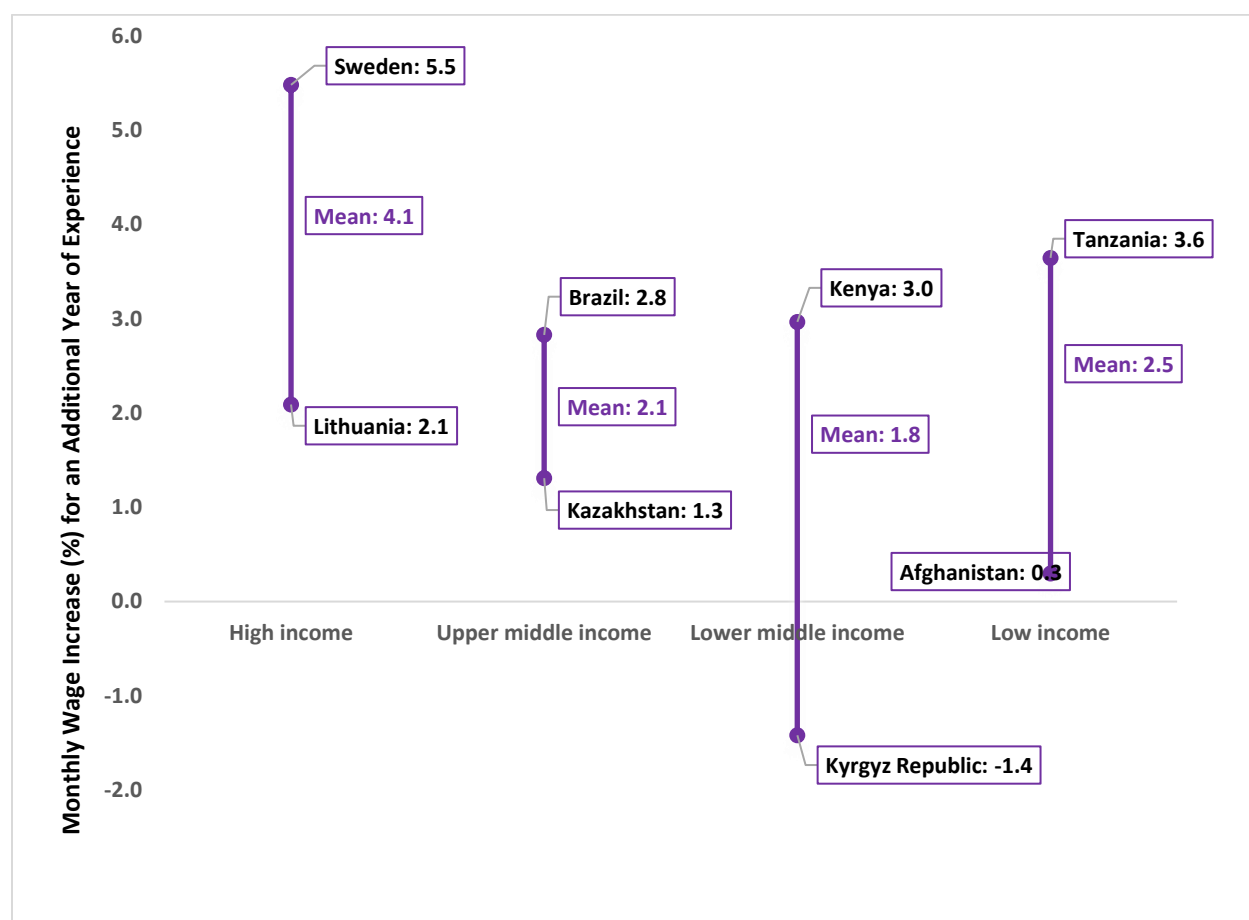
227. This chapter compares at the global level the payoffs of time spent in school and work. For instance, does schooling affect how much one's earnings grow at work? Do payoffs from work differ by the level development of the economy? What are the roles of informality, gender, and the agriculture sector on the careers of workers as they face diverging payoffs from work?

228. The estimates of returns to work are based on observations of over 22 million individuals across a thousand surveys in 144 economies. The data source for the analysis is the World Bank International Income Distribution Database. The surveys include nationally representative household surveys, labor force surveys and budget surveys.

229. Workers in emerging economies face lower payoffs to work experience than workers in advanced economies (figure 4.1). In the Netherlands and Sweden, one additional year of work raises wages by 5.5 percent. In Afghanistan the corresponding figure is 0.3. This result is surprising but has an explanation. Compared to advanced economies, emerging economies have a poorly educated workforce with a larger proportion of workers engaged in manual jobs in the informal sector. 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.

230. 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. This may explain the higher returns to work in advanced economies than emerging economies. There is also less scope of learning, as well as risk of automation, in such jobs. 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 4.1. 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 133 economies by income level. The first bar presents the estimates for high income economies. The middle figure presents the mean (4.1 percent). On average an additional year of experience increases monthly wages by 4.1 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.

231. Although work provides a venue for a prolonged acquisition of skills after school, it is a complement to schooling, not a substitute. Globally, 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 4 years at work. A worker would need to spend 3 years on the job in Germany, 5 years in Malawi, and 8 years in Guatemala to match the benefit of one extra year of schooling on wages.

232. Also, educated workers have a greater scope of learning at work than uneducated workers. For each additional year of work experience, poorly educated workers have an annual wage growth of 1.97 percent. Workers with high levels of education, on the other hand, have annual returns to work experience of 2.43 percent.

233. The complementarity between education and learning at work imply that economies 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 learn less than the more educated individuals.

234. Consider Jordan, a country with low returns both on education (5.85 percent) and experience (1.24 percent), and 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 the equivalent person in Germany. What is more, by the time she accumulates 30 years of experience, the German worker's wage would already be at least 5 times higher than for the worker in Jordan.

Informality

235. Over a thousand stalls litter the open-air space. Juma works in one of them, repairing bicycles. He works in the *Jua Kali* sector. In Swahili, "*Jua*" means *sun*. "*kali*" means "hot or fierce" a term coined to reflect that the work is done in open spaces under the hot Nairobi sun. Juma's business is one of the 5.8 million unlicensed businesses that make up the informal sector in Kenya.³⁰⁵ By some estimates, employment in the informal sector in Kenya stands at a staggering 77.9 percent of total employment. Three out of four workers are informal, one of the highest rates of informal employment in the continent.³⁰⁶ Juma represents the average Kenyan.

236. Informal work is a means of survival. Maria, one of the 4.5 million people working in the informal sector in Guatemala, dropped out of school as her family could not afford the fees. Forced to provide income for her family, and unable to find formal work, she took up selling trinkets on the street. She earns about US\$2.5 a day – barely enough to afford her meals.³⁰⁷ She worries about inclement weather destroying her wares, as well as having to deal with the insecurity of working on the streets. Such informal entrepreneurs face limited prospects for growth. They exist day-to-day without health insurance, social security or any other form of protection.

237. From the rickshaw pullers in the buzzing streets of Dhaka, Bangladesh, to the mobile fruit vendors of Nairobi, Kenya, the informal economy is omnipresent. Informal employment is more than 70 percent in Sub-Saharan Africa and South Asia, and more than 50 percent in Latin America. Although informal workers outnumber formal ones, their productivity is significantly lower for the typical developing economy. Informal workers are only 15 percent as productive as formal ones.³⁰⁸

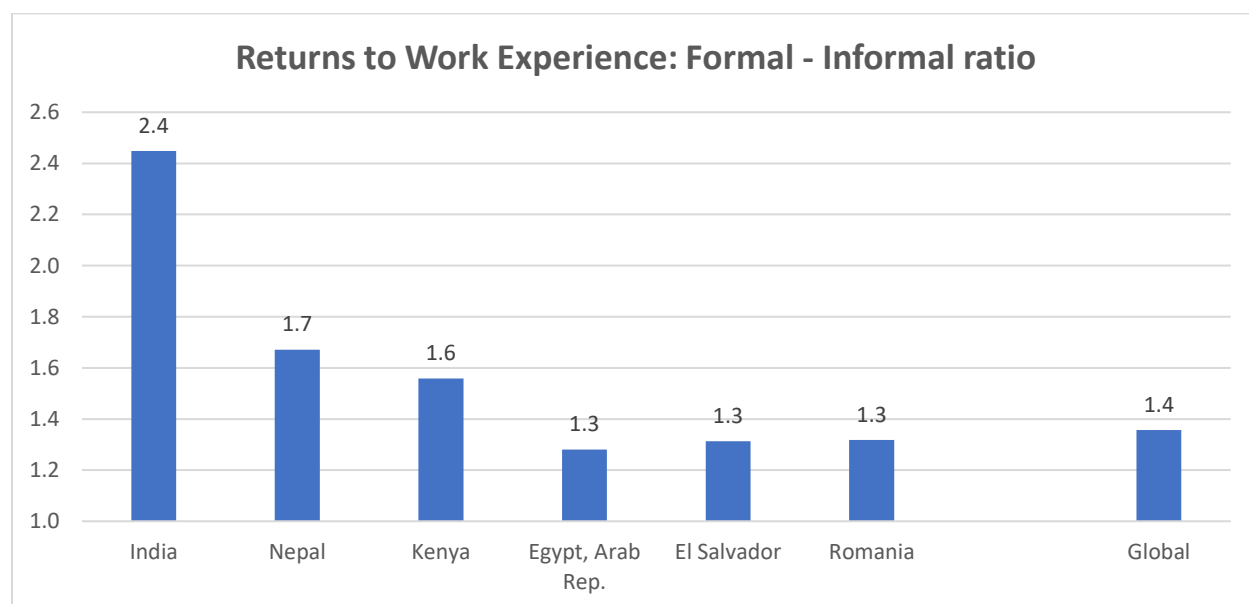
238. The informal sector is slow to change. Since 1999, India has seen its IT sector boom, become a nuclear power, broken the world record of number of satellites launched in a single rocket and achieved an annual growth rate of 5.6 percent. Yet, the size of its informal sector has remained around 91 percent. These patterns are not idiosyncratic to India. Informal sectors in

emerging economies are a fixture. In Madagascar, the percent 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.

239. Turning back to Juma, a year spent in the informal sector raises his income by only 2.65 percent per year. In contrast, a worker in the formal sector in Kenya raises his income 4.13 percent every year, which is 1.6 times higher than the informal sector. The difference is potent.

240. The disparity in the payoffs to work between formal and informal jobs is a global phenomenon (figure 4.2). In Nepal, returns to experience is 1.7 times higher for formal wage workers than informal wage workers. In India, returns to experience the formal sector is over twice as high as the informal sector. Globally, on average, the earnings increase for an additional year of work for informal wage workers is 1.4 percent. The figure is 1.9 percent for formal wage workers.

Figure 4.2. Informal work provides lower payoffs than formal work



Source: Authors' calculations using household and labor force survey data from the International Income Distribution Database. Note: The figure provides estimates of the ratio of an increase in wages from an additional year of potential experience for formal versus informal wage workers. For example, in Egypt the returns to potential experience for a formal wage worker is 1.3 times more than an informal wage worker.

241. Informal workers show resourcefulness to handle the harsh constraints they face. Consider the trash collector in Guntur, Andhra Pradesh.³⁰⁹ Businesses bought trash from her, sorted it, and sold it to recyclers. To make extra money, she cut the middleman – she sorted the trash herself. She took out loans from microfinance institutions to buy a cart to collect more trash. She got her husband to join in. Soon she was buying trash from others. Eventually she was organizing a large network of trash collectors. Take another example. In the 1970s, near the Mumbai Stock Exchange, a group of women would lay out wet sea sand in the road. The wheels from the cars would dry out

the sand. After occasionally scraping the top, the women would sell the dried sand to slums where it would be used to scrub dishes. These women generated income out of nothing.

242. These millions of informal businesses run the by poor are unlikely to make their owners rich. Typically, they have no paid staff, 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.³¹⁰ 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.³¹¹ They also rarely transition to the formal sector.

243. 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. The Mumbai sand driers, although creative, have a business that is too small in scale to elevate them out of poverty. Furthermore, these enterprises do not provide a stable stream of income, leaving the poor vulnerable to unexpected events. The question then is why the poor run these enterprises in the first place. The answer is that it is the only option they have. The enterprises of the poor are a way to have work when formal employment is unavailable.

244. Governments can encourage stable formal private jobs for the poor. Stable jobs are desirable as they allow poor workers to make commitments to expenditures. Consider the zinc factory that enabled a village to prosper in Udaipur District, India.³¹² At least one member of every family in the village worked in the factory. The presence of the zinc factory not only provided opportunities for employment, but provided a career – workers could climb up the ladder from the factory floor to foreman. Research has found rigorous evidence of how factory jobs improved the lives of the poor.³¹³

245. 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 can obtain formal jobs.

246. Countries with heavier regulations have larger unofficial economies. Such countries also display higher levels of perceived corruption.³¹⁴ Complex and costly procedures to start a business discourage entrepreneurs. Firms do not grow. Steady jobs are not created. Reducing the regulatory burden may encourage formal firms to grow, thus creating steady jobs that could be accessed by certain segments of the poor. Removing burdensome regulations may provide incentives for certain firms to formalize, although there is limited evidence of this.

247. Mexico provides a good illustration.³¹⁵ 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 30.1 to 1.4. Number of procedures were reduced from 7.9 to 2.7 on average. Number of office visits required to register a business fell from 4.2 to 1, respectively. The Federal Commission for Improving Regulation (COFEMER), organized the reform. COFEMER coordinated with municipal governments since many business registration procedures are set locally in Mexico. Business reforms led informal owners that were similar in profile to formal wage workers to be 22.3 percent more likely to become wage workers. The

evidence suggests that easing regulations encourages the transition from informal firm ownership to formal wage jobs.

248. Between 2001 – 2004, Russian Federation implemented reforms of business regulations. Three consecutive national laws focused on liberalization of entry and operation of existing businesses in the areas of inspections, licenses, and registration. Agencies (e.g., fire, sanitary, labor, or certification) were limited to no more than one inspection of any firm every two years. Over one hundred business activities were exempt from licenses. The procedures for startups were shortened. As a result, in regions with fewer burdens on entrepreneurs, reform had a substantial positive effect on the performance of small firms as well as the formation of new formal small businesses.³¹⁶

Working Women

249. Some societies exclude women from work. Across the world, 49 percent of women above the age of 15 are employed. For men, it is 75 percent. Gender imbalances persist in positions of power. Less than a fifth of firms have a woman as the top manager.³¹⁷ 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. In 2017, only 6.4 percent of the Fortune 500 companies had women CEOs.³¹⁸

250. 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, full ownership rights belonged to the husband. Though gender parity has improved around the world, major differences persist.

251. Several gender restrictions were transferred from colonial powers to colonies. While colonial powers overturned many of these restrictions at home, the old legal codes were retained in many former colonies. For example, while Spain in 1975 allowed married women to contract in her own name, the 1960 Spanish Civil Code is still maintained in Equatorial Guinea. The United Kingdom's Mines and Collieries Act of 1842 imposed restrictions on women's work in mining that are still retained in many commonwealth economies. Remnants of an old 1932 Soviet Law that restricted women from certain jobs is still prevalent in most post-communist countries. In the early 2000s, Portugal repealed several decrees introduced in the 1890s that restricting women's work. Several of these restrictions are still found in Lusophone Africa and Brazil.

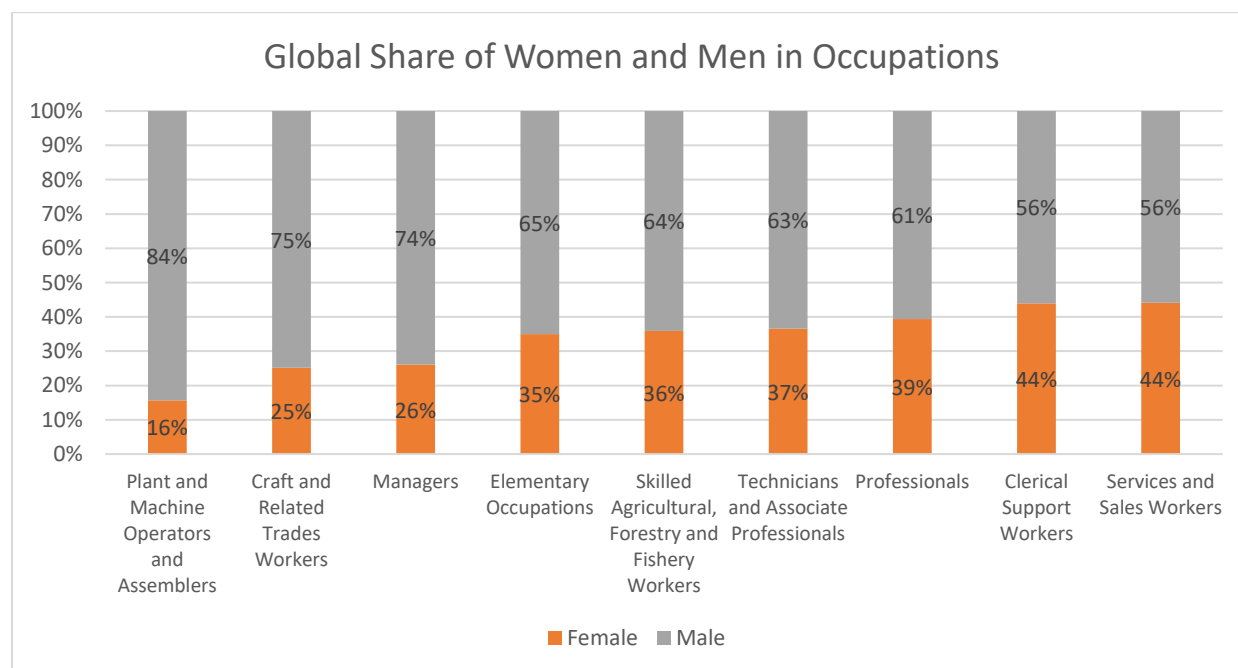
252. Dalia and Zaid, two siblings of similar age in Yemen, Rep., live different lives. Dalia faces several restrictions; her brother does not. She may not be able to work at night for certain jobs. The law does not protect her from any form of discrimination in hiring. Zaid's testimony in court carries more weight than hers. Zaid will inherit more than her from their parents. Once she gets married, the limits to her freedom multiply. She is required to obey her husband. She cannot travel

outside the home the same way as Zaid. Dalia is one of 2.7 billion women globally who are legally restricted from having the same choice of jobs as men.

253. 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.

254. Men outnumber women in every occupation (figure 4.3). Only a quarter of managers are women. About 39 percent of professionals are women. Across the 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 - women constitute only 16 percent. Most female managers of formal firms in emerging economies are found to be in the retail sector.³¹⁹

Figure 4.3. Men outnumber women across all broadly-defined occupations



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

255. Women face lower payoffs from work than men in many countries. The returns to work experience for men is 3.1 percent, for women it is 1.9 percent. In Venezuela, RB, men's wages increase by 2.2 percent, while women's do so by only 1.5 percent for each additional year of work. The difference is even larger for countries like Mali, where returns for men are 3.1 percent, while for women are only 1.6 percent. To put this in context, a woman in Mali would need to accumulate almost 2 years more experience for every year her male coworker accumulates to earn the same wage increase. In Denmark, on the other hand, this figure is 5 percent for men, and 4.98 percent for women.

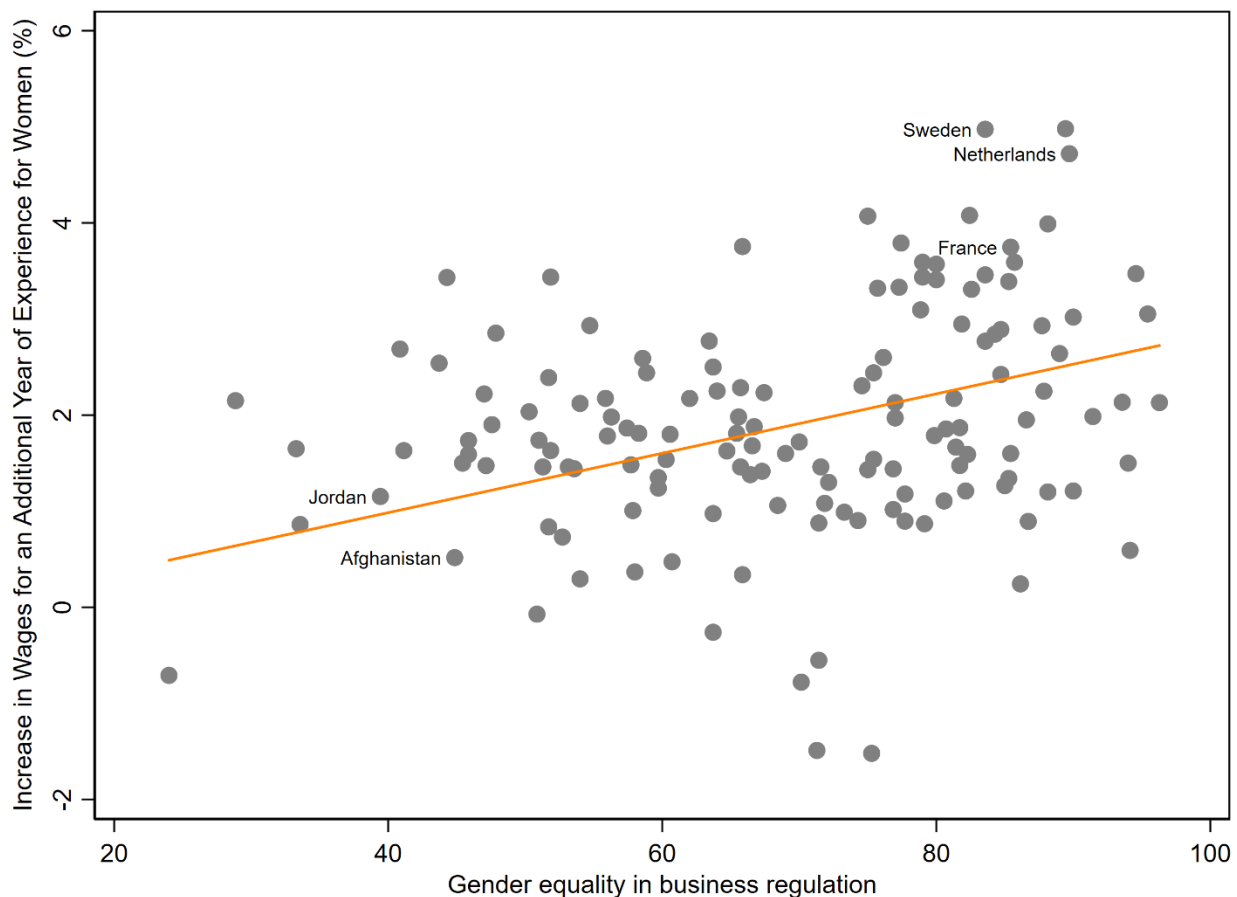
256. The reasons for such different payoffs between men and women are multiple. Consider a working couple from Bangladesh. They are contemplating the decision of conceiving their first baby. However, Bangladesh's laws do not prescribe paid or unpaid parental leave. As such, an equivalent job position 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.

257. However, some care should be taken in reading these numbers at face value. The nature of the underlying data means that the exact years of experience cannot be calculated. Women may exhibit lower returns to work experience as they drop out of the labor market quite frequently due to childbearing and childrearing responsibilities. Furthermore, the estimates of work experience payoffs are based only on women who are employed. The inclusion of women who are unemployed may lower the estimated returns even further.

258. Better information can encourage 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 can be powerful. Just mandating a non-discrimination clause in hiring in terms of gender can increase women's employment in formal firms by 8.6 percentage points.³²⁰ Similarly, mandating paternity leave to encourage a more equitable distribution of childrearing activities between men and women can raise the proportion of women employed in formal firms by 6.8 percentage points.³²¹

259. The larger the number of legal restrictions women face, the lower the payoff from working (figure 4.4). 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 have been found to discourage women from both owning and managing firms.

Figure 4.4. Lower payoffs to work experience correspond with more legal restrictions on women at work



Source: Author's calculations based on World Bank (2018) 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.

260. Countries are reforming. Take the case of Madame Ngetsi. Following reforms in the family code in Congo, Dem. Rep. in 2016, she can formalize her small business, open a bank account, get a loan, sign a contract, register her business and register land without her husband's permission. Zambia's Gender Equity and Equality Act of 2015 prohibits gender discrimination in employment. Iraq guarantees workers a similar position with the same wage after maternity leave. China increased paid paternity leave. Afghanistan forbids sexual harassment in employment and education. In total, 65 economies reformed towards gender equality from 2015 to 2017.

261. Empowering women by reforming discriminatory laws is just one way to improve their well-being. Programs that empower women by giving them access to training and assets are seeing success. In rural Bangladesh, poor women work as maids or agricultural workers. Wealthy women rear livestock. A nationwide program empowered poor women by providing them livestock in combination with skills and training on their legal, social and political rights. The program changed

lives. Poor women started rearing livestock, spending less time as agricultural workers or maids. As a result, for many of the women, their earnings rose, the value of their livestock increased, they accumulated business assets, they were more likely to own land, and they lifted themselves out of poverty. These improvements lasted seven years after the program.³²² A similar program in Uganda empowered adolescent girls by providing them vocational training and information on sex, reproduction, and marriage to counter rampant youth unemployment and early childbearing. Four years after the program, women were more likely to engage in income-generating activities.³²³

262. Policies can reduce restrictions that shackle women from entering labor markets or transitioning towards productive work. For instance, the Economic Empowerment of Adolescent Girls and Young Woman (EPAG) project launched by the Liberian government in 2009 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 had significant impacts on different aspects of participants' lives: employment and earnings increased by 47 and 80 percent respectively; participating women increased their savings by US\$35; improvement in several subjective outcomes such as self-confidence, life satisfaction, social abilities, among others. Moreover, households with participating women improved their food security by increasing the consumption of high-value proteins and decreases the likelihood of food shortages.³²⁴

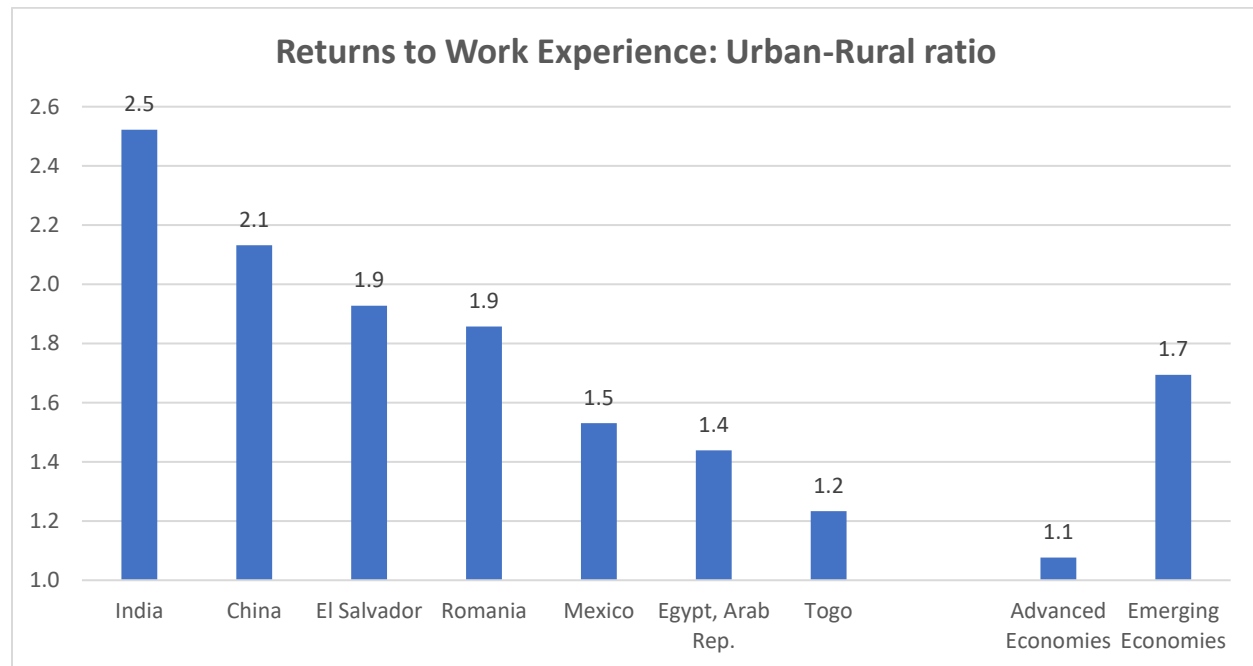
Working in Agriculture

263. Bella works in the rice fields in the rural area 90 kilometers north of the Togolese capital city of Lomé. She is one of several rural smallholder farmers in the area. Her crops suffer from erratic rainfall. Insurance is unavailable. She doesn't have access to finance to buy tools or fertilizer. Poor roads deter her from accessing markets. Her story is not unusual. More than half of Togo's population is in agriculture. Around 60 percent of the population lives in rural areas, and 65 percent of these households are in poverty.³²⁵

264. Although agricultural employment tends to decline as countries develop, it remains the main economic sector in low income economies. In 2017, agriculture accounted for 68 percent of employment in low income economies. Because the livelihoods of the majority depend on the agriculture sector, improving agricultural incomes is an effective way of reducing poverty. Agriculture has a strong record as an instrument for poverty reduction. Growth from agriculture has a larger effect on reducing poverty than growth from other sectors.³²⁶

265. Bella's life could be different if she moved to the city where she may have more career opportunities. Her earnings could be higher – her returns for an additional year of work experience in the city would be 2.7 percent. If she worked in the village in Togo, her returns to experience would be 2.2 percent. The returns to work in the city is 1.2 times more than the village. This is reflective of a global pattern (figure 4.5). In emerging economies, the payoffs to work in urban areas are 1.7 more than rural areas. For India and China, payoffs to work in urban areas are double that of rural areas.

Figure 4.5. Rural areas provide lower payoffs than work in urban areas



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

Note: The figure provides estimates of the ratio of an increase in wages from an additional year of potential experience for urban versus rural workers. For example, in Romania the returns to potential experience for an urban worker is twice more than a rural wage worker.

266. However, the opportunities in the city can be harnessed by Bella only under certain circumstances. She would need to have a certain level of education to access most of the better jobs in the cities. Goods and services – from food to transport – are far more expensive in the city than the countryside. To afford the high cost of city living, Bella would need to have a minimum amount of financing. Furthermore, her established network of family and friends in the countryside that support her during tough times would be inaccessible in the city. There is a risk that Bella would end up in an occupation with far lower payoffs than the average job in the city.

267. The constraints faced by the poor in moving to the city have been well illustrated. In India, for instance, workers in Orissa provided several reasons for not staying in the city.³²⁷ First, there is no housing—the extreme poor squeeze themselves often in swamps or slums right next to garbage dumps. In contrast, the villages offer more open greener and quieter spaces. If one moved the whole family to the city, there are considerable risks. What happens if the children get sick – sure, 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.

268. Overall, workers in emerging economies experience half of the payoffs to work (1.96 percent) than workers in advanced economies (4.09 percent). Governments may be tempted to move poor workers from villages to cities to raise the overall payoffs in the economy, thereby reducing poverty. However, this movement is unlikely to considerably narrow the payoff gap

between emerging and advanced economies. The following two scenarios illustrate this result. Imagine all the workers in Togo moved around until the share of workers in urban areas matched that of an advanced economy such as Spain. Also assume nothing else changed in Togo – the rural and urban areas had the same returns as before. This movement would narrow the Togo-Spain gap in aggregate payoffs by 22 percent. Now consider an alternate scenario. No workers moved in Togo, but both the urban and rural areas raised their payoffs to match Spain. In this scenario the Togo-Spain gap in aggregate pay offs would fall by 77.4 percent.

269. A similar hypothetical story plays out for Bangladesh. Adopting Spain's employment pattern would just narrow the payoffs gap between Bangladesh and Spain by 7.2 percent. In contrast, achieving Spain's payoffs to work in urban and rural areas would narrow the gap by 91.5 percent. The implication is that improvements in rural areas are necessary to narrow the payoffs gap between emerging and advanced economies. This is what has also been found by studies in Kenya and Indonesia.³²⁸

270. 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.³²⁹ Life histories of migrants from Tanzania confirm these insights, further highlighting the role that secondary towns can play, in facilitating the transition out of agriculture.³³⁰ In early stages of development, growth of secondary towns may do more for rural poverty alleviating than big cities, although in later stages of development, big cities take over.³³¹

271. There is wide acceptance that as economies go down the development path, agricultural productivity rises, unlike the informal sector. There are many steps governments can take to ensure agricultural jobs in rural areas provide sufficient income for the poor in parallel to increasing productivity. The challenges facing farmers in emerging economies are numerous - they lack access to essential inputs and services that increase their productivity. Smallholders are not integrated with value chains. Entrepreneurs face numerous obstacles to their operations. Inclusive value chain development allows farmers to capture the urban demand for higher value agricultural products such as dairy, meat and fruits 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. This section explores three areas that are of enormous importance where policymakers have made strides: programs that transfer knowledge, initiatives that exploit digital technologies to increase access to input, output and capital markets, and improvement in regulatory systems.

272. Training farmers on the best farming techniques can raise productivity. This training is typically done through agricultural extension work. Several 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 inputs as an impetus for improving agricultural productivity. Providing resources to cooperatives can connect them to agribusinesses along the value chain. JD Finance, the fintech arm of a leading Chinese e-commerce platform JD.com, has been collaborating with cooperatives to provide with farmers not only microcredits but also aquaculture monitoring and logistics management techniques. There are many other

examples of such efforts with qualitative evidence of the impact on the livelihoods of many farmers.

273. For instance, a few years back, Safiata faced several challenges in her cocoa processing business located in the Sambirano region, Madagascar. She faced difficulties finding buyers for her cocoa beans. She had to accept unfair prices that led to operating losses. These days, Safiata fares better thanks to the Integrated Growth Poles Project run by the local government. The project, supported by the World Bank, offered her training in improved cocoa processing practices coupled with business management skills. Safiata can upgrade to premium quality cocoa that conferred several benefits. Exporters seek her cocoa, paying prices that are 50 percent higher than her previous cocoa. Premium cocoa can also be stored longer, allowing Safiata to wait for better offers for her cocoa without worrying about it deteriorating. She developed new contacts through the project that allowed her to diversify her activities. Two of her children are now in university, choosing their own paths. To date, beneficiaries of the Integrated Growth Poles Project, like Safiata, have seen an average increase in net revenues of 47 percent.

274. In the past, when Jan Agha's animals suffered a bad cut, he would put chewing tobacco, petrol or mud to stop the wound. He laughs thinking about how his poor animals must have suffered. He knows better now - he uses iodine instead. Jan Agha is one of many livestock farmers in Merak Bela village, Nangarhar province in Afghanistan who benefited from Farmer Field Schools. The classes are twice a month and are an important part of the National Horticulture and Livestock Project, a government initiative supported by the World Bank. Agha, a father of 11 children, says his income has tripled since the project – his cows can produce almost 10.5 liters a day, while before they produced just 3.5 liters a day. Farmer Field schools have also found success in East Africa.³³²

275. A year ago, Marie Behane produced only 8 bags of sorghum in the Far North region of Cameroon. In 2017, she produces 22 bags of sorghum. Much of this can be credited to the support from the Agriculture Investment and Market Development Project. To aid farmers such as Marie, the government established partnerships between producer organizations, agribusiness purchasers, and financial institutions to improve the sorghum sector activity to meet agribusiness needs. Marie's membership of the Regional Council of Farmers' Organizations in Northern Cameroon cooperative conferred to her many of the project's benefits. Her increased earnings allowed her to send her kids to school. She can afford to get them treatment when they fall sick.

276. The effectiveness of agricultural training can be improved. One way is by activating social ties in villages to encourage peer learning. A recent study ran a series of training experiments with rural female farmers in Uganda that lead to the conclusion that encouraging competition among women farmers resulted in greater learning in training sessions.³³³ Digital Green amplifies agricultural extension services by leveraging knowledge and participation of local communities to produce low cost videos to spread information that is within the local context. Pursuing innovative methods to improve learning in training raises the returns of the training budgets.

277. Mechanization has in the past failed to take a foothold in Sub-Saharan Africa. This failure has warranted some skepticism on ambitious predictions of technological transformations in agriculture. However, there are signs that mechanization is taking hold, facilitated by information

and communication technologies. Real time measurements allow farmers to make better real-time decisions. Aerial images from satellites, drones, and soil sensors improve measurements and allow for the monitoring of crops in real time.³³⁴ Detailed and precise information inform farmer decisions on how much fertilizer and irrigation is needed for their crops.

278. Many farmers in emerging economies do not know if they are getting the best price for their crops. However, buyers typically have a better idea of prices. In economics this is known as information asymmetry. TruTrade in Uganda is an example of digital technology can bridge the technology gap. TruTrade uses online applications to allow price setting, track the movements of produce, and payments. TruTrade connects smallholders to buyers while enforcing quality and transparency. This creates an atmosphere of trust. Farmers receive good prices and reliable access to markets. Traders can build relationships as a trusted provider, thereby growing their business.

279. Mobile technology in Kenya has also been used to reduce administrative and assessment costs of insurance scheme. A good illustration 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 on 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.³³⁵

280. Orchards in the Kastamonu Province in Turkey face two main challenges – pests and harmful frost weather. National weather broadcasts are not useful. For one, they happen in the evening – too late for producers to react. Second, the weather forecasts were at an aggregated level, and thus not reflective of local conditions that tended to vary by farm. Furthermore, weather forecasts cater towards urban areas, therefore do not account for the cooler weather in rural areas. The Government of Turkey in collaboration with international donors established five mini-meteorological stations in rural areas throughout the province as well as 14 reference farms to measure rain, temperature, as well as pest cycles. Producers were informed regularly through SMS. They were thus able to react to prevailing local conditions. Costs fell dramatically for producers in the first 2 years. Pesticide applications dropped by 50 percent.³³⁶

281. Regulations play a role in shaping the business environment for players in the agricultural sector through their impacts on costs, risk, and competition. High transaction costs can reduce trade volumes, restrict access to finance, and lower productivity. Faced with such challenges, firms are liable to slip into the informal economy.³³⁷ The right institutional and regulatory framework can enable agricultural entrepreneurs to integrate into formal markets.

282. Kenya used to be the world’s leading producer of pyrethrin, an organic insecticide made from the pyrethrum flower. However, the state-owned Pyrethrum Board of Kenya had exclusive rights to purchase and process pyrethrum flowers. After foreign competition caused Kenya’s global market share to drop from 82 percent in 1980 to 4 percent in 2010, new legislation was passed, working with the World Bank, to eliminate a ban on private investment in the sector. By April 2018, three firms had obtained pyrethrum processing licenses; two other investors are

awaiting licenses. The move benefits 43,000 farmers who can sell pyrethrum in a more competitive market.

283. Fertilizer use in emerging economies is often constrained by high prices and scarcity due to inadequate administrative procedures and infrastructure. Lengthy and expensive procedures to register fertilizer may limit their availability, thereby reducing yields. In Malawi, it takes 913 days to register fertilizer, costing about thirty times the income per capital to register. In Nepal, it takes 1,125 days, costing more than 6 times the per capita income to register. When new rules for fertilizer registration were introduced in Honduras as part of a World Bank project, three hundred new products were registered in 2013 compared to only 68 in 2011.

284. Finance is another important component of a commercialized agriculture sector. Working capital, long-term credit, access to savings accounts, and payment services can be used to expand operations. Financial regulations that support innovative ways of delivering financial services, can increase access to finance in rural areas. In Mozambique, following an amendment to the law to allow for agent banking activities in 2015, Moza Banco serves the unbanked population in the country, often located in rural areas, through retail stores or postal offices. Ghana adopted a new law the same year to allow both banks and non-bank institutions to issue e-money. Thirteen percent of the adult population in Ghana has access to a mobile banking account, which is higher than Africa's average.

Chapter 5: The Changing Nature of Firms

285. Historically, firms have operated within certain boundaries. In 1937, British economist Ronald Coase explained this phenomenon in *The Nature of the Firm*.³³⁸ Studying firms in Detroit, the United States, Coase observed that firms grow so long as it is cheaper for them to take on additional transactions than it is to complete those transactions on the open market.

286. Firms in 2018 operate within wider boundaries. Free trade agreements and improved infrastructure reduced the cost of cross-border trade, allowing transactions to take place wherever costs are minimized.³³⁹ New technologies have lowered communication, search, and processing information costs. Management from a distance is more effective.

287. Declining transaction costs shifted incentives toward coordinating economic activity in a decentralized manner through the market. As a result, firm boundaries are more permeable. Firms are also less hierarchical than in the past—new technologies allow managers to outsource more tasks to the market. Some platform companies create new micro-markets, such as JD.com in China, with nearly 300 million active users.

288. The expanded 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 farms that raised the sheep 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 of finding an outside supplier able to customize Ford's auto parts were higher.

289. With rising integration of world markets in the 1980s and 1990s, vertical integration became less prominent. Large corporations with complementary, interconnected but separate establishments started to emerge across the world. This structure allowed firms to expand their market reach, keeping most of their operations in-house but located in low cost locations.

290. 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 1969.³⁴⁰ The reduction in tariff and 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.

291. The rise of these “superstar” firms like IKEA would have made Joseph Schumpeter proud. “Capitalism requires the perennial gale of Creative Destruction,” Schumpeter opined.³⁴¹ He did not worry about whether jobs might be lost in the process. Politicians do.

292. Around the world, the corporate labor share declined between 1975 and 2012 in 75 percent of advanced countries and 59 percent of emerging economies.³⁴² World Bank evidence based on the use of total labor shares, which includes the self-employed and government sectors, shows a decline in two-thirds of the 76 developing countries included in the sample.

293. However, considering only the period 2005 to 2014, only one quarter of economies experience declining total labor shares. Several large emerging economies experienced an increase in labor shares, such as Brazil and Nigeria.

294. Governments struggle to craft a coherent response to the decline in labor shares. In an attempt to create jobs, politicians often finance programs for the development of small and medium enterprises (SMEs). Such programs are rarely cost effective. More importantly, they are based on the belief that SMEs create sustainable jobs. Yet the evidence shows that large firms account for the largest proportion of new jobs in many economies.

295. A better solution is to ease the barriers to entry for start-ups. Most new firms do not grow significantly. Those who do may become the superstars of the future. They require a business-friendly environment, one that is not biased towards state-owned enterprises or firms run by government officials, their associates or relatives.

296. 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.

297. Large firms have a beneficial effect on labor demand by boosting production.³⁴³ Superstar firms are also integrators of young, innovative firms, often benefiting small businesses by connecting them with new markets. Where superstars exist, they tend to employ the most workers because they generate the most output, even if they are less labor intensive as compared to other firms in the economy. Digital technologies expand the market reach of superstars, allowing them to achieve large economies of scale.

298. But the changing nature of firms, particularly firms in the digital economy, also raise new public policy concerns. Antitrust rules need to be revisited. National as well as global corporate tax regulation requires updating.

Large Firms

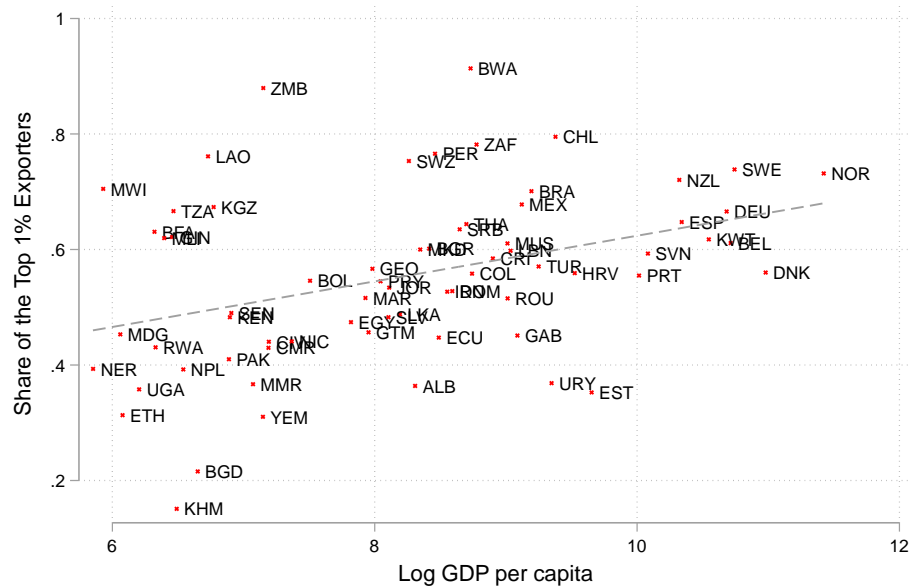
299. Thomas Jefferson raised concerns around the “aristocracy of corporations” when he announced in 1816 that “I hope we shall crush...in its birth the aristocracy of our monied corporations, which dare already to challenge our government...”.³⁴⁴ A century later, in a speech in 1910, Theodore Roosevelt warned that corporate giants dominated the American economy. Another century has passed, and those words are still applicable. The names and nature of these superstar firms have changed tremendously, however.

300. Natura Cosmetics S.A., the largest cosmetics maker in Latin America, was founded in 1969 as a door-to-door business in Brazil. Natura distinguishes itself via its direct sales model, as well as its environmentally-sustainable business practices. In 2018, it was selling personal care products in more than 3,200 stores in 70 countries across the world, with RUS\$9.85 billion (US\$3 billion) in net revenue last year. It employs 7,000 staff and operates a network of 1.4 million sales consultants globally. Natura’s online sales are growing the fastest, having grown by 150 percent in the second quarter of 2017 alone.

301. Tata Group began life in the resource-related or non-tradable sector, establishing India's first steel plant and hydro-electric plant. In the second half of the 20th century it expanded its business into tradable products such as tea, watches and automobiles. In the early 2000s, the Tata Group entered the high-tech sectors. Tata spent US\$2.8 billion on research and development (R&D) in 2016, 2.8 percent of its annual turnover.

302. These are just two examples of large, productive, innovative firms. These firms dominate the global economy: 10% of the world's public companies generate 80% of all profits.³⁴⁵ Superstar firms alone can transform a country's industrial structure, shift comparative advantages, and shape a country's exports. Nevertheless, the concept of a superstar firm is relative, depending almost entirely on the local country context. Superstars may be local or multinational firms. Finding a common threshold on sales, exports, and size across countries is not possible due to divergent levels of development. One study across 32 developing countries found that on average the five largest exporters in a country account for one third of exports, 47 percent of export growth, and a third of the growth due to export diversification.³⁴⁶

303. The growth of superstar firms is mainly driven by technology, removal of distortions through market oriented reforms, and trade liberalization. Richer countries have larger sized exporters. What's more, the top 1 percent of exporters account for a larger share of exports—on average, 55 percent (figure 5.1). Superstar growth is particularly strong in markets undergoing rapid technological advances.³⁴⁷ Reduced informational costs related to price search, free trade agreements, and improved infrastructure have reduced the cost of cross-border trade, allowing transactions to take place wherever costs are minimized. New technologies allow management from a distance. Against this backdrop, the share of sales by superstar companies is expected to grow.³⁴⁸



Source: Authors' calculations based on Exporter Dynamics Database version 2.0 described Fernandes, Freund and Pierola (2016).

304. There are plenty of reasons to argue that large firms have a beneficial effect on economic growth. The largest firms can 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, while promoting the exit of unproductive firms. They often pay higher wages, although in some advanced economies, evidence indicates that the large-firm wage premium has been shrinking.

305. Superstar 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. An early adopter of internet solutions, it sells smart robotics to auto manufacturers, allowing them to stream operating data for automated processing and human viewing. The data collected through sensors and actuators can be used to optimize operations and maintenance. In disrupting many industries, tech giants are changing them for the better. Didi Chuxing, the leading ride-hailing company in China offers app-based mobility options for more than 450 million users. The service is generally considered to be superior to that of the established taxi sector and is forcing them to improve.

306. The largest firms typically account for the majority of formal jobs in an economy, even though young firms taken together may account for the majority of job creation in a given year. In Serbia, workers of top 1 percent manufacturing superstar firms hold a quarter of total employment; the top 5 percent absorb almost half of the total labor force. Romania shows a similar picture.

Where superstars exist, they tend to employ the most workers because superstar firms generate the most output, even if they are less labor intensive than the average small or medium-sized firm.³⁴⁹

307. Superstar firms are large integrators of young, innovative, dynamic firms. Superstars also assist small businesses by connecting them with new markets to source inputs, offering convenient payment solutions, and reaching targeted/wider consumer base. In India, numerous technological startups act as digital partners for global technological companies, providing payment solutions and/or 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.

308. In a similar way to firm and market integration, large firms provide important financing for small business. Large buyers of agricultural produce satisfy 40 percent of the credit needs of commercial farmers or farmers organizations.³⁵⁰ For instance, as the leading agricultural manufacturer and service supplier in Vietnam, Loc Troi Group provides working capital for agricultural cooperatives to purchase inputs, which contributes to increased agricultural productivity as well as household income.

309. Promoting large superstar firms is a challenge for policymakers. Although technological change has favored the rise of superstar firms in advanced economies, evidence for emerging economies is mixed, as technology has not yet diffused rapidly to those countries. One potential approach is to nurture firms with high-growth potential. However, identifying such firms is extremely difficult.

310. The most efficient way to encourage the emergence of high-growth firms, and ultimately superstars, is to have more start-ups in the first place. The more start-ups there are, the more competition.³⁵¹ Resources are allocated toward their most productive uses. Under conditions that facilitate business, it is more likely that one of these start-ups transforms into a high-growth company that creates jobs. Larger firms are more productive than smaller firms.³⁵² Faced with new competition, less productive firms—so long as they are not state-owned or politically connected—exit the market. World Bank research finds that in Ben Ali's Tunisia new firms were simply prevented from competing with companies connected to the President's family.³⁵³

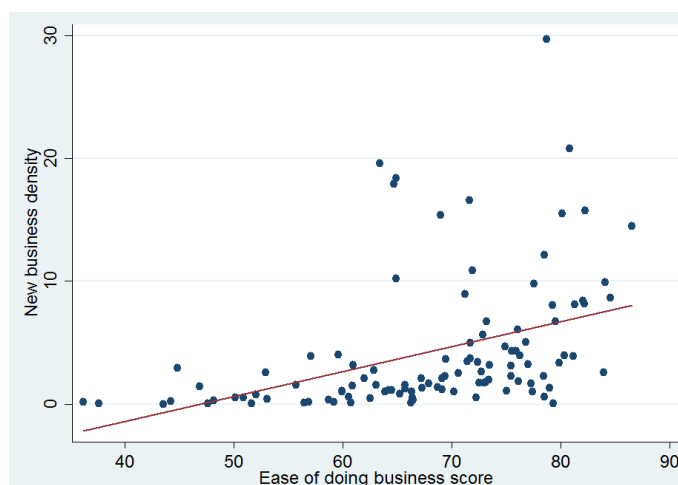
311. Countries with significant start-up activity display several characteristics: start-ups typically operate in business-friendly environments, they are run by well-educated entrepreneurs, they hire workers with high human capital, they innovate (bringing new products or service solutions to the market), and they export (directly or as subcontractors of superstar firms).³⁵⁴

312. By creating a better business environment for all firms, the more successful firms naturally rise to the top. 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 with business-friendly regulations and institutions in place.³⁵⁵

313. Numerous studies show that increased start-up activity is associated with ease of doing business in a country (figure 5.1). Where formal entrepreneurship is higher, job creation and economic growth also tend to be higher.³⁵⁶ One study estimates that the failure of small firms to

grow into large firms lowers productivity growth in manufacturing by 25 percent in Mexico and India as compared with the United States.³⁵⁷ Another study shows that government policies that favor small firms over large, reduce the average size of firms by 20 percent, cut output per firm by 25 percent, and increase the number of establishments by 24 percent.³⁵⁸

Figure 5.1. The easier it is to do business in a country, the greater the number of start-ups



Source: Authors' calculations using the World Bank's Doing Business and Entrepreneurship databases, accessed April 2018.

Note: The ease of doing business score reflects the regulatory environment for starting and operating a local small and medium sized enterprise. The higher the score, the more conducive the regulatory environment is. The correlation between new business density and the ease of doing business score is 0.41, significant at 5 percent level after controlling for GDP per capita. The new business entry density is defined as the number of newly registered corporations per 1,000 working-age people (those ages 15–64).

314. Technology is another important prerequisite for many firms to grow. Policies that seek to increase mobile and internet penetration can bridge the digital divide in economies, bringing all firms closer to external sources of financing and markets. Information and Communication Technology infrastructure, as well as programs to increase firm capabilities to absorb and use new technologies, are both important.³⁵⁹ The spread of SIM cards across Kenya, equivalent to around 90 percent of the population, was vital to the success of M-PESA, a mobile payment and microfinance platform. Many attribute Kenya's start-up boom to the presence of M-PESA, which enables entrepreneurs to access credit. Technology provides opportunities for new, disruptive financing methods such as M-PESA which overcome collateral issues, particularly amongst those in the poorest and most remote segments of society.

315. Notwithstanding the importance of the overall business environment and of mobile and internet access, politicians continue to pursue targeted programs to assist specific firms with high growth potential. Some initiatives are more useful than others. Business plan competitions, programs that train entrepreneurs and prepare them for investment, as well as programs that increase export competitiveness, have the potential to increase the prospects of start-ups.

316. In Nigeria, young firms that won a US\$50,000 grant in a business plan competition created more jobs in three years than those that did not win. The cost per job was also lower than the costs of vocational training, wage subsidy, management training, and small grants taken together.³⁶⁰

Competitions have had similar positive impact in assisting start-ups in Ethiopia, Tanzania, and Zambia.³⁶¹ However, choosing winners in a competition for start-ups does not equate to identifying superstar firms of the future. A creative study in Nigeria finds that the scores start-ups receive in business plan competitions are poorly associated with the subsequent employment growth of these firms.³⁶² Using machine learning methods does not improve forecasting either. The predictive power of both approaches is low, highlighting the fundamental difficulties involved in picking future winners from a pool of start-ups.

317. Programs that prepare young firms to adopt new technologies and become investment ready can contribute to their expansion after entry. Start-ups in emerging countries often have good business ideas, but they are not prepared to attract outside funding. They may also not have the managerial skills and organizational practices necessary to take an idea to market. This is the case in the Western Balkans, for example, where entrepreneurs are reluctant to surrender partial control of their business in exchange for equity financing. The World Bank's program *Pioneers of the Balkans* provides business support services to innovative start-up firms, including on how to leverage the knowledge that equity partners bring.³⁶³ A study on Start-Up Chile, the largest ecosystem accelerator in South America, shows that schooling of entrepreneurs bundled with the provision of basic business services significantly increases new venture performance.³⁶⁴ In Argentina, the Buenos Aires Emprende also facilitates investment opportunities for innovative startups.

318. One may question the wisdom of preparing start-ups for equity investments if the history of government programs picking winners is so dire. However, there is a difference between choosing a high potential start-up firm as an equity investor or as a government. Equity investors want to identify which firms have the greatest growth potential. Governments, on the other hand, care more about the marginal effects of the government assistance provided, which is much more difficult to quantify. Even if a government could predetermine the firms most likely to have accelerated growth, this does not necessarily mean they are the ones that need government support. As an example, male-owned firms tend to be larger and more profitable, but the added effect of government support might be higher for women, since assistance might close the gender gap.

319. Governments can also help start-ups to grow by facilitating exports. Export promotion agencies focus on access by domestic firms to foreign markets. In Egypt, Arab Rep., a group of academics partnered with an Egyptian rug supplier to secure export orders from foreign buyers through trade fairs and direct marketing channels.³⁶⁵ Trade fairs broker linkages between local firms and multinational companies. National branding initiatives and geographical indications, such as "Made in Morocco" or "Lübecker Marzipan" also differentiate products, potentially improving marketability abroad.

320. Export competitiveness is best enhanced by linking smaller firms to large exporters. In Ethiopia, PVH Corporation, one of the largest global apparel companies and owner of brands such as Calvin Klein and Tommy Hilfiger, is an anchor investor in a new industrial zone generating 60,000 jobs and US\$1 billion in export revenues annually. The presence of PVH attracts domestic firms to join the industrial park, offering sub-contracting services.

321. One under-researched policy area to ease doing business is by opening public procurement to small firms. In Brazil, an online competitive bidding system for government contracts increased employment by 2.2 percentage points amongst winning companies.³⁶⁶ Notably, 93 percent of the new jobs created were for people that were either unemployed, in the informal sector or out of the labor force. The employment effects persist beyond the initial contract period.

Digital Firms

322. The importance of large firms in driving economic growth is not new. However, the advent of digital technologies and platforms changes how this phenomenon unfolds. New digital technologies can accelerate growth. Digital superstars encounter different opportunities for efficiency and market expansion.

323. In some sense, digital platforms are like the original brick and mortar malls, linking shoppers with different brand stores, creating efficiencies for brands and a source of revenue for mall owners. But data gathered through platforms can also be utilized to improve firm efficiency. Ant Financial, an independent financial company under Alibaba Group, incorporates in its loan assessment model transaction data gained through Alibaba's Taobao marketplace, to offer microcredit to merchants on the platform.³⁶⁷ In Honduras, VoaComer develops a platform for users to search for restaurants based on recommendations, rate their own experiences, improving the culinary experience of visitors and locals.

324. The list of the world's most valuable firms by market capitalization in 2017 shows that firms increasingly leverage online platforms to improve their offerings to customers. Seven of the top-ten non-financial firms on the list fit this category. Digital giants, such as the Alibaba Group in China, entered the Global Fortune 500 within less than two decades. Much of Alibaba's growth was driven by its e-commerce platform—Taobao.

325. While global players such as Amazon still dominate this list, platform-based businesses are on the rise in every country. Consider VIPKID, a leading Chinese online education firm that matches children in China with North American teachers for real-time, one-to-one English learning classes. Founded in 2013, it links 200,000 students with 30,000 teachers in the United States and Canada. Or consider Jumia, an e-commerce company in Nigeria, which spearheaded the e-commerce trend in Africa in 2012. It 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. It is more than a firm, Flipkart operates like a market, defying firm boundaries as originally described by Coase.

326. Digital platforms allow for rapid scaling. With less than 100 staff, Jamalon, an eight-year old online books retailer in Amman, Jordan, was able to establish partnerships with over 3,000 Arabic plus 27,000 English-language publishers, delivering 10 million titles to most of the MENA countries.³⁶⁸ There are many examples of billion-dollar startups built around digital 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. As of April 2018, the JD platform has 300 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—including data collected through Alibaba’s Taobao marketplace—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. In the past five years, over 4 million small Chinese businesses received loans.

327. Digital platforms are shaping labor demand. First, platforms impact traditional suppliers of services or goods similar to those offered through the platform. The emergence of platform firms increases competition just as new traditional firms to, which can impact prices and revenues for market actors, and restrict the demand for labor.

328. Second, platforms create new business opportunities for self-made innovative entrepreneurs, who often play a major role in fomenting innovation and business dynamism.³⁶⁹ By increasing the supply of labor, digital platforms encourage small firms to focus on their core competencies, becoming highly-specialized to escape product market competition.³⁷⁰ Although electronic commerce involves risks, these young firms are often more responsive to productivity and profitability shocks than more mature firms. For example, since 2009 many clusters of rural micro e-tailers have opened shops on Taobao.com Marketplace, fostering “Taobao Villages” in China.³⁷¹ Taobao Village merchants produce fast-moving consumer goods, agricultural products and handicraft works based on their niche competencies. Taobao Villages have created more than 1.3 million jobs, drawing youth who migrated to cities back to hometowns to start up enterprises. Reliable internet connectivity and high smartphone penetration must exist for this kind of e-Commerce to grow.³⁷²

329. Third, platforms expand the business opportunities for service providers, which can help consolidate services sectors and create more jobs. Indeed, the services sector accounts for the majority of jobs today in many countries. For example, the sector’s share in total employment is over 70 percent in Argentina, Saudi Arabia, Uruguay, while it runs over 80 percent in Jordan, Israel, and Hong Kong. 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 request services online, in part because digital platforms incorporate mechanisms that build trust. Examples include brand certification, digitalized social capital, and third-party validations. Consumer trust enables platforms to expand rapidly into other business lines. For example, Grab, a Singapore-based ride-hailing platform, grew to hold 95 percent of the Southeast Asian ride-hailing market, before expanding to offer additional services ranging from ordering food to payment systems at the touch of the app. GrabPay addresses a critical gap in this region where an estimated two-thirds of people are unbanked.

330. Fourth, platforms expand the supply of labor by increasing opportunities for new, flexible types of work that can complement traditional forms of employment, in the so-called “gig” economy. Workers can set their own hours for most platform work, platforms operate around the clock, and the additional source of income can reduce income fluctuations for secondary earners. The flexibility inherent in platform work also enables more women to participate in the labor force. At the same time, however, these features of platform work blur the line between formal and casual employment. While flexibility is a benefit in some cases, it also raises concerns around decreasing wages, income instability, as well as disconnection from protections connected with standard employer-employee relationships, including pension plans, health insurance, and paid leave.

331. Finally, digital platforms boost economic dynamism. They improve aggregate efficiency by eliminating frictions and intermediation between market players. Electronic communication, brokerage, or integration reduce transaction costs. Platforms enable firms to exploit under used physical and human capacity. Platforms allow users to exploit both demand-side and supply-side economies of scale such as network effects, whereby the platform's value to a given user increases with the number of users on the network.³⁷³ The fact that platforms allow users to access several potential trading partners spurs competition. It also encourages sellers or service providers to offer price-quality packages often more competitive than those that would be available in standard markets.³⁷⁴

332. Low income countries may be able to boost job creation through platform development. Digital platforms have emerged most rapidly in advanced and middle income economies, due to the wide availability of the internet and smart phones. Digital infrastructure like internet connectivity and mobile phone penetration are foundational. Next, entrepreneurs who can identify market niches for platforms to grow are crucial, as are skilled workers who can operate and service platforms. Platforms also need a critical mass of heterogeneous users willing to use them and a regulatory framework that addressed market failures without obstructing their functioning.

333. Rapid development of platform businesses also calls for adaptive policies and regulations. Data privacy and protection is at the center of the regulatory discussion considering the large amount of data accumulated on platform businesses. Questions around cyber security and customer protection affect user trust. Ensuring transparent extraction of data and avoiding abusive usage of data are growing priorities of platform firms, following recent, high profile data breaches. A reliable platform fosters a transparent environment with authenticated users, while filtering out malicious users as well as fraudulent or inappropriate information. It also protects users' private information as well as transaction data accumulated on the platform. The same applies to user data mined and used by governments.

Taxing and regulating firms

334. There is much to celebrate when it comes to superstars and the proliferation of platform firms. But there is much to caution, too. Superstars firms pose policy challenges in 2018 as much as they did during Jefferson's time, if not more. Startups can turn into superstars much faster in the digital age as compared to firms in traditional markets 100 years ago. Negative externalities can also manifest quicker. Sherwin Rosen, who introduced the concept of superstar firms in 1981, predicted that technology would allow firms to expand markets and crowd out the competition more easily. In many markets, this has proven to be true. Technology has allowed some companies to rise to the top—and stay there. Regulations, particularly in relation to taxation and antitrust, still require significant work to keep up with new developments..

335. Expanded firm boundaries strain the current international tax system. It has become easier for firms to shift their profits to low tax jurisdictions (tax planning and tax avoidance) and harder for governments to identify illicit financial flows (including tax evasion, tax fraud, and tax crimes). It is estimated that nearly 60 percent of total income of multinationals is reported in countries where they pay an effective tax rate of less than 5 percent. Some companies maintain hundreds of affiliates in low or zero tax economies—almost 60 percent of Fortune 500 companies in 2016 had

at least one affiliate established in Bermuda or the Cayman Islands, both of which have a 0 percent corporate income tax rate.³⁷⁵

336. The overarching problem is that current tax regimes are founded on the principle of residency rather than source. Current rules require that businesses pay tax on profits generated where they have physical presence. In practice, this means that global conglomerates pay taxes in economies where they locate an affiliate. Thus, if a digital company provides online services to consumers abroad or generates revenue from (foreign) user data, governments where the consumers are located have no legal hook to collect taxes on that company's profits. The physical presence requirement also enables firms to organize their own internal cross-border production structures between affiliates, declaring different profits for different affiliates, irrespective of direct value generation by each affiliate. Effective corporate taxation rates have been shown to have a decisive impact on where those affiliates locate.³⁷⁶

337. The inherent nature of digital business results in digital firms paying less tax than traditional firms. The European Commission estimates that digital businesses in Europe face an effective tax rate of only 9.5 percent, compared to 23.2 percent for traditional business models.³⁷⁷ The provision of goods and services from abroad, without physical presence in countries where consumers are located, escapes traditional corporate tax. Moreover, digital firms generate profit out of intangible assets, such as user data or advertising. Identifying how and where value is created is difficult. This is not fair – digital companies benefit from the good health and education levels of citizens, as well as the political stability, functional infrastructure, and economic prosperity in a country, just as traditional companies do. Governments are deprived of tax revenues. Meanwhile, the profits of digital firms continue to rise faster than any other segment of the economy.

338. Advanced countries, through multilateral efforts at the OECD, regional, and unilateral actions, are taking steps to tax the digital economy.³⁷⁸ In 2016, the OECD released a template for collecting VAT from foreign suppliers of digital goods and services through the International VAT/GST Guidelines. As of 2015, EU and non-EU firms are obliged to charge VAT on all digital services based on the location of the consumer. The tax removes the competitive advantage held by digital companies located in countries with low VAT rates. In 2017, Australia passed a similar tax on digital products and other services imported by consumers. In both cases, foreign digital businesses are required to register with the authorities in the country of consumption, file and settle taxes directly. Other advanced economies with indirect taxes on the digital economy already in place include Japan, Korea, New Zealand, Norway, the Russian Federation and South Africa.

339. Less has been done in emerging economies, where additional tax revenues are needed most. Most emerging economies have a limited tax base, due to high levels of informality and poverty, as well as collection challenges. Meanwhile, the digital economy, particularly in e-services, is increasing rapidly in emerging markets. Digital transactions are potentially more accessible than informal markets when it comes to tax collection. In 2017, Serbia and Taiwan, China adopted models similar to the EU and Australia, extending their VAT regimes to cover digital suppliers. India adopted an “equalization levy”, which is a 6 percent withholding tax applied to the gross consideration paid by Indian companies to non-resident businesses without a permanent establishment for online advertisement services. China, Malaysia, and Thailand are also reviewing their tax frameworks in order to collect taxes on digital profits.

340. The problem with indirect taxes is their impact on consumer prices. Direct corporate taxes do a better job of targeting firm profits directly (even accounting for some pass-through of this cost to consumers). But direct taxation of digital business is amorphous given the virtual nature of digital value chains, which may cross multiple international borders. In most cases, only the final consumer and perhaps the digital intermediary (often involved in payment) are both apparent and tractable entities. What's more, to impose a direct tax, countries may need to review/renegotiate some of their double taxation treaties. Doing so will not be easy. The direct tax proposed under the EU's 2018 Digital Tax Package would apply to digital firms with "significant digital presence", which means firms over a certain size in terms of revenues, users, or business contracts in each Member State in a given year. But it cannot enter into force until EU Members (which retain sovereignty over taxes) successfully renegotiate their tax treaties with third countries. Indirect taxes would apply in the interim. In parallel, Spain is also pursuing its own direct tax on digital companies, to be in place by 2019 to finance the increase in pensions.

341. In addition to the tax collection challenges posed by digital business, governments still have to contend with "base erosion and profit shifting" (BEPS) and other tax avoidance/evasion schemes, by both digital and traditional business.³⁷⁹ Some multinational firms have long shifted their profits around the world to so-called "tax havens", which are countries with low or zero tax rates and often high levels of secrecy. In so doing, firms reduce their tax burden.³⁸⁰ This phenomenon is not new, nor is it necessarily illegal, but it becomes easier via the digital economy. Fortune 500 companies are reportedly holding more than US\$2.6 trillion in accumulated profits offshore for tax purposes.³⁸¹ The Paradise Papers, leaked in late 2017, disclose some of the most egregious examples.³⁸²

342. Tax planning is accepted by tax administrations as appropriate and legal if taxpayers organize their tax affairs within the letter and intent of the law. In practice, the line between legitimate tax avoidance through tax planning and illegal tax evasion schemes that involve the deliberate exploitation of the tax system is far from clear. It ultimately comes down to intent, which can be hard to prove.

343. Transfer pricing rules, based on the OECD Transfer Pricing Guidelines, and other standards for implementation of international tax principles, seek to address the dual risk of double taxation and non-taxation of multinationals. When corporate affiliates transfer property, provide services or enter into financial transactions across borders, those transactions may not result in the same market-based outcomes as they would be if they were undertaken between wholly independent parties. Transfer prices set by multinational conglomerates for transactions between affiliates that do not reflect market prices can be manipulated to lower the tax burden of the conglomerate. Under the transfer pricing rules, companies have to ensure that transfer prices accord—based on the firm's own judgement—with the "arm's length" rule. That principle requires that the transfer price between affiliates for a given asset, function or risk is the same or similar to that which would be the case between independent companies operating at arm's length.

344. Transfer pricing rules are vulnerable to abuse. Problems arise when there is transfer mispricing, known as transfer pricing manipulation or abusive transfer pricing. In such cases, multinational conglomerates artificially segment their activities between their affiliates specifically to take advantage of loopholes in the tax system and shift profits into low-tax

jurisdictions. Certain law and accounting firms specialize in navigating the regulations in question to achieve this goal.

345. It is not easy to identify transfer mispricing. Should a tax audit take place, it can be difficult to find another transaction that is truly at arm's length for purposes of comparison. Certain markets, due to economies of scope and scale, network effects, or risk assignments, do not lend themselves to such an analysis. If that is the case, relying on a transaction between other affiliates may also be unhelpful—the prevalence of aggressive transfer pricing within corporate groups means that other international market transactions that could potentially be useful may also be distorted. Second, accounting rules that implement transfer mispricing can obscure what is actually going on. Firms have significant flexibility to establish contracts for goods, services, or intellectual property rights, or set up lending agreements between affiliates, all of which can be used to justify the transfer of income/profit. Small subsidiaries may also be set up to bear the risk for the entire global conglomerate, in exchange for (significant) payment. If there is no comparable transaction in the market against which to assess that contract or agreement, firms may have vast discretion to set “prices” as they please.

346. Intellectual property is often used to justify income transfer between affiliates. Evidence shows that corporate tax rates influence where firms register their intellectual property rights.³⁸³ Foreign affiliates in higher tax countries can pay royalties to the IP-owning affiliates in low tax locations.³⁸⁴ This practice has been extensively reported in the pharmaceutical sector, where firms use IP royalty payments to report dead-weight losses, set high prices, or even withdraw drugs from the market entirely. Firms in the tech sector are following suit.

347. Another way multinationals minimize their tax burden is through contract research and development (R&D). When a subsidiary located in a low tax country manages, controls, and finances R&D in a higher tax country, it sets a price (usually the cost of the R&D plus an arm's length mark-up). If the contract stipulates that the financing subsidiary also bears and manages the risk of that R&D, additional returns from any subsequent patent or other intellectual property that comes out of that R&D will accrue to the subsidiary (in the low tax location). To compound these windfalls, well-advised companies carry out their R&D in countries with R&D tax incentives. Thus, firms conducting R&D can deduct those expenses from taxable income, receive tax credits, and then allocate R&D revenues to foreign affiliates (because they bore the risk and performed the development, enhancement, maintenance, protection, and exploitation functions related to the intellectual property created by the R&D). On top of that, some countries charge lower corporate taxes for any revenues generated using patents. When one considers the sheer length of some patents, not to mention their vulnerability to abuse, amending intellectual property rules become an important part of global efforts to combat tax avoidance and tax evasion.

348. In its current form, the international tax framework creates incentives for countries to compete on corporate tax rates, provoking a race to the bottom by many countries—mostly lower income countries. Governments pursue a variety of tax incentives to attract foreign direct investment in their economies, including low corporate tax rates, tax holidays, VAT and tariff reductions or exemptions. Tax incentives erode government revenues. The situation is particularly concerning in emerging economies, where corporations represent the most accessible (and significant) tax base. As a result, governments have to rely on other more distortive sources of

financing such as VAT. Numerous emerging economies have corporate income tax rates of 0 percent.

349. Governments have been taking steps to reduce tax avoidance. The Global Forum on Transparency and Exchange of Information for Tax Purposes, which originated with the OECD in the early 2000s, brings together almost 150 jurisdictions, as well as the European Union, to implement internationally agreed standards on transparency and the exchange of information for tax purposes.³⁸⁵ The Forum monitors implementation of the standards by its Members, sharing the results on its website. More recently, the Base Erosion and Profit Shifting (BEPS) initiative launched in 2013 by the OECD and G20 countries brings together over 100 countries, regional tax organizations, and international organizations, including the World Bank, to develop new tax standards to reduce tax avoidance. The group negotiated a comprehensive package of measures to be adopted by signatories to better align the location of taxable profits with the location of economic activity and value creation, and improves the information available to tax authorities.

350. The BEPS package represents a significant political commitment by governments. However, the degree of implementation and compliance will measure its true success. Many of the measures require amendments to double tax treaties, of which there are thousands worldwide. In addition, the grouping is developing a monitoring process for four “minimum” standards and plans to put in place review mechanisms for other elements of the BEPS measures.³⁸⁶

351. Other steps can be taken in the meantime. Governments can pass controlled foreign corporation rules, which make it harder for firms to shift profits to affiliates in low tax jurisdictions abroad by charging corporate taxes on the taxable income (but not gains) of the affiliates. Governments can pass legislation requiring all multinationals to publish detailed reports on the countries in which they operate and have holdings, including their turnover, intra-firm sales, employees, assets, profits, taxes, etc.³⁸⁷ For example, the United Kingdom passed a law in early 2018 that compels certain British Overseas Territories like Bermuda, the British Virgin Islands and the Cayman Islands to disclose the real owners of shell companies. By 2020, those governments have to create public databases setting out the real owners of all companies registered there.

352. Governments can also take steps to shut down tax havens. Economic sanctions are one option, facilitated by a list of the most egregious offenders. In late 2017, the Council of the European Union released a list of 17 non-cooperative third country jurisdictions for tax purposes. Since then, the Council of the European Union obtained commitments from certain of those jurisdictions to remedy EU concerns and revised the list down to just 9 jurisdictions (table 5.1).

Table 5.1. EU List of non-cooperative jurisdictions in taxation matters

European Council list of non-cooperative jurisdictions in taxation matters (March 2018)
American Samoa
Bahamas
Guam
Namibia
Palau
Samoa
Saint Kitts and Nevis
Trinidad and Tobago
US Virgin Islands

Source: Council of the European Union, 2018.

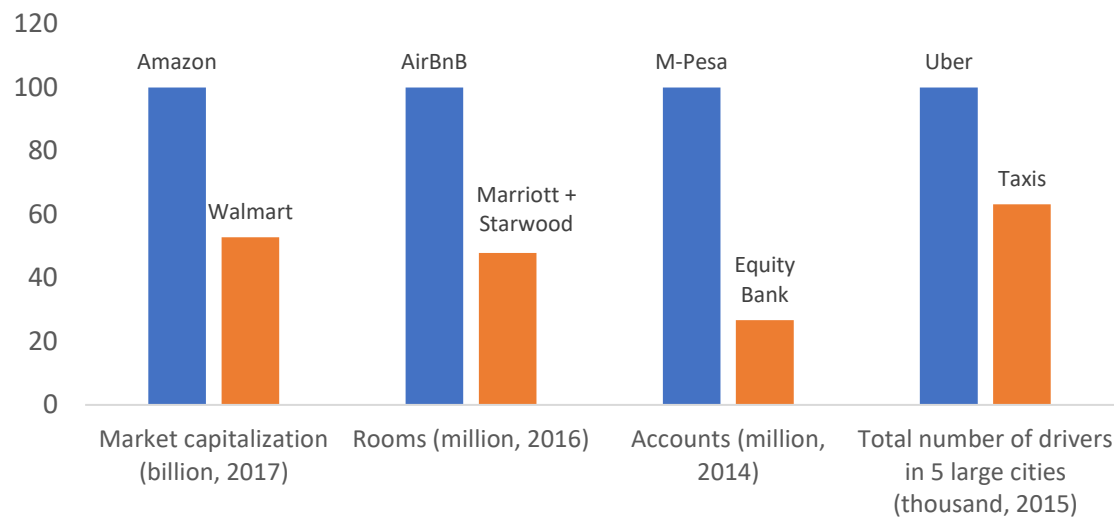
353. Growing public discontent with tax avoidance practices has revived interest in global formulary apportionment, an allocation formula that aggregates and then divides a firm's worldwide income across countries in which firms are active. Global formulary apportionment would remove existing incentives for multinational corporations to shift reported income to low-tax locations. There would be no need for transfer pricing rules. The formula to allocate profits between countries would be based on "allocation keys" comprising volume of sales to third parties, assets, payroll, and/or headcount of staff in each jurisdiction. The European Commission proposed a version of this in 2016 with the Common Consolidated Corporate Tax Base. The system would not eliminate tax competition between EU members, since it would still be in governments' interest to use low tax rates to attract investment.

354. At the international level, the introduction of formulary apportionment faces significant hurdles, not least an agreement among major economies on the rules used to allocate corporate income. 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. What's more, any unilateral moves to formulary apportionment risk double taxation of some income and non-taxation of other income.

355. An alternative approach is the destination-based cash-flow tax. Such a tax would levy charges based on where goods end up (the destination), rather than where they were produced (the country of origin). Such a system could ease pressures of tax competition if adopted universally. Absent universal adoption, however, tax competition and profit shifting could increase.

356. Beyond the tax realm, antitrust frameworks are struggling to adapt to expanding firm boundaries, particularly in the digital economy. Although digital platforms initially increase competition and may even disrupt incumbents, new problems can arise over time as platforms themselves become entrenched (figure 5.3). As with any market, the ascent of platform firms relative to the nearest competitors raises issues related to market power. Users tend to converge around one or few platforms. Platforms can obstruct the growth of competing offers, for example, by negotiating preferential access to ancillary services. Amazon in the United States accounts for 10 percent of United Parcel Service's (UPS) returns and is able to negotiate discounts of up to 70 percent. UPS makes up the difference by charging higher prices to other customers.

Figure 5.3. Platforms and their offline competitors



Source: Author's calculation, based on data from Yahoo! Finance, Business Insider, CGAP, Visual Capitalist.

357. Exclusionary tactics may be even more likely in digital markets and are difficult to identify.³⁸⁸ For example, platforms can charge higher fees for other networks to interconnect. In 2013, sending e-money from M-PESA to its rival Airtel Money was over four times more expensive than sending it within the network. Facilitated by the Competition Authority of Kenya, Airtel and Safaricom, which owns M-PESA, reached a settlement on the matter. Since then, in 2018 Kenyan regulators brokered an agreement with the two players to launch mobile money interoperability, which allows users to send and receive money across networks in real time. Competitive coexistence platforms allow businesses and individuals to use several competing platforms at once and switch easily between them. This can have a positive impact on prices and participation. When Zimbabwe mandated interoperability and infrastructure sharing among e-money operators, it raised the total number of subscribers by 15 percent.

358. Mergers and acquisitions in the digital space pose particular challenges for policymakers. Many digital platform companies operate in adjacent, multi-sided markets, bundling or at least connecting different types of services. Most antitrust rules are not yet built for these situations.³⁸⁹ Cross-platform network effects that affect the market power of dominant firms and create competitive constraints for others are especially difficult to account for.³⁹⁰ For example, in addition to online retail, Amazon controls one-third of the cloud business, 44 percent of e-commerce and a 70 percent of voice in the United States. Amazon also publishes books, manufactures hardware, and entered the grocery-store business with its 2017 purchase of Whole Foods. The U.S. antitrust agency approved the deal on the basis that the businesses are sufficiently different as to eliminate the risk of consumer harm. Moreover, Whole Foods accounted in 2017 for less than 2 percent of the grocery market. Nevertheless, Amazon's current dominance in online retail raises concerns around future consumer welfare if Amazon ultimately comes to dominate the offline retail market.

359. Elsewhere, governments are indicating that platforms operating in adjacent markets are not infallible to antitrust challenges. In 2017, Google received a US\$2.7 billion fine from the European

Commission for promoting its own shopping services in its search results, at the expense of competitors.³⁹¹ In Peru, the telecom regulator forced the largest communication networks to offer messaging services to banks that were expanding into e-money.

360. More generally, platform firms may operate in regulatory grey areas. For example, although Airbnb can shift 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 can affect neighbors who do not share the benefit of local rental income. Regulators can adjust laws to ensure their relevance to the new business models platforms create. Minimum standards of quality, prudence, and safety, among other policy goals, must still be upheld by digital business. In the case of e-money, Peru's financial regulator has set up a special license that imposes a lighter regulatory burden. Mexico City created a new regulatory category for ride-sharing apps. Airbnb is working with destinations such as Denmark, as well as the cities of Amsterdam, Barcelona, Milan, New York on models for improved capture of taxation and limitations on the types of dwellings, locations and duration properties can be rented using Airbnb.

361. Regulation can also address problems associated with platforms that provoke a race to the bottom in price or 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 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 early May 2018, the Egyptian government passed a law to regulate ride-hailing companies, allowing Uber and Careem to get back on the road and complete alongside traditional taxis. Other governments have opted instead to ban platforms completely. For example, Bulgaria's Supreme Court ordered Uber to stop operating in 2016. The same year, the Hungarian government amended its regulations to make it effectively impossible for Uber to operate. Many other cities or countries have banned ride-hailing apps, including parts of Australia, China, Greece, Slovakia, and Spain.

362. The changing nature of the firm requires action from governments. Expanding firm boundaries present opportunity for societies, but they also bring risks. Firms—digital and traditional—should pay their fair share of corporate taxes. The international community has made good progress in tackling tax avoidance by multinational firms, but much more remains to be done. Antitrust laws need to adapt to patrol anticompetitive practices in the digital economy. The implications of superstar dominance across multiple adjacent markets should be scrutinized. Anything else raises serious questions around the bounds of corporate power.

Chapter 6: Adapting Social Protection and Labor Market Institutions

363. Otto von Bismarck, Germany's Chancellor in the late 19th Century, is widely accredited for having invented social insurance as we know it: one where benefits to formal workers are 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 via taxes on tobacco. As his plan failed, Bismarck eventually resorted to wage-based, contributory financing. The contributory model is still largely in place in most countries.

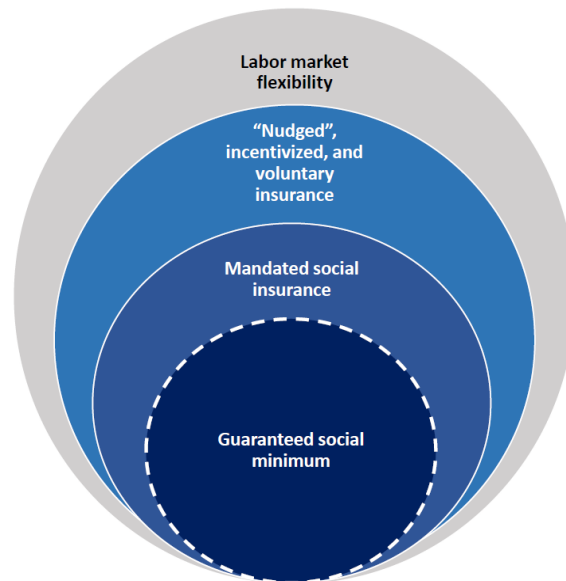
364. Social insurance and labor institutions conceived around long-term employer-employee relationships are increasingly challenged by changes in the world of work. Labor markets are becoming more fluid, including workers pursuing a portfolio of activities like self-employment or multiparty employment arrangements. Changing skill demands also raise the concern of higher inequality, and broader segments of the population becoming vulnerable.

365. While the Bismarckian arrangements have served many advanced countries well, in developing countries the model remained mostly aspirational due to informality. Many lack formal protection. Earning from jobs alone may not lift people out of poverty: in Africa and Asia, over half of workers live on less than US\$2 per day.³⁹² In low-income countries, social assistance and insurance only cover 18 and 2 percent of people in the poorest quintile, respectively. The corresponding rates increase to 77 and 28 percent in upper-middle income settings.

366. More uncertain, complex labor markets demand effective social protection while ensuring that firms and workers can respond to changes in technology and product markets. These developments are stimulating a reconsideration of how social protection, including labor market institutions, can reduce poverty, smooth consumption, and redistribute wealth. Their relevance is reflected in legislations, national strategies and budgets. Any discussion on the future of social protection is not a matter of 'whether' it is needed, but of 'how' it is best adapted to the changing nature of work.

367. The chapter outlines how a package of three inter-dependent components of social protection systems – a guaranteed social minimum against poverty (with assistance at its core), social insurance, and labor market institutions – can manage these labor market challenges in developed and developing countries (figure 6.1). The provisions of social assistance, social insurance and labor market institutions must be coordinated to jointly provide protection and promote employment. Changes in the shape of one may affect what is needed in the others.

Figure 6.1. Social protection and labor system for the changing world of work



Source: Adapted from World Bank (2018).

368. The envisioned package reinforces the role for social assistance. Already spurred by equity concerns, the development of adequate social assistance is underscored by greater risk in labor markets and the need to ensure adequate support irrespective of form of labor contract. The proposed package moves some of the burden of protections from social insurance and labor market protections to social assistance.

369. “Progressive universalism” embeds the objective of expanding of social assistance prioritizing the poorest, while navigating the fiscal, practical and political trade-offs that incremental levels of coverage entail. As a result, countries have an array of options to walk the path, including extending individual programs or combining multiple ones. Among the options, there is growing discussion around Universal Basic Income (UBI). This program is a variant of a familiar instrument – unconditional cash transfers. Since UBI is often featured in the debate on the future of work, this chapter devotes particular attention to it.

370. A guaranteed societal minimum income should be complemented with adequate insurance that does not fully depend on having stable wage employment. Such arrangements would, first, provide basic universal coverage, subsidizing premia for at least the poor. This would top-up social assistance. In addition, mandatory earnings-based contributions would be necessary. At least initially, this mandate would apply only to formal workers. A lighter mandate could attract greater compliance. Finally, additional insurance could be achieved through voluntary saving schemes “nudged” by the state. Disentangling redistribution from savings and moving the redistributive function to the guaranteed societal minimum would increase transparency and reduce labor costs. This may reduce incentives to replace labor with technology.

371. As all workers become better protected through enhanced social assistance and insurance systems, labor markets can be made more flexible to facilitate work transitions. Current labor

regulations are often used as a substitute to provide the protections that social assistance and insurance systems could instead provide. For example, when aiming to provide a livable income, countries could choose to use more social assistance to supplement earnings and relax pressure on setting the minimum wage to levels that would exceed the labor productivity. Similarly, income support to the unemployed may be provided by unemployment benefits rather than via severance pay.

372. Moving protections to the social assistance and insurance sectors can reduce the burden of risk management on labor regulation. In doing so, it may protect informal workers. Lower labor costs can improve the adaptability of firms in the changing world of work and allow for more formal employment, especially of new labor market entrants and low skilled workers. Complementary support for reskilling and job search, as well as new arrangements for expanding workers' voice, become even more important.

Social Assistance

373. “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.³⁹³ 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 in other contexts for centuries. It was only 70 years ago that the “Beveridge Report”, with its recommendations embedded into the National Assistance Act of 1948, marked the end of the era evoked by Dickens.

374. In subsequent decades, social assistance began to spread in developing countries.³⁹⁴ Trends in social assistance attest to significant progress. Out of 142 countries, 70 percent have unconditional cash transfers in place, 43 percent introduced conditional cash transfers (CCTs), and 101 countries have old-age social pensions.³⁹⁵

375. Developing countries are expanding flagship social assistance programs: between 2013 and 2016, the coverage of the national CCT scheme in Tanzania increased twentyfold from 0.4 percent to 10 percent of the population. 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.

376. These expansions are often accompanied by administrative innovations. Social registries connect potentially eligible beneficiaries to different programs. This improves coordination programs and attain efficiency gains. When linked to a unique ID number, such platforms can reduce costs due to 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.

377. Countries are using various outreach strategies to raise awareness of available interventions. For example, in Brazil the *Busca Activa* strategy resulted in including over one million additional poor families in the *Cadúnico* social registry.³⁹⁶ Payment technologies are also

making a difference. In the Labor Intensive Public Works scheme in Ghana, the digitalization of paper-based transactions and a wider use of biometric machines reduced overall wage payment time from 4 months to one week. In the Indian state of Chhattisgarh, electronic devices for the Public Distribution System of food assistance contributed to a reduction in ‘leakages’, from 52 percent in 2005 to 9 percent in 2012.

378. Rigorous empirical studies demonstrate the substantial multidimensional impacts of social assistance. Evidence shows that transfers increase not only household income, but also the human capital of current and future generations. For example, a systematic review of 56 cash transfer programs found significant impacts on school enrolment, test scores, cognitive development, food security, and usage of health facilities.³⁹⁷

379. Despite progress made, there is more to do. The evolution of social assistance is unfolding as the changing nature of work combines with structural challenges. More people, and not only the poor, are becoming vulnerable as skills demands change. At the same time, high levels of informality have prevented firm-based, “Bismarckian” social insurance from taking hold in most developing countries.

380. Where deprivation is widespread, households across income distribution may face similar, although still varying, levels of need.³⁹⁸ Such continuity may contrast with sharp, somewhat arbitrary measures of poverty or eligibility criteria. Even where poverty is less prevalent, there can be a concentration of similarly-vulnerable people around poverty lines. For instance, in some middle-income countries those living on US\$6 per day, or just above the poverty line, face a 40 percent probability of falling back into poverty.³⁹⁹ In fact, poverty is often dynamic: in Africa, one-third of the population is persistently poor, while another third moves in and out of poverty.⁴⁰⁰ These issues suggest the need for broader coverage than most of current programs.

381. When countries achieve high levels of coverage, many policymakers weigh the possibility of targeting by “excluding the rich”, instead of selecting beneficiaries from the bottom. This approach is often considered in the context of subsidy reforms and entails new technical challenges. While it does not eliminate exclusion errors, these tend to occur higher up the income distribution. As such, “targeting from the top” may have less problematic social consequences.⁴⁰¹ 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.⁴⁰²

382. In advanced economies, social assistance faces the bottleneck of low ‘take-up’, or the extent to which eligible beneficiaries participate in a program. For example, it is estimated that in the European Union only about 60 percent of social benefits are claimed.⁴⁰³ This challenge stems from lack of awareness of benefits, misunderstanding of eligibility rules, perceived stigma associated with assistance, bureaucratic obstacles, and opportunity costs to access benefits. In low-income countries, only 18 percent of the poorest quintile receives some form of transfer, albeit coverage rises to 77 percent for upper middle-income countries. Low coverage can be the result of fiscal, administrative and informational constraints. Out of the benefits provided in developing countries, about one-third accrues to the poorest quintile, while two-thirds are spread across the income distribution.⁴⁰⁴

383. These challenges are complex. Decisions about the shape of a ‘guaranteed societal minimum’ carry different technical, fiscal, and political challenges. Packages with more universal elements reduce or eliminate challenges around determining eligibility, but require significantly more resources. The choice of larger or smaller tax-transfer policies have different roots of political support.

384. The principle of ‘progressive universalism’ could be applied to the idea of a guaranteed societal minimum. Originally introduced in the context of universal health coverage,⁴⁰⁵ such principle could provide a direction of travel to build an inclusive societal minimum, as well as set out basic parameters to gauge trade-offs.

385. Progressive universalism is anchored in four core considerations. First, it recognizes that while a significant expansion of social assistance is needed, its extent depends on country-specific factors (e.g., preferences toward redistribution, fiscal space, political economy, and implementation capacity). Second, the pace of scale-up matters: gradual, sequential expansions might be more realistic, especially for contexts with limited capacities. Third, as countries expand social assistance, those at the bottom of the distribution – who are intrinsically more difficult to reach – should benefit before or at least at the same time as others in society. Fourth, those at the bottom need to be supported adequately, meaning that they are likely to need more support than others. For example, average benefits represent between 13 and 18 percent of the poor’s income or consumption in most developing countries. These amounts tend to be too modest to make a dent on poverty.

386. These basic considerations have important implications. For instance, they place a higher societal weight on minimizing exclusion errors among the poor rather than on reducing errors of inclusion of the better-off. Success does not necessarily entail that everyone in a country receives transfers – rather, it requires that the poorest and vulnerable do so. Therefore, progressive universalism demands information systems to prioritize those most in need.

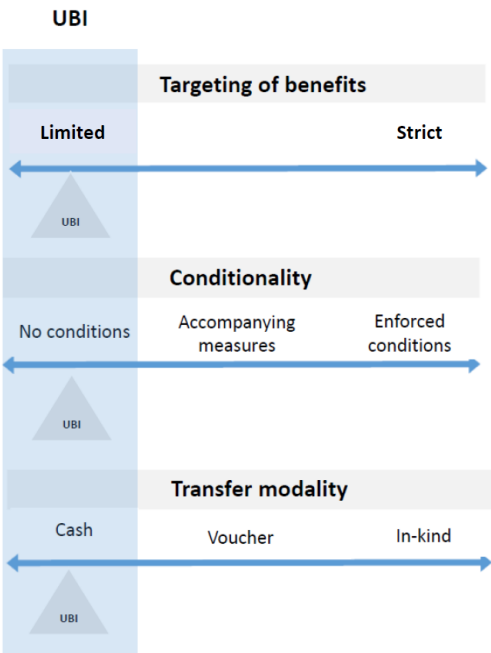
387. The idea of a Universal Basic Income (UBI) is a hotly-debated topic in thinking about how countries can build their guaranteed social minimum and overcome the challenges in current social assistance provision. For example, India’s Chief Economic Adviser, Arvind Subramanian, predicted enthusiastically that “... I can bet, within the next two years, at least one or two [Indian] states will implement universal basic income”.⁴⁰⁶

388. Part of the literature discusses the potential for UBI to provide income security as concerns for mass unemployment due to automation rise. UBI has also been explored as a vehicle to enhancing accountability and improving efficiency in public spending in oil-producing countries. Another branch of literature examines how UBI fulfills the rights agenda. Arguably, most of the literature presents UBI as a platform for “welfare reform”. Importantly, these distinct narratives imply different objectives for a UBI. To gauge the appropriateness of the program, it is important to clarify which goals it intends to pursue.

389. A UBI is the result of three design choices. First, the program is meant for every person independent of income or employment status. Second, it is provided in the form of cash, as opposed to in-kind transfers and services. Third, there are no conditions attached or reciprocal

responsibilities to be fulfilled by participants (figure 6.2). In addition, a UBI is intended for individuals, and not households, and it is supposed to be provided regularly and permanently.

Figure 6.2. Design traits of a UBI



Source: Authors’ calculations.

390. Other parameters can be set in varied ways. For example, a UBI can envisage limited transfers to supplement household income, to lift people out of poverty, or to meet additional needs. When transfers are modest in size, a UBI is more likely to be complementary to work. This is the version discussed in this essay. Instead, a more radical and contested option envisages UBI as a deliberate substitute for work. In addition to the size of transfers, other parameters of UBI design matter. For instance, a UBI can be provided as substitution for or in addition to existing welfare schemes; eligibility criteria can envisage a minimum (e.g., 18 years); and citizenship or residency requirements may also apply.

391. Theoretically, a UBI may be designed in a way that provides the same level of transfers to the entire population, and then recoups part of it through taxes. A similar approach is to directly provide more benefits to the poor and less to the rich. In other words, benefits would decline as incomes rise. This “tapering” can be achieved through a Negative Income Tax (NIT).⁴⁰⁷

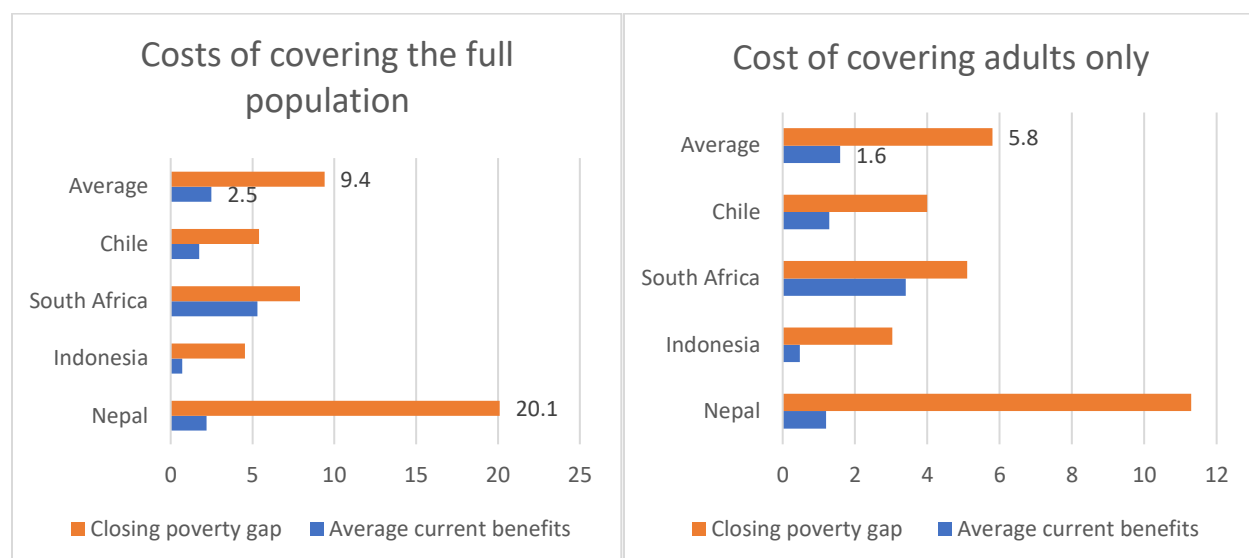
392. What do we know about how UBI works in practice? For the moment, a true UBI is largely a theoretical proposition. Only one country, Mongolia, had a short-lived UBI covering the entire population. The program lasted 2 years (2010-2012) before being downsized due to fiscal constraints. When mineral prices collapsed, so did the scheme.⁴⁰⁸ 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.

393. 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 to 660,000 individuals. There are several small-scale schemes and experiments ongoing in Canada, China, Kenya, the Netherlands, and the United States.⁴⁰⁹ These are labelled as UBI, but they are often variants of targeted programs.

394. While practical “proof of concept” is lacking, fiscal implications of a UBI could be significant. Recent analysis estimated the costs of providing a UBI in four European countries. UBI transfers were set equal to those of existing cash transfer programs.⁴¹⁰ 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.

395. Simulations from developing countries also point to significant additional spending for a UBI. For example, in a handful of emerging economies a UBI set at 25 percent of median income would cost about 3.75 percent of GDP.⁴¹¹ In comparison, low and middle-income countries spend on average 1.5 percent of GDP in social assistance. In India, the government’s estimates show that a quasi-UBI excluding the top 25 percent could be largely paid by replacing existing schemes.⁴¹² While the latter account for about 5 percent of GDP, results have been contested.⁴¹³ Other simulations are providing further evidence. For instance, the cost of a UBI for adults set at the average poverty gap level ranges from 11.3 percent of GDP in a low-income country like Nepal to 3 percent of GDP in Indonesia.⁴¹⁴ If transfer amounts are lower – for example set at the average level of current benefits – costs would shrink considerably (but would have less impact). When also covering children, in Nepal the cost of eliminating poverty via a UBI would double (figure 6.3).

Figure 6.3. Simulated cost of UBI for different amounts in select countries (percentage of GDP)



Source: Gentilini et al. 2018.

396. A UBI would generate winners and losers among the population. Effects depend on how the program is financed; if and which programs would be replaced; the performance of existing schemes; current tax structures; the size of UBI transfers; and the profile of beneficiaries.

397. At the margin, many winners from a UBI could be non-poor. For example, in Finland, France and the United Kingdom, lower-income households already receive income support under existing policies. Therefore, they would be less likely to gain if the UBI is set at similar levels. A UBI would instead tend to benefit those not qualifying for (or not taking-up) current social assistance benefits. In contrast, low social assistance coverage in Italy means that most individuals across income groups would receive higher transfers through a UBI. The individualized nature of UBI would also have distributional impacts. For example, many couples without children would gain from a UBI. By contrast, single parents at lower income levels may be worse-off. A UBI, which is often conceived for adults, may not provide additional support for children. It is important to note that these simulations do not consider the distributional effects from higher taxation nor potential work incentive effects.

398. Estimates for select developing countries that simulate replacing some existing schemes with a UBI also found significant distributional effects.⁴¹⁵ In Nepal, for instance, most individuals would experience gains 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 get less benefits. Under the same scenario, simulations suggest that a UBI in South Africa make 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.

399. 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.⁴¹⁶ Available evidence confirms limited impact on work incentives. This holds for both UBI and other forms of social assistance.⁴¹⁷ A study on the Alaskan dividend program in the United States shows no impact on employment. Instead, it finds increases in part-time employment of 1.8 percentage points (or a 17 percent increase).⁴¹⁸ Yet, the size of the average transfers under the scheme is arguably too small to affect labor supply. Similarly, a study of the Iranian quasi-UBI program found that it did not affect overall labor supply.⁴¹⁹ There was a negative effect among youth, 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’).⁴²⁰ These emancipatory effects would likely require more generous benefit levels.

400. An important debate is whether a jobs-guarantee program would offer a better alternative to UBI. For example, India’s National Rural Employment Guarantee Act offers 100 days of work per year at the minimum wage. UBI proponents contest public works on the basis that a ‘right to income’ should precede that of work.⁴²¹ Conversely, it is contended that the right to work rests on the premise that anyone who wants work could be offered one, but it does not impose a duty to work.⁴²² 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 works envision more meaningful activities, public works emerge as a complementary instrument for those with work capacity. The concept of ‘participation income’ is a hybrid between a UBI and public works. It envisions the provision of universal cash transfers tied to some form of civil engagement.⁴²³

401. As with other forms of social assistance, a UBI requires solid delivery systems. One requirement is a credible personal identification system. In Sub-Saharan Africa, the share of the population with national IDs ranges from nearly 90 percent in Rwanda to less than 10 percent in Nigeria. A UBI necessitates robust payment mechanisms and markets capable to meet additional demand from cash transfers. A UBI program would also call for carefully monitoring inflation, which was a major issue in the case of Iran. It would still need core delivery building blocks for social assistance, like outreach, registration, information systems, recertification, oversight, monitoring and evaluation, grievances and redressal mechanisms.

402. A UBI could improve eligibility determination and reduce errors of exclusion among the poor. However, universal design does not ameliorate the barriers of information often faced by the poor; nor the constraints of not having IDs, accounts into which to receive payments, or being challenged by barriers of remoteness, literacy or language to get effectively enrolled. If the main constraint is fiscal cost, a UBI may amplify that bottleneck.

403. A UBI could generate efficiency gains by reducing program fragmentation. Most countries layer together social assistance programs in a complex mosaic. For example, Bangladesh has over one-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. The program composition of social

assistance should allow for differentiated support to different vulnerabilities; as illustrated, a UBI offers flat benefits.

404. Many programs pursue multiple objectives beyond income support that could hardly be replaced by cash alone. For example, large scale food assistance interventions (e.g., school feeding) support low-income households, may encourage local production, enhance school attendance, and shield beneficiaries against inflation. Similarly, a UBI must not replace services in training, job search, social care, disability, health, education and other critical provisions; also, cash as a modality may not always be the more effective transfer modality in contexts of weak markets.⁴²⁴

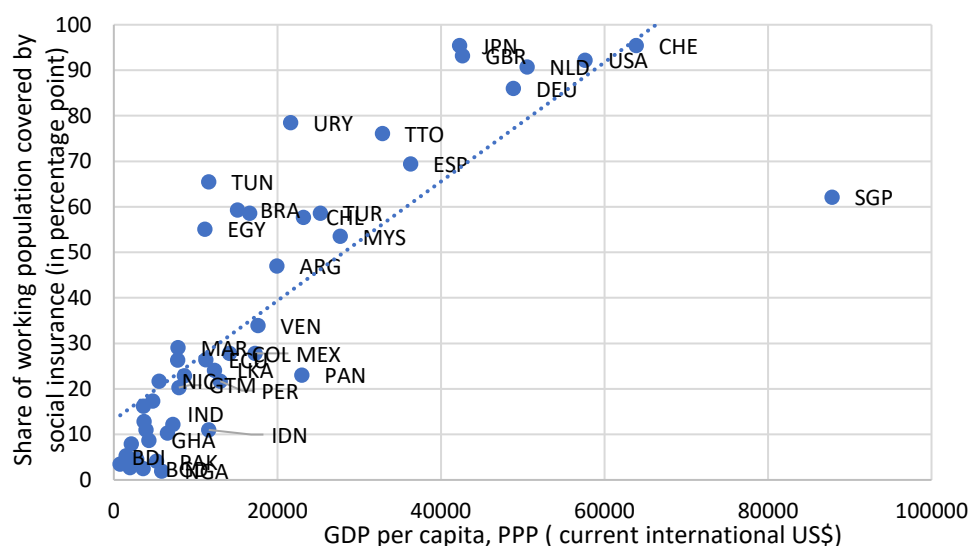
405. By simplifying eligibility, UBI can expand coverage of the poor as well as of those vulnerable to labor market changes. However, some people at the bottom of the distribution may not be better-off with a UBI instead of current programs; also, UBI demands identification, payment mechanisms, and grievance redress for many more people than other options. Broader coverage and additional efforts would require a much-larger fiscal envelop. The wide reach of UBI programs is often posited to strengthen social contracts. As such, UBI can build support for the reforms or additional taxation that would be necessary for financing. But the political economy of UBI is vastly underexplored. Design choices should not be straitjacketed: whether and how to configure co-responsibilities, as well as what transfer modality to provide, should be based on societal preferences, evidence, and local conditions.

Social Insurance

406. After six years of double-digit growth, in June 2011 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, were able to 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.⁴²⁵

407. The “Bismarckian” social insurance model – as pursued by Ethiopia – 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 onto jobs in formal services firms. This contributory approach is ill-fitting for developing countries where formal, stable, and subordinate employment is not common. Indeed, because eligibility to coverage is based on making mandatory contributions, this form of social insurance excludes informal workers, who account for as much as two-thirds of workers in these countries. In India and in many countries in Sub-Saharan Africa, coverage barely reaches ten percent of the working population (figure 6.4). This model is also increasingly unsuitable for a changing world of work where the stability of long-term employer-employee relationships is no longer the norm, and where there are more risks and greater uncertainty. The traditional model of social insurance can also make employing workers more expensive, as illustrated by the Ethiopia case. Thus, rethinking this model is a priority.

Figure 6.4. Coverage of social insurance in developing countries is low and stagnant



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

408. 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 consumption smoothing, are also important. A comprehensive package of protection can meet these goals. This package 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 can smooth consumption. Finally, market-based nudged or purely voluntary savings would allow people to make additional savings, if desired. Elements of this model already exist in many countries.

409. Attaining a universally accessible, comprehensive package of protection requires continued government-mandated participation for most and subsidized coverage for the poor. The mandate to participate ensures the most efficient risk pool. The redistributive and poverty preventing elements of this system could be separated from the rest. The former could then be financed through a broader tax than employment-based contributions. This would allow for this basic insurance to be extended to all people.

410. This approach can, along with a guaranteed minimum income, reduce the size and pure-tax element of mandated contributions. To varying extents, current social insurance models mingle redistribution with risk-sharing functions, and thus require higher contributions which are perceived by many mainly 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.⁴²⁶

411. Some countries are already moving in the direction proposed. 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 and around 150 million older people are receiving payments.⁴²⁷ Similarly, Costa Rica's government covers part of the pension contribution for the self-employed. Subsidies could be for everyone, just for the poor, or 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 population to be subsidized.

412. In richer countries and countries with mature social insurance systems, reducing the reliance on payroll taxes is difficult. Social insurance in rich countries is financed through payroll taxes. These systems – found also in Eastern Europe and the Southern Cone of Latin America – are mature and the size of their pension and health liabilities are formidable obstacles to change. In Romania, for example, the implicit pension debt is about 175 percent of GDP. As a result, other taxes would have to be increased dramatically to make up the financing gap that would arise with lower labor taxes. Most of these countries already have high rates of value added tax.⁴²⁸ Therefore, while they have largely halted pension increases, most of the advanced economies are counting, at least partly, on future benefit cuts to deal with their aging populations. In some countries, like Brazil, pension deficits are already financed from general revenues.

413. In many emerging economies, social insurance liabilities are more limited since coverage is low. In countries like Bangladesh, Namibia, Lao PDR, Nepal, 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.

414. Yet, despite clear advantages, efforts to move away from a payroll tax-based model are often resisted. There are various arguments against a shift to general tax financing. Chiefly, a payroll tax is earmarked for social insurance; it also confers beneficiaries a sense of entitlement and, thus, ownership. It is argued that this feature better protects social insurance from political interference compared to financing through general revenues. That said, alternative sources of revenue can also be earmarked.

415. In sum, in richer countries it is difficult to move completely away from the contributory model based on dedicated payroll taxes. However, they seem to have prevented further liability increases through budget cuts and occasionally through earmarking other taxes.⁴²⁹ Middle income countries may have more scope to replace part of their financing. Finally, the best chance for viable alternatives to payroll tax lies in low-income countries that have either not introduced it or where there is no significant liability. Here, relying on general taxation could lead to higher coverage rates for basic insurance with fewer labor market distortions. These are also the countries which

could use technology to leapfrog institutional developments through, for example, the use of mobile transactions as a base for consumption taxation.

416. Beyond the basic insurance level, additional policy support 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 can affect formal employment. The average payroll tax rate used to finance contributions is almost 23 percent in advanced economies.⁴³⁰ It is also more than 20 percent in countries like China, Egypt or Peru. The mandate could be relaxed by reducing the tax rate or lowering the ceiling on earnings subject to mandatory savings.

417. Once universally accessible coverage against impoverishing losses is in place, and a modest mandated plan ensures adequate consumption smoothing, governments are advised to proceed with a light touch. They can put in place incentives to increase private savings. They could also design savings programs in ways that make it more likely for people to participate in them.

418. For example, as an alternative to a mandate, policy makers have tried making participation in savings or insurance schemes the lowest-effort, default option. Some measures include adding an “opt-in” default on business registration and income tax returns. These measures can lower transaction costs.⁴³¹ Other approaches that rely on behavioural insights can be instructive. In Kenya, giving people a golden colored coin with numbers for each week to keep track of their weekly deposits doubled their savings rate.⁴³² Another form of nudging may include ‘commitment devices’ in which, for example, people agree to incur a loss if they do not reach a savings goal. Evidence from the Philippines shows that the strategy increased savings by 81 percentage points.⁴³³ Technology vastly increases possible nudges. For example, it facilitates the defaulting of rounding from mobile money or credit card transactions into savings.

419. 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, for instance, relies on automatic enrolment and offers a limited set of investment choices.⁴³⁴ The United Kingdom’s National Employment Savings Trust operates similarly.⁴³⁵ In both programs, although people can withdraw, incentives dissuade people from doing so.

420. In countries that have mandatory savings, the mandate can be softened by allowing people to access a portion of their savings for fundamental life events.⁴³⁶ Participants can be allowed to “borrow” from their individual account. Interest can be set at higher-than-market rates to encourage quicker “repayment”. Singapore grants workers access to their mandatory savings for specific aspirational investments, such as housing and education. The dilemma for policy makers is to balance individuals’ liquidity preference with their long-term consumption smoothing objective.

Labor institutions

421. In many developing countries, labor regulations were adopted at the time of colonialism. Through Napoleonic conquest, French civil 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: French (and socialist) legal origin countries have significantly more stringent labor regulations than do common law countries.⁴³⁷ These regulations are ill-fitting to many developing countries' labor markets. Designed with industrial economies in mind and at a time of weak social protection systems, they fail to protect most workers when informality is the norm. This is the case because most governments are unable to regulate a substantial part of the economy. Within formal work, regulations favor 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.

422. Reforms need to address three main challenges around labor regulations. First, they cover few, only formal workers whose labor is observed, regulated and taxed by the state. Yet, more than half of the global labor force is informal, and even in non-agricultural activities, close to seven in ten workers are informal or work on the informal sector in countries like Guatemala, India, Liberia and Pakistan.⁴³⁸ Second, labor regulations try to do too much and act as a social protection system, including ensuring a minimum income or substituting for unemployment benefits. Third, and as argued in the World Development Report 2013, while they address labor market imperfections, they also act as a barrier to formal work. This happens especially when they are too strict as they can impose a high cost on firms as well as on society by excluding many, especially youth and the low-skilled.⁴³⁹

423. The social cost of protecting jobs is increasing with the changing nature of work: rapid changes put a premium on flexibility for firms to adjust their workforce, but also for those workers who benefit from more dynamic labor markets. Labor regulations set necessary rules—including core labor standards—and can encourage firms to invest in training or can increase workers' commitment to their jobs. However, they impose costs on firms that can hamper productivity.⁴⁴⁰ 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.⁴⁴¹

424. Technology adoption is negatively associated with the strictness of labor regulations, specifically with burdensome dismissal procedures.⁴⁴² Technology-intensive sectors are smaller in countries with stricter labor regulations.⁴⁴³ More stringent regulations are also associated with lower entry and exit of firms—especially small ones—in industries with higher worker reallocation.⁴⁴⁴ Within countries, similar evidence is also emerging.⁴⁴⁵ The evidence on labor regulations shows limited impacts on overall employment, except in the case of stringent laws. However, they can constraint formal employment and have important distributional effects. Importantly, at this time of change, stringent regulations make it costlier for firms to adjust the composition of their workforce, an important condition for adopting new technologies and increasing productivity.⁴⁴⁶ Hiring and dismissal costs, in addition, are associated with longer unemployment spells and fewer moves between different types of work.⁴⁴⁷

425. The challenge is to establish the right balance between workers' protection—including protections for those without a labor contract—and firms' flexibility in the management of their human resources. The tensions are clear in efforts to introduce more flexible contracts in advanced economies, such as “mini-jobs” contracts in Germany, or zero-hours contracts in the United Kingdom. Such contracts are not advisable for developing countries, where informality is still the norm.

426. To address these problems, policymakers need to rethink labor regulations. The flexicurity objective remains vital. Although many governments have made their labor markets more flexible, only a few are making corresponding investments in worker protections that facilitate the reintegration of workers back into work. Reforms can provide firms more flexibility while strengthening social protection, labor market programs and arrangements for expanding workers' voice. Beyond basic regulations, protections would be provided independently of work contracts 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. Thus, this would be a shift from protecting some jobs to protecting all people.

427. One of the policies that needs careful attention is the minimum wage. The original objective of a legislated minimum wage was to ensure a fair remuneration to workers that protects them against abuse from employers when they have higher bargaining power due to limited competition. In this case, the minimum wage can even increase employment. However, in part due to weaknesses in the social protection system, the minimum wage has become a blunt instrument to ensure a minimum level of income. Yet, only a minority of workers across countries benefit from the minimum wage; most informal workers do not.⁴⁴⁸ Even in correcting imbalances in market power, a legislated minimum wage is similarly blunt. It assumes that these imbalances are the same across the board and it is not responsive to changes in market power.

428. In most cases, the minimum wage applies uniformly to firms irrespective of productivity, across regions and sectors, and can affect, depending on the level, (formal) job creation. As a result, many firms—65 percent of formal firms and 82 percent of informal ones in Paraguay, for example—have labor productivity levels that are below the minimum wage.⁴⁴⁹ The minimum wage can also have important distributional impacts, adversely impacting youth, for example. This is an important issue as several countries set minimum wages at high levels: in low-income countries, minimum wages are, on average, 85 percent of the value added per worker; in middle-income and high-income countries, they are around 53 and 30 percent of the value added per worker, respectively.⁴⁵⁰

429. When thinking about alternatives or complements to minimum wages, a first step would be to align firms' and workers' incentives by tightening the link between labor productivity and wages. If the original objective of protecting workers against market power is prioritized, reforms can increase potential benefits of minimum wages. Governments can adopt formulas to guide adjustments to the minimum wage that give more weight to changes in productivity. Regulations can be kept simple and transparent; discretion can be reduced by having an independent body that periodically assesses the level of the minimum wage and its impacts.⁴⁵¹ In addition, governments can consider lower minimum wages for the kind of workers where it is more likely to have negative effects, such as young, first time job seekers.

430. The bargaining power of workers also needs to be strengthened. Labor unions—with a broader constituency and membership—play an important role. So does collective bargaining. Technology, including social media, can make this task for workers associations more effective. For larger firms, for whom there is evidence in advanced economies of increased labor market power, increased scrutiny could be applied to assess the potential adverse labor market effects of mergers.⁴⁵²

431. A more ambitious set of instruments would target, explicitly, the distribution of value added within the firm. Many workers—as sole traders, self-employed or workers in family businesses — are sharing in the profits of firms. Profit sharing—monitored by social partners and firm-level collective bargaining arrangements— can be an attractive alternative to the minimum wage for large firms, which employ most workers and for which the minimum wage is more likely to bind (because they are more likely to be formal). The proceeds from the profit sharing could be deposited into an individual savings account.

432. When rules on firms' hiring and dismissal decisions are too onerous, they can also create structural rigidities that carry higher social costs in the face of disruption. Bolivia, Oman and Venezuela, for example, do not allow contract termination for economic reasons, limiting grounds for dismissal to disciplinary and personal reasons. In 32 countries, the employer needs approval of a third party even in case of individual redundancies. In Indonesia, an approval from the Industrial Relations Dispute Settlement Board is required; in Mexico, the employer obtains approval from the Conciliation and Arbitration Labor Board; in Sri Lanka, the employer must obtain consent of the employee or approval of the Commissioner of Labor.

433. Firms could be accorded more flexibility in managing their human resources contingent on the law mandating proper advance notice and the presence of an adequate system of income protection as well as efficient mechanisms to sanction discrimination. More flexible dismissal procedures when current regulations are stringent ought to be balanced with increased protections outside of the work contract and active policy measures to meet the needs of people who lose their jobs. Otherwise, reducing restrictions on hiring and dismissal decisions would shift an unmanageable risk-burden onto workers. The current approach, however, places too much of this burden on firms and not enough on the State directly. To prevent abuse, ministries of labor can implement audits based on the risk of violating the law and apply penalties on employers found at fault.

434. The provision of financial protection to workers in the case of livelihood disruptions can also be reformed. Severance pay is the most prevalent form of this protection in most low and middle-income economies that have not implemented unemployment benefit schemes. Some countries have, on paper, extremely generous severance pay. For example, after ten years of continuous employment, the statutory severance pay equals 132 weeks of salary in Sierra Leone; 130 weeks of salary in Mauritius, and 120 weeks of salary in Bahrain.

435. Yet, severance pay is an ineffective instrument for income protection since it pools risk at the firm or industry level where shocks can be correlated.⁴⁵³ In addition, employees 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, and would 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.⁴⁵⁴

436. 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, for example, have individual savings accounts for unemployment. Singapore has individual accounts that can be used for unemployment, housing or education.

437. There is a wide variety of employment contracts. In addition to permanent and temporary employment contracts, there are part-time and on-call contracts, contracts for workers hired through temporary employment agencies. In addition, other forms of work, such as employee sharing, job sharing, and online work, are becoming more common. These contracts differ significantly in the degree of employment security, associated working conditions, and the types of benefits provided to workers. Hence, they distort firms and workers decisions.

438. As labor markets become more complex with new forms of work, the design of contracts can become simpler as to accommodate growing diversity. That is, rather than aiming to define in advance as many contracts as working forms emerge, policymakers can aim to define a single core contract resting on a set of uniform basic protections. These protections would include the areas discussed above, as well as core labor standards and protections in terms of work safety. Recent reforms in Italy and Slovenia are an example.⁴⁵⁵ But uniform protections ought to be basic to foster job creation and support the economy in adjusting to the changing nature of work. Workers and employers, supported by strengthened collective bargaining structures, would then negotiate bilaterally benefits above those specified in the base contract.

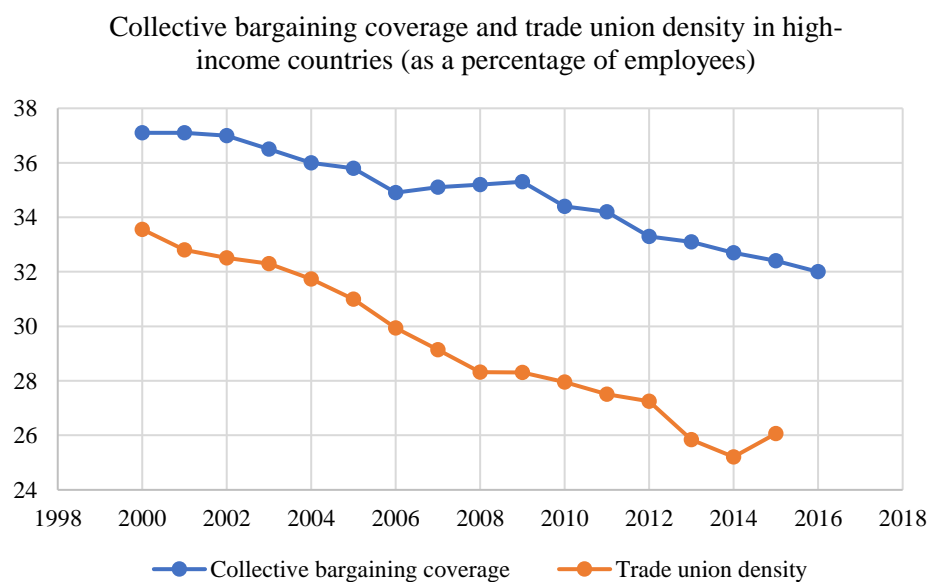
439. As a transition to a uniform core contract, governments would need to ensure that worker protections in the labor code are neutral with respect to working forms. Brazil's 2017 labor code reform moved in this direction. Any benefits that are part of the base contract would also be pro-rated depending on hours worked. A starting point is to do away with regulations that severely constrain flexible work arrangements. In Montenegro, for example, contracts for part-time employment cannot be less than 10 hours per week. In Serbia, the "reference" wage (determining a minimum social contribution) is not adjusted for hours worked.⁴⁵⁶ Reforms are also necessary in terms of working time arrangements. The traditional 5-day, 8 hours per day work week is no longer desirable for some workers.

440. As the industrial-era employment protections are scrutinized, so too need to be 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). Generally, 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 a given employer.

441. Some countries are reforming labor regulations in ways that support firms and workers in adapting to the changing world of work. Italy's recent reforms, for example, have been associated with the creation of more permanent jobs.⁴⁵⁷ But many are not. Between 2007 and 2017, 99 countries initiated reforms in labor regulations. Approximately 48 percent of the reforms made labor legislation more flexible, and 52 percent enforced more job protections.⁴⁵⁸ Notably, 21 countries made the use of fixed-term contracts more restrictive and 17 made severance pay costlier.

442. Finally, there is also a need to strengthen the enforcement of labor laws and mechanisms to expand workers' voice.⁴⁵⁹ Unions and collective bargaining institutions remain important, especially at the level of the firm and given potential unequal changes in information and power. Moving to a simpler, core contract would also require strengthened collective bargaining structures as fewer protections are pre-specified in the law. But their significance is declining: On average across high-income countries, 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 (figure 6.5). In developing countries, given high informality, unions and collective bargaining tend to play a more limited role. Unionization rates vary from between 15 and 20 percent of workers in Brazil, Moldova, Senegal, or Tunisia to less than 10 percent of workers in countries like Ethiopia, Guatemala, Indonesia or Turkey. Countries like South Africa, where almost 30 percent of workers are estimated to be unionized and a similar share is covered by collective bargaining agreements, are an exception.

Figure 6.5. Coverage of collective bargaining and unions is declining in high income countries



Source: Authors' calculations, based on OECD Employment and Labor Statistics.

Note: Figure covers OECD countries. Collective bargaining coverage is calculated among workers that have collective bargaining rights.

443. These institutions need to be updated to remain relevant, reflecting the diversity of working forms and giving much needed voice to old and new actors in the world of work. Including self-employed and informal firms in the social dialogue, for example, would more accurately reflect the range of actors relevant for the future (and present) world of work. In short, countries need to build more representative structures to expand representation at the dialogue table beyond the traditional ‘tri-partite’ model. This model works well within the context of a firm, but less so at the national level where other groups with divergent interests exist. In some developing countries, such as Kenya and Uganda, the informal sector is organized and represented in many national discussions. India’s Self-Employed Women’s Association (SEWA) represents self-employed workers.

444. The most effective arrangements for achieving voice, may not necessarily be linked to the labor market. In the new “Duty of Vigilance” law in France, although not a prerequisite, any concerned party can request that a judge compels a company subject to the law to establish, implement, or publish a vigilance plan that establishes mechanisms to prevent human rights violations and environmental impacts throughout their production chain. Broader means for representation can address some of the political constraints that make labor reforms difficult.

445. Technology can strengthen voice. Digital technologies can improve systems which over-rely on labor inspectors. Digital technologies can 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.⁴⁶⁰ Oman has a Worker Protection Scheme that allows for monitoring wage payments.⁴⁶¹ Social media can play a role in voicing complaints about employers and working conditions, putting pressure on authorities but also on employers due to reputational risks. In addition, governments could, through results-based contracts, outsource to third-parties the development of online platforms for submitting, managing and resolving labor complaints.

446. Given the changing nature of work, as well as the need to improve workers’ productivity, especially among the poor and informal workers, active labor market programs become even more central to policymakers’ toolkit. Governments need to ensure that first time job-seekers, workers who lose their jobs, or those who are working on low productivity jobs have access to proper counseling, training, information about new job opportunities, job search assistance, and migration support. However, most low and middle-income countries spend little on active labor measures: about 0.5 percent of GDP. Only a fraction of the unemployed and inactive population has access to these services, particularly in rural areas.

447. Beyond the expansion of these support programs, it is important to get these interventions right. Many programs have a poor track record. For instance, among 90 youth employment programs that were rigorously evaluated only 30 percent had a positive impact on employment rates or earnings and the effect was small.⁴⁶² While impacts tend to be small in the short-run, these often increase with time as workers raise productivity or are absorbed in the labor market. A recent analysis of these programs also found that programs that emphasize human capital accumulation are particularly promising. So are also programs that focus on women or participants that come from long-term unemployment.⁴⁶³ In judging their effectiveness, however, it is important to keep

in mind what these programs can be reasonably expected to achieve, especially as they often target low-skilled workers in environments of limited labor demand.

448. Hence, there are two challenges that governments face regarding active labor market programs: increasing scale and improving the approach. There are emerging lessons from a range of successful programs that address these challenges. First, the importance of tailoring programs to the specific needs of individuals, recognizing that typical target groups of such interventions—such as youths or women—are far from homogenous. Second, countries need to consider moving from ad-hoc, self-standing, interventions, to an integrated package of services that can be adapted to needs. For example, the evidence suggests that in-classroom technical training for youths is more effective if combined with work experience in the form of internships or apprenticeships.⁴⁶⁴

449. Several of the youth employment programs in Latin America and the Caribbean, and similar initiatives in Sub-Saharan Africa, follow this model. Similarly, the combination of technical training with socio-emotional skills seems to also payoff, including among entrepreneurs. Given the changing skills demands in the labor market, these programs are likely to become increasingly relevant. Third, there is also a growing role for private non- and for-profit organizations in providing active labor services, depending on an assessment of needs. Private providers, paid for employment results, can provide the required support.

Chapter 7: Ideas for a New Social Contract

450. “I am the State” is how Louis XIV expressed his view of the social contract. At the other extreme, Lenin argued that “socialism can only take shape and be consolidated when the working class has learned how to run the economy and when the authority of the working people has been firmly established.”⁴⁶⁵ Not long after the revolution of 1917, ownership of all assets was transferred to workers and peasants.

451. The French Revolution and socialist movements, among others, have all been about a quest for a new social contract. The English *Magna Carta Libertatum* (“the Great Charter of Liberties”) was an earlier attempt to protect individual freedoms against the King. Introduced in 1215, the document influenced the formulation of, among others, the Constitution of the United States. These documents, too, defined a social contract.

452. 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 threat of it. Rulers governed by the so-called ‘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.

453. In most societies, the obligation of the state extends beyond simply providing safety. It includes broad provisions around services, jobs, and public goods. More generally, expectations behind a social contract revolve around the notion of a fair society with protections for everyone’s basic living standards. Governments set the parameters for a fair society where citizens can thrive.

454. Formal elements of social contracts are embodied in legislation debated in parliaments. In democratic societies, prior to such debates a wide consultative period engages academics, civil society organizations, political parties. If adopted, the implementation of legislation is financed by public budgets. The budget process involves another set of analyses, this time on the costs and benefits of proposed changes.

455. Recent examples of substantially new social contracts, or their elements, include Roosevelt’s New Deal in the United States in 1933-35, the adoption of a new constitution in China in 1978, the Balcerowicz Plan in Poland in 1989, as well as the Hartz reforms in Germany in 2003. Cracks on current social contracts are already evident in, for example, the Arab Spring and the backlash against globalization reflected in rising protectionism. The changing nature of work makes it even more urgent to upgrade the social contract.

456. This chapter addresses two questions related to the changing nature of work: If the government is given a mandate to prepare a social contract, what could its basic ingredients be? Related, how could the state finance the package of proposed reforms so that these can be adopted? This exercise sets out a scenario that politicians could consider as part of legislative processes and national consultations involving multiple stakeholders. The package described here is not meant

to be exhaustive. Instead, the discussion lays out an illustrative menu of policies that could ignite a renewed societal dialogue.

457. The sustainability of a social contract hinges on fairness. As Jawaharlal Nehru, the first Prime Minister of India, warned, “... the forces in a capitalist society, if left unchecked, tend to make the rich richer and the poor poorer”. Fears of losing jobs, climbing inequality in some economies, and failure to deal with informality in developing countries are straining the relationship between citizens, firms, and governments. At the same time, social media are raising aspirations, especially among youth. When met, aspirations can foster opportunity and prosperity. But when unfulfilled, they could lead individuals and countries down a track of frustration.

458. “The social contract is broken... there is a culture of not participating, of not caring, of silence”, was one of the voices from areas affected by rampant insecurity in Mexico.⁴⁶⁶ In many developing countries, a dysfunctional social contract may lead to exerting less demand on the state to improve public service provision. As a result, evidence from developing countries suggest that the middle class may sometimes “... send their children to private schools, use private healthcare, dig their own boreholes for water, and buy their own generators”.⁴⁶⁷ Ineffective public services impact the poor disproportionately: a cross-country review shows that in poor urban slums, average water prices charged by private vendors were 4.5 times higher than those by the public network elsewhere.⁴⁶⁸

459. Demand from the middle-class ensures more coverage of services, as both a tax-payer and benefit-receiver. Such involvement of the middle-class may reactivate demand for accountability and better service provision for the broader population, including the poorest. Lack of trust in governments, however, can preempt those virtuous dynamics. For example, evidence from India has shown that farmers who trust the government are more willing to replace energy subsidies (which they benefit from) with reliable electricity provision (which they would pay for). In other words, even those with vested interests may be willing to support better policies when they trust government’s provisions.⁴⁶⁹

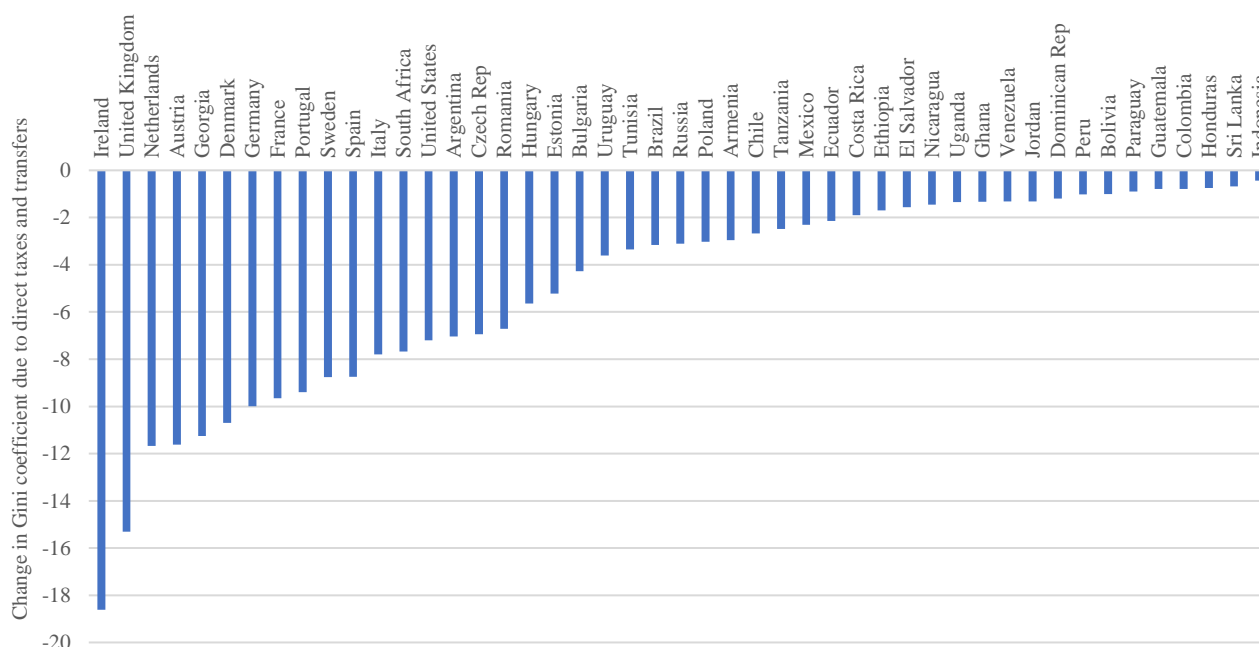
460. Ensuring equal opportunity is central to fairness, but mechanisms to achieve fairness often fall short – especially in developing countries. For example, countries are under-investing in early years, particularly among disadvantaged groups, and an unequal education system perpetuates inequality. In Latin America per capita government spending on children under 5 is one-third that for children 6 to 11. In Sub-Saharan Africa, only 2 percent of the education budget goes to pre-primary education.⁴⁷⁰ Similarly, tax and social protection systems in developing countries redistribute income to a limited extent. This is because both revenue collection and social protection spending are low.

461. Persistently high levels of informality are symptomatic of and exacerbate inequality in societies. Informality stymies social contracts. Informal employment is more than 70 percent in sub-Saharan Africa and South Asia, and more than 50 percent in Latin America. Informal workers are beyond the reach of the state with respect to provision, protection, and redistribution. However, they also miss the obligations to the state, for example in paying taxes. Informality can reflect a lack of trust in the state.⁴⁷¹ Evidence from Latin America shows that inequitable social spending, regressive social protection coverage, and inefficient tax regimes can break social contracts. When

social contracts are found to be unfair or exclusive, informality can become the opt-out option. In other words, high levels of informality can be the symptom as well as the cause of an unfulfilled social contract.

462. Fiscal redistribution is one mechanism through which social contracts can achieve equality of opportunity. The redistributive potential of a country depends on the size and composition of taxes and government spending, as well as their progressivity. For instance, in a sample of 30 developing countries, direct taxes and social transfers contribute to a reduction in income inequality of 0.03 Gini percentage points, compared to reductions of 0.07 points in the United States and 0.09 points in European Union member states (figure 7.1).⁴⁷² Even if contributory pensions are counted as a transfer, with the corresponding contributions considered as taxes, the Gini coefficient would fall by an average of 0.09 points among 22 developing countries, compared to 0.21 points in EU-28 countries and 0.11 points in the United States.

Figure 7.1. Tax and transfer systems in developing countries have limited impact on inequality



Source: Euromod and Commitment to Equity database, and references therein.

Note: Difference in market income plus pensions and disposable income. Gini index ranges from 0 (perfect equality) to 1 (highest inequality). Data are for the most recent year available (for European Union countries, survey data is for 2015; for non-European Union countries, years vary between 2010 and 2014 for most countries).

463. Despite the recent positive trends, inequality remains high in many economies. New elements can be embedded into the social contract to promote equality of opportunity for people and firms. For people, this inclusion entails fostering job creation, as well as making early childhood investments. One estimate suggests that expansion of early childhood development in the United States could reduce inequality by 7 percent and increase intergenerational mobility of

income by 30 percent.⁴⁷³ Impacts are likely to be even higher in more unequal societies. In addition, it means providing a minimum guaranteed income as well as basic protection from rising risks.

464. Beyond some core elements which are needed by all, aspects of a social contract would need to be tailored to country needs. One clear area of customization relates to demographic trends. By 2050, more than half of global population growth is projected to occur in Sub-Saharan Africa. There, annual growth rates of working age population are projected to be over 2.7%.⁴⁷⁴ In contrast, the populations of East Asia and the Pacific are rapidly-aging: more than 211 million people ages 65 and over live in this region, accounting for 36 percent of the global population in that age group. By 2040, the working-age population will shrink by 10-15 percent in Korea, China, and Thailand.⁴⁷⁵ Countries in Sub-Saharan Africa and South Asia, thus, would need to be particularly responsive to the needs of large youth cohorts entering the labor market to ensure the sustainability of the social contract. In Eastern Europe or in East Asia, in addition, social contracts would also need to create, for example, mechanisms to ensure the sustainable financing of elderly protection and care.

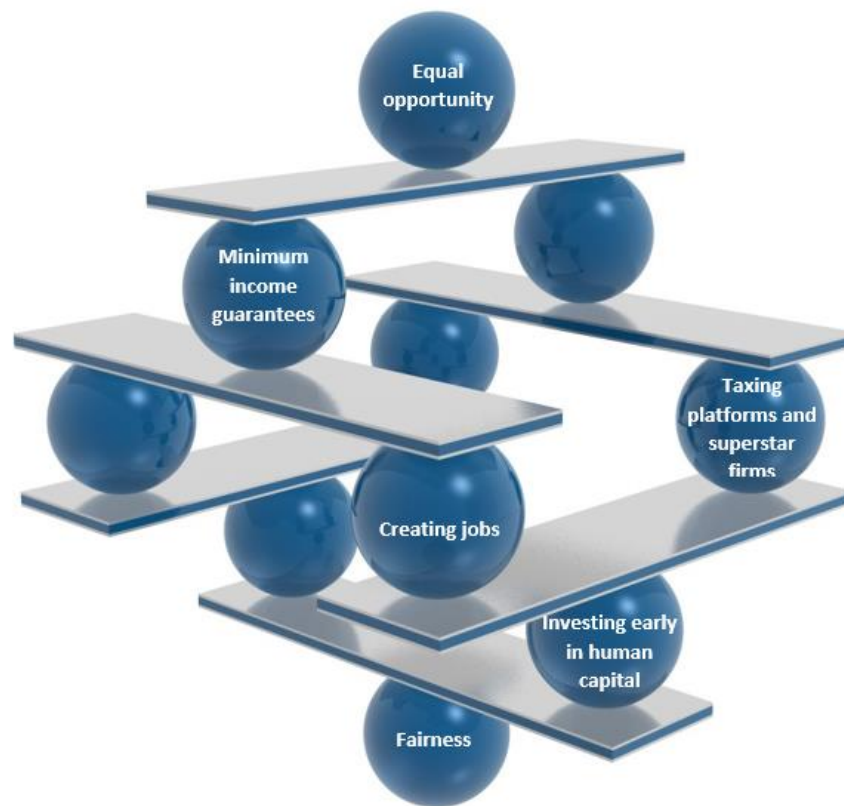
465. For firms, technological change—combined with globalization and other mega-trends—is exposing weaknesses in taxation and regulation systems. Digital platforms have emerged as a global economic force, but they do not pay taxes accordingly. A new social contract calls for a reflection on the international tax architecture to ensure that global firms pay their fair share of corporate taxes in every country they operate. The resulting additional revenues can also finance new elements of the social contract while improving redistribution and strengthening the legitimacy of the social contract.

466. A new social contract would also ensure open social dialogue with diverse actors: from small informal enterprises to superstar firms – and from informal self-employed workers to wage employers – different voices are emerging in the world of work. The social dialogue promotes this diversity. Social media tools open the door for engagement.

Possible Elements of a New Social Contract

467. Social contracts are wide-ranging. So are policies that could feed into them. This section discusses a set of elements that countries could consider when designing their social contract. The objective is to position options discussed in previous chapters within a broader societal framework. This scenario offers further insights on these elements should countries pursue them based on their preferences. Possible elements of a social contract could include: investing early in human capital; taxing platforms and superstar firms; and expanding social protection to provide a socially acceptable minimum income and insurance (figure 7.2). The overall goal of these elements is to achieve equality of opportunity.

Figure 7.2. Elements of a social contract



Source: The authors' calculations.

468. Governments have an important role to play in promoting job creation. Most countries want a mix of policies to support large firms and smaller, nascent enterprises. A job creation strategy can rest on two pillars. First, elimination of economic distortions to facilitate the reallocation of labor towards the most productive firms, encouraging them to grow. Possible policies include improving the general business environment, promoting foreign direct investment, and infrastructure policies. Anti-trust regulation is an important complement to ensure the dominant position of superstars is contestable and that markets remain competitive overall.

469. Second, governments can promote employment growth by supporting entrepreneurship. Start-up and high-growth firms are important for job creation as they typically account for a large proportion of new jobs generated. Easing business regulations and improving connectivity-related infrastructure can support these firms' growth. Successful identification of start-ups that will grow in the future is inherently difficult. That said, some initiatives are more useful than others, such as: business plan competitions, programs that prepare entrepreneurs for being investment-ready, export promotion initiatives, and support services to strengthen input-supplier linkages between small and large firms.

470. Part of the jobs creation agenda in the formal sector includes reducing the cost of hiring workers. This can help firms better adapt their workforce to changing skills demands. As a first

step, countries can relax some of the most stringent labor regulations, especially those negatively affecting low-productivity workers. In many cases, labor regulations—including legislated minimum wages, constraints on hiring and dismissal decisions, and severance pay—make it too expensive for firms to adjust their workforce. For example, in Pakistan the maximum length of a temporary contract, including renewals, is 9 months. The minimum wage is twice the value added per worker (a rough proxy for average labor productivity) in Liberia or Zimbabwe. Third-party approval is needed in the case of the dismissal of even one worker in countries like Angola, Egypt, Honduras or Indonesia. Linking protections to how and where people work leaves unprotected most informal workers. Instead, more flexible labor regulations would come in tandem with enhanced social protection provided independently of the work contract.

471. In most countries, existing social contracts guarantee access to basic education. However, the changing nature of work necessitates a reexamination of this basic contract. Labor market returns to general cognitive and socio-emotional skills that help make workers more adaptable and that complement technology appear to be increasing. This means that unless everyone has a fair shot at acquiring these skills, inequality will increase. 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.⁴⁷⁶ 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 early years ensures that they have the required foundations for developing skills in the future. As skills acquisition is cumulative, returns to early investments is the highest.

472. The changing nature of work makes basic literacy and numeracy essential. These skills are increasingly required for simply navigating life – for buying medication, for applying to jobs, for interpreting campaign promises. The ability to read and manipulate numbers lays the foundation for all future skills acquisition. Consequently, guaranteeing access to basic education is not enough – social contracts need to guarantee actual learning. For too many schooling does not translate into learning. Millions of children in low- and middle-income countries attend school for 4-5 years without acquiring basic literacy and numeracy. A new social contract needs to ensure that schooling leads to literacy and numeracy for all.

473. A social contract on early childhood development could comprise of two elements: (i) support the first 1,000 days of a child’s life in terms of nutrition, health, and stimulation and possibly income support; and (ii) at least 1 year of quality pre-school for every child. Part (i) includes programs for supporting deworming, immunizations, micronutrient supplementation and fortification; and community outreach for monitoring child outcomes, parental education, and support. For Part (ii) quality is as important as access because low quality pre-schools can cause harm. Quality pre-schools are those that emphasize age-appropriate curriculum and well-trained teachers and caregivers. These elements present an integrated package to ensure children receive basic standards of nutrition, health, stimulation, and protection in the early years. The package outlined above only includes basic ingredients towards this end. A more comprehensive package would add items such as pregnancy and birth assistance, child protection services, and investments in water and sanitation.

474. Some countries are already trying to deliver on 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, to monitor and prevent any negative impact on child development. Similarly, Chile's *Crece Contigo* includes a *programa de acompañamiento familiar* that works with families, pregnant women and children under grade 4 who are in situations of health and social risk. France passed a law to ensure that all children have access to pre-school.

475. A social contract on literacy and numeracy would ensure that students master these skills by grade 3 (approximately age 10). Schools around the world expect students to acquire these skills by grade 3 because by this stage students need to read to access the rest of the curriculum. Children who cannot read by grade 3 struggle to catch up—eventually falling so far behind that no learning takes place whatsoever. The core ingredients of this element would include: learning assessments at end of grade 3 to shine a light on those who are at risk; and early grade reading and math assistance for students in grades 1-3 who need additional support. A more comprehensive package would add items including ensuring a pupil-teacher ratio of 40:1 in primary grades.

476. There are good models for supporting literacy and numeracy by grade 3. Research has shown that Early Grade Reading and Teaching at the Right Level interventions are cost-effective and scalable, even in resource-constrained contexts. In Liberia and Malawi, training teachers to better evaluate their students combined with additional materials significantly improved learning in early grades. In Singapore, students take simple screening tests at the beginning of grade 1, and those who are behind in reading receive additional support daily. These approaches are scripted and straightforward. They train teachers to assess their students through ongoing, simple measurement of their ability to read, write, comprehend and do basic arithmetic. Those who need additional support are provided this support through targeted activities and materials. Such models have been tested with success in contexts as varied as India, Ghana, Kenya, or Jordan, and form a basis of precise design and costing.

477. A social contract also requires all actors to contribute their due share in taxes across countries. This is currently not the case. Many large digital platforms—for example, Taobao.com marketplace in China, and Jumia in Nigeria—are a case in point. It is estimated that in the European Union traditional companies have paid an effective tax rate of 23.2 percent, while digital companies pay on average only 9.5 percent in taxes.⁴⁷⁷

478. The platform economy makes taxation of these global firms difficult. Large digital businesses rely heavily on intangible assets (e.g. algorithms that facilitate personalized advertisement). They have few tangible assets (e.g. the largest “hotel”, U.S. company Airbnb has no hotel rooms; Careem, the leading ride-hailing firm in the Middle East and North Africa region owns no cars). Also, they have sales that bear little relationship to where the company has a physical presence, and a significant part of their value is user-generated (e.g. social media).

479. These features may be particularly salient in digital platforms, but they are not unique to these firms. For example, pharmaceutical companies also have many intangible assets, and traditional exporters sale with no physical presence at destination. Estimates suggest that the level of assets sheltered in tax heavens is around 8 percent of global GDP.⁴⁷⁸ This is estimated to cost

around US\$200 billion. The share of financial wealth held abroad ranges from more than 50 percent in Russian Federation and the Gulf countries, 30 percent in Africa and 22 percent in Latin America, to 4 percent in the United States or Asia. More recent estimates suggest that 45 percent of multinationals' profits are shifted to tax havens, causing a loss of 12 percent of global corporate tax revenues.⁴⁷⁹

480. International corporate taxation needs to be updated to keep up with the times. Corporate tax rules are more than a century old. They were devised for the pre-internet era, where physical presence in a country made sense as a base for taxation. In fact, corporate taxation laws were designed for a pre-globalization era where firms could not easily shift income around the world to minimize tax liabilities.

481. Given the preeminence of some of the large global digital platforms, it is not surprising that countries have started to put in place measures to more effectively tax them. The European Commission released a proposal in early 2018 to tax the profits of the digital economy that are generated in member countries, even if a company does not have a physical presence there. The proposal focuses on taxing advertising from U.S. companies such as Google, the fees raised from users and subscribers to services such as Apple or Spotify, and the income made from selling personal data to third parties. An estimated 5 billion euros in revenues a year could be generated for member countries if a 3 percent tax rate is applied.

482. A global agreement on how to tax digital platforms and the strengthening of global rules around reporting are a way to ensure that all firms contribute their fair share. The implementation of the automatic exchange of financial information is an important step. In addition, all multinational companies could be required to publicly disclose, for each country where they operate, basic financial information, such as their sales, profit, taxes paid, and number of employees. These rules could be combined with national measures that strengthen local corporate tax laws and reduce the number of loopholes that allow firms to reduce their tax bill.

483. 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 consider providing an inclusive minimum income, combined with basic universal social insurance, that is decoupled from how or where people work. Such minimum could take many forms. For example, it could be achieved through a multiplicity of programs or by expanding individual interventions. A Universal Basic Income (UBI) is one option that, while untested, could extend, with some modifications, familiar unconditional cash transfer schemes. Each of these modalities present different comparative advantages, fiscal, political, and administrative implications.

484. Low and middle-income countries have made significant headways in social assistance. For example, in Tanzania spending on conditional cash transfers increased tenfold between 2013 and 2016. The program currently reaches 16 percent of the population and claims 0.3 percent of GDP. Similarly, 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. Between 2001 and 2014, the scheme's coverage increased from 1 to 11 million beneficiaries, and absorbed from 0.2 to 1.2 percent of GDP, respectively.

485. Several challenges remain. For example, in high-income countries about 40 percent of benefits remain unclaimed, while in low-income countries over 80 percent of households in the bottom quintile are not covered by social assistance. More and better coverage of social assistance is needed so to provide an inclusive, guaranteed societal minimum. Current experiences offer a wide gamut of tested programs to be considered for scale-up. Other new interventions could also be part of the menu of options, such as a UBI or NIT. Whether existing or new, 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 in the scale up process. Where exactly in the income distribution one becomes a net beneficiary instead of a net payer is a choice that societies can make based on their preferences and capabilities.

486. In addition, social insurance systems that cover, for example, 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 also in advanced economies. As a result, informal workers can lack access to that kind of support. Also, 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 reform could also reduce labor costs as the financing of the system is at least partly shifted away from labor taxes towards general taxation.

Delivering the New Social Contract

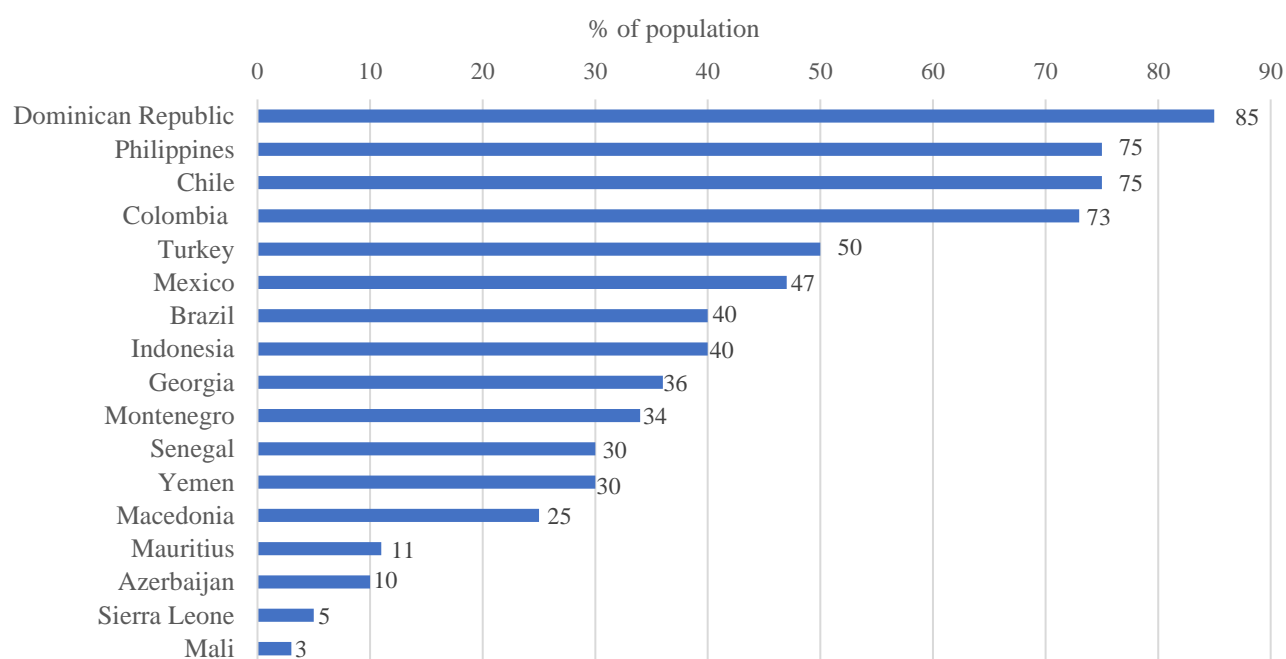
487. Technology leapfrogs a range of implementation challenges inimical to earlier attempts at equality of opportunity. In doing this, it expands the frontier of what is possible in policy. This has brightened the prospects for countries to implement the new social contract. These benefits, however, need to be interpreted in tandem with possible risks, especially in terms of privacy.

488. Technology broadens the reach and inclusiveness of social programs. In Mexico, geospatial mapping tools are used to identify the most vulnerable areas in cities, including at block-level. Mobile phone data was leveraged to construct poverty maps in Côte d'Ivoire. In Benin, GPS-based data collection located households living in urban settlements with no addresses. In France, a digital solution for a social pension program simplified application processes, with take up rates increasing between 22 and 50 percent. Technology can enable students to learn at their own pace. Sophisticated algorithms underpinning programs like Geekie in Brazil and Mindspark in India customize instruction to the level of the student.

489. Digital devices have also delivered assistance in fragile settings. In Lebanon, electronic smartcards provide food vouchers to nearly 800,000 Syrian refugees. In Jordan, the Read to Kids initiative provides refugees with free access to high-quality Arabic reading materials through a mobile application. When schools were closed during the 2014-15 Ebola epidemic, an emergency radio education program was launched in Sierra Leone providing academic broadcasting five days a week.

490. Costs can be reduced by technology. In Argentina, linking 34 social program databases with the unique ID number revealed inclusion errors in eligibility of various social programs. This led to US\$143 million in savings over an 8-year period. In 2016, Thailand eliminated 660,000 applicants out of 8.4 million based on cross-checking databases using the unique national ID number. In Turkey, the Integrated Social Assistance System includes an automatic collection of data on applicants from 21 different databases (including civil registry, employment, vehicle, property, business registry), facilitation of data collection during obligatory home visits to all applicants, and preparation of case documents for the almost 1,000 local social assistance offices across the country. Similar impacts are observed in a range of other countries which have established social registries. However, the share of the population included in these databases varies by country, including from single digits to over four-fifths of citizens (figure 7.3).

Figure 7.3. Share of Population Included in Social Registries, Select Countries



Source: Leite et al. (2017).

491. Technology enhances accountability. In Romania, modeling techniques are used to profile social assistance beneficiary households and their likelihood to commit fraud or display erroneous data. This approach optimizes limited resources for spot-checks and investigations. Similarly, the Dominican Republic embeds machine learning algorithms in its socioeconomic data collection system to flag irregularities. Biometric verification systems to record attendance of teachers in Sindh, Pakistan, have uncovered large numbers of ‘ghost’ teachers. In Yemen, social media are used to solicit feedback on the emergency cash transfer program.

492. The sizable benefits of technology should be carefully weighed against its risks. For example, Equifax, a global information solutions company, lately faced a major cybersecurity

incident affecting 145 million consumers in the United States. The event revealed the names, Social Security numbers, birth dates and addresses of almost half of the U.S. population.⁴⁸⁰ India's flagship Aadhaar system, which stores the biometric information of nearly every citizen, was breached by unauthorized personnel: access to names, email addresses, phone numbers and postal codes was made available after paying for bribes.⁴⁸¹

493. The scale of innovations makes it even more important to have legislation in place for personal data protection. Proper laws are often absent in low income countries. Rules for collecting and sharing personal data should be spelled out clearly. Such principles apply to existing schemes, and the stakes are even higher for programs with universal coverage. Thus, countries need to build capacity for enforcing data security.

494. The sophistication of technology should not exceed local capacities to properly manage it. This benchmark puts a premium on gradually testing and introducing solutions, maintain open communication channels with users, deploying context-appropriate technologies (e.g., higher-tech in cities versus lower-tech in remote rural areas with limited connectivity), establishing solid operational processes, and ensuring robust and scalable infrastructure. Such an approach can improve the ability of society to fully reap the benefits of technology while minimizing the risks.

Financing the New Social Contract

495. Simulations suggest that the component of the new social contract focused on foundational human capital, including investments in early childhood and support for literacy and numeracy by grade 3, would cost around 2.5 percent of GDP in low income countries and 0.8 percent of GDP in middle income countries. These are estimates based on unit costs of fully-costed models in low- and middle-income countries combined with data-driven assumptions on demographic structures and prevailing proficiency rates. These costs may vary across countries depending on programs already in place, demographic structures, input prices, and salary levels of program staff.

496. The lower cost for middle-income countries relative to low-income countries are driven by two factors. First, low-income countries are early in their demographic transitions, so they tend to have on average more children in ages 0 to 10 per capita than middle-income countries. Second, low-income countries tend to have lower proficiency rates in literacy and numeracy by grade 3 on average, leading to greater costs of remedial education. These cost advantages are mitigated to a small extent by higher unit costs (driven by higher salaries) in middle-income countries.

497. Nearly 93 percent of the total costs of the human capital component in low income countries comes from the early childhood investments. This is because these investments include a range of inputs considered crucial for providing integrated support in early years (immunization, deworming, micronutrient supplementation, community outreach for monitoring, education, and support, and pre-school). These investments need to cover multiple dimensions - health, nutrition, and stimulation. Literacy and numeracy support is cheaper in comparison. It includes sample-based learning assessments for grade 3 literacy and numeracy, teacher training, and remedial education for students who are lagging (based on available data on proficiency rates).

498. The costing exercise for the human capital package of the new social contract involves three steps: identifying the unit cost of each proposed element (e.g., cost of immunizations per live birth); identifying the number of beneficiaries for each element (e.g., number of children aged 0-1 that would receive immunizations); and calculating the total cost of each element and the overall human capital component. Given that costs are likely to differ by country; estimates are provided for two scenarios, one low-income country (Mali) and one middle-income country (Colombia). Element-specific unit costs, are derived from rigorous studies of relevant in-country programs (e.g., unit cost of micronutrient supplementation documented by scientific trials in Mali and Colombia) if available. Alternatively, the most recent cost estimates that are appropriate for the country's income level (e.g., cost of deworming for developing countries globally) are considered. In addition, population data are sourced from United Nations World Population Prospects and GDP data from World Development Indicators.

499. The cost of enhancing social assistance to provide a guaranteed minimum would also vary considerably by context and design choices made (table 7.1). Simulations of a UBI serve the function of providing an upper-bound estimate. Currently transfers as a share of the poor's income or consumption are low, i.e., 13 percent and 18 percent in low and lower-middle income countries, respectively. Preliminary estimates for a handful of low and middle-income countries show that a UBI set at such a level would cost nearly 2.5 percent of GDP. However, the average level of current transfers does not lift most poor out of poverty. A UBI with a larger transfer to close the poverty gap, would cost almost 6 percent of GDP in middle income countries; in the poorest countries, the cost of a UBI that eliminates poverty would be double-digit.⁴⁸²

Table 7.1. Estimated Costs of Possible Elements of a Renewed Social Contract (% of GDP)

Income Group	Human Capital Package		Social Assistance Package	
	<i>Basic</i>	<i>More Comprehensive</i>	<i>Basic</i>	<i>More Comprehensive</i>
Low Income Countries	2.5	10.6	11.3	20.1
Lower Middle-Income Countries	1.1	2.3	3.0	4.5
Upper Middle-Income Countries	0.8	3.0	5.1	7.9
High Income Countries	0.3	0.8	4.0	5.4

Source: Authors, based on preliminary results (Gentilini et al. forthcoming; Zheng and Sabarwal 2018). Note: The basic human capital package includes (1) supporting the first 1,000 days of a child's life in terms of nutrition, health, and stimulation and possibly income support; (2) at least 1 year of quality pre-school for every child; (3) learning assessments at end of grade 3 to shine a light on those who are at risk; and (4) 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) pregnancy support; (2) birth assistance; (3) access to safe water and adequate sanitation; (5) a pupil-teacher ratio of 40:1 in primary grades. 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. Estimates are based on a specific country for each country grouping. As such, results are meant to be indicative. Specific numbers indicated above are still being finalized and are subject to further changes.

500. Embarking on such level of spending in low-income countries would be difficult. In those contexts, governments could expand coverage in line with their fiscal capabilities, continue to invest in enhancing delivery platforms and information systems, and do so within a strategy of progressive universalism. This would include measures that ensure that the poor are not excluded from interventions – for example, starting with more modest ‘tapered’ options that can increase coverage as capacities grow.

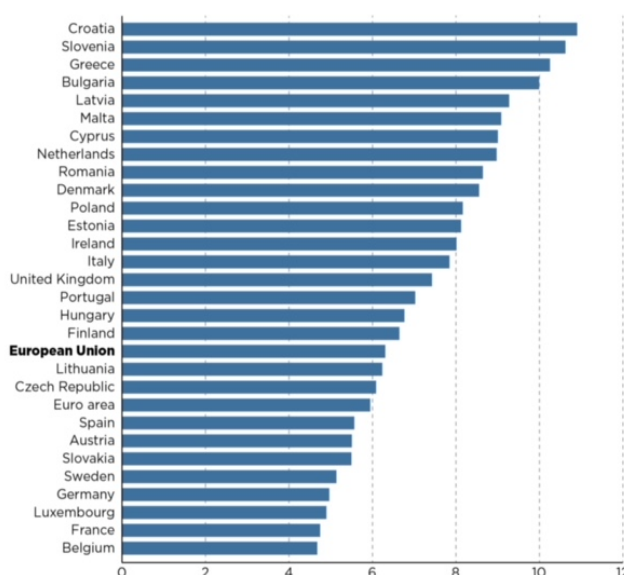
501. Other countries would be better positioned to consider more significant scaling-up options. However, the complexities around political economy of reform are likely to be particularly compelling in higher-income countries, as well as in middle-income countries with vast constellations of interventions like India. These efforts would need to be closely synchronized with social insurance.

502. Given the needs, a new social contract would require additional government revenues. A first potential source of revenue are excise taxes. For example, the average revenue from excise taxes on alcohol and tobacco in the European Union is 0.3 percent of GDP. However, several countries have larger dependence on such taxes: Estonia at 4.8 percent in 2016; Luxembourg at 2.5 percent; the Czech Republic, Ireland, and the Netherlands at about 1.5 percent. Saudi Arabia adopted excise tax regulations in 2017: 50 percent on soft drinks, and 100 percent on energy drinks, tobacco, and tobacco products. The “sugar” tax is a new phenomenon. Croatia has had such taxes on all sugar and coffee-based products since 2014. Ireland approved a “soda tax” set to start in mid-2018, which is around the same time a similar tax takes effect in the United Kingdom. Some of these taxes—such as tobacco taxes—are deemed regressive as poorest families tend to allocate larger shares of their budget to them. However, when looked at it comprehensively, including benefits from lower medical expenses and longer, healthier working lives, benefits far exceed the increase in taxes, with benefits accruing in large measure to lower income households.⁴⁸³

503. Another indirect tax gaining momentum is the carbon tax. Carbon taxes are in place in nearly every large economy apart from Brazil and the United States.⁴⁸⁴ The median carbon tax in 2016 was US\$8 per ton of CO₂ emissions, with wide variance across countries. Sweden charges US\$130 per ton, while Poland charges US\$1 per ton.

504. Most carbon taxes with implications for greenhouse gas emissions in advanced economies are levied on energy products and motor vehicles, rather than directly on emissions. The run-up to the Paris climate change conference in 2015 provided momentum for the adoption of such taxes. The median carbon tax in advanced economies is about US\$8 per ton of CO₂ emissions, but the tax varies widely from US\$130 per ton in Sweden to US\$1 in Poland (figure 7.4). As of 2017, all 28 EU countries levy carbon taxes. Carbon tax revenues as a percentage of government revenue in the European Union started to rise in 2009, during the global financial crisis, and were equal to 6.3 percent of revenue in 2015. The ratio of environmental tax revenues to total revenue varies from over 10 percent in Croatia, Slovenia, and Greece, to about 5 percent in Belgium and France.

Figure 7.4. Share of Carbon Taxes in Total Tax Revenue, European Union, 2015



Source: Djankov 2017.

505. Japan phased in a carbon tax over five years from 2012 to 2016. In 2014, Chile and Mexico approved the first carbon tax in South America, starting with modest levies—US\$5 per metric ton of emissions in Chile and US\$3.50 per ton in Mexico. Although Brazil does not have a carbon tax yet, it levies taxes on fuels. In 2017, Brazil increased the gasoline tax from 12 cents to 25 cents per liter and for diesel fuel from 7 cents to 15 cents per liter at refineries. For ethanol, the tax rate increased from 3.8 cents to 4.1 cents for the producer, and 4.7 cents per liter for the distributors.

506. China and Korea have gone a different way: instead of imposing a carbon tax, they experimented with emissions trading systems in 2013 and 2015, respectively. An emissions trading system works by setting a cap on emissions and requiring emitters to hold a permit for each ton that they emit. The level of the cap determines the number of permits available.

507. China's new emissions trading system covers key industry sectors such as iron and steel, power generation, chemicals, building materials, papermaking, and nonferrous metals. It currently has seven pilot emissions trading systems, which combined form the largest national carbon pricing initiative in the world in terms of volume. Since the start of the pilots in Beijing, Guangdong, Shanghai, Shenzhen, and Tianjin in 2013, and in Chongqing and Hubei in 2014, the designs of some of these systems has evolved—their scope has expanded and their stringency has increased. For example, Shenzhen expanded its emissions trading system to include transport, Guangdong included buildings and transport, and Hubei added 49 large companies to its emissions trading systems. Korea imposed caps on emissions from 525 of the country's biggest companies, creating the second-largest market globally. The World Bank estimates that China's emissions trading systems are equivalent to charging between US\$7 (Beijing) and US\$2 (Shanghai) per ton, while the Korean emissions trading system is equivalent to charging US\$9 per ton.⁴⁸⁵

508. For a third source of revenue, governments can ensure that platform and superstar companies pay their fair share of taxes. This would mean charging platform companies taxes equal to what other companies are paying. This is rarely the case. Evidence has surfaced for several cases where companies use tax havens or direct negotiations with governments to avoid taxation. Regulators with the European Commission are investigating whether Amazon and Apple are getting unfair support from countries such as Ireland and Luxembourg. Amazon attributed more than US\$7 billion worth of sales to the United Kingdom in 2013, but paid only US\$6.5 million in tax. Apple uses an accounting technique known as the “Double Irish With a Dutch Sandwich”, which reduces taxes by routing profits through Irish subsidiaries and the Netherlands and then to the Caribbean.⁴⁸⁶ Google channels most of its European revenue through a subsidiary in Ireland. Google, which generated more than US\$4.5 billion from the UK in 2014, paid just over US\$28 million in corporation tax. On average, Apple, Facebook, Amazon and Google have paid less than one percent tax on corporate earnings in the United Kingdom in 2014.⁴⁸⁷ More generally, the U.S. Government Accountability Office estimates that the tax code allows corporate deductions, credits, and deferrals to the tune of US\$180 billion a year, or about 40 percent of the actual corporate income tax revenue. More than half of U.S. business activity, measured by sales, is conducted by pass-through entities, which do not pay taxes. It is estimated that almost half of multinationals’ profits are shifted to tax havens, causing a loss of 12 percent of global corporate tax revenues.⁴⁸⁸

509. The European Commission’s recent proposal to tax the profits of the digital economy is expected to raise around 5 billion euros per year. Eliminating this preferential tax treatment to platform companies and reducing the possibility for these companies to seek special treatment will go a long way towards financing a new social contract.

510. Fourthly, governments can raise revenues through the value-added tax (VAT). Such taxes do not distort productive activity. They do not penalize the most successful companies and individuals. They are also easier to collect than many other taxes. Not surprisingly, thus, value-added taxes are a significant share of government revenues globally. The value-added tax can be regressive, however, as the poor spend a larger share of their income on consumption than the rich. That said, this is not necessarily the case: among advanced economies, consumption taxes are regressive when measured as a percentage of household income, but are generally either proportional or slightly progressive when measured as a percentage of household expenditure.⁴⁸⁹ In many advanced economies basic food products like milk, bread, and some medical products are exempt from the value added tax, to ensure that the poor can buy these necessities. Among advanced economies, France has the most generous value added tax exemptions scheme.

511. The average value added tax rate in advanced economies in 2017 was 19 percent, with the United States the only OECD country without a value added tax. China implemented a value added tax in 1994 and currently collects nearly 48 percent of its revenues from it. The main rate is 17 percent with a number of exceptions where the prevailing rate is set at 13 percent. Russian Federation charges an 18 percent value added tax, while Brazil charges a base value added tax of 17 percent, and some Brazilian states add a percentage point or two above that base.

512. The largest change in value-added taxation is taking place in India, where a nationwide tax at 18 percent, known in India as the goods and services tax, replaces over a dozen excise duties, services taxes, and interstate customs duties and surcharges, as well as the state-level value added

tax and the interstate entry tax, which are charged as goods cross state borders in India. Of India's 29 states, 22 have already approved the tax legislation and are scrapping tax and customs checkpoints to comply with it.

513. For countries that do not have a value-added tax, introducing one would be a first step. This is the case of Angola, Liberia, Maldives and Myanmar, for example. These countries would follow India and the Kingdom of Saudi Arabia which introduced a national level value-added tax in 2018.

514. For countries that already have a value-added tax, closing tax exemptions and converging toward a uniform tax rate, could raise significant revenues. In countries like Costa Rica, Honduras, the Dominican Republic and Uruguay, for example, tax expenditures related to the value-added tax are estimated to cost more than 3 percent of GDP.⁴⁹⁰ In Vietnam, moving to a uniform VAT rate of 10 percent and significantly narrowing the list of exemptions could increase tax revenues by 11 percent.⁴⁹¹ Additional revenues are likely to come not only from higher taxes on goods or services under 'preferential' rates, but also from higher collection rates overall as the simplification of the system can improve the efficiency of the system.

515. Importantly, eliminating reduced VAT rates and VAT exemptions does not need to be regressive. Simulations for four low and middle-income countries—Ethiopia, Ghana, Senegal and Zambia— show that, although preferential VAT rates reduce poverty in those countries, they are not well targeted towards poor households overall. As a result, a UBI funded by 75 percent of the revenue gains from a broader VAT base —despite being completely untargeted—would create large net gains for poor households and reduce inequality.⁴⁹² Similar results have been obtained in more advanced economies.⁴⁹³ Preferential rates on food or energy, often introduced to support the poor, do provide a proportionately greater benefit to the poor than to the rich. However, often, rich households benefit vastly more in aggregate terms than poor households. Preferential rates introduced with other objectives, as when lower rates are applied to books or hotel accommodations, are, in fact, regressive.

516. Finally, the elimination of energy subsidies is also a potential source of financing. Spending on such measures is generally regressive. For example, in low and middle-income countries, the poorest 20 percent benefit from only 7 percent of fuel subsidies while the richest 20 percent enjoy 43 percent. Also, spending on energy subsidies is substantial. In 2016, global energy subsidies reached US\$260 billion. Pre-tax subsidies constitute over 10 percent of GDP in countries like the Kyrgyz Republic, Venezuela and Zimbabwe, and around 5 percent in the Republic of Congo, Lebanon, Mozambique, Saudi Arabia and Ukraine. When incorporating foregone tax revenues and negative externalities associated with higher energy consumption, subsidies could exceed 15 percent of GDP in countries like China, Mongolia, Russian Federation, and Uzbekistan.

517. Many countries have taken the opportunity of low fuel prices to reform those subsidies. While these measures are generally regressive, their removal without compensatory measures could affect low-income households negatively. A review found that in only 9 out of 28 cases, reform episodes were compounded with the provision of safety nets. This is starting to change. Successful energy subsidy reforms in Iran and India, for example, were accompanied by cash transfers – including with near-universal provision in the case of Iran. In addition, recent studies

showed that in 7 out of 11 reform cases, commitments to reform energy subsidies were combined with an expansion of social safety nets. These include countries like Bangladesh, Egypt, Indonesia, and Jordan.

Consultations and Timetable

518. Simeon Djankov and Federica Saliola are Directors of the 2019 WDR. 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, Consuelo Jurado Tan, and Yucheng Zheng. Michal Rutkowski, Senior Director for Social Protection and Jobs Global Practice, provides overall guidance.

519. The WDR team is engaging in strategic consultations with: World Bank staff, Governments, Executive Directors and advisors, bilateral development partners, international organizations, civil society organizations, and leading researchers.

520. The Board discussion of the Concept Note was held on February 13, 2018. The Bank-wide review of the Yellow Cover draft was held on May 14, 2018; the Board discussion of the Gray Cover draft is scheduled for July 10, 2018. WDR 2019 will be launched in October 2018.

Notes

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- ³⁹⁴ Hanlon et al. 2010.
- ³⁹⁵ World Bank 2018.
- ³⁹⁶ Leite et al. 2017.
- ³⁹⁷ Bastagli et al. 2016
- ³⁹⁸ Brown et al. 2017.
- ³⁹⁹ Lopez-Calva and Ortiz-Juarez 2011.
- ⁴⁰⁰ Dang and Dalaban 2018.
- ⁴⁰¹ Brown et al. 2016.
- ⁴⁰² Desai and Kharas 2017.
- ⁴⁰³ European Union 2015.
- ⁴⁰⁴ World Bank 2018a.
- ⁴⁰⁵ Gwatkin and Ergo 2011.
- ⁴⁰⁶ 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>.
- ⁴⁰⁷ Barr 2012. For other tapered models, see World Bank (2018).
- ⁴⁰⁸ Yeung and Howes 2015.
- ⁴⁰⁹ 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>
- ⁴¹⁰ Browne and Immervoll 2017.
- ⁴¹¹ IMF 2017. See Harris et al. 2018 for a discussion on financing a UBI via VAT.
- ⁴¹² Government of India 2017.
- ⁴¹³ Khosla 2018.
- ⁴¹⁴ Gentilini et al. forthcoming.
- ⁴¹⁵ Gentilini et al. forthcoming.
- ⁴¹⁶ However, substitution could occur through an increase in taxes.
- ⁴¹⁷ Baird et al. 2018.
- ⁴¹⁸ Marinescu 2018.
- ⁴¹⁹ Salehi-Isfahani and Mostafavi-Dehzoeei 2017.
- ⁴²⁰ Birnbaum and De Wispelaere 2016.
- ⁴²¹ Standing 2013.
- ⁴²² Tcherneva 2013.
- ⁴²³ Atkinson 2015.
- ⁴²⁴ Alderman et al. 2017.
- ⁴²⁵ Shiferaw et al. 2017.
- ⁴²⁶ For these simulations, see Palacios and Robalino forthcoming.
- ⁴²⁷ Dorfman et al. 2013.

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- ⁴²⁸ Djankov 2017.
- ⁴²⁹ The EU's latest bi-annual aging report shows that the projected spending in 2050 for the EU has been reduced by three percentage points of GDP reflecting a series of parametric reforms that reduce the value of future pensions.
- ⁴³⁰ OECD Taxing Wages 2017.
- ⁴³¹ Benartzi and Thaler 2004.
- ⁴³² Akbas et al, 2016.
- ⁴³³ Ashraf et al. 2006.
- ⁴³⁴ Thaler and Sunstein 2008.
- ⁴³⁵ NEST by design offers only a small number of simple choices and, partly for that reason, has low admin costs.
- ⁴³⁶ Beyer and Valdes 2004.
- ⁴³⁷ Botero et al, 2004.
- ⁴³⁸ ILOSTAT, accessed 02/27/2018.
- ⁴³⁹ In the language of the World Development Report 2013, when regulations are outside of the "plateau". World Bank 2012.
- ⁴⁴⁰ Acharya, Baghai and Subramanian 2013; Almeida and Aterido 2008
- ⁴⁴¹ Caballero et al 2013.
- ⁴⁴² Packard and Montenegro 2017.
- ⁴⁴³ Bartelsman, Gautier and De Wind 2016.
- ⁴⁴⁴ Botasso et al 2017.
- ⁴⁴⁵ Brambilla and Tortarolo 2018.
- ⁴⁴⁶ Adhvaryu et al 2013.
- ⁴⁴⁷ Betcherman 2012.
- ⁴⁴⁸ The empirical literature, particularly on Latin America, suggests that wages often increase in the informal sector after a minimum wage hike. This has been explained as a "lighthouse effect" whereby the minimum wage is a signal for wage bargaining, including in the informal sector, or as a compositional effect as an increase in the minimum wage leads firms to substitute formal workers for informal ones (Boeri et al 2011).
- ⁴⁴⁹ Palacios and Robalino forthcoming.
- ⁴⁵⁰ Kuddo, forthcoming.
- ⁴⁵¹ Kuddo et al 2015.
- ⁴⁵² Krueger and Posner 2018.
- ⁴⁵³ Holzmann et al 2012.
- ⁴⁵⁴ Robalino and Weber 2014.
- ⁴⁵⁵ Pinelli et al, 2017; Vodopivec et al 2016.
- ⁴⁵⁶ Krstic and Schneider 2015.
- ⁴⁵⁷ Sestito and Viviano 2016.
- ⁴⁵⁸ Kuddo, forthcoming.
- ⁴⁵⁹ Almeida and Carneiro 2011.
- ⁴⁶⁰ Silva et al, 2014.
- ⁴⁶¹ World Bank 2016a.
- ⁴⁶² Kluge et al 2016.
- ⁴⁶³ Card et al 2015.
- ⁴⁶⁴ Kluge et al 2016.
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- ⁴⁶⁹ Alkon and Urpelainen 2018.
- ⁴⁷⁰ World Bank 2018a.
- ⁴⁷¹ Saavedra and Tommasi 2007.
- ⁴⁷² Even if contributory pensions were considered a transfer, with the corresponding contributions considered as taxes, the Gini coefficient would fall by an average of 9 percentage points among 22 developing countries, compared to 11 points in the US and 21 points in the European Union. Moreover, when indirect taxes and subsidies are considered, part of this effort is reversed since indirect taxes are often regressive and the top of the distribution benefits from price subsidies and VAT exemptions and reduced rates.
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<http://blogs.worldbank.org/eastasiapacific/how-can-rapidly-aging-east-asia-sustain-its-economic-dynamism>
- ⁴⁷⁶ Jerrim and Macmillan 2015.
- ⁴⁷⁷ European Commission 2018.
- ⁴⁷⁸ Zucman 2015.
- ⁴⁷⁹ Tørsløv, Wier and Zucman 2018.
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- ⁴⁸² The level of international poverty lines used in the simulations vary by country income categories.
- ⁴⁸³ This has been shown to be the case in Chile and Ukraine, for example. See Fuchs and Meneses (2017a and b).
- ⁴⁸⁴ Djankov 2017.
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- ⁴⁹² Harris et al. 2018.
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