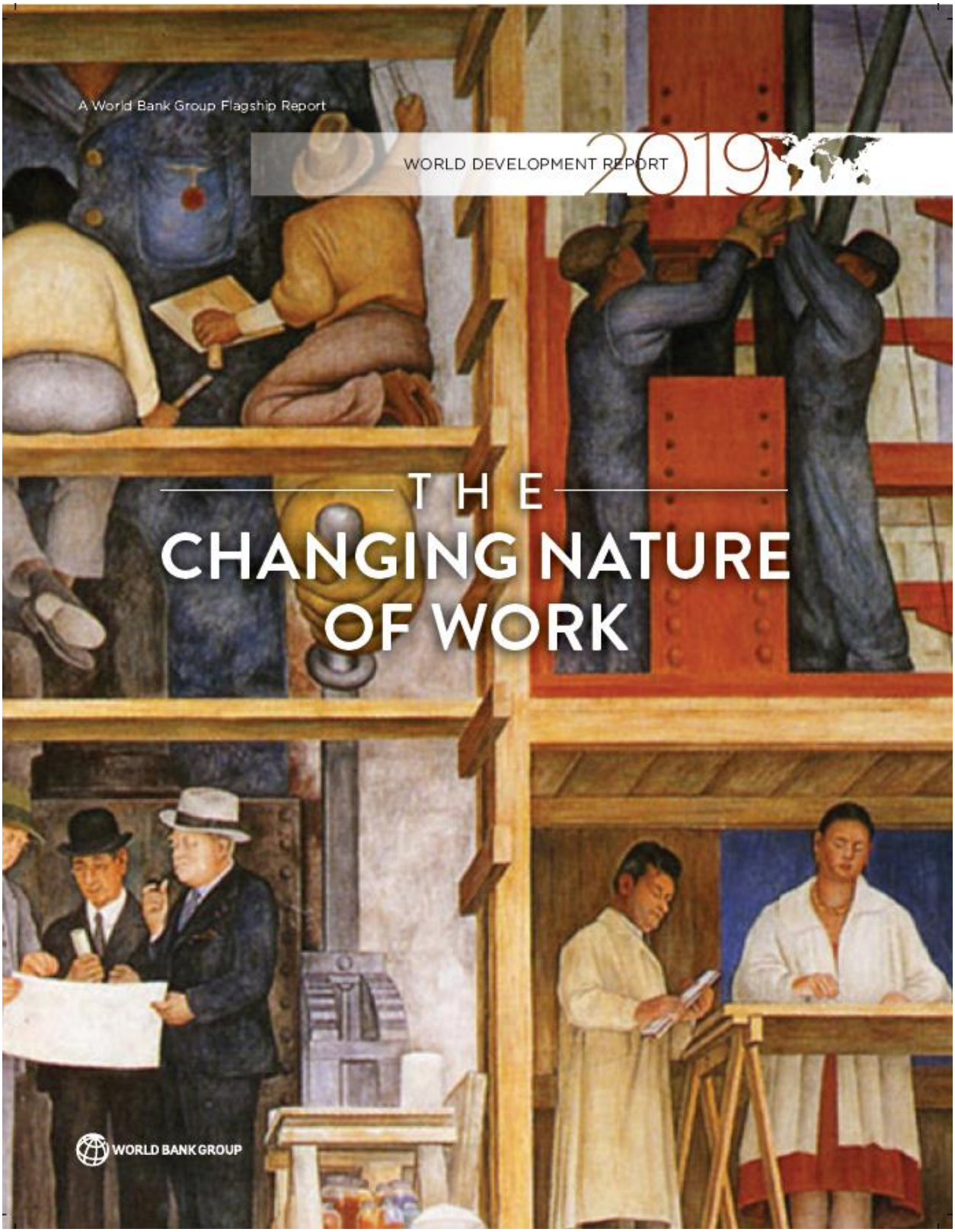
A World Bank Group Flagship Report
WORLD DEVELOPMENT REPORT 2019
THE
CHANGING NATURE
OF WORK
WORLD BANK GROUP

World Development Report 2019

THE CHANGING NATURE OF WORK

Working Draft

June 1, 2018

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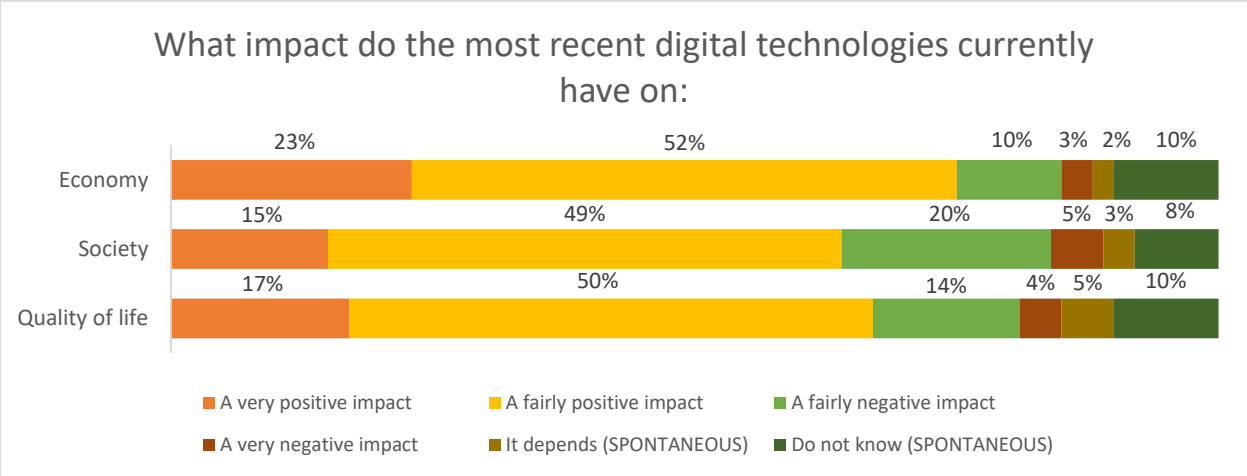
Overview

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. Yet technological innovations have also improved living standards globally. Life expectancy has increased, basic healthcare and education are widespread, average incomes have gone up for most people. The world is better connected, aspirations have risen and 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).

Figure 0.1. Technology improves the European 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.

3. Manufacturing jobs are lost due to automation in a number of advanced economies and some middle-income countries. 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 in advanced economies are pushed into lower-wage jobs or temporary spells of unemployment. As automation erodes the benefits of low wages, formal industrial jobs do not get created in Africa or South Asia.

4. In the changing nature of work, the forces of labor supply and demand collide. In some developing countries, particularly in Africa, the Middle East 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]

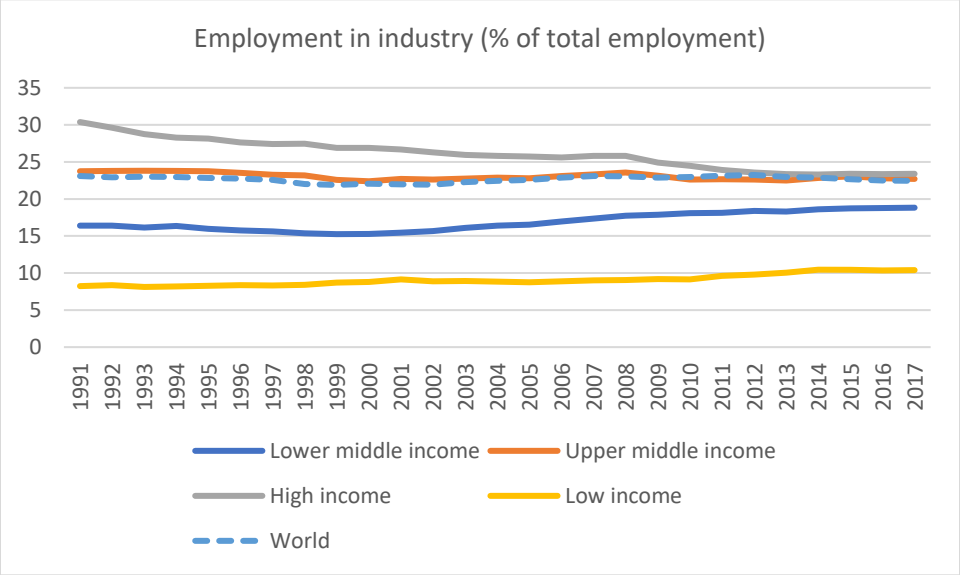
5. The biggest fear is that automation is going to undo the employment benefits of open trade and investment in some developing economies; while not allowing these benefits to accrue in other developing countries. Africa and South Asia may never become the industrial powerhouses that China and Vietnam have become. A further question is whether developing economies can develop an export-oriented service sector. Such development depends on accumulating human capital, building infrastructure for business needs, as well as perfecting the rules and taxes that impact the creation of formal employment.

What is Changing in the World of Work

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

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 like the United States have shed manufacturing jobs, the rise of the manufacturing sector in China and Vietnam 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-studied 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,

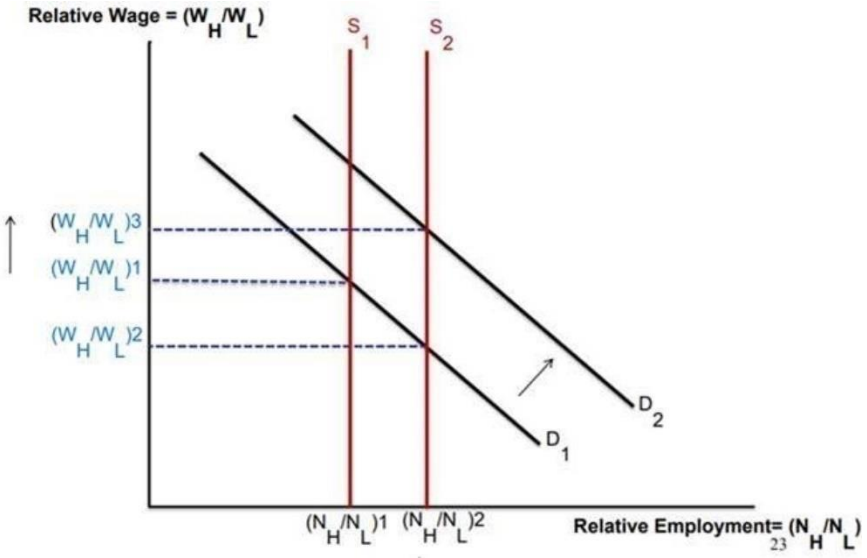
primarily manufacturing, has remained remarkably stable in the rest of the world. In low income countries, from 1991 to 2017, the proportion of the total labor force working in industry has been consistently around 10 percent. The situation was relatively constant in upper-middle income countries, too, 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, 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, these 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. Two forces interact to create demand for industrial products. On the one hand, the decreasing costs of connectivity imply more capital-intensive exports from advanced economies; as well as more labor-intensive exports from developing economies. On the other hand, rising incomes bring higher consumption of existing products. The number of new products also expands. These two forces increase the overall demand for labor. A further effect is the increase in financial returns for those who create new products.

11. 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 (S1 to S2), the relative wage between high-skilled and low-skilled labor is expected to decrease [(WH/WL)1 to (WH/WL)2]. However, the demand for high-skilled labor continues to increase (D1 to D2), resulting in higher relative wage between high skilled and low-skilled labor [(WH/WL)1 to (WH/WL)3].

12. Third, technology, in particular social media, 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 has been rising in a fair number of advanced economies. Inequality rose in 11 out of 30 advanced economies explored. Inequality in most emerging economies has decreased or remained unchanged in the past decade.[5] Specifically, from 2008 to 2015, 37 of 41 emerging economies studied experienced a decline or no change in inequality (as measured by the Gini coefficient). The four emerging economies that experienced a rise in inequality are Armenia, Bulgaria, Cameroon, and Turkey.

13. In Brazil, for example, the Gini measure of inequality declined from 60.12 in 1993 to 51 in 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.

14. 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]

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

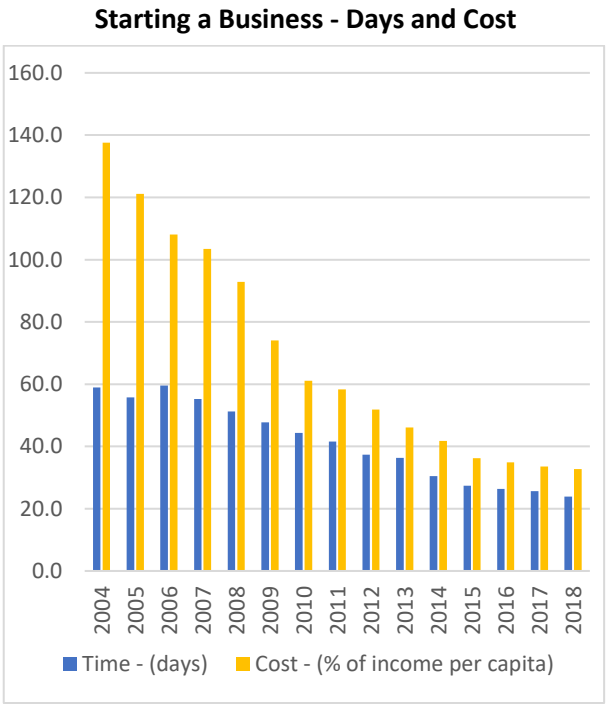
16. Third, workers worry about the rise of the gig economy, where organizations contract with independent workers for short-term engagements. The gig economy provides opportunities for distant or flexible work, but strips workers of many social protections.

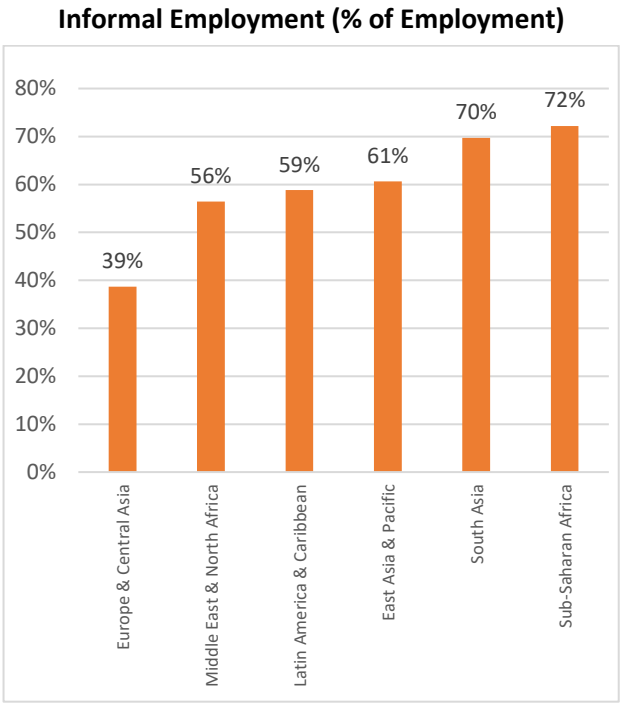
17. How many people work in the gig economy, where organizations contract with independent workers for short-term engagements, is difficult to estimate. Where data exist, the numbers are small. Data from Germany indicates that only 0.8 percent of the labor force is active in the gig economy.[8] Worldwide, 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.

18. 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.

19. Fourth, informality has not been reduced substantially in developing economies over the past two decades. Informality remains high across regions despite improvements in the business regulatory environment (figure 0.4). The share of informal workers 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. In Sub-Saharan Africa informality has on average remained around 75 percent of total employment from 2000-2016. In South Asia, it has increased from an average of 50 percent in the 2000s to 60 percent in the period 2010-2016. Addressing informality and the absence of social protections for many workers across the globe continues to be the most pressing concern for emerging economies.

Figure 0.4 Informality Persists in Most Emerging Economies Despite Improvements in the Regulatory Environment





Source: Authors' calculations using household and labor force survey data from the International Income Distribution Database (right panel). World Bank Doing Business Indicators (left panel).
Note: The figure in the left panel presents the latest available estimates of shares of informal employment for Emerging economies. In the sample, a person is identified as informal worker if he or she does not have a contract, social security, and health insurance; is not part of a labor union. Emerging Economies include all countries within middle and low-income classification. The sample consists of 57 emerging economies. The figure in the right panel is the estimated time and cost of starting a business for 103 emerging economies.

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 developing 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.

- Governments need to enhance social protection. A societal guaranteed minimum and strengthened social insurance, complemented by reforms in labor market rules, work towards achieving this goal.

- Taxation is in dire need of upgrading. Many global corporations, especially among the new platform companies, use tax avoidance techniques to increase their profits. Property taxes

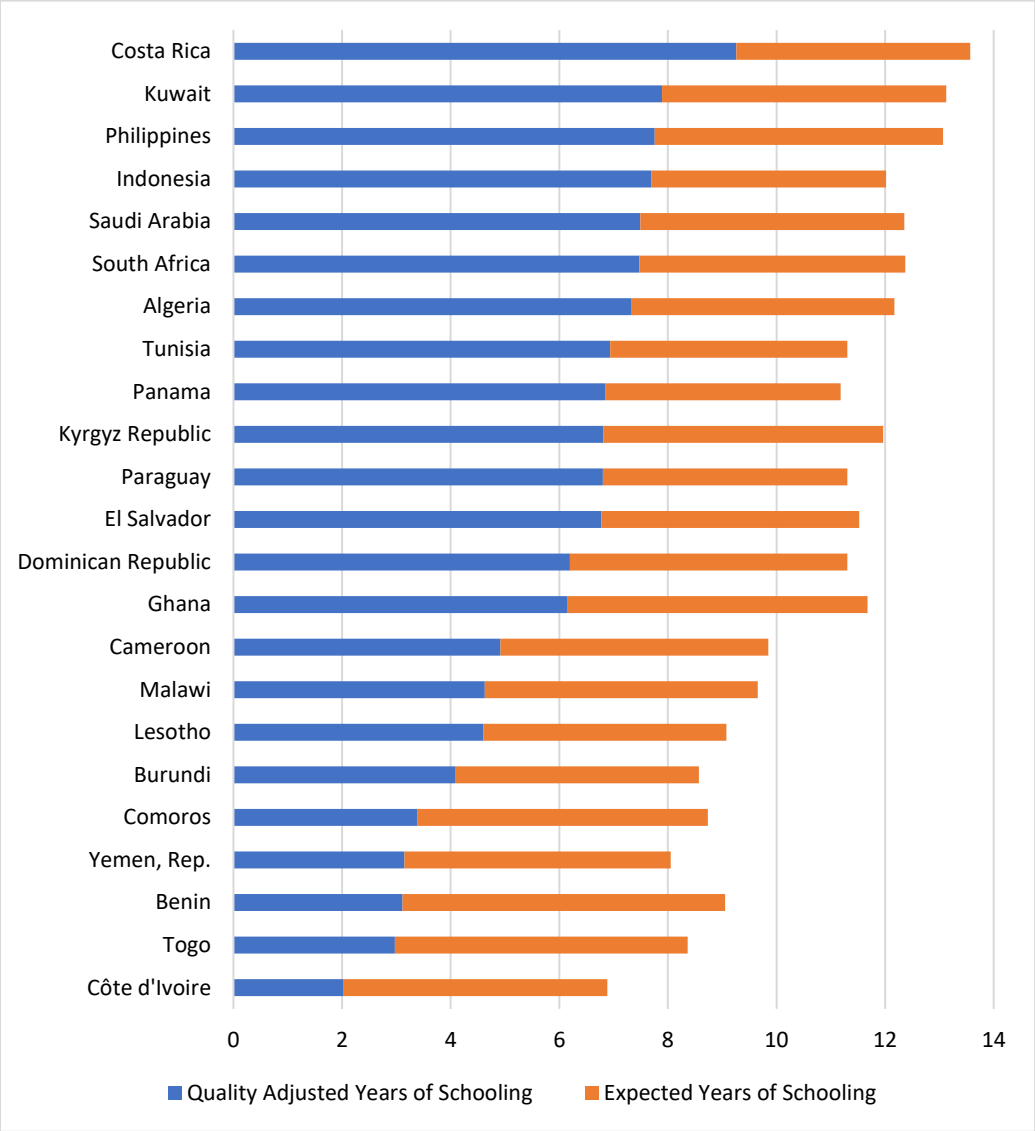
in large cities, automatic links between customs and VAT databases to identify tax evasion, levying carbon taxes are among the ways to increase government revenue.

21. First, the most significant investments that people, firms and governments can make is in enhancing human capital. This is for several reasons. 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 0.5). 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 0.5. 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 address the issue of missing political incentives. By doing so it aims to provide the impetus for enhancing investment in human capital.

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

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

27. 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.

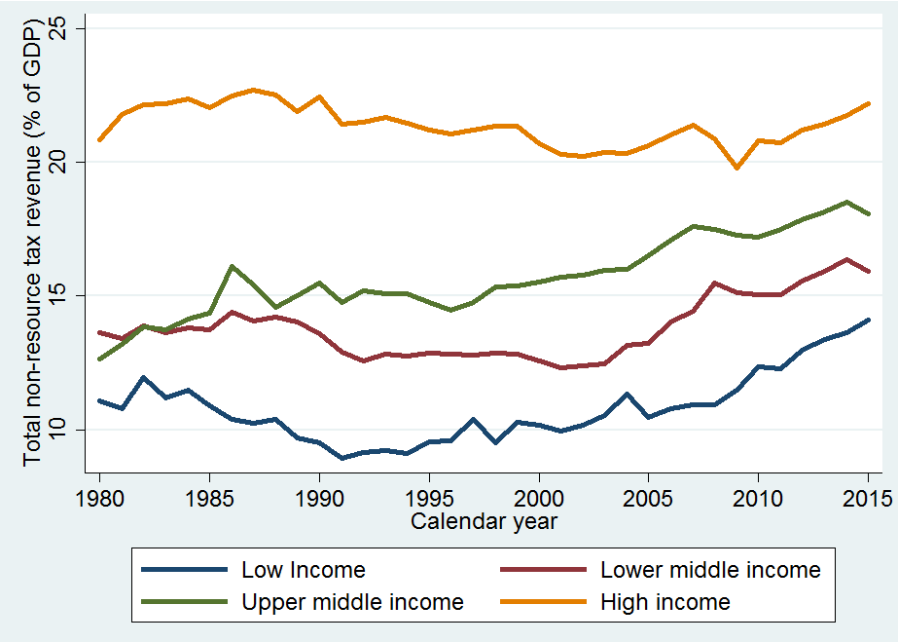
28. Third, rising global incomes have expanded markets, as have digital platforms. But age-old tax avoidance schemes have flourished too. On average, almost 60 percent of the total income of multinationals is reported in jurisdictions with an effective tax rate of less than five percent. The structure 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 US$100–$240 billion in annual lost revenues. Lower income economies are the hardest hit, given their relatively smaller source of personal income and consumption taxes.

29. 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.

30. 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.

31. The share of tax revenue in developing economies is half of the share in advanced economies (figure 0.6). 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 0.6. Tax Revenues Have to Rise in Developing Economies



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

This Study's Running Order

32. 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.

33. 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.

34. 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—where people acquire specific skills that are demanded by the changing nature of work.

35. 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, as well as 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.

36. 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.

37. 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.

38. 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

39. 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.

40. Technology improves overall living standards. 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, 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. Vietnamese workers learned foreign languages when the country began integrating into global value chains.

41. Opportunities are expanding as a result of this technological change. 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.

42. 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.

43. Notwithstanding these opportunities, there is disruption, too. The declining cost of machines puts at risk low-skill jobs around the world that are intensive in 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.

44. 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.

45. The rise of the robot is discussed most frequently in the context of the manufacturing sector. Fears about robot-induced unemployment have dominated the discussion about the future of work. 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. But 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, against the numerous predictions of job losses resulting from technology.

46. Technology is significantly disrupting demand for three types of skills. These are general cognitive skills, job-specific skills, and socio-emotional skills. This is reflected in rising returns to advanced cognitive and socioemotional skills. Globally, private returns to education, at about 9 percent a year, remain high despite the significant expansion in supply. Returns to tertiary education are the highest at almost 15 percent a year.[17] 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.[18] For example, returns to primary schooling in India increased during the Green Revolution, with the more educated farmers adopting new technologies.[19]

47. The disruptive effect of technology does not manifest equally across the globe. 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.

48. Technology can improve overall living standards. However, the process of job creation and destruction works society-wide – and not just for the few – when rules of the game are fair. Workers in some sectors or countries benefit handsomely from the technological progress. In other sectors workers face displacement, having to retool to survive. Platform technologies create huge wealth, but in the hands of few. Although current estimates are overblown, countries may still need to take proactive steps to upskill their workers and develop new comparative advantages in future growth sectors.

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.[20] 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 for every 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.[21] 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.[22] 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).[23] 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.[24] 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.

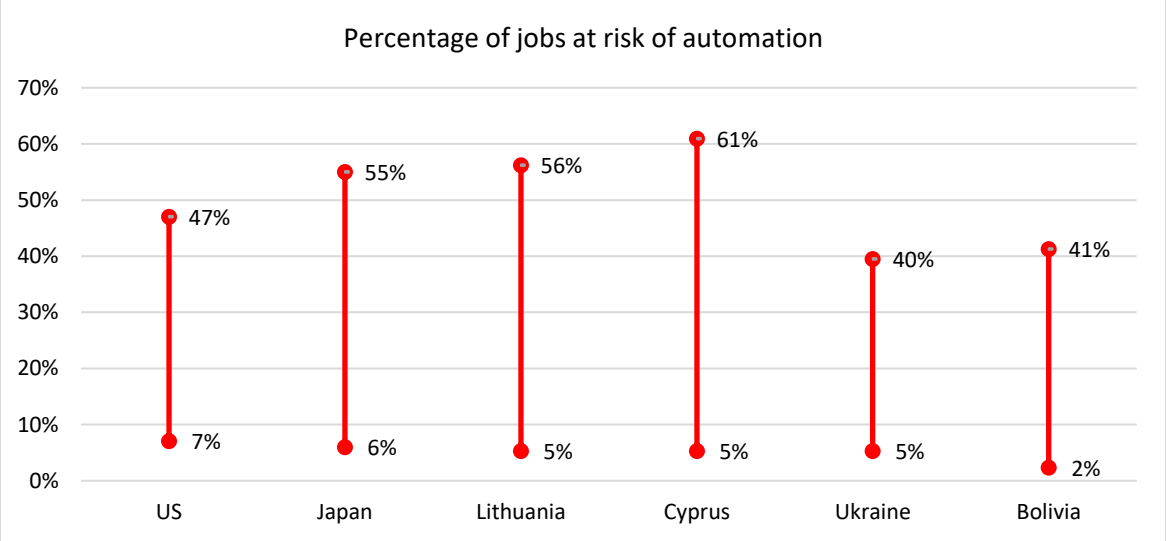
53. Some service jobs are also susceptible to automation. Israeli company Mobileye is developing driverless vehicle navigation units.[25] The Chinese technological giant, Baidu, is working with King Long Motor Group, China, to introduce autonomous buses in industrial parks. South Korea is opening a 360 thousand square meters facility known as k-city, to test driverless cars.[26] 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.[27] "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.[28]

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."[29] 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.[30] 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.[31] 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.[32] 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.[33] 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 from 1999 to 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.[34] JD Finance, a leading fintech platform in China, instead of hiring traditional loan officers, created more than 3,000 risk management or data analytical related 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.[35] 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 annual growth rate.[36] Humans create 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 tools. Once qualified, programmers work with Andela directly or join other Andela clients across the world. It aims to train 100,000 African software developers by 2024. Ninety percent of its workers are in Lagos, Nigeria, with other sites in Nairobi, Kenya, as well as Kampala, Uganda.[37]

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.

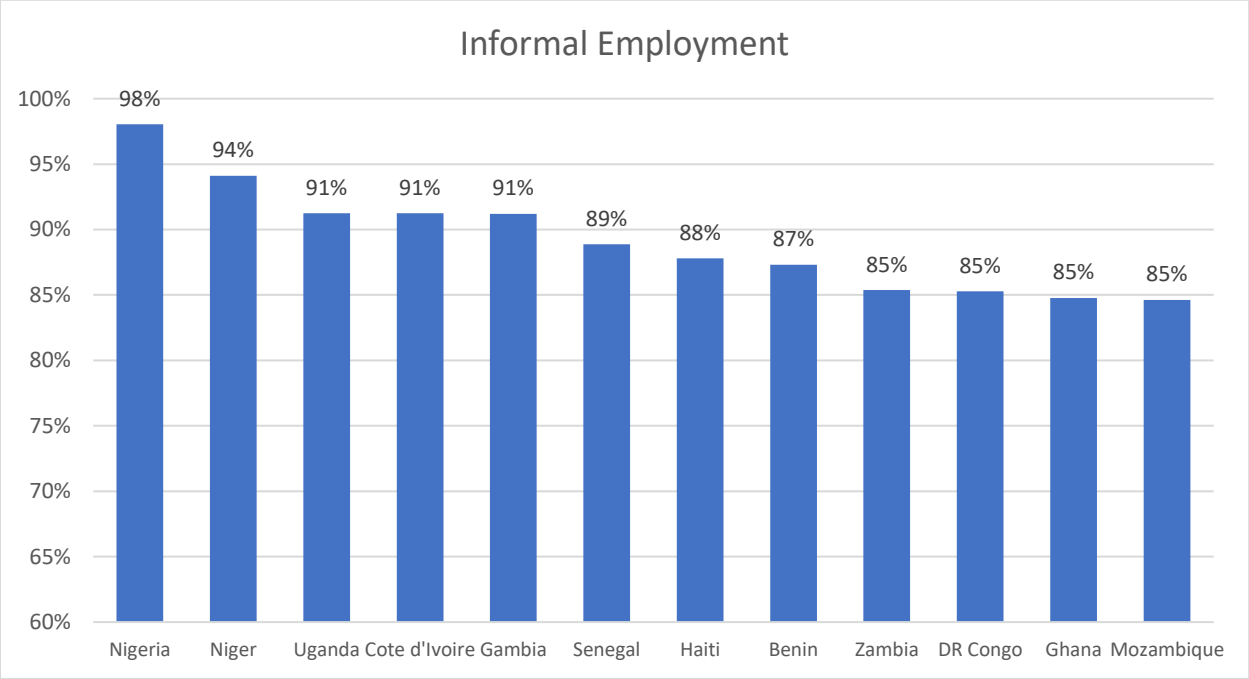
63. Technology increases proximity to markets, facilitating the creation of new, efficient value chains. Farmerline in Ghana is an online platform that communicates with a network of over 200,000 farmers in their native languages via mobile phone on the weather, market prices, while collecting data for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

How the Demand for Skills is Changing

64. 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.

65. 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.

66. 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.[38]

67. Technology is 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.[39] Second, returns to job-specific skills that are routine are declining. Third, pay-offs to combinations of different skill-types appear to be increasing.

68. 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 non-routine analytical tasks earn 23 percent more; those on interpersonal tasks 13 percent more. In Georgia and Armenia, the earnings premium for problem solving and learning new things at work is close to 20 percent.[40]

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

70. 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 but worsened it among unskilled workers. The new technology complemented skilled workers in executing non-routine abstract tasks, while substituted for unskilled workers in performing routine tasks.[41]

71. 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, communication, and problem-solving skills, for example, as the most important set of skills after technical skills.[42]

72. 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, unskilled production workers. This shift led to an increase in the use of routine manual tasks and a reduction in the use of abstract tasks within firms.[43]

73. The changing skills content of jobs has been documented extensively in advanced economies.[44] 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.[45]

74. 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 non-routine cognitive and interpersonal work is rising, there is no increase in low-skilled non-routine manual work.[46] Routine cognitive work has increased in other countries such as Botswana, Ethiopia, Mongolia, the Philippines, and Vietnam.[47] Studies observe, in most cases, that the demand for non-routine cognitive and interpersonal skills is rising much faster than for other skills. High-skilled workers are gaining

with technological change while low-skilled workers—especially those in manual jobs—seem to be losing out.[48]

75. 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 replacement of workers, elimination of occupations, creation of new occupations, as well as decrease in the share of unskilled workers. However, employment levels increased across all skill categories.[49]

76. 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.

77. Improvements in transcontinental communication technologies, along with 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.

78. 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.[50] While sales have been strongest in traditional goods such as apparel, furniture, shoes, luggage, leather goods, and auto accessories, sellers are diversifying their offerings to include high-tech goods such as drones and robots.[51]

79. 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.[52] Forthcoming data shows that in the United States, there has been a significant rise in alternative work arrangements (although not all these jobs are online), from 10.7 percent in 2005 to 15.8 percent in 2015.[53] Bangladesh, for example, contributes about 16.8 percent to the global labor pool online with around 650,000 freelance workers.[54] 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.

80. Finally, technology is changing how people work and the terms on which they work. Rather than "standard", long-term contracts, digital technologies are giving rise to more short-term work, often via online work platforms. These so-called "gigs" make certain kinds of work more accessible to every individual on a more flexible basis. Increased access to digital infrastructure—via laptops, tablets, and smartphones—provides an enabling environment for on-demand services to boom. Examples range from grocery delivery, driving services to sophisticated tasks like accounting, editing, or music production. ASUQU in Nigeria connects creatives and other experts with businesses across Africa. CrewPencil works in the South African movie industry. Tutorama, based in Egypt, connects students with local private tutors. 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.

81. 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- to 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.[55] 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.

82. 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 or 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.

83. 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.

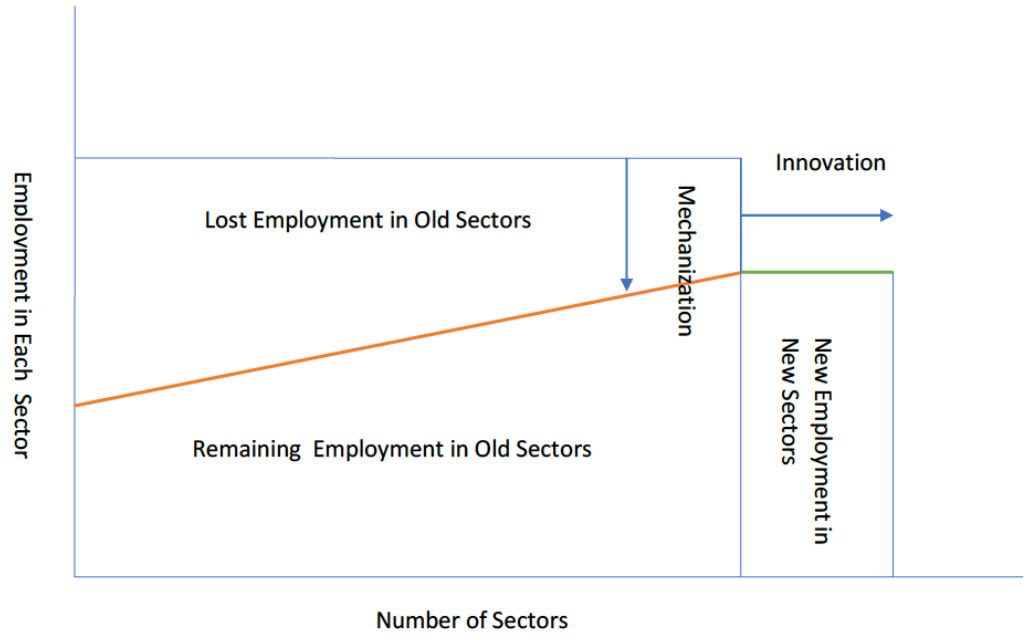
A Simple Model of Changing Work

84. Robots may end up replacing not only factory workers but waiters and accountants as well. What frameworks can help us to think about the future of work, particularly in the developing world?[1]

85. Keynes' predictions that leisure would replace work have not materialized because workers produce and ordinary people consume a much wider range of goods and services in 2018 than in Depression-era England. Employment in the traditional pre-World War II industries has indeed declined enormously, but other sectors have taken their place.

86. These facts suggest that the overall future of work will be determined by the battle between mechanization and innovation (figure 1.3). Employment in old industries declines due to mechanization, while employment in new industries increases due to innovation. The overall impact on employment depends on the race between mechanization and innovation.

Figure 1.3. The forces of mechanization and innovation will shape employment.



Source: Author's calculations.

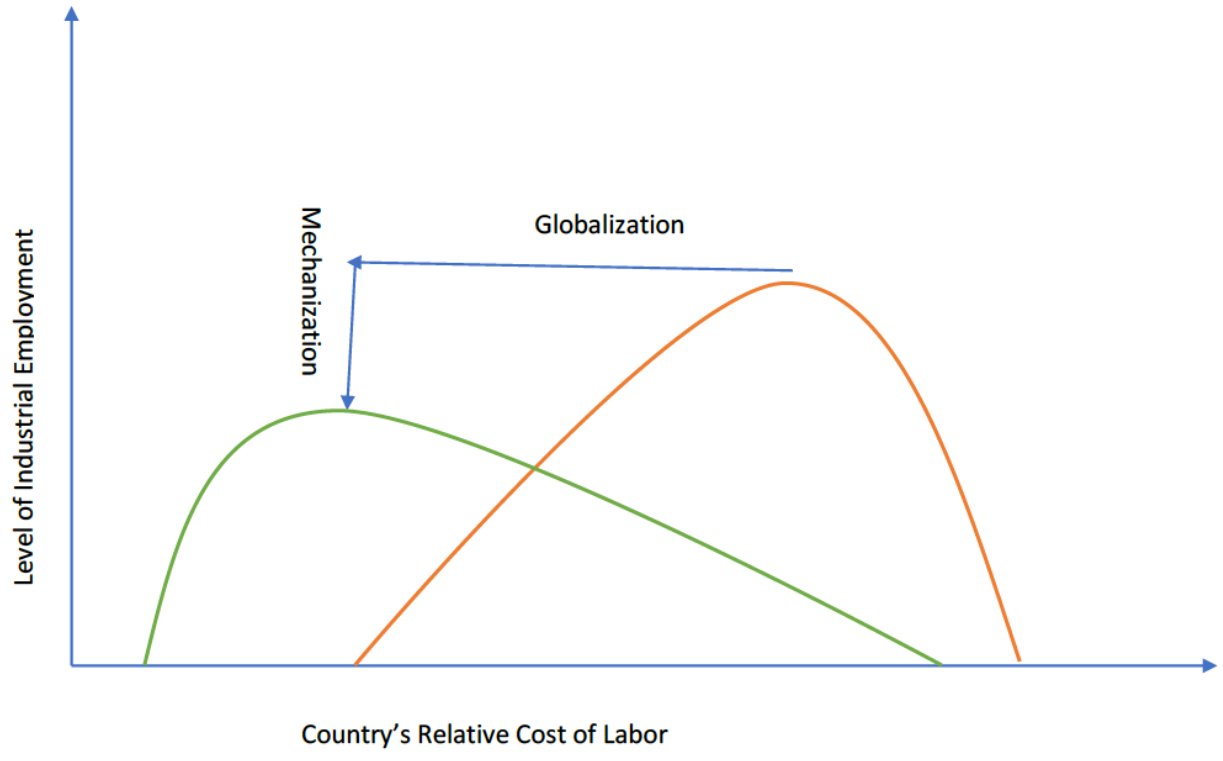
[1] This section is based on Edward Glaeser (2018).

87. Job loss across old industries is not uniform; some tasks and sectors are easier to automate than others. Over the last 30 years, the mechanization process has disproportionately reduced demand for less skilled workers, while the innovation process has generally favored the highly educated. This combination increases inequality but is not an automatic result of change. Both Ford's assembly line and Uber illustrate that innovation can also lead to increased employment of less skilled workers.

88. The battle between innovation and mechanization rages not only in the rustbelt of Europe and the United States, but also in emerging economies. The mechanization of agriculture in emerging economies may represent the largest single shift in work across the planet. If cities in emerging economies do not generate abundant new sources of employment, the mechanization of agriculture may indeed led to widespread joblessness.

89. The growth of employment in emerging economies is also being aided by globalization, but mechanization may mean that Africa may never experience mass industrialization (figure 1.4). Figure 1.4 shows the combined impact of globalization and mechanization on industrial employment across the world. The logic of cost minimization—done explicitly within the firm or implicitly achieved through competition within a market—constantly pushes towards either the replacement of labor by machines or the movement of production to countries with less costly labor. That movement across countries depends on decreasing costs of transportation and connectivity, which is what is meant here by globalization.

Figure 1.4. The impact of mechanization and globalization on overall employment.



Source: Author's calculations.

90. The speed of globalization is determined both by international events and by local investments and policies. Infrastructure and trade policy shape the speed at which a country connects to the global economy. Urban populations are often effectively more globalized than their rural counterparts. Foreign direct investment generates the human connections that make capital flows far more likely.

91. The tremendous income gains experienced in Japan, Korea and China, all started with manufacturing exports which competed effectively because of low labor costs and increasingly efficient transportation. But mechanization means that cities like Shenzhen, which were once synonymous with labor-intensive manufacturing, are now centers of deep capital investment and enormous expertise.

92. The mechanization shift is shown by the downward shift in the overall curve in figure 1.4. Industrial employment will only come to the world's poorest places if globalization outpaces mechanizations. If globalization comes too slowly to Sub-Saharan Africa, then industrialization may not be a plausible path out of poverty. The region will have to find an alternative path for growth.

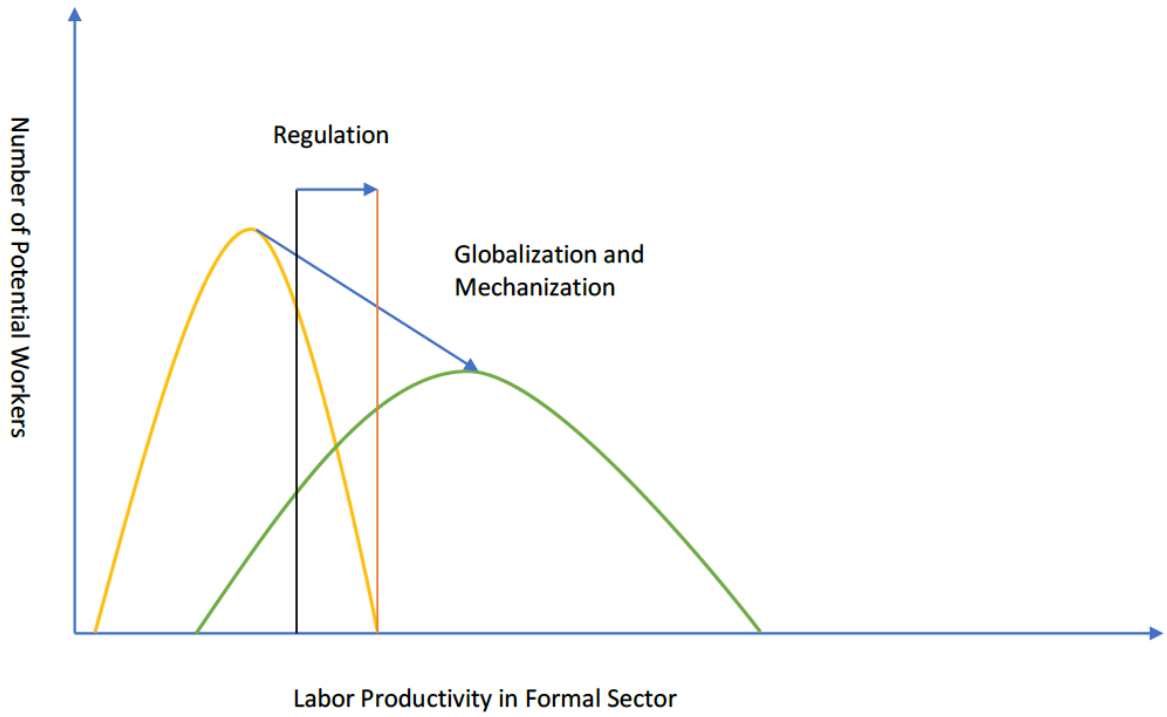
93. Many wealthy regions and nations have their employment overwhelmingly in services, and some of those services can be exported. Yet many services are provided face-to-face and require wealthy clients, which is why the service economy of London is thriving and the service economy of West Virginia is not. If industrialization fades as a possibility for the poor world, we must hope that a new model of service-driven export growth emerges.

94. The shift of the curves in figure 1.4 from left-skewed to right-skewed emphasizes that mechanization will proceed more quickly in places with high labor costs. Yet even though some expensive labor-saving investments may not make sense in low wage areas, many ideas about labor-saving technologies will be exported. Ultimately, those ideas will reduce industrial employment in the poor world.

95. The relative cost of labor, rather than income, is emphasized because some countries can have labor costs that are much higher than their income levels. Countries with low levels of human capital may not have laborers who can provide an export advantage, especially if regulations keep labor costs high for formal employers.

96. Human capital will also shape the productivity and wage distributions within developing world countries (figure 1.5). Globalization and mechanization should act to shift the productivity and wage distributions up, but also to increase the variance, at least in the short run. Workers who have the skills to participate in the global economy will benefit more than workers who do not.

Figure 1.5. The role of human capital in shaping productivity and wages in emerging economies



Source: Author's calculations.

97. The vertical lines in the figure denote the minimum productivity level at which formal firms find it optimal to employ workers. Those lines reflect policy choices, including minimum wages, benefit levels, and other labor regulations, and the value of productivity in the informal sector or outside the workforce entirely.

98. The lower vertical line represents the pre-globalization level of regulation and informal sector productivity, which implies that the majority of workers are in the informal sector. The upward shift in formal labor productivity will tend to move workers out of the informal sector, but there are two forces that will reduce that trend.

99. First, countries tend to impose more requirements on firms as they get richer. Minimum wages rise. Mandated benefits increase. These requirements make hiring less attractive and leave more workers either in the informal sector, or outside the labor force entirely as in many wealthier nations.

100. Second, rising inequality means that there are many workers whose productivity levels remain low despite increasing average incomes. An increase in inequality will generally mean, when most workers are formal, that more workers become informal or jobless. Global increases in inequality don't just mean heterogeneous incomes, but also potentially oceans of the non-employed.

101. There are upsides to many workplace benefits. This discussion does not suggest that labor regulations should be reduced, but only that their benefits should be weighed against any costs associated with reducing the level of formal employment. This discussion does imply, however, that educational investments that reduce the numbers of individuals with very low productivity will lower the number of long-term non-employed. Such educational investments will also increase the size of the formal sector.

Chapter 2: Building Human Capital

102. 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.[56] In 1980, only 84 out of 100 children reached their fifth birthday, while in 2018, nearly 94 out of 100 do. A child born in the developing world in 1980 could expect to live for 52 years, in 2018 this number is 65 years. In fact, a girl born in South Korea in 2030 is expected to live more than 90 years.[57]

103. However, a large unfinished agenda remains. Nearly a quarter of children under 5 are malnourished.[58] 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.[59] 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.[60]

104. 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."[61] This is still true in 2018.

105. 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.[62] 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.[63] Other dimensions of human capital also count. There is well-established evidence that when people are healthier, they tend to be more productive.[64] In Nigeria, a program providing malaria testing and treatment increased worker earnings approximately 10 percent in just a few weeks.[65] A study 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.[66]

106. 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, improves people's physical and mental well-being.[67] Evidence from the United Kingdom shows that providing a healthier diet for school children significantly increased their achievements in English and Science.[68] In a multi-country study, both underweight and obese children had lower IQ scores than healthy weight children.[69] 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.[70] 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.[71]

107. Human capital benefits transcend private returns.[72] 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.[73] 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.[74] In Pakistan, children whose mothers have even a single year of education spend an extra hour a day studying at home.[75]

108. 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.[76] This fraction could be even higher if we take into account the quality of education and the interactions between workers with different skills.[77]

109. 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 settlements continue to have higher school attainment, a progressive shift of employment from agriculture to manufacturing, and higher per capita income.[78]

110. Returns to human capital may be even higher during periods of high uncertainty. During the Green Revolution in India in the 1970s-80s, it was the more educated farmers who could adopt new technologies.[79] In Mexico, the benefits of increased labor productivity resulting from the North American Free Trade Agreement were concentrated among more skilled workers.[80] Not surprisingly therefore, ongoing technological disruptions have increased the premiums on human capital. Firms with a higher share of educated workers do better at innovating and exploiting new technologies.[81] At the economy level, human capital is positively correlated with overall levels of research, innovation, and the adoption of advanced technologies.[82] 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.[83]

111. In the current era of rapid technological change and attendant uncertainties, human capital is more important than ever before. Despite higher supply of schooling, there has been an increase in the returns to schooling since 2000.[84] Those with higher human capital can both adapt faster in the face of technology-induced uncertainty. They can also better complement new technologies, an ability that is increasingly important. Future success depends on working with machines, instead of fearing them. It takes human capital to do this well.

112. As the importance of human capital becomes clearer, our understanding of what it is 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.[85] 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.[86] In addition, cognitive and socio-emotional skills reinforce each other. Providing mathematics-based games to preschoolers in India generated enduring improvements in students' intuitive abilities.[87]

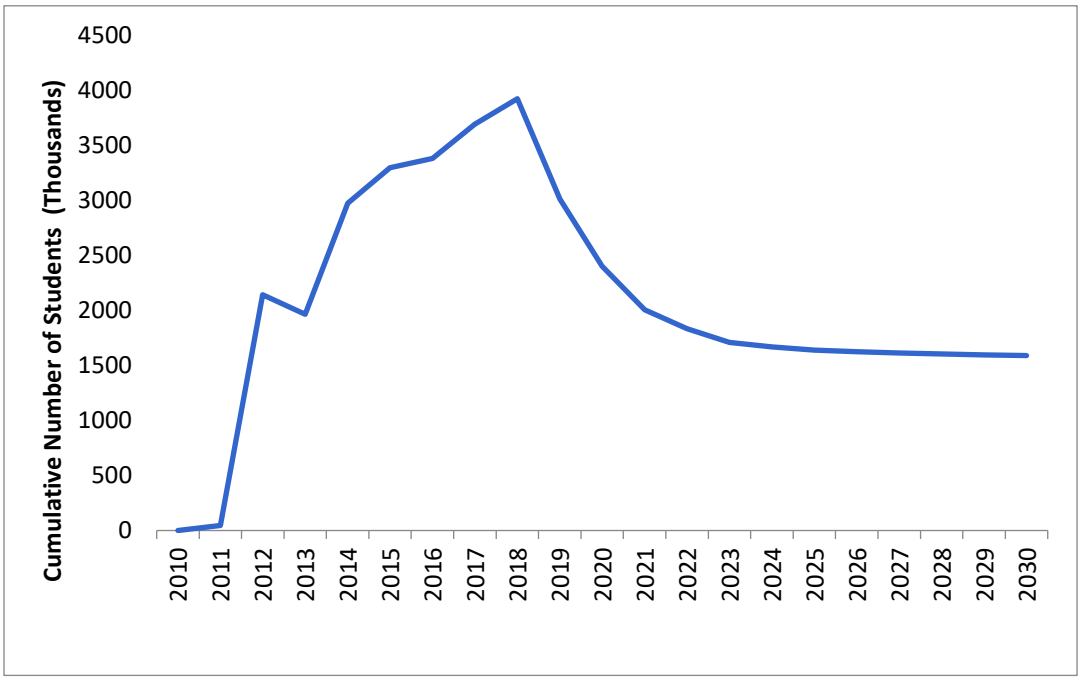
113. Human capital matters not just for individuals, but also for societies. For example, in the mid-1970s, Nigeria introduced universal primary education, sending a large cohort of people through primary school who otherwise would not have gone. Years later, those same people were found to be more engaged in political life. They paid closer attention to the news, spoke to their peers about politics, attended community meetings, and voted more often.[88] Human capital can also play an important role in generating trust and building "social capital."[89] Social capital in turn is associated with a number of positive societal and economic features, including higher economic growth.[90] 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.[91]

114. Increased human capital reduces crime.[92] In Mexico, high school dropouts are significantly more likely to be caught up in the violence of the war on drugs.[93] In Liberia when men at risk of committing violence were enrolled into a cognitive behavioral therapy program intended to stimulate skills such as recognizing emotions, they 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.[94]

115. Conversely, failing to protect human capital might affect societal cohesion negatively. 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.[95] 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.[96] 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.[97]

116. Human capital is also one of the first things to suffer in fragile societies. 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.

117. 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.[98] 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.[99] 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.[100]

Why Governments Need to Invest

118. 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 cannot afford to invest in better health and education for their children even when they want to. This is clearly seen in how families spend their money once budget constraints are even slightly relaxed. In Sierra Leone, only 3-4 months after the introduction of public works, participating families significantly increased their spending on health services, especially for children.[101]

119. 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.[102] 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 aged 10-22 months and improve mothers' knowledge about the benefits of breastfeeding.[103] 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.[104]

120. 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.[105]

121. 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.[106]

122. 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 about US$7-12 for each dollar invested.[107] Without government intervention or incentive, families might not choose to invest enough in these types of programs.

Why Governments Often Fail

123. Despite the important role for public action, governments often fail to deliver for two reasons. First, because politicians do not have sufficient incentives to pursue technically sound policies. Second, because bureaucracies do not have the capacity to deliver.

124. 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.

125. As a result, they might underspend or favor spending on the politically visible aspects of human capital[108] 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.

126. 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,[109] 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.[110]

127. Governments fail to deliver in two ways. The first, more obvious, failure is that of not investing sufficiently in human capital.[111] The second, less obvious but much more pervasive, is the failure that comes with investing inefficiently in human capital. This happens when governments spend resources but these resources are 'wasted' because they fail to translate into tangible improvements human capital outcomes. Most countries invest a significant share of their budgets in education and health. However, 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.[112]

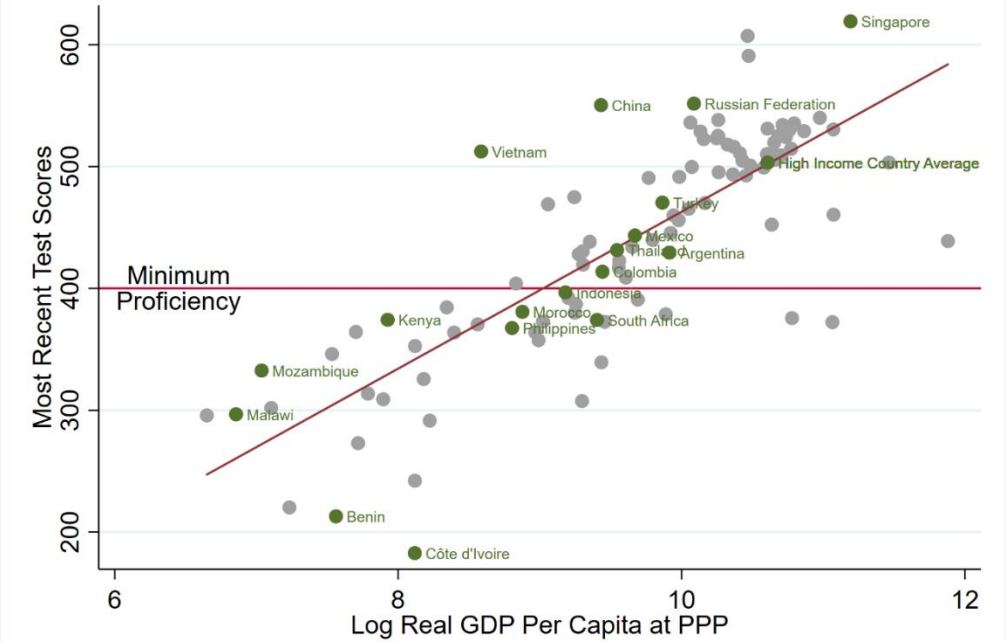
128. One reason for lack of effectiveness is that human capital investments often do not reach the poorest. In many countries, the richest 20 percent of the population benefit 5-10 times more from public education resources than the poorest quintile.[113] But it is not just the gaps in spending. Even when spending happens, resources are often used less effectively when it comes to poorer communities.[114] Gaps in spending and quality of service provision for the poor show up as gaps in outcomes. 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.[115] In India, infant mortality rate among the poorest versus richest wealth quintiles is 82 and 34 per 1000 births, respectively.[116] Human capital investments thus has the effect of widening social gaps rather than closing them.

129. 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.[117] In fact, the fraction of childhood spent in a high-poverty area is negatively correlated

with outcomes such as high-school completion.[118] Every year spent in a better area during childhood increases college attendance rates and earnings in adulthood.[119]

130. 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



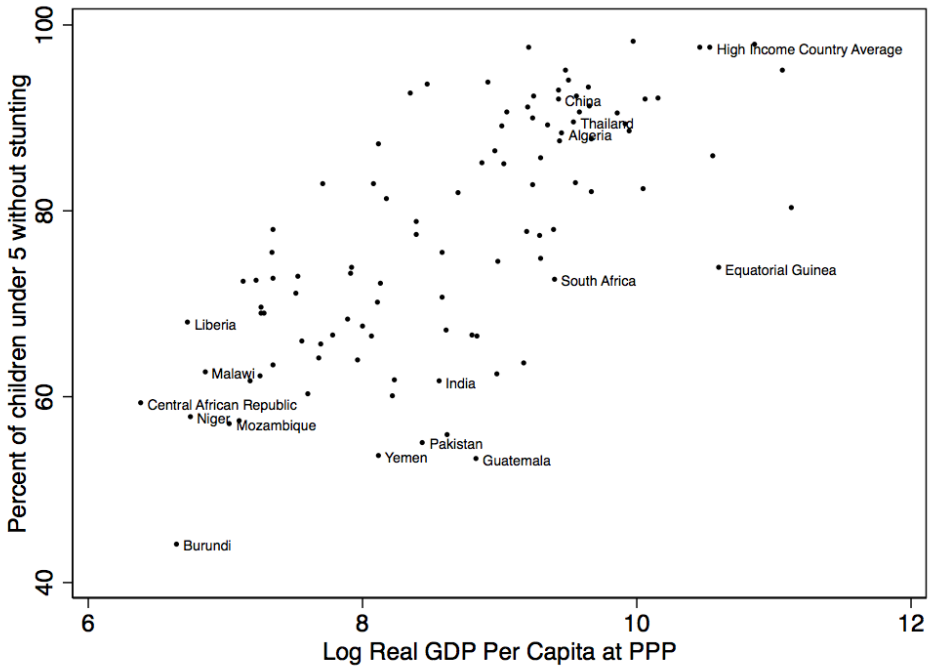
Source: Authors' calculations. Data for China refer to PISA tests administered to students in Beijing, Shanghai, Guangdong and Jiangsu.

131. 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.[120]

132. 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.[121] There is well established evidence that health in early life has a long term impact on individual well-being.[122] Nevertheless, stunting

rates—one of the 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 their age,[123] 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.[124]

Figure 2.3. Percentage of children under 5 without stunting



Source: UNICEF, WHO, and World Bank 2017.

133. 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.[125] 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.

134. 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.[126] The World Bank's own Service Delivery Indicators, released around the same time, shone a spotlight on the low levels of teacher competence and high levels of absenteeism. Together, these results led to

substantial public outcry and the introduction of Tanzania's "Big Results Now" initiative, a government effort to track and address low levels of learning. The World Bank has been supporting these reforms through a program linked specifically to learning outcomes, which is already leading to tangible results.

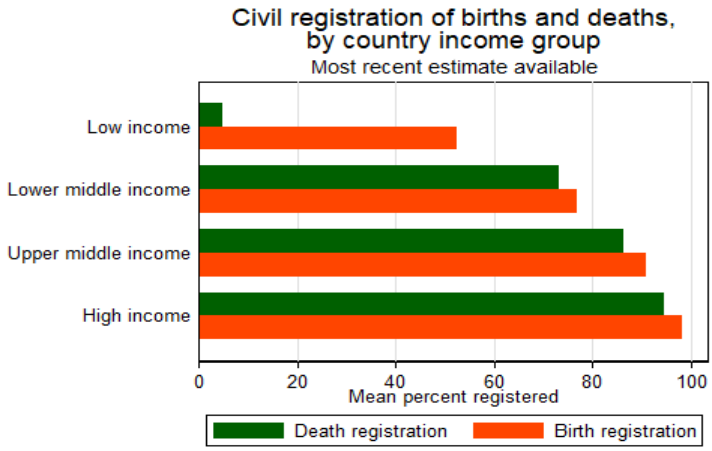
135. Better information can also provide technical guidance for policy reforms. A review of community accountability interventions in public sector primary schools in low- and middle-income countries identified 11 mechanisms through which these operate to improve school performance.[127] These types 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.[128]

136. In a resource-constrained world, it is also important to understand whom to target first. Carefully evaluated pilots improve the planning around targeted scale-ups. 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, as well as cognitive development than children in villages without the project.[129]

137. However, information on human capital outcomes is scarce. In education, only 1 in 6 governments publish annual education monitoring reports.[130] 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.

138. Monitoring of even the most basic health information—births and deaths—is inadequate in low- and middle-income countries (figure 2.4). 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.[131] 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.

139. 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.[132]

140. 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 set of common questions to include in learning assessments, to allow results to be harmonized across different tests.

141. 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.[133] 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.

142. 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.[134] 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.[135] An emerging body of research shows provider effort and competence as two critical factors driving poor quality in health.[136] Similarly, unqualified, unmotivated teachers are detrimental to student learning.[137]

143. 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.[138] 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.[139] 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.[140] 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

144. 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 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.

145. 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.

146. The goal of the HCI is to quantify the most important 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.

147. 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.[141]

148. 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.

149. 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.[142] 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.

150. The HCI is measured in terms of the productivity of the next generation of workers, relative to the benchmark of complete education and full health. This gives the units of the index a natural interpretation: a value of x for a 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	*Contribution to Productivity*	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	*Contribution to Productivity*	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	*Contribution to Productivity**	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 microeconometric 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 x B x C

151. 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: first, direct effects of higher worker productivity, and second, indirect effects reflecting greater investments in capital induced by having more productive workers.

152. 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

153. 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."

154. Automation, platforms, and social media are reshaping not just work but the skills needed for work. Demand for transferable cognitive skills[143] and socio-emotional skills[144] seem to be increasing. Demand for narrow job-specific skills has become more uncertain.[145] These changes are happening in most countries—and they are happening fast.[146]

155. As the demand for skills changes rapidly, two concerns are heightened. First is inequality of opportunity. Job polarization—the expansion of high- and low-skill jobs coupled with the decline of middle-skill jobs—is well documented in many advanced countries.[147] Whether these changes will unfold in the developing world in the same way remains to be seen. Evidence of creeping job polarization has emerged in countries such as Indonesia, Mexico, and Brazil.[148] A second concern is the trade-off between skill adjustments in the current workforce versus skill adjustments among those who enter the labor market in the next decade.

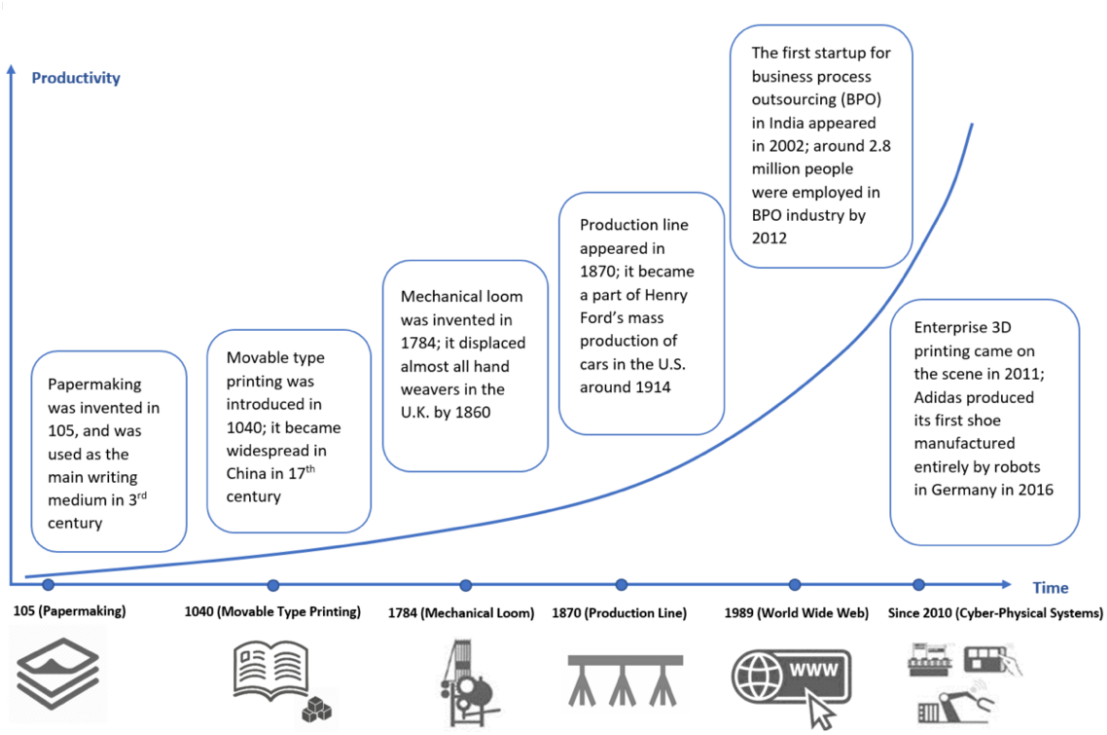
156. How well countries cope with these concerns depends in part on how the supply of skills shifts in response to rapidly changing demand. A significant part of this supply re-adjustment is happening outside compulsory education[149] or formal jobs. Three domains—early childhood, tertiary education, and adult learning outside jobs—are increasingly important in meeting the skill demands of future labor markets. Together, they highlight the idea that labor market skills, more than ever before, are a matter of lifelong learning. In a rapidly changing world, people need several opportunities to re-skill or up-skill throughout their lifetimes. Lifelong learning aligns not just with the changing nature of work; but also with the changing nature of populations. It is a part of the skills re-adjustment for the rapidly aging populations of East Asia or Eastern Europe and also for the large youth bulges in Sub-Saharan Africa and South Asia.

157. Shifts in skills demand are likely to be different in different contexts. It will depend on factors such as level of development, demographic trends, and degree of globalization. However, some patterns are detectable. With technological change, the returns to some job-specific skills have increased, but for some are declining somewhat dramatically. For example, demand for skills linked to home-appliance repair is decreasing quickly because technology drives down equipment prices and improves reliability. However, demand for skills linked to power-generation installations is increasing given the expanding renewable energy sector. Demand for job-specific skills have always been susceptible to change. However, swift technological change makes it harder to anticipate which job-specific skills will thrive and which will become obsolete in the near-future.

158. Rapid technological change also means that skills that are transferable across jobs and the overall ability to quickly adapt to changes are increasingly valued by the labor market.[150] A large

share of children entering primary school in 2018 will work in occupations that do not yet exist. Even in low- and middle-income countries, many people are employed in jobs that did not exist three decades ago—India has nearly 4 million app developers;[151] Uganda has over 400,000 internationally certified organic farmers;[152] China needs 100,000 genetic counselors.[153] Not only are entirely new demands being made on workers, the pace of change also calls for quick adjustments. In the past, shifts in skill requirements prompted by technological progress took centuries to manifest (figure 3.1). With "industry 4.0", the advances in technology demand new skills seemingly overnight.[154] In such a rapidly transforming context, it makes sense to invest in skills that enhance individuals' adaptability and can easily be transferred from one type of job to another.

Figure 3.1. Time needed for technological diffusion keeps getting shorter



Source: Authors' calculations.

159. General cognitive skills—one type of transferrable skills—appear to have increasing returns. General cognitive skills determine how well individuals understand the world around them and act based on this understanding. Evidence across low- to high-income countries suggests that jobs are becoming more intensive in non-routine, cognitive tasks in the recent decades.[155] Consequently, demand for transferable higher-order cognitive skills like logic, critical thinking, complex problem solving, and reasoning is rising. Irrespective of the region of the world, these skills are consistently ranked among the skills most valued by employers.[156] 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.[157]

160. Socio-emotional skills is another set of in-demand transferable skills, which includes the ability to recognize and manage emotions, develop caring for others, and establish positive relationships. They often cover human capabilities that machines are unable (for now) to replicate. Creativity, innovation, and social interaction are some examples of the skills that are likely to remain high in demand.[158] 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.[159] In the United States, labor market returns to socio-emotional skills are much higher in the 2000s than they were in the mid-1980s.[160] In Sweden, returns to social skills have almost doubled from 1992 to 2013 in the private sector.[161] These returns will continue to grow.

161. A noticeable trend is the increasing importance of new skill combinations.[162] 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 highly demanded.[163] 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.

162. Given these changes, strong skill-foundations, gained through high quality primary and secondary education, are important. The World Development Report 2018 shows that the skill acquisition that one would expect to happen in schools is often not occurring. This is linked to poor service delivery and, more deeply, to technical and political system-level issues. The report shows that education systems will not get better at ensuring foundational skills for all unless they start taking learning seriously. It discusses specific strategies to address this.

163. This chapter shows how skills supply needs to shift outside compulsory education (and formal jobs). It discusses three types of skills investments that can have big pay-offs in the changing nature of work: early childhood investments, tertiary education, and adult learning outside jobs. Quality learning in one's early years lays a solid foundation of general cognitive and socio-emotional skills. Future-oriented tertiary education provides opportunities to strengthen students' ability to learn and adapt. Adult learning programs allow those who are in the labor market to adjust their skills according to the changing demands. The increasing importance of these domains signals that skills for the future are truly a matter of lifelong learning.

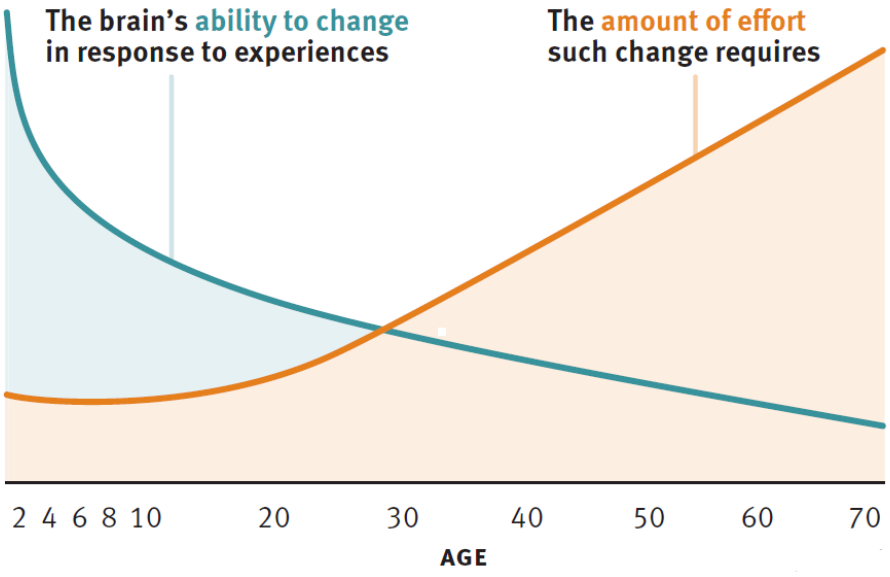
Learning in Early Childhood

164. 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.[164]

165. 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 to improve equality of opportunity. Currently, these investments are underprovided, especially for poor, 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.

166. 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.[165] During this period the brain's ability to learn from experience—its "plasticity"—is the highest. Brain plasticity 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.

167. 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.[166] In Colombia, for example, exposure to psychological stimulations through home visits with play demonstrations significantly improved cognitive development of children aged 12-24 months.[167] In Pakistan, the *Lady Health* Workers program, which provided health services in rural areas led to a decline in infant mortality from 250 to 79 for every 100,000 live births.[168] 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.[169]

168. 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, self-control), launching them on higher learning trajectories.[170] In Bangladesh, rural children who attended preschool performed better in first- and second-grade speaking, writing and mathematics, compared to those who did not.[171] 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.[172] 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.[173]

169. 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.[174] Hence, the returns for early investments are the highest and the advantages conferred by these investments grow overtime.[175] It is estimated that an additional dollar invested in quality early childhood programs can yield a return of 6 to 17 dollars.[176]

170. 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.[177] 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.[178] During the same period, in Spain, offering full-time public care for three-year-old children increased maternal employment by 9.6 percent.[179]

171. Early childhood investments are also effective in increasing equity. They close developmental gaps between children from different socioeconomic backgrounds.[180] 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.[181] For example, in rural Guatemala, an early childhood development nutrition program for poor families significantly increased wages for these children in

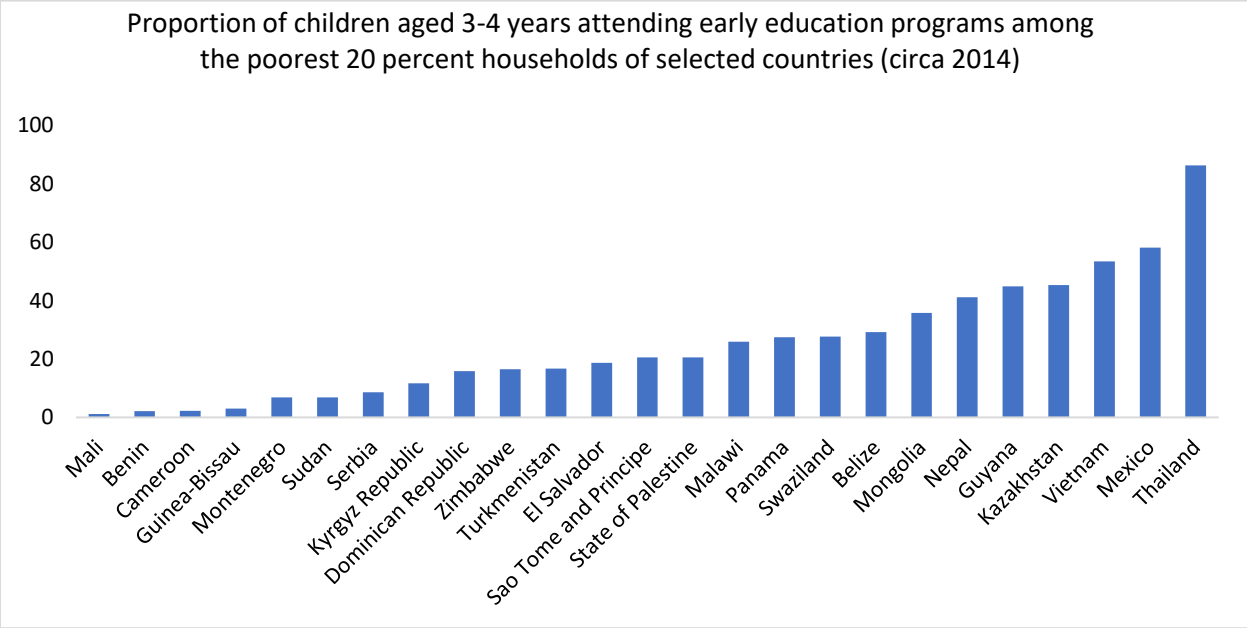
adulthood.[182] In Jamaica, early stimulation for infants and toddlers increased their future earnings by 25 percent—equivalent to adults who grew up in wealthier households.[183]

172. 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.[184] Worldwide, more than 87 million children under age seven have spent their entire lives in conflict-affected areas.[185] 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.[186] 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.[187]

173. 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.[188] 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.[189]

174. 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, as well as sociability.[190] 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.[191] 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.[192]

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.

175. 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.[193] In Tonga, organizing playgroups for children aged 0-5 significantly improved their early grade reading skills.[194] 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.[195] 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.[196]

176. 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.[197] 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.[198]

177. 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, 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.[199]

178. 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.[200] The Nicaraguan government incorporated MELQO results into the design and planning of the country's preschool measurement system.

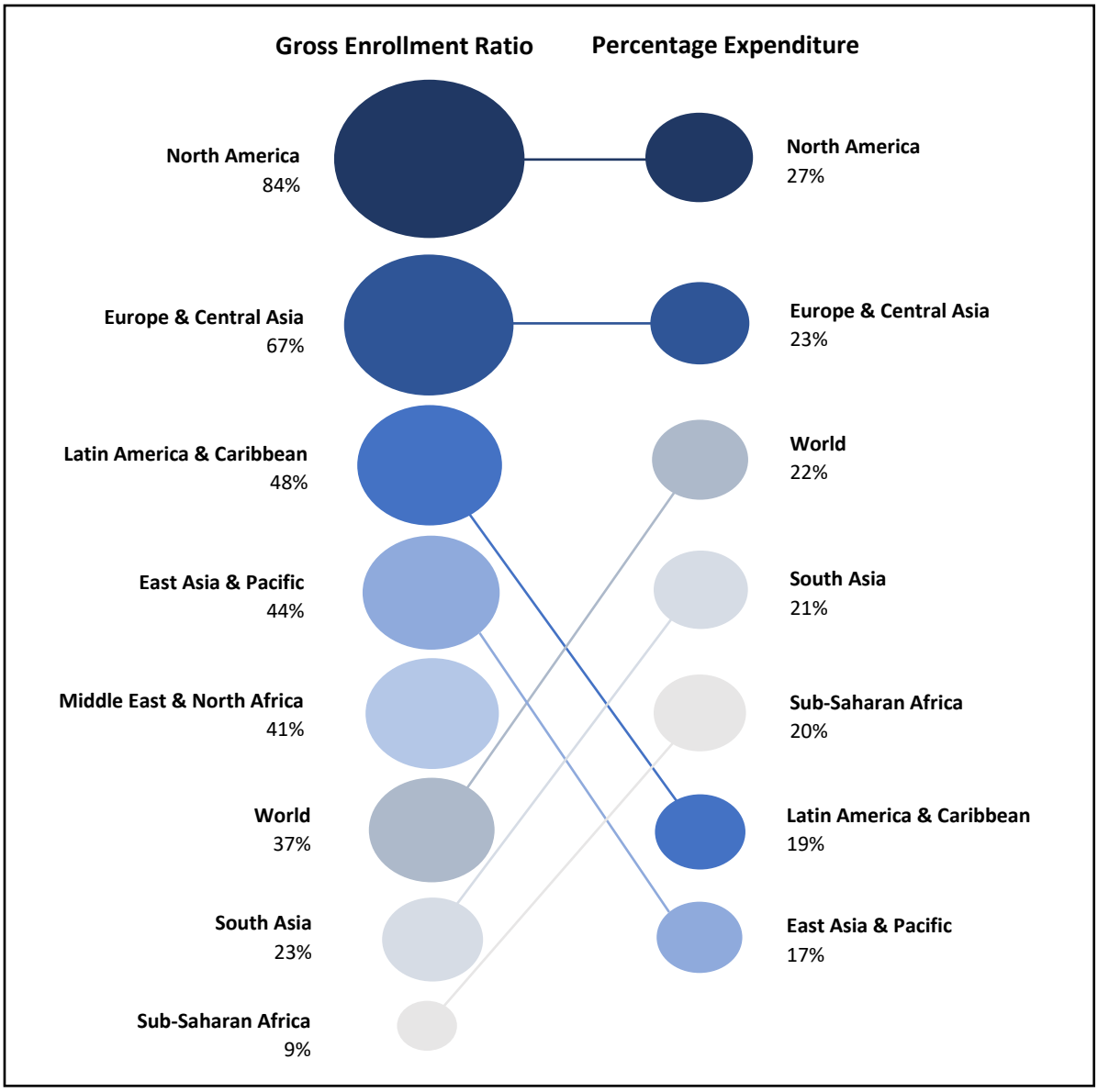
Tertiary Education

179. The Free University of Tbilisi was established in 2007 through a non-profit organization. It has already become the top-performing and most sought-after university in Georgia. This was accomplished through transparent admissions (nationally competitive entry examinations), high-quality faculty, flexible course offerings, and discussion-based pedagogy. Each year, the university attracts hundreds of top-tiered applicants, and more than 90 percent of its graduates find employment or enroll in further education.

180. 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.

181. More integrated and technology-driven economies appear to reward tertiary education.[201] The global average private return to tertiary education is 15.8 percent.[202] 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.[203] 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.[204] 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, 2016



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

182. The changing nature of work makes tertiary education more attractive in three ways. First, technology and integration have increased the demand for higher-order general cognitive skills[205]—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 premiums of tertiary graduates,[206] while reducing the demand for less educated workers.[207] 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.[208]

183. 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.

184. Flexibility is increased by ensuring that when students open the door to one pathway, the door to other pathways does not close irrevocably. For instance, at the start of tertiary education most students must choose between general education or vocational training. General education such as programs on engineering or economics prepare students in transferable higher-order skills that determine their overall learning-readiness or trainability. On the other hand, vocational training, such as programs on nursing or airport operations, is directly related to specific occupations. Once this choice is made—especially if it is for vocational training—it can be difficult and expensive to reverse. This rigidity in tertiary systems is inefficient and inequitable given the future of work.

185. 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.[209] 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.[210] This share was more than 50 percent in Malaysia, and 31 percent in Kenya in 2013.[211] Vocational training meets immediate demand for technical skills, enables faster education-to-work transitions for some, and alleviates pressures on the university system.[212]

186. 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.

187. 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 the employability of individuals with various degrees, wage profiles, courses to take for certain occupations, among other things.[213]

188. Greater flexibility is also needed within course formats. The 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 are needed. 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.

189. Tertiary systems have not 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 science, 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).[214] XuetangX, the major MOOCs and blended learning portal from China, crossed 2.7 million students in May 2016.[215] MOOCs represent a promising way of delivering flexible, personalized education to a large population. But ensuring quality is a serious challenge. A recent study shows that students who took a course online performed worse than those who followed in-person instructions.[216] Besides content, many MOOCs fail on dimensions of student engagement and/or instructor quality.

190. 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.[217] 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.[218]

191. 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.[219] 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.[220] Another channel is through better metrics that reliably assess student gains in complex cognitive skills at the higher education level.[221]

192. 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.[222] 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.[223]

193. 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 via the online learning platform Coursera. Dutch Vocational Colleges provide entrepreneurial courses with the objective of improving non-cognitive skills such as teamwork and self-confidence.[224] In Tunisia, introducing an entrepreneurship track that combines business training with personal coaching reshaped behavioral skills of university students.[225] In Spain, cooperative learning strategies (learning in small teams with peers of different ability levels) improved empathy, assertiveness, cohesion, as well as the ability to accept different views and reach agreements among university students.[226] In China, a combination of cooperative learning and role play enhanced self-educational abilities and communication skills among undergraduate students in pharmacology classes.[227] However, to better teach socio-emotional skills, more efforts are necessary to design appropriate curricula and accurate measurement, especially in the contexts of low income countries or rural areas.[228]

194. 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.[229] One study suggests that universities and research institutes, rather than firms, have driven scientific advances in sectors like biotechnology.[230] 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.[231] 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.[232] In Chile and Colombia, firms are more likely to introduce new products and patent them if they collaborate with universities.[233]

195. 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.[234] 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.[235] Egypt, Arab Rep. launched its first university incubator, *Venture Lab*, in 2014.[236]

196. For some countries, a regional-cooperation approach has proved more optimal. Regional "centers of excellence" can 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.

197. 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.[237] In China, Peking University is building *Clinical Medicine Plus X*, a research cluster for precision medicine, health big data, and intelligence medicine.[238] 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.[239] 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.[240]

198. But building university-based innovation hubs is not easy. There seem 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 the supply of human capital, close ties between university research and private sector innovation, sufficiently developed capital markets, and even innovation-friendly cultural norms (such as de-stigmatization of failure). In short, successful university-based innovation clusters are a rare breed.

199. 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.[241] An appropriate mix of research quality, budget, culture, as well as institutional arrangements is essential for a good university candidate.[242] The agglomeration effects of universities vary by sector. For example, university R&D has been shown to be irrelevant for sectors such as furniture.[243]

200. Second, a healthy innovation ecosystem requires an enabling environment. Just because successful innovation clusters exist does not mean that governments can create them. However, governments can "set the table"—for example, by providing necessary local infrastructure, increasing expenditure on R&D, assisting universities to attract high-quality researchers and connect with private sector innovation, easing rigid labor market regulations.[244]

Adult Learning Outside Jobs

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

202. 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. Bad design too often gets in the way. There are three ways to improve adult learning—more systematic diagnoses of the specific constraints that adults are facing, pedagogies that are customized to the adult brain, and flexible delivery models that fit well with adult lifestyles. Adult learning is an important channel for skills readjustments in the future of work, but it needs a serious design re-think.

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

204. Worldwide more than 2.1 billion working-age adults (aged 15-64) have low reading proficiency.[245] 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.[246] 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.[247]

205. 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 education[248] 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.[249] Lacking formal certification and trainings in 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.

206. 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.[250] 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.[251] Changing demographics add additional pressures to the labor market. With population aging, 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.

207. 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.[252] 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 to 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.[253] The Argentinean *Entra21* program provided adult skills training and internships, leading to 40 percent higher earnings among participants.[254] 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.[255]

208. But many adult learning programs fall short of impact. Adult literacy programs often improve word recognition but fail to improve actual reading comprehension.[256] 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 every 1.5 second—the speed needed for comprehension.[257] Entrepreneurship programs often improve business knowledge but not income or employment.[258] In Peru, training improved business practices among the targeted female entrepreneurs, but did not generate significant impacts on employment.[259] In France, a program comprising of collective business training, individual coaching as well as financial support had no impact on business creation or employment.[260] 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.[261] Turkey's vocational training had no significant impacts on overall employment, while the positive effects on employment quality faded in the long term.[262]

209. 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.[263] 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.[264] 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.[265] 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.

210. There are two main reasons for low effectiveness: suboptimal design and incorrect diagnoses. Adult brains learn differently—this is not always factored into program design. The brain's ability to learn decreases with age.[266] 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. An adult brain's ability to learn is significantly dependent upon how much it is used. Practice is essential to adult learning.[267] 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.[268]

211. Adults face significant stress which compromises their mental capacity—this is not always factored into program design, either. For adults, emotions are constantly mediated by the 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).[269] Creating emotional cues linked to learning content—such as goal-setting—can be an effective strategy to increase adult learning.[270] Such behavioral tools are only rarely integrated in adult learning programs.

212. Adults face specific socio-economic constraints—these are not always factored in program design. Adult learners have high opportunity costs—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.[271] Distance to training locations and lack of child care were significant barriers to vocational training program completion for women in India.[272] Dropout rates are often high for adult literacy programs, ranging from 17 percent in Niger to 58 percent in India.[273]

213. 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.[274] In Ghana, demand for training by informal businesses is low as most managers do not see skills as a constraint.[275]

214. 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.[276] Qualitative work from Uganda shows women in female-dominated trades were frequently mistaken regarding the earnings of women in male-dominated trades.[277] In Sub-Saharan Africa, youth entrepreneurs in the informal economy have limited information about relevant training programs.[278] 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.[279]

215. 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.[280] 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.[281] In Liberia, the *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.[282]

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

217. 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.

218. 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.[283]

219. 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.[284] 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.[285]

220. 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.[286] 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.[287] Delivering training programs via mobile phones can also shield adult learners from potential stigma.

221. 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.[288] 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.[289]

222. 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.[290] 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.[291] A World Bank supported program in South Africa is attempting to increase support job search through peer support, SMS reminders, and action planning.

223. 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.[292] For factory workers in India, acquiring soft skills such as time management, effective communication as well as financial management increased their productivity.[293]

224. The need for better targeting comes out clearly in the highly variable returns to training.[294] 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.[295] Similarly, the World Bank's *Youth Employment and Opportunities* project in Kenya is tailoring the design of a youth-friendly entrepreneurship aptitude test. Finally, governments might be more effective as facilitators rather than as actual deliverers of training. For instance, India's *Vikalp Voucher* program incentivizes students to choose between multiple private training providers and courses, which can be paid for using a government voucher.

Chapter 4: Returns to Work

225. 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.[296]

226. 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. 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.

227. Countries are underinvesting in human capital. Learning does not end in school. Work presents a vehicle for governments to accumulate human capital. Raising learning at work will increase the base of human capital accumulation as not only do more people work, they also spend most of their lives at work. However, to maximize work as a venue for human capital accumulation, several pressing concerns need to be addressed. First, the exclusion of women from work deprives society of human capital. Second, the poor in emerging economies are concentrated in rural areas in the agriculture sector. Raising the productivity of the sector is crucial to harness human capital accumulation. Third, a prominent feature of emerging economies is the large informal sector. The informal sector provides unstable sources of income while excluding the poor from social protection. Governments need to encourage formal sector jobs as viable alternatives for the poor. The lack of social protection for informal workers means the social contract between the state and its citizens needs to be revisited.

228. 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."

229. 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."[297] 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.

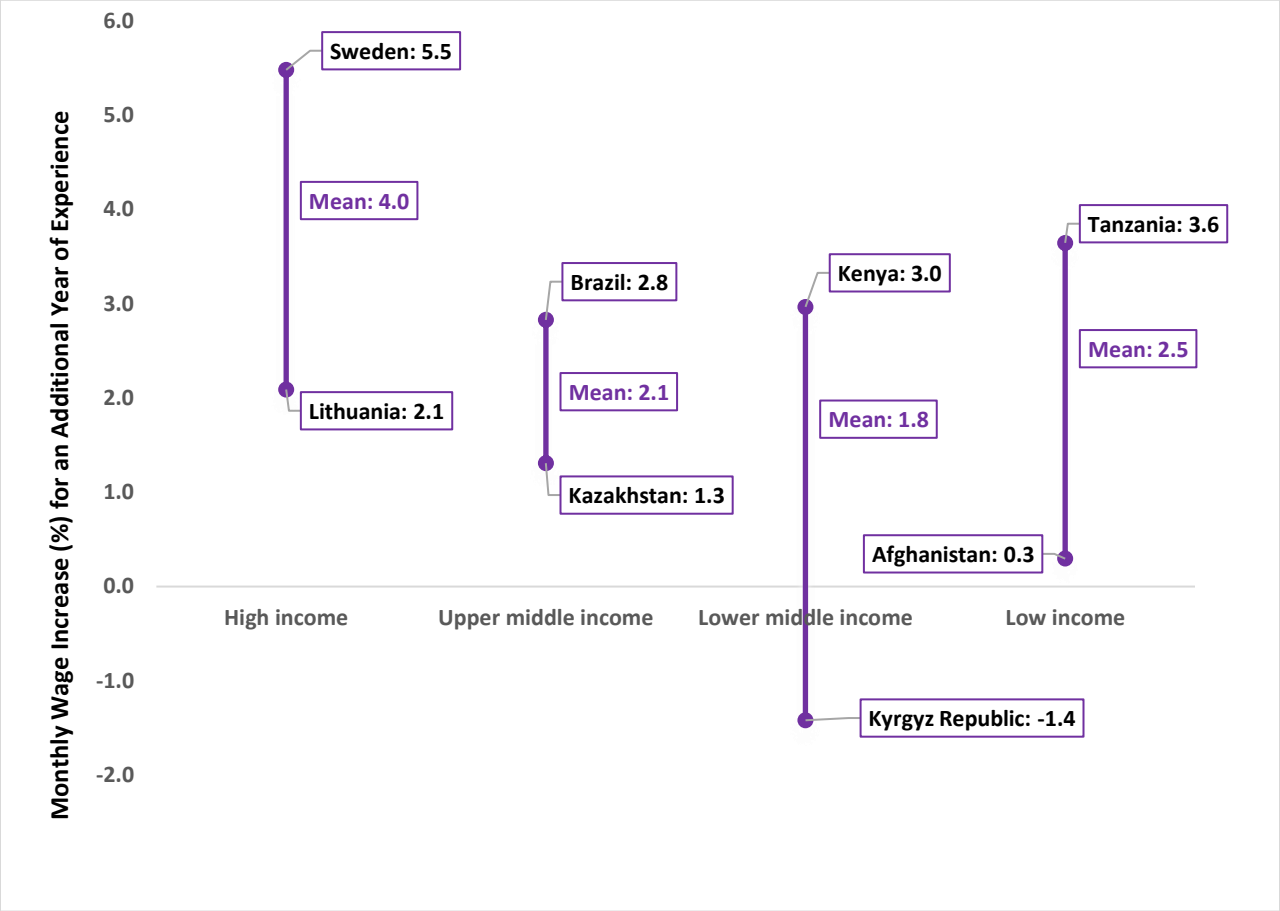
230. This chapter compares at the global level the payoffs of time spent in school and work. For instance, does schooling affect how much one's earnings grow at work? Do payoffs from work differ by the level development of the economy? What are the roles of informality, gender, and the agriculture sector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

231. The estimates of returns to work are based on observations of over 29 million individuals across a thousand surveys in 145 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.

232. 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. There is a logically consistent explanation for this pattern. 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.

233. 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 135 economies by income level. The first bar presents the estimates for high income economies. The middle figure presents the mean (4.0 percent). On average an additional year of experience increases monthly wages by 4.0 percent in high income economies. The top figure is the highest estimate for the high income group (Sweden – 5.5 percent). Therefore, an additional year of experience raises monthly wages by 5.5 percent in the Sweden. The bottom figure displays the lowest estimate for the high income group (Lithuania – 2.1 percent). The same information is repeated for other income groups, as represented by each bar. The top and bottom economies for each region are provided. The methodology follows previous work by categorizing years of experience into bins (Lagakos et al. 2018). The wage growth is estimated for each bin relative to the no-experience bin. The returns to experience is then calculated as an average of these seven bins, using a geometric mean. The top and bottom economy listed for each income group are ranked after the estimates account for income and life expectancy of the economy.

234. 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. However, policies that raise returns to work experience are likely to benefit a larger portion of the population in emerging economies given that many individuals are excluded from the school system.

235. 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 2.44 percent.

236. 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.

237. 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

238. 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.[298] 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.[299] Juma represents the average Kenyan.

239. Informal work is a means of survival. Dalia, 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.[300] 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.

240. 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.[301]

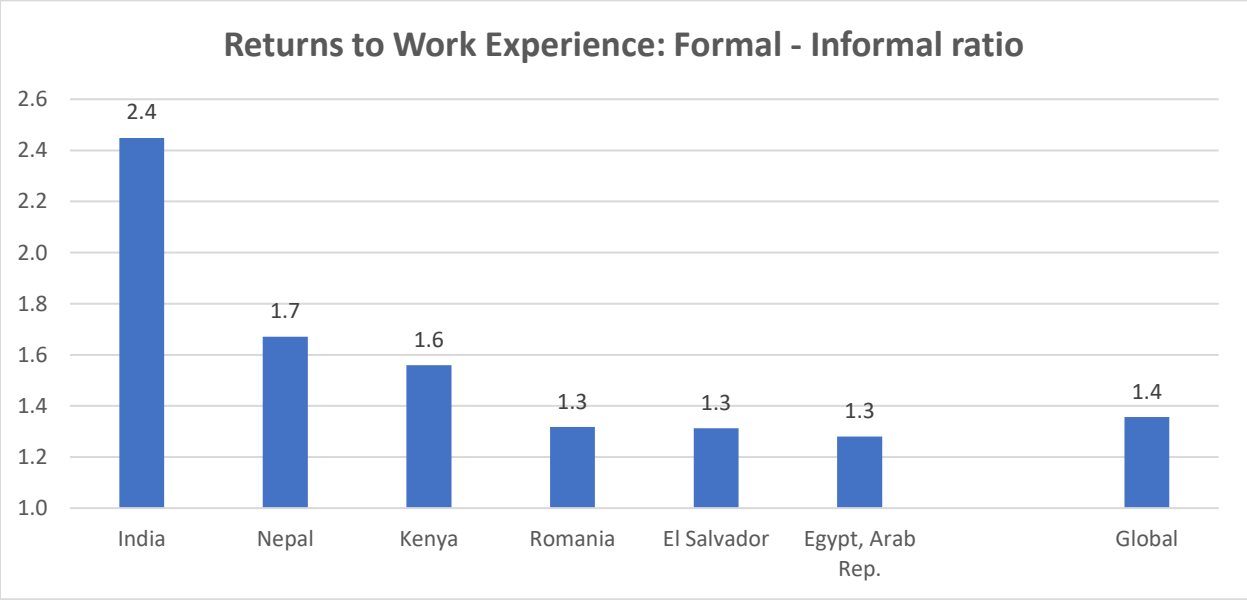
241. The informal sector is slow to change. Since 1999, India has seen its IT sector boom, become a nuclear power, broken the world record of number of satellites launched in a single rocket and achieved an annual growth rate of 5.6 percent. Yet, the size of its informal sector has remained around 91 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.

242. A year spent in the informal sector raises income by only 2.65 percent a year. In contrast, a worker in the formal sector in Kenya raises her income 4.13 percent every year, which is 1.6 times higher than the informal sector. The difference is potent.

243. 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.

244. Informal workers show resourcefulness to handle the harsh constraints they face. Consider the trash collector in Guntur, Andhra Pradesh.[302] 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.

245. 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.[303] 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.[304] They also rarely transition to the formal sector.

246. 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.

247. 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.[305] 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. Factory jobs dramatically improve the lives of the poor.[306]

248. 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.

249. Countries with heavier regulations have larger unofficial economies. Such countries also display higher levels of perceived corruption.[307] 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.

250. Mexico provides a good illustration.[308] 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.

251. 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.[309]

Working Women

252. 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.[310] 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.[311]

253. 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.

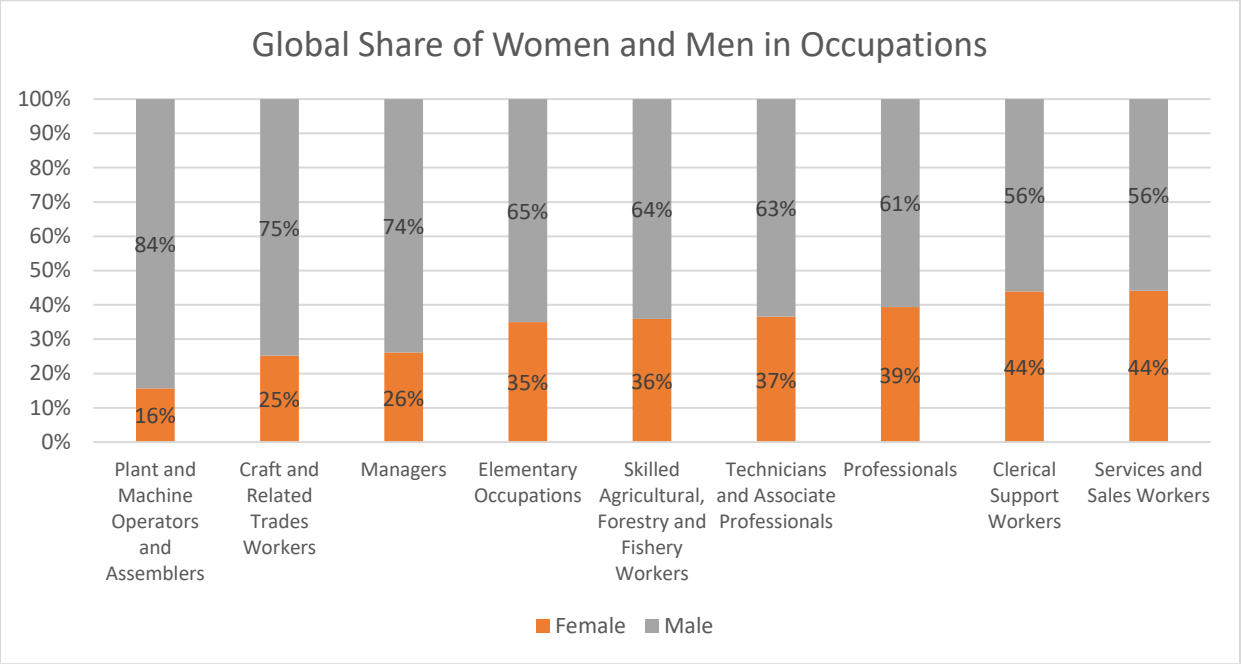
254. Several gender restrictions were transferred from colonial powers to colonies. While colonial powers overturned many of these restrictions at home, the old legal codes were retained in many former colonies. For example, while Spain in 1975 allowed married women to contract in her own name, the 1960 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.

255. 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.

256. 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.[312]

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.

257. 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.

258. 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.

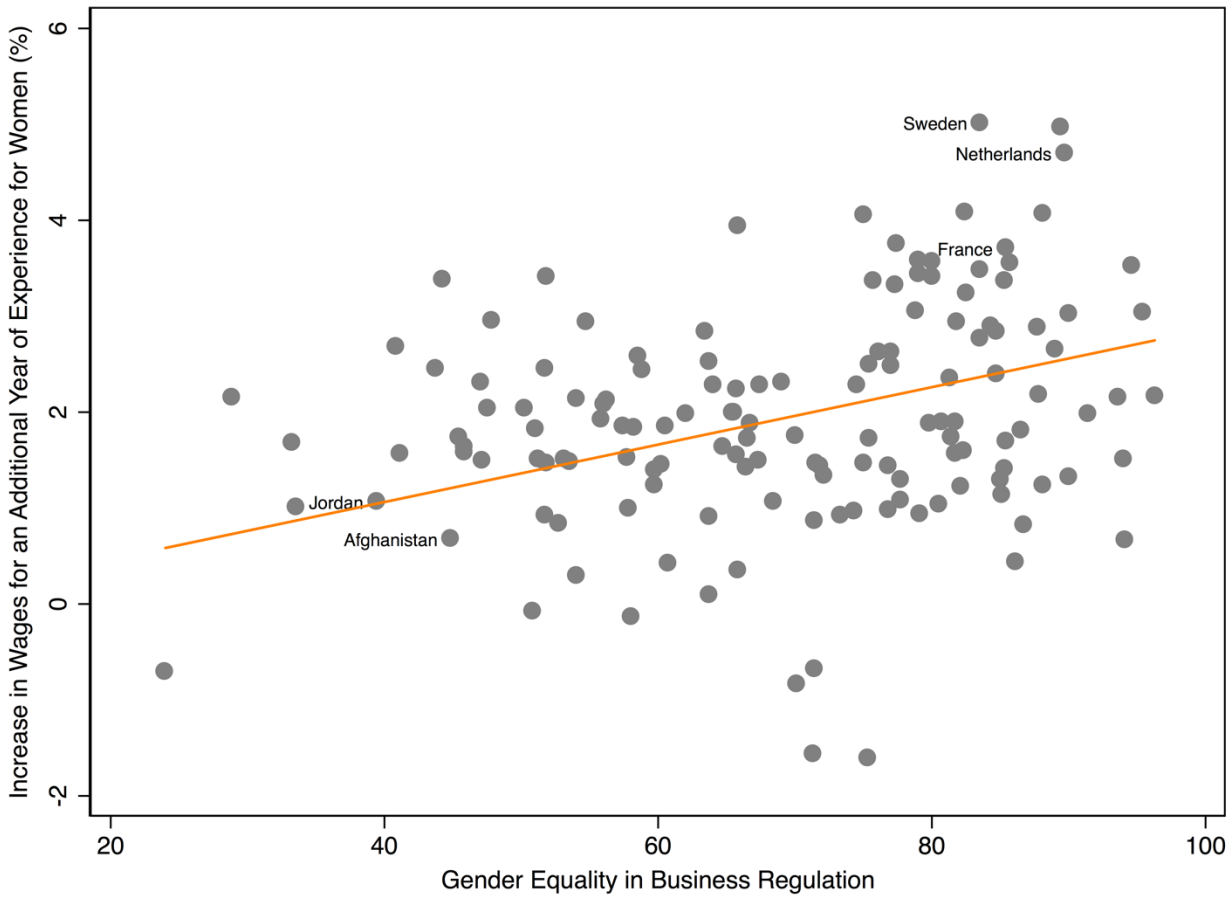
259. Some care should be taken in reading these numbers at face value. The nature of the underlying data means that the exact years of experience cannot be calculated. Women may exhibit

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. This also means that it is unlikely that the low returns to experience estimates for women are a mere statistical artifact.

260. 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.[313] 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.[314]

261. 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, as well as 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.[315] There is a possibility that it is not the changes in the laws that is causing higher returns to experience for women, but a third factor that is causing changes in both. Regardless, laws are relatively easy to change and thus a natural first step.

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.

262. Countries are reforming. Following changes to the family code in Congo, Dem. Rep. in 2016, women can formalize their businesses, 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.

263. 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.[316] 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.[317]

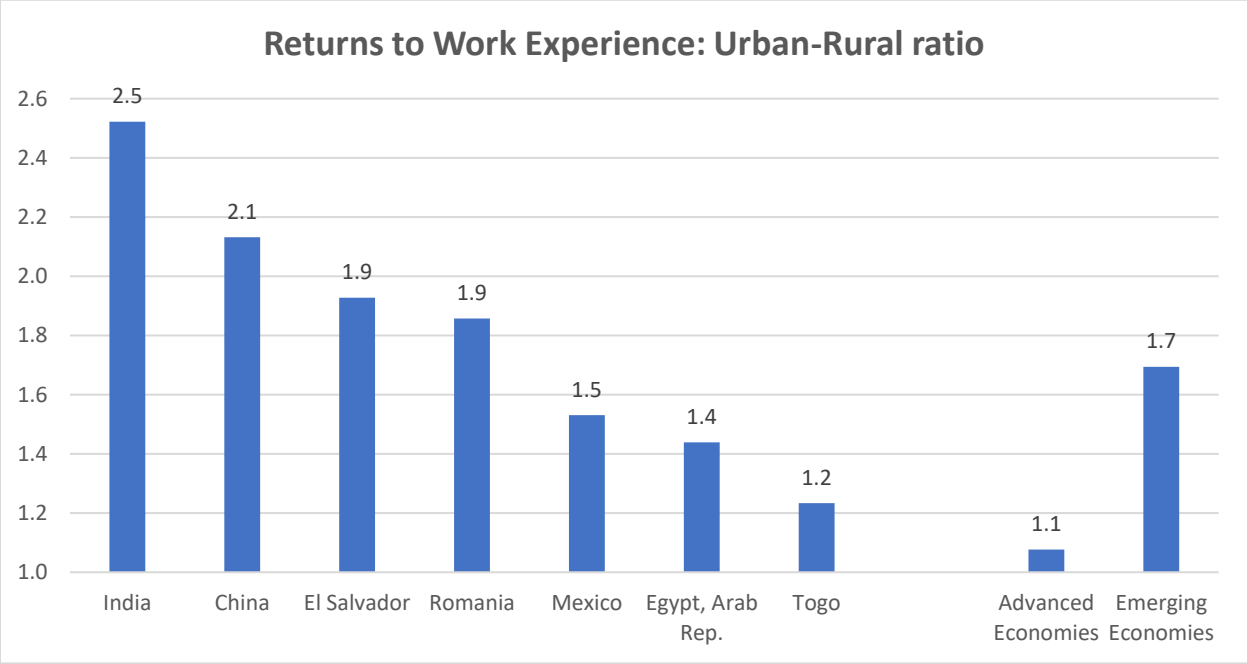
264. Policies can reduce restrictions that shackle women from entering labor markets or transitioning towards productive work. For instance, the Economic Empowerment of Adolescent Girls and Young Woman (EPAG) project launched by the Liberian government in 2009 seeks to provide young girls with both in-classroom 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.[318]

Working in Agriculture

265. Although agricultural employment declines 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.[319] However, the combined forces of automation and open trade work against agricultural employment in developing countries. Capital-intensive agriculture in advanced economies may be reducing import demand.

266. The result is faster urbanization in Africa and South Asia, where the challenges of moving to the city proliferate. On the one hand, earnings could be higher – an additional year of work experience in the city is worth 2.7 percent higher pay. 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. This is consistent with findings from numerous studies.[320]

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.

267. On the other hand, the opportunities in the city can be harnessed only under certain circumstances. Workers would need to have a certain level of education to access most of the better jobs in the cities. In a number of developing economies stringent workplace regulation deters firms from employing less productive workers, pushing them into the informal economy.

268. 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. [321] 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 in 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.

269. Overall, workers in emerging economies experience half of the payoffs to work (1.96 percent) than workers in advanced economies (4.01 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.

270. 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.[322]

271. 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.[323] 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.[324] 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.[325]

272. 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. Value chain development allows farmers to capture the urban demand for higher value agricultural products such as dairy, meat, 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.

273. 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.

274. 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. Following participation in the local government's *Integrated Growth Poles Project*, supported by the World Bank, Safiata received 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 completed school and then went on to 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.

275. 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. Through the Farmer Field School in Merak Bela, Nangarhar province in Afghanistan, Jan Agha is one of many livestock farmers who learned to use iodine instead. 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.[326]

276. 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.

277. The effectiveness of agricultural training can be improved. One way is by activating social ties in villages to encourage peer leaning. 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.[327] 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.

278. 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, or soil sensors improve measurements and allow for the monitoring of crops in real time.[328] Detailed and precise information inform farmer decisions on how much fertilizer and irrigation is needed for their crops.

279. 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.

280. 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.[329]

281. 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 though 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.[330]

282. 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, as well as lower productivity. Faced with such challenges, firms are liable to slip into the informal economy.[331] The right institutions and regulations can enable agricultural entrepreneurs to integrate into formal markets.

283. Kenya used to be the world's leading producer of pyrethrin, an organic insecticide made from the pyrethrum flower. However, the stated-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.

284. 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.

285. Finance is another important component of a commercialized agriculture sector. Working capital, long-term credit, access to savings accounts, as well as 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: Strengthening Social Protection and Labor Policies

287. 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.

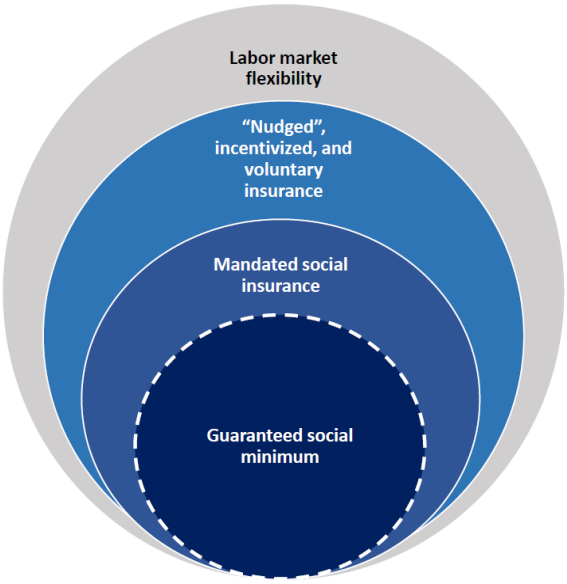
288. Social insurance and labor institutions conceived around long-term employer-employee relationships are increasingly challenged by changes in the nature of work. In advanced economies labor markets are becoming more fluid, with workers pursuing a portfolio of activities like self-employment or multiparty employment arrangements.

289. While the Bismarckian arrangements have served many advanced economies well, in developing countries the model remained mostly aspirational due to informality. Many workers 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 a day.[332] 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.

290. More uncertain, complex labor markets demand effective social protection while ensuring that firms and workers can respond to changes in technology. These developments are stimulating a reconsideration of how social protection, including labor market institutions, can reduce poverty, smooth consumption and redistribute wealth. These concerns are reflected in legislation, 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.

291. The chapter outlines how a package of three 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 5.1). The provisions of social assistance, social insurance and labor market institutions must be coordinated to jointly provide protection. Changes in the shape of one may affect what is needed in the others.

Figure 5.1. Social protection and labor system for the changing world of work



Source: Adapted from World Bank (2018).

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

293. "Progressive universalism" embeds the objective of prioritizing protection for the poorest people, while navigating the fiscal, practical and political trade-offs that incremental levels of coverage entail. As a result, countries have an array of options, 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.

294. 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 premiums 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, meanwhile moving the redistributive function to the guaranteed societal minimum, would reduce labor costs. This change may reduce incentives to replace labor with technology.

295. As all workers become better protected through enhanced social assistance and insurance systems, labor markets could, where appropriate, be made more flexible to facilitate work

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

296. Moving protections to the areas of social assistance and insurance 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, meanwhile allow for more formal employment, especially of new labor market entrants and low skilled workers. Complementary support for reskilling, as well as new arrangements for expanding workers' voice, become even more important.

Social Assistance

297. "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.[333] 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.

298. In subsequent decades, social assistance began to spread in developing countries.[334] 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.[335]

299. 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.

300. These expansions are often accompanied by significant innovations facilitated by technology. Technology broadens the reach of social programs. Social registries connect potentially eligible beneficiaries to different programs. This improves coordination programs and generates savings. When linked to a unique ID number, 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. Technology reduces costs. In Argentina, linking 34 social program databases to the unique ID number of beneficiaries revealed inclusion errors in eligibility for various social programs. This led to US$143 million in savings over an 8-year period. In 2016, Thailand eliminated 660,000 applicants out of 8.4 million based on cross-checking databases using unique national ID numbers.

301. Technology supports greater inclusion in social programs in additional ways. In Mexico, geospatial mapping tools are used to identify the most vulnerable areas in cities, including at the 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. Digital technologies also deliver assistance in fragile settings. In Lebanon, electronic smartcards provide food vouchers to nearly 800,000 Syrian refugees.

302. Countries are using various outreach strategies to raise awareness of available interventions. For example, in Brazil the *Busca Activa* strategy resulted in including more than one million additional poor families in the *Cadúnico* social registry.[336] 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.

303. Rigorous empirical studies demonstrate the substantial multidimensional effects of social assistance. 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 improvements on school enrolment, test scores, cognitive development, food security, and usage of health facilities.[337] In Mexico, the *Oportunidades* CCT program improved motor skills, cognitive development and receptive language of children 24-68 months old. Under the program, education improvements are especially pronounced at the upper primary school and secondary level, where drop-out rates start to increase. Similarly, secondary school enrollment increases by 7 percentage points for children in Kenya's Orphans and Vulnerable Children program. These gains are usually largest where gaps are often biggest, like among for the poorest, rural, girls or ethnic minorities.

304. Social assistance produces those effects on human capital through a mix of channels. The transfers provide resources to households that can alleviate constraints in acquiring food, water, medicine, health care services, school supplies, etc. Evidence shows that cash transfers are overwhelming spent on those desirable goods.[338] These additional resources can also reduce pressure for caregivers to work in ways incompatible with caregiving, or reduce child labor.[339] The enhanced economic security may reduce stress, reduce depression, increase mental bandwidth, and foster more involved parenting. [340] The programs may themselves offer information or services to reinforce child health and development, as well as encourage the use of preventive health services and schooling through a variety of means, e.g., social messaging, outreach workers, colocation of services or explicit co-responsibilities of service use for those receiving income support.

305. Social assistance programs also have impacts on households' assets and livelihoods. In a meta-analysis of impact evaluations from Africa, livestock ownership increased on average by 34 percent and ownership of durable goods (e.g., inputs for household enterprise) by 10 percent.[341] Programs are increasingly reinforcing such effects on livelihoods by adding elements of financial inclusion, entrepreneurship training, and asset transfers beyond the typical consumption support.[342] In other words, social assistance, especially the "income support plus" interventions,

can help reduce deficits in human capital and raise productivity among poor informal sector workers.

306. Despite the significant progress made in social assistance, there is more to do. Social assistance should evolve as the nature of work changes and combines with structural challenges. More people—not only the poor—are becoming vulnerable to changing skills demands. At the same time, high levels of informality have prevented firm-based, "Bismarckian" social insurance from taking hold in most developing countries.

307. Where deprivation is widespread, households across the income distribution may face similar, although still varying, levels of need.[343] 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 people living on US$6 a day, or just above the poverty line, face a 40 percent probability of falling back into poverty.[344] 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 over time.[345] These issues suggest the need for broader coverage than most programs currently provide.

308. 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 energy and food subsidy reforms. 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.[346] 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.[347]

309. In advanced economies, social assistance faces the challenge of low uptake amongst eligible beneficiaries. For example, it is estimated that in the European Union only about 60 percent of social benefits are claimed.[348] This challenge stems from a lack of awareness of benefits, misunderstanding eligibility rules, perceived stigma associated with assistance, bureaucratic obstacles, and the opportunity costs of accessing benefits. In low-income countries, only 18 percent of the poorest quintile receives some form of transfer; coverage rises to 77 percent in 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.[349]

310. 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.

311. The principle of "progressive universalism" could be applied to the idea of a guaranteed societal minimum. Increasingly adopted in the context of universal health coverage,[350] the principle could also help inform pathways of expansion in social assistance.

312. Progressive universalism is anchored in four considerations. First, it recognizes that while a significant expansion of social assistance is needed, the 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 where capacity constraints are present. 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 in poverty.

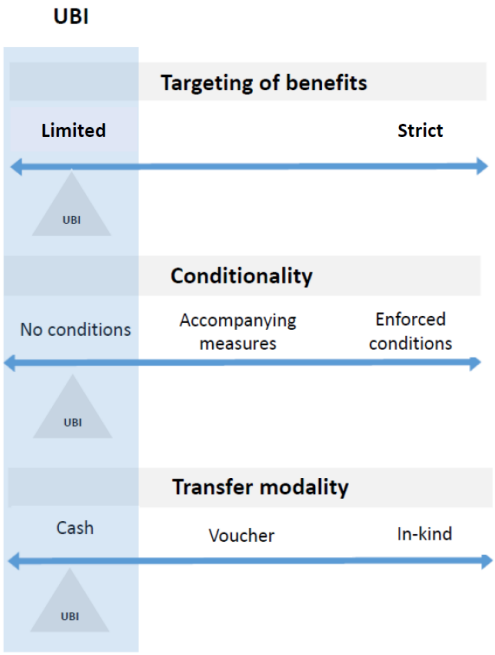
313. These basic considerations have important implications. For instance, they place a higher societal weight on minimizing exclusion errors among the poor rather than on reducing errors of inclusion of the better-off. Success does not necessarily entail that everyone in a country receives transfers,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

314. The idea of a Universal Basic Income (UBI) is a hotly-debated topic in thinking about how countries can build a guaranteed social minimum meanwhile 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".[351]

315. Part of the literature discusses the potential for UBI to provide income security as concerns for mass unemployment due to the rise in automation. UBI has also been explored as a vehicle to enhance accountability and improve 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.

316. 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 5.2).

Figure 5.2. Design traits of a UBI



Source: Authors' calculations.

317. 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 age (e.g., 18 years); and citizenship or residency requirements may also apply.

318. 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).[352]

319. What do we know about how UBI works in practice? For the moment, 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 too did the scheme.[353] 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.

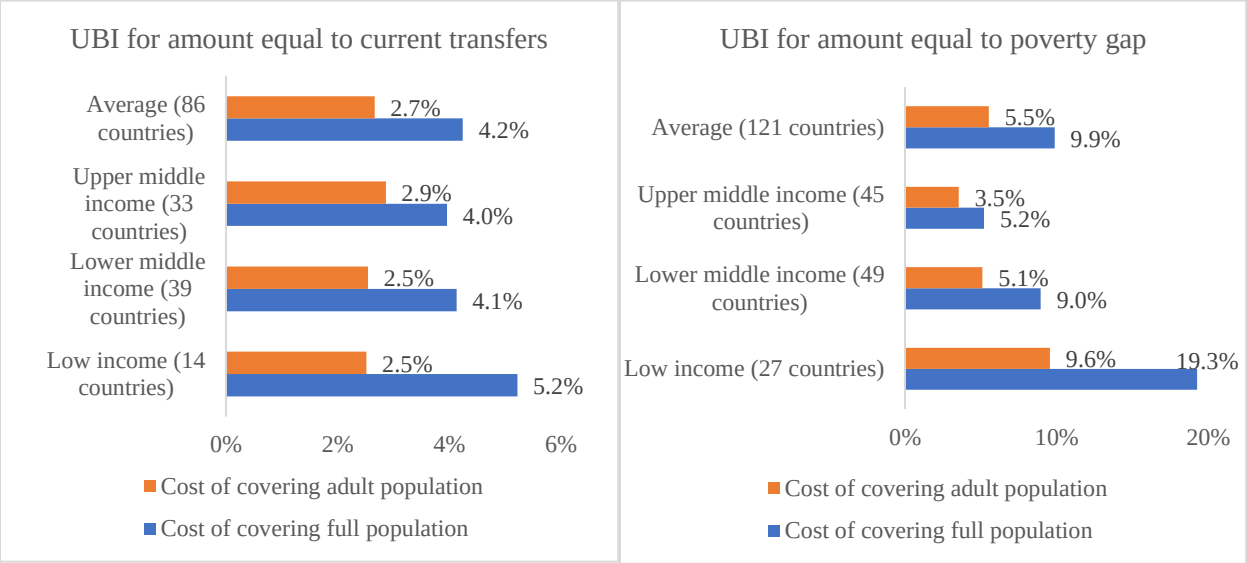
320. Variants of a UBI are in place in a range of resource-dividend schemes. The Alaska Permanent Fund, for example, is designed to redistribute oil revenues to all residents. In 2016, the Fund distributed about US$2,000 each to 660,000 individuals. There are several small-scale

schemes and experiments ongoing in Canada, China, Kenya, the Netherlands, and the United States.[354] While labelled as UBI, they are often variants of targeted programs.

321. The fiscal implications of a UBI could be significant. New analysis estimates the costs of providing a UBI in four European countries. UBI transfers were set equal to those of existing cash transfer programs.[355] 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.

322. 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.[356] 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.[357] While the latter accounts for about 5 percent of GDP, results have been contested.[358] Other simulations are providing further evidence. For instance, the cost of a UBI for adults set at the average poverty gap level ranges from 9.6 percent of GDP in low-income countries to 3.5 percent of GDP in upper-middle income countries. If transfer amounts are lower – for example, set at the average level of current benefits – costs would shrink considerably (but would have less impact). Whether a UBI is provided for an amount to close the poverty gap or being equivalent to current transfers, the cost of the scheme would nearly double if intended to the full population and not for adults only (figure 5.3).

Figure 5.3. Simulated cost of UBI for different amounts in select countries (percentage of GDP)



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

323. 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.

324. 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.

325. Estimates for select developing countries that simulate replacing some existing schemes with a UBI also found significant distributional effects.[359] 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 receive less benefits. Under the same scenario, simulations suggest that a UBI in South Africa makes most of the elderly and the poor worse off. A similar negative effect on about 40 percent of senior citizens would be observed in Chile.

326. 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.[360] Available evidence confirms limited impact on work incentives. This holds for both UBI and other forms of social assistance.[361] 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).[362] 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.[363] There was a negative effect among young people, however. It has been argued that a UBI may empower individuals, both within households (e.g., 'making unpaid work pay') and in the labor market (e.g., the power to 'say no').[364] These emancipatory effects would likely require more generous benefit levels.

327. 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 every year at the minimum wage. UBI proponents contest public works on the basis that a "right to income" should precede that of work.[365] Conversely, it is contended that the right to work rests on the premise that anyone who wants work could be offered a job, but it does not impose a duty to work.[366] Those favoring jobs schemes also point to the range of productive and socially valuable activities implementable beyond labor-intensive tasks (e.g., social care services). A UBI may be an alternative to public works when their overwhelming function is mere income support. However, when more meaningful activity is envisioned, public works emerge as a complementary instrument for those who are fit and able to work. The concept of 'participation income' is a hybrid between a UBI and public works. It envisions the provision of universal cash transfers tied to some form of civil engagement.[367]

328. 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.

329. A UBI could improve eligibility determination and reduce errors of exclusion among the poor. However, universal design does not diminish the information barriers often faced by the poor; nor the constraints of not having IDs or banks accounts into which payments can be made; nor the challenges relating to remoteness, literacy or language that can hamper enrolment. If the main constraint is fiscal cost, a UBI may amplify that bottleneck.

330. 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 more than a hundred programs. India has nearly 950 centrally sponsored schemes, with many more provided at the state level. This plethora of programs usually has more historical or institutional roots than solid technical justification. Some degree of consolidation may be appropriate, but the

optimal number of programs is certainly more than one. The program composition of social assistance should allow for differentiated support to different vulnerabilities; as illustrated, a UBI offers flat benefits.

331. 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.[368]

332. 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 envelope. 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 under-explored. 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.

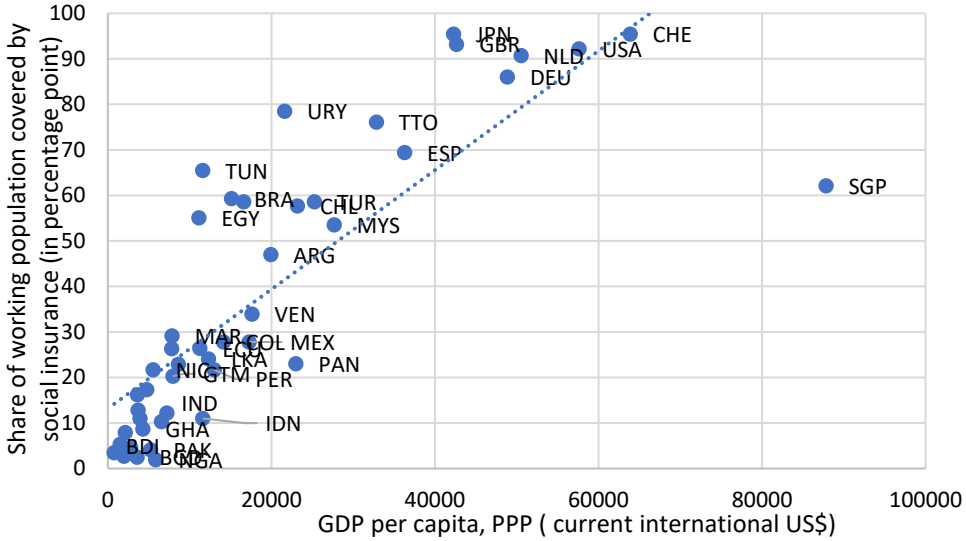
Social Insurance

333. 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.[369]

334. 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 relatively uncommon. Indeed, because eligibility for 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, if not more. In India and in many countries in Sub-Saharan Africa, coverage barely reaches ten percent of the working population (figure 5.4). This model is also increasingly unsuitable for a changing world of work where stable long-term employer-employee relationships are less frequent, 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 5.4. Coverage of social insurance in developing countries is low and stagnant



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

335. 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.

336. 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.

337. 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.[370]

338. 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.[371] 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.

339. 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.[372] 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.

340. 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.

341. 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 upon 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.

342. 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.[373] 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 countries that could

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

343. Beyond the basic insurance level, additional policy support is likely to be required to achieve adequate protection. Additional mandated contributions would allow consumption smoothing, for which instruments are often missing in countries with underdeveloped capital and insurance markets. This layer would cover formal workers, but setting the level of insurance is not trivial since a higher mandate leads to higher labor taxes. In some countries, these taxes are already high, which can affect formal employment. The average payroll tax rate used to finance contributions is almost 23 percent in advanced economies.[374] 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.

344. 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.

345. For example, as an alternative to mandatory contributions, 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.[375] 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.[376] Another form of nudging may include "commitment devices" through which, for example, people agree to incur a loss if they do not reach a savings goal. Evidence from the Philippines shows that the strategy increased savings by 81 percentage points.[377] Technology vastly increases possible nudges. For example, it facilitates the defaulting of rounding from mobile money or credit card transactions into savings.

346. 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.[378] The United Kingdom's National Employment Savings Trust operates similarly.[379] In both programs, although people can withdraw, incentives dissuade people from doing so.

347. In countries that have mandatory savings, the mandate can be softened by allowing people to access a portion of their savings for certain life events.[380] 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 policies

348. 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.[381] These regulations are ill-fitting for 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.

349. 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. Especially 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.[382] 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.[383]

350. 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.[384] 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.[385]

351. Technology-intensive sectors are smaller in countries with stricter labor regulations.[386] More stringent regulations are also associated with lower entry and exit of firms—especially small ones—in industries with higher worker reallocation.[387] Within countries, similar evidence is also emerging.[388] 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. Stringent regulations make it costlier for firms to adjust the composition of their workforce, an important condition for adopting new technologies and increasing productivity.[389] Hiring and dismissal costs, in addition, are associated with longer unemployment spells and fewer moves between different types of work.[390]

352. 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.

353. 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. This would be a shift, therefore, from protecting some jobs to protecting all people.

354. One of the policies that merits reconsideration is the minimum wage. Only a minority of workers across developing countries benefit from the minimum wage; most informal workers do not.[391] Even in correcting imbalances in market power, a legislated minimum wage assumes that these imbalances are the same across the board. In most cases, the minimum wage applies uniformly to firms irrespective of productivity, across regions and sectors. 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.[392] 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.[393]

355. When thinking about minimum wages, a first step would be to align firms' and workers' incentives by tightening the link between labor productivity and wages. Governments can adopt formulas to guide adjustments to the minimum wage that give more weight to changes in productivity. Discretion can be reduced by having an independent body that periodically assesses the level of the minimum wage and its impacts.[394]

356. 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.[395]

357. A more ambitious set of instruments would target, explicitly, the distribution of value added within the firm. Many workers, such 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.

358. 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 cases 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.

359. 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.

360. 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.

361. 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.[396] 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.[397]

362. 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.

363. 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.

364. As labor markets become more complex with new forms of work, the design of contracts can become simpler to accommodate growing diversity. Rather than aiming to define contracts in advance 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 worker safety. Recent reforms in Italy and Slovenia are an example.[398] 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 any benefits above those specified in the base contract.

365. 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 each week. In Serbia, the "reference" wage (determining a minimum social contribution) is not adjusted for hours worked.[399] Reforms are also necessary in terms of working time arrangements. The traditional 5-day, 8 hours a day working week is no longer desirable for some workers.

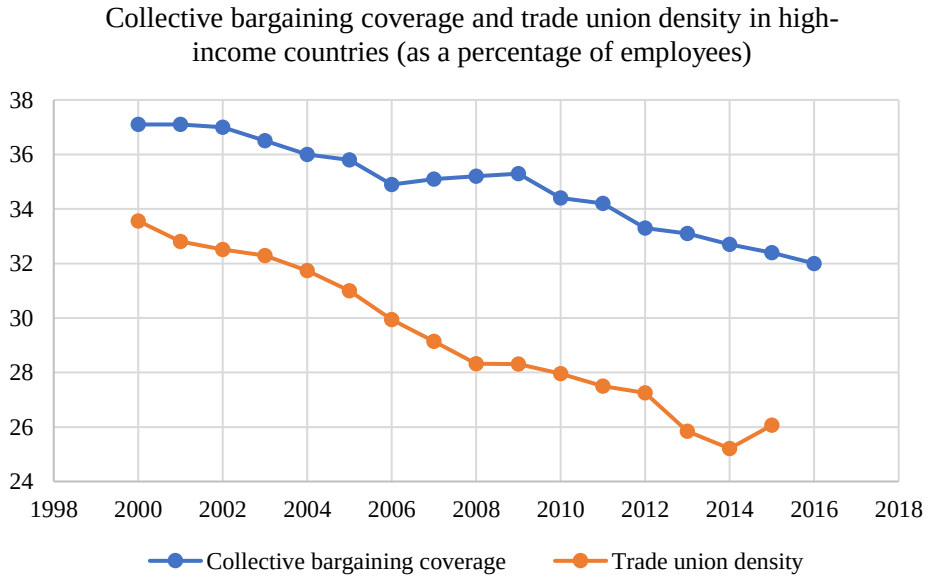
366. As the industrial-era employment protections are scrutinized, so too need to be rigid, possibly outdated laws regarding work arrangements. Some new forms of work blur the distinction between being an employee and being a "dependent" self-employed: is a Yandex driver a Yandex employee? Labor codes 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.

367. 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.[400] 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.[401] Notably, 21 countries made the use of fixed-term contracts more restrictive and 17 made severance pay costlier.

368. Finally, there is also a need to strengthen the enforcement of labor laws and mechanisms to expand workers' voice.[402] 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: across high-income countries, on average, the share of workers covered by a collective agreement has shrunk from 37 percent in 2000 to 32 percent in 2015; 24 percent of employees are members of trade

unions, down from 30 percent in 1985 (figure 5.5). 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 5.5. 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.

369. 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.

370. The most effective arrangements for achieving greater workers' participation, may not necessarily be linked to the labor market. While not a prerequisite, France's new "Duty of Vigilance"

law allows any concerned party to 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.

371. Digital technologies can improve systems which rely heavily 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.[403] Oman has a Worker Protection Scheme that allows for monitoring wage payments.[404] 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.

372. 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 important to policymakers. 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.

373. Beyond the expansion of these support programs, it is important to get these interventions right. Many programs have a poor track record. For instance, of 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.[405] 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 the long-term unemployed.[406] 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.

374. 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 young people 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 young people is more effective if combined with work experience in the form of internships or apprenticeships.[407]

375. 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 pay off, 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 6: The Changing Nature of Firms

376. Historically, firms have operated within certain boundaries. In 1937, British economist Ronald Coase explained this phenomenon in *The Nature of the Firm*.[408] 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.

377. Firms in 2018 operate within wider boundaries. Free trade agreements as well as improved infrastructure reduce the cost of cross-border trade, allowing transactions to take place wherever costs are minimized.[409] New technologies have lowered communication costs. As a result, firms are also less vertically-integrated—managers can outsource more tasks to the market. Some platform companies create new markets, such as JD.com in China, with nearly 300 million active users.

378. The wider boundaries of the firm evolved gradually. Compare the Ford Motor Company (Ford) of the 1930s with Inter IKEA Group (IKEA) of 2018. Henry Ford owned the 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.

379. With rising integration of world markets in the 1980s and 1990s, vertical integration within one country became less prominent. 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.[410] The reduction in tariff or non-tariff barriers allowed IKEA to set up global value chains. The advent of internet technology transformed these chains into global networks: IKEA procures many of its products through online bidding. Firms from around the world become part of IKEA's network of suppliers.

380. The rise of "superstar" firms like IKEA would have made Joseph Schumpeter proud. "Capitalism requires the perennial gale of Creative Destruction," Schumpeter opined.[411] He did not worry about whether jobs might be lost in the process. Politicians do.

381. Around the world, the corporate labor share declined between 1975 and 2012 in 75 percent of advanced countries and 59 percent of emerging economies.[412] 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.

382. World Bank data shows that, for the period 2005 to 2014, one quarter of economies experience declining total labor shares. For example, the total labor share declined by 1.4 percent in China, 2.8 percent in Niger, and 1.3 percent in Romania. Several large emerging economies show an increase in labor shares, such as Brazil and Nigeria.

383. Governments struggle to craft a 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 stable jobs. Yet the evidence shows that large firms account for the largest proportion of stable jobs in many economies.[413]

384. A better solution is to ease the barriers to entry for start-ups. These startups require a business-friendly environment, one that is not biased towards large private incumbents, state-owned enterprises or firms run by government officials, their associates or relatives. A small number of start-ups will grow to become the next superstar firms. Technological change favors the most productive firms in each industry, incentivizing the reallocation of resources towards them.

385. There is much to celebrate when it comes to the rise of superstars. But there is much to caution, too. Startups can grow faster in the digital age as compared to firms 50 years ago. Correspondingly, negative externalities can manifest quicker. First, firms can more easily stifle competition in digital markets. Sherwin Rosen, who introduced the concept of superstar firms in 1981, predicted that technology would allow firms to expand markets or crowd out the competition more easily. In many markets, this prediction has proven to be true. Technology has allowed some companies to rise quickly to the top—but prevent others from rising.

386. Second, firms can more easily undermine fiscal policy. The cross-border supply of goods and services in the digital economy are difficult to tax under current rules, meanwhile many solutions require coordination at the global level. Some countries are taking unilateral steps by, for example, extending VAT to goods and services sold via the internet. But such taxes have a direct impact on consumer prices. They still do not tax profits generated through intangible assets such as user data or advertising space. More traditional tax avoidance schemes, through aggressive transfer pricing, are also easier in the digital economy.

387. Regulations, particularly in relation to competition and taxation, must be updated if they are to keep up with rising corporate wealth.

The New Superstar Firms

388. 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…".[414] 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 nature of these superstar firms have changed tremendously, however.

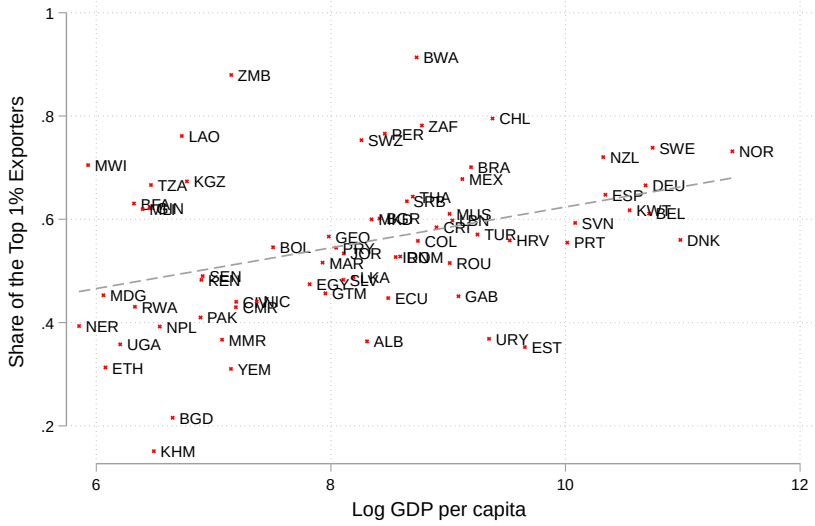
389. Natura Cosmetics S.A., the largest cosmetics maker in Latin America, was founded in 1969 as a door-to-door business in Brazil. Natura distinguishes itself via its direct sales model, as well as its environmentally-sustainable business practices. In 2018, it was selling personal care products in 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.

390. 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.

391. These are just two examples of large, innovative firms. These firms dominate the global economy: 10 percent of the world's public companies generate 80 percent of all profits.[415] Emerging markets account for a growing proportion of these profits. Superstar firms 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.[416] For example, Nokia in Finland, Samsung in Korea, and Intel in Costa Rica all account for approximately 20 percent of a country's total exports.

392. Superstar growth is particularly strong in markets undergoing rapid technological advances.[417] Reduced trade barriers also encourage firm growth by increasing access to new imported inputs.[418] 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 6.1). Reduced informational costs related to price search, free trade agreements, as well as improved infrastructure have reduced the cost of cross-border trade, allowing transactions to take place wherever costs are minimized. Against this backdrop, the share of sales by superstar companies is expected to grow.[419]

Figure 6.1. The top 1 percent of exporters account for a larger proportion of exports in rich countries



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

393. There are several 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. Large firms increase aggregate productivity by upgrading their internal capabilities to become more efficient, while promoting the exit of unproductive firms. Large firms can achieve economies of scale that lower prices for consumers, although the benefits are not always passed through to consumers.[420] They often pay higher wages, although in some advanced economies, evidence indicates that the large-firm wage premium has been shrinking.

394. 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.

395. The largest firms typically account for the majority of formal jobs in an economy.[421] For example, large firms (with 100+ employees) accounted for approximately 60 percent of the total employment share in Malaysia (2015), Myanmar (2014) and Vietnam (2016). In Cambodia in 2016 that figure was 70 percent. This plays out in other regions, too: large firms accounted for 53 percent of total employment in Argentina (2017); 46 percent in Bolivia (2017); 54 percent in Ecuador (2017); and 62 percent in Dominican Republic (2016). In Serbia, workers in the top 1

percent of manufacturing 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.[422]

396. 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.

397. In a similar way to 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.[423] 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.

398. The importance of large firms in driving economic growth is not new. However, the advent of digital platforms changes how this phenomenon unfolds. In some sense, digital platforms are like the original brick and mortar malls, linking shoppers with different brand stores, creating efficiencies for brands, meanwhile generating 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 into its loan assessment model transaction data gained through Alibaba's Taobao marketplace, to offer microcredit to merchants on the platform. [424] 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.

399. 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.

400. 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.

401. 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.[425] 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. Since 2014, over 4 million small Chinese businesses received loans.

402. Digital platforms create instant business opportunities for entrepreneurs, who otherwise may spend a long time developing a sales force and international presence.[426] For example, since 2009 many clusters of rural micro e-tailers have opened shops on Taobao.com Marketplace, fostering "Taobao Villages" in China.[427] Taobao Village merchants produces 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.[428]

403. Next, platforms expand the business opportunities for service providers, which can consolidate services sectors and create more jobs. Indeed, in 2018, the services sector accounts for the majority of jobs 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 Jordon, Israel, and Hong Kong SAR, China. There has been a proliferation of platforms that allow freelancers to have simultaneous access to multiple platforms at low entry costs. Consumers are also more willing to 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.

404. Importantly, some 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. Data from Germany indicates that only 0.8 percent of the labor force is active in the gig economy.[429] Worldwide, the total freelancer population is estimated at around 84 million—less than 3 percent of the global labor force (3.5 billion).[430] In the 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 stagnant wages, income

instability, as well as disconnection from protections connected with standard employer-employee relationships, including pension plans, health insurance, and paid leave.

405. Finally, digital platforms enable firms to exploit under used physical and human capacity—transforming dead capital into active capital. Hernando de Soto in *The Mystery of Capital* explained that capital is created when an asset's economic potential is fixed into a form that can initiate production.[431] Assets that are not fixed in a formal property system are difficult to mobilize in markets: "[t]he formal property system […] is the place where capital is born." Property records capture and organize the necessary information required to conceptualize the potential value of an asset, identifying, exploring and combining those assets. Digital platforms do the same. Ride-hailing platforms provide a way for individuals to advertise their free time and spare vehicle capacity—be it a luxury vehicle, a moped, or a tuk-tuk—to generate income. Freelancing websites enable unemployed computer programmers located in remote parts of the world to document their expertise to find remote work with companies abroad.

406. The advent of the digital platform firm—one that operates globally, exists principally in the cloud, and often generates income from the capital of others—marks a shift in the nature of the firm. Most regulations are not yet adapted to these changes. Platform firms often operate in regulatory grey areas, but minimum standards of quality, prudence, and safety, among other policy goals, must still be upheld by digital business. Data privacy and protection is often at the center of the regulatory discussion considering the large amount of data accumulated, employed, and monetized by platform businesses. Zoning or other laws affecting business activity may also be implicated. For example, although Airbnb 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.

407. Regulators can adjust laws to ensure their relevance to the new business models platforms create, without obstructing growth or the disruptive potential of new platform businesses. For example, Airbnb is working with destinations such as Denmark, as well as the cities of Amsterdam, Barcelona, Milan, and New York, to develop models for improved capture of taxation and limitations on the types of dwellings, locations and duration properties can be rented using Airbnb. Peru's financial regulator has set up a special license that imposes a lighter regulatory burden for e-lenders. Mexico City created a new transport category for ride-sharing apps. Platform rating tools can also help.

408. Regulation may also be needed if platforms 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 compete alongside traditional taxis.

409. 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. It is yet to be seen which measures result in better medium-term outcomes for consumers and the economy.

Competitive Markets

410. Technology is changing business models and firm behavior. Intangible digital products are often replicable at little or no cost, significantly reducing the importance of physical presence to do business. This creates unprecedented opportunities for new firms to enter foreign markets. However, the network effects associated with some online products often lead to significant benefits for early players, resulting in market concentration and facilitating the emergence of monopolies. Amazon's Kindle reinvented the e-book market in 2007, making it easier to read and buy online books—and by 2018 it held over 80 percent of the U.S. e-book market.[432] Also in 2007, Kenya's largest mobile phone operator Safaricom launched the first mobile money system M-Pesa in Kenya while holding 80 percent of the mobile market—by 2018 M-Pesa accounted for the same market share in mobile money.[433]

411. Maintaining competitive markets requires policies that strike the right balance between ensuring a level playing field in which startups can flourish while preserving competition even after startups grow. Fragility increases the risks associated with business opportunities, by increasing costs, reducing demand, and compromising returns on investment. A stable political environment, combined with smart business regulation, investment in infrastructure and support, as well as policies that facilitate exports, create an enabling environment for startup activity. But rapid growth in the digital economy poses new challenges for policymakers. Current rules on anti-competitive behavior often struggle to accommodate new ways of doing business in digital markets.

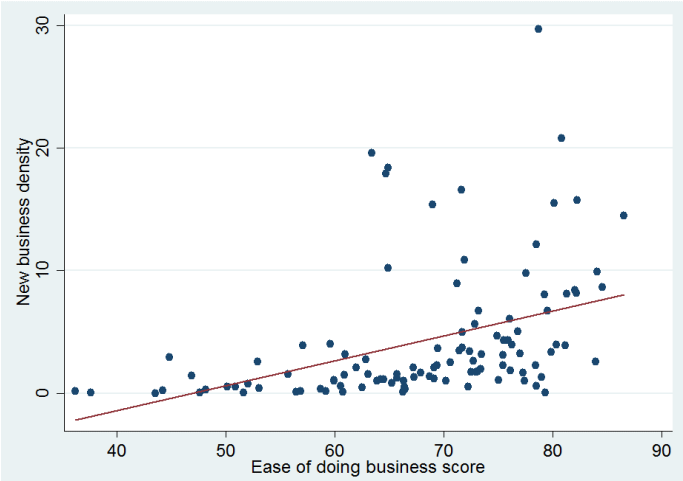
412. The most efficient way to encourage the emergence of superstar firms, be they digital or not, is to have more start-ups in the first place. The more start-ups there are, the more competition.[434] Under conditions that facilitate business, it is more likely that one of these start-ups transforms into a high-growth company that creates jobs. Resources are allocated toward their most productive uses. Larger firms are more productive than smaller firms.[435] Faced with new competition, less productive firms—so long as they are not state-owned or politically connected—exit the market.[436]

413. By creating a better business environment for all firms, the more successful firms naturally rise to the top.[437] 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.[438]

414. Numerous studies show that increased start-up activity is associated with ease of doing business in a country (figure 6.2). Where formal entrepreneurship is higher, job creation and

economic growth also tend to be higher.[439] In Mexico, for example, a reform that simplified business registration in Mexican municipalities increased the registration of new businesses by 5 percent and wage employment by 2.2 percent; the increased competition also reduced the income of incumbent businesses by 3 percent.[440] Another 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.[441] Higher start-up costs can also result in lower overall productivity: absent competition, incumbent firms will continue to operate irrespective of productivity levels.[442] In the absence of effective regulation, firms are also less inclined to leave the informal sector. 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.[443] In fragile settings, regulations that encourage private sector investment and facilitate hiring are particularly important in the short run to trigger startup activity.[444]

Figure 6.2. 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).

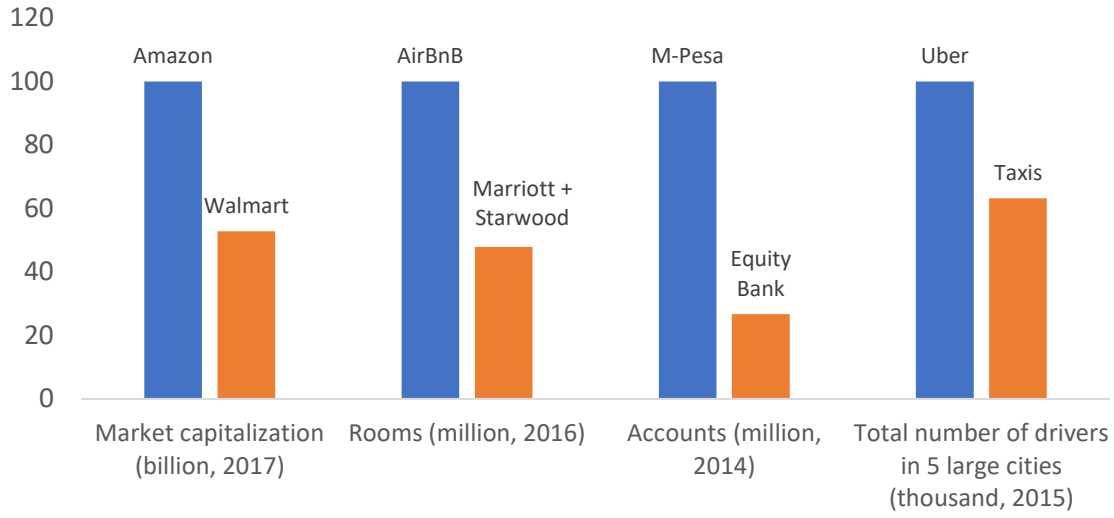
415. Technology adoption is another important prerequisite for many firms to grow and compete, particularly in global markets. Evidence shows that the more digitally advanced a country is, the more entrepreneurship.[445] More startups in the digital age exist exclusively on the internet. Policies that seek to increase mobile or internet penetration can bridge the digital divide in economies, bringing all firms closer to external sources of financing and markets. 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 platform. Many attribute Kenya's start-up boom to the presence of M-Pesa, which enables entrepreneurs to access micro-credit and encouraged traditional banks to innovate.

416. Programs that train entrepreneurs and prepare young firms to become investment ready can contribute to their expansion after entry. Such programs can be particularly impactful in fragile, conflict, and violence settings, as they can focus on improving opportunities for specific populations, specific sectors, value chains, or geographic regions.[446] Start-ups in emerging countries often have good business ideas, but they may not have the managerial skills or organizational practices necessary to take an idea to market. 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.[447] Young firms may not be prepared to attract outside funding, either. 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.[448] In Argentina, the Buenos Aires Emprende also facilitates investment opportunities for innovative startups.

417. Governments can also grow start-ups by facilitating exports. Barriers to export should be lifted and export promotion agencies tasked with facilitating market access abroad for domestic firms. Export competitiveness can be enhanced by linking smaller firms to large exporters. Trade fairs are one common way to broker such linkages. 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. The presence of PVH attracts domestic firms to join the industrial park by offering sub-contracting services. The zone is expected to generate 60,000 jobs and US$1 billion in export revenues annually. National branding initiatives or geographical indications, such as "Made in Morocco" or "Lübecker Marzipan" differentiate products, having the potential to improve sales abroad.

418. Just as governments foster competitive markets through an enabling business environment, they also monitor markets from the top down to police anti-competitive behavior by the largest players. Some startups—digital or traditional—will grow into tomorrow's superstar firms. Those firms may ultimately dominate domestic, regional, or global markets, in one or many sectors. New problems can arise over time as those new firms themselves become entrenched (figure 6.3).

Figure 6.3. Platforms vs. their offline competitors



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

419. Platform firms present new problems in the competition context. The rapid ascent of platform firms relative to the nearest competitors raises issues related to market power. Users tend to converge around one or few platforms. For example, the top three payment card networks account for 80 percent of all payment cards worldwide. Beyond China, where UnionPay holds a monopoly, roughly every second payment is made with a Visa-branded card. Given the value of data to the operations of digital platforms, convergence around social networks or search engines with many diverse users allows a few platforms to rapidly accumulate vast quantities of data, leading to a winner takes all market.[449] Data surveillance allows tech companies to observe early on if a new product or service is gaining ground in the market, giving them an advantage to copy or acquire the start-up before it develops into a stronger competitor. Facebook and Google, for example, account for an estimated 80 percent of the global advertising business.

420. Large firms 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. This raises shipping costs for other online merchants.[450] The Kenyan e-money platform, Safaricom's M-Pesa, held around 70 percent of the country's mobile money agents under exclusive contracts until they were challenged by rival Airtel before the Competition Authority of Kenya in 2014. The Authority ultimately ruled such practices to be unlawful.

421. Exclusionary behavior may be even more likely in digital markets and anti-competitive behavior is difficult to identify.[451] Algorithms can be programmed not to compete. In 2016, a UK retailer admitted using automated repricing software configured to achieve higher prices jointly with its competitor, triggering anticompetition enforcement.[452]

422. Platforms can also exclude competitors by charging 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 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 or receive money across networks in real time. Interoperability and competitive coexistence platforms that allow businesses and individuals to use several competing platforms at once and switch easily between them 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. In Peru, the telecom regulator forced the largest communication networks to offer messaging services to banks that were expanding into e-money.

423. Superstars often rise through mergers and acquisitions. For example, Indian Sun Pharmaceutical Industries became one of the world's largest generics companies because of a series of acquisitions starting in the 1990s. In late 2017, Indonesia's biggest ride-hailing service Go Jek set out plans to acquire three local financial-technology companies which would position the company as the country's dominant player in the nascent digital payments market.[453]

424. Competition laws exist to patrol firm anticompetitive behavior as well as mergers and acquisitions that could reduce market competition and ultimately harm consumers. By reducing anticompetitive behavior through cartels or the abuse of dominance, and reviewing mergers and acquisitions for their market impact, competition law contributes to more open, innovative, and productive markets.

425. Competition policy is increasingly important in emerging economies. The share of cartel fines attributable to non-European or North American economies increased from 4 percent in 2000 to 25 percent in 2014.[454] The Philippines adopted a comprehensive competition law in 2015, Guatemala is doing the same in 2018. A reorganization of China's competition institutions in 2018 is expected to lead to more aggressive enforcement. In Africa, the number of economies with competition laws in place increased from 13 in 2000 to more than 30 in 2017, with the majority having active merger control regimes in place.

426. To address some of the challenges associated with national enforcement, supranational competition frameworks are also emerging. Enhanced international cooperation can address capacity challenges, promote information sharing, and improve investigative and enforcement power when anti-competitive behavior impacts multiple jurisdictions. High levels of government ownership in some countries can also inhibit enforcement at the national level. In Africa, for example, the Common Market for Eastern and Southern Africa (COMESA) Competition Commission operates a mandatory merger control regime and is extending enforcement efforts. The Competition Commission of the West African Economic and Monetary Union (WAEMU) runs a voluntary merger filing regime, and has focused on overturning protectionist national laws since its inception in 2003.

427. Competition authorities can monitor markets for anticompetitive behavior and carry out merger control reviews. They can also negotiate settlements with dominant operators or impose interim measures to deal with suspect behavior while investigations are carried out. But the digital economy poses challenges for policymakers under most antitrust rules of analysis.[455] Many digital

platform companies operate in adjacent, multi-sided markets, bundling or at least connecting different types of services. New types of market power emerge when firms provide services free of charge on one side of the market in exchange for user data, then monetize that data on another side of the market. Most competition rules are not yet built for these situations.[456]

428. Cross-platform network effects affect the market power of dominant firms and create competitive constraints for others are especially difficult to account for.[457] 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 technology 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 given the potential cross-platform network effects between Amazon's online and offline business. Elsewhere, governments are adapting rules to deal with adjacent markets: in 2017, Google received a US$2.7 billion fine from the European Commission for abuse of market dominance when it promoted its own shopping services in search results, at the expense of competitors.[458]

Tax Avoidance

429. "The bourgeoisie are today evading taxes by bribery and through their connections; we must close all loopholes," Lenin stated in 1918.[459] Such frustrations continue in 2018, as billions of dollars of corporate profits go untaxed every year. Current tax rules struggle to ensure that firms pay a fair share of taxes. As firm boundaries transcend borders and physical assets, 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, or tax crimes).

430. It is difficult to estimate how much revenue is being lost. The OECD estimates that 100-240 billion USD in lost in revenue annually as a result of base erosion and profit shifting by multinational companies. This is equivalent to 4-10 percent of the global corporate income tax revenue.[460] Another estimate suggests that the level of assets sheltered in tax havens is around 8 percent of global GDP.[461] Yet another suggests that multinationals' shift around 45 percent of their profits to tax havens, causing a loss of 12 percent of global corporate tax revenues.[462] Recent enforcement efforts also provide some indication of the magnitude of the problem. A voluntary disclosure program in India in 2016 encouraged 65,000 taxpayers to disclose $11 billion of previously undeclared assets, leading to an additional $6 billion in tax revenues.[463] There is no doubt that government budgets are smaller than they need to be as they assist their populations to adjust to the changing nature of work.[464]

431. A multitude of loopholes exist in most tax laws, many created through shrewd corporate lobbying, that allows corporations to increase their tax deductions and move profits to jurisdictions with low or zero corporate income tax. 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.[465]

432. The problem is that current rules generally require businesses to pay tax on profits in countries where they have physical presence. In practice, this means that multinational enterprises pay taxes in economies where they locate their affiliates and activities. 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.[466]

433. The virtual nature of digital businesses makes it even easier to locate activity in low tax jurisdictions, such that digital firms pay 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.[467] 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.

434. Advanced countries, through multilateral efforts at the OECD, regional, and unilateral actions, are taking steps to tax the digital economy.[468] There is still no international consensus on how direct taxing rights over the profits of some digital platforms should be apportioned between countries in which consumers are based and the countries in which the platforms are based. More progress has been made with respect to indirect taxes.[469]

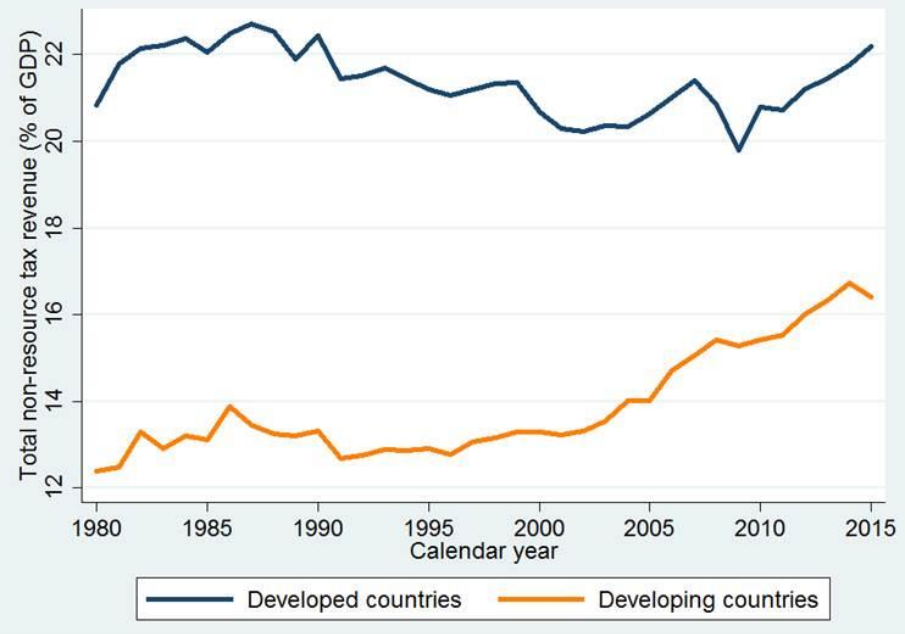
435. In 2016, the OECD released a template for collecting value added tax (VAT) from foreign suppliers of digital goods and services through the International VAT/GST Guidelines.[470] More than 50 countries have adopted the Guidelines' recommendations for imposing VAT on the direct supply to consumers of services and intangibles by foreign suppliers, including most OECD and G20 countries.[471] Where foreign suppliers are required to account for VAT, an effective compliance strategy demands increased exchange of information and mutual assistance in collection to support indirect tax compliance.[472] Third party data, including data from domestic internet service providers can identify the supply of digital services by foreign providers to domestic users. An online registry of traders who carry on businesses in, or with customers in, a country can also facilitate enforcement.

436. The EU, for example, has levied VAT on nonresident suppliers of telecommunications, broadcasting, and electronic services, regardless of scale, since January 1, 2015. Nonresident businesses are required to charge the customer VAT at the rate applying in the customer's country, thereby removing the competitive advantage held by digital companies located in countries with low VAT rates. An online portal allows suppliers to register, submit quarterly returns, and pay the tax due.[473] According to the OECD, more than €3 billion in taxes have been raised in the EU in this way.[474] Australia adopted an approach similar to the EU in July 2017.[475] Within ASEAN, Singapore announced in its February 2018 budget that a goods and services tax will be imposed

on imported digital services, including music and movie streaming.[476] Other advanced economies with indirect taxes on the digital economy include Japan, Korea, New Zealand, Norway, the Russian Federation and South Africa.

437. Less has been done in emerging economies, where additional tax revenues are needed most (figure 6.4). 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 like the EU's and Australia's, extending their VAT regimes to cover digital suppliers. In early 2018, Argentina and Turkey did the same. China, Malaysia, and Thailand are among the countries currently reviewing their tax laws to extend collection to digital profits.

Figure 6.4. Non-resource tax revenue of developed and developing countries.



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

Note: High income countries are categorized as "Developed Countries". Other middle income and low-income countries are categorized as "Developing countries".

438. 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.

439. As an alternative to indirect or direct taxes, a country could introduce a new, freestanding tax on foreign suppliers of digital services. A freestanding tax would do a better job as compared to indirect taxes at targeting the foreign suppliers directly, rather than the domestic consumers. Moreover, because the tax would exist separately from the mainstream system of income tax, it would avoid conflict with existing double taxation agreements. However, it could raise questions of compliance with WTO rules on cross-border services trade. The risk of WTO non-compliance may be mitigated if the measure is framed as a tax on profits arising in the source country, since value is co-created by both the supplier and the customer in the digital economy (due to the value of user data).[477] In addition, the measure arguably plays a role in levelling the playing field between domestic and foreign suppliers of digital services. As with VAT, collecting this kind of tax is enhanced through a registry of non-resident suppliers of digital services.

440. For example, in 2016 the Indian government introduced a 6 percent equalization levy on online advertising revenue paid by Indian companies to non-resident e-commerce companies. In March 2018, the European Commission proposed a tax on the gross revenues from digital activities in which users play a major role in value creation. Specifically, the tax would apply to revenues from selling online advertising space, intermediary activities that allow users to interact and sell goods and services, and the sale of data.[478] The Commission has estimated that a 3 percent tax could raise €5 billion a year.

441. In addition to the tax collection challenges posed by digital business, governments still have to contend with base erosion and profit shifting and other tax avoidance/evasion schemes, by both digital and traditional business.[479] Some multinational firms have long shifted their profits around the world to so-called "tax havens", which is the name often given to countries with low or zero tax rates. In doing so, firms reduce their tax burden.[480] This phenomenon is not new, nor is it necessarily illegal, but it becomes easier via the digital economy. In the United States, government revenues from corporate tax have declined from 40 percent in 1943 to 10 percent in 2012, while corporate profits have remained relatively stable.[481] Fortune 500 companies are reportedly holding more than US$2.6 trillion in accumulated profits offshore.[482] The Paradise Papers, leaked in late 2017, disclose some of the most egregious examples.[483]

442. 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 legal tax avoidance through tax planning and illegal tax evasion that involve the deliberate exploitation of the tax system is not always clear.

443. Transfer pricing rules, based on the OECD Transfer Pricing Guidelines, in addition to 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 transaction is the same or similar to that which would be the case between independent companies operating at arm's length.

444. Transfer pricing is vulnerable to abuse. Problems arise when there is transfer mispricing, known as transfer pricing manipulation or abusive transfer pricing. Specifically, prices are manipulated so that they do not reflect an arms-length valuation. Multinational enterprises can also artificially segment their activities between their affiliates to take advantage of loopholes in the tax system and shift profits into low-tax jurisdictions. Certain law or accounting firms specialize in navigating the regulations in question to achieve this goal.

445. It is not easy to audit transfer pricing under current rules. 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 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 between similar affiliates that could potentially be useful may also be distorted. Second, accounting rules 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.

446. 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.[484] Foreign affiliates in higher tax countries can pay royalties to the IP-owning affiliates in low tax locations.[485] 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. 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, or finances R&D in a higher tax country, it sets a price (usually the cost of the R&D plus a 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 of out that R&D will accrue to the subsidiary (in the low tax location). Firms in the tech sector are following suit.

447. In its current form, the international tax system creates incentives for countries to compete on corporate tax rates, provoking a race to the bottom in effective tax rates. 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.

448. At the multilateral level, governments have been taking steps to reduce tax avoidance. The Base Erosion and Profit Shifting (BEPS) initiative launched by the OECD and G20 countries in 2013 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.

449. The BEPS package represents a significant political commitment by governments. However, the degree of implementation and compliance will measure its true success. The grouping is developing a monitoring process for four "minimum" standards around which consensus was reached and plans to put in place review mechanisms for other elements of the BEPS measures.[486] In addition, many of the measures require amendments to double tax treaties, of which there are thousands worldwide. The *Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting*, signed by 70 governments in June 2017, seeks to assist governments in transposing results from the OECD/G20 BEPS Project into bilateral tax treaties worldwide. Signatories of the Convention list existing tax treaties they wish to modify using the Convention. Once a tax treaty has been listed by the two parties, it becomes an agreement to be covered by the Convention. In this way, the Convention can modify the application of thousands of bilateral tax treaties. Current signatories have listed over 2,500 treaties, already leading up to over 1,200 matched agreements.

450. Some countries are also taking unilateral steps. 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.[487] Controlled foreign corporation rules make it harder for firms to divert profits to affiliates in low tax jurisdictions abroad by charging corporate taxes on the taxable income (but not gains) of the affiliates. New anti-diversion rules, which require firms to pay taxes up front, entered into force in the United Kingdom in 2015. The rules target transactions between UK resident companies (or foreign companies with a resident permanent establishment) and other connected companies that result in a reduction in the UK taxpayer's liability by an amount that exceeds the consequent increase in the connected party's tax liability. For a transaction to be caught under the UK law, it must lac sufficient economic substance and be designed to reduce tax. The starting point for applying the insufficient economic substance test is "whether it is reasonable to assume that the transaction(s) or the involvement of a person in the transaction(s) was or were designed to secure the tax reduction (as defined through the effective tax mismatch outcome rule)".[488] Australia adopted similar rules in 2016, also applying a test of whether it is "reasonable" to conclude that the purpose of the arrangement is to secure a tax benefit.

451. The UK and Australian rules have been designed to incentivize greater compliance with the mainstream corporate income tax regime. These countries already have a developed transfer pricing capacity and a sophisticated suite of anti-avoidance measures. The context for emerging economies is rather different: their capacity to address transfer pricing risks is low and existing anti-avoidance legislation may not be effective. A more mechanical and targeted anti-diversion rule that is integrated into the corporate tax system could be more effective at tackling tax avoidance directly, rather than as an indirect deterrence measure. In contrast to the more discretionary approach of the UK and Australian systems, emerging economies could apply anti-diversion rules automatically to entities that meet certain minimum criteria. For example, related entities are subject to a low rate of taxation and generate super-profits (as defined in the law). In that case, the additional charge would apply to any related entity satisfying those criteria, regardless of whether it has any direct dealings with taxpayers in the country. This would provide a more mechanical back-up to transfer pricing rules that will help governments secure their tax base.

452. For countries that are net importers of capital, adopting an approach that is within the corporate tax regime and so subject to double taxation treaties (which override domestic rules) is less likely to concern foreign direct investors. By contrast, an additional, non-creditable tax, levied at penal rates is likely to unnerve foreign investors.[489] The benefits of a diverted profits tax to any country will depend on its specific circumstances, including the extent of treaty networks, the origin of inward direct investment, and the effectiveness of existing measures against profit shifting. Countries with very limited capacity in their tax administration may be better advised to ensure that they have a good system of withholding taxes that are relatively simple to operate.

453. Governments can also take steps to shut down tax havens. Economic sanctions are one option, facilitated by a list of countries deemed to offer preferential tax treatment. Argentina first issued a "black-list" of countries with preferential tax regimes in 2000. Transactions between affiliates located in those countries and in Argentina were automatically deemed not to be on an arm's length basis, therefore subject to additional monitoring and reporting requirements. In 2013, the government switched its approach, replacing the black list with a so-called "white list" of cooperative countries—those that made or are in the process of negotiating double taxation treaties or other agreements on the exchange of information for tax purposes with Argentina. All countries not listed are considered to be "non-cooperative", resulting in the application of more stringent rules to transactions with corporate affiliates located there. In early 2018, as part of a comprehensive tax reform law, the Argentinian government committed to publish another black list of non-cooperative jurisdictions—those that do not have in place agreements on the exchange of information with Argentina. Until that list is published, the white list remains in force.

454. Brazil has also had a list of tax havens in place since 2010. Of particular note, the existence of a double taxation treaty or any other agreements on the exchange of information for tax purposes with Brazil is not sufficient to avoid being included in the list. In the same vein, in 2017, the Council of the European Union issued a list of 17 third country jurisdictions deemed non-cooperative 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 non-cooperating jurisdictions. Blacklisted countries face reputational damage and may

not receive funds from EU member governments other than for development purposes. Additional sanctions have not yet been agreed upon by EU Member States.

455. Growing public discontent with tax avoidance practices has revived interest in global formulary apportionment, an allocation formula that aggregates but 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.

456. 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.

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

458. The changing nature of the firm requires action from governments. Large firms pose policy challenges in 2018 as much as they did during Jefferson's time, if not more. Expanding firm boundaries present opportunity for societies, but they also bring risks. Market regulation needs to balance measures that allow superstars to grow with rules that prevent the exclusion of competitors from the market. Competition laws need to better patrol anticompetitive practices in the digital economy. The implications of superstar dominance across multiple adjacent markets should be scrutinized. 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. Anything else raises serious questions around the bounds of corporate power.

Chapter 7: Ideas for a New Social Contract

459. "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."[490] Not long after the revolution of 1917, ownership of all assets was transferred to workers and peasants.

460. The French Revolution and socialist movements, among others, have all been about a quest for a new social contract to adapt to large scale societal changes and pressures. 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.

461. Old and new pressures on today's social contracts call again for new ideas. On the one hand, cracks in current social contracts are evident in the lack of protections or efficient public services for most of the poor and stubbornly high inequality. On the other hand, the changing nature of work is generating fears about mass unemployment, a race to the bottom in social protections and climbing inequality. These elements, among others, are straining the relationship between citizens, firms, and governments in both developing and advanced economies.

462. While some of these fears appear to be exaggerated, there are indeed reasons to be concerned and to inject new ideas into public debates about the social contract. Two elements require particular attention.

463. First, at the same time that technology opens up new avenues for delivering services and participating in society, many—especially the poor—lack access to quality services or tools to manage risks. Many work informally without access to protections and in low-productivity jobs that make it difficult to escape or remain out of poverty. Social and economic reforms in developing countries need to account for this reality. Informality, for example, constrains what can be done through social insurance systems that are based on earnings contributions that need to be declared to the state.

464. Second, adjustment costs related to the changing nature of work. Technology has varying impacts on different skills and their demand in the labor market. Depending on the technology, some skills, and hence some workers, are becoming more relevant than others in the world of work. Advanced skills—like complex problem solving or critical thinking—are becoming more valued in labor markets. These skills help individuals work more effectively with technology and adapt easily to changing technologies. Socio-emotional skills—like empathy, teamwork, conflict-resolution—are also becoming more valuable in labor markets because they cannot be easily replicated by machines.

465. This has implications for skills development and social protections systems. For future generations, it is important to create sound foundations for the accumulation of advanced skills and socio-emotional skills. This requires effective investments during early years and basic

schooling so that future generations can leverage the opportunities created by technological change for higher productivity and economic growth. For skills adjustments of the current generation prospects are mixed. Many workers—not only low-skilled but often also middle-skilled—are likely to see the nature of their jobs transformed. For a number of these workers, adapting to these new demands may prove difficult. Retraining in many cases, even if possible, may not be cost-effective. Social protection and active labor market programs are, hence, likely to gain in importance. Yet, for social protection systems to become more responsive, they need to be expanded, strengthened and possibly reformed.

466. This is the right time to think about how to update the social contract. The changes outlined above require time to take hold. The politics of some of the reforms needed are complex given potential trade-offs involved between, for example, investments in the current generation of workers versus future generations. Public spending would need to become more efficient and additional sources of revenue identified. At the same time, there is urgency given rising aspirations, especially among the youth. Social media and urbanization contribute to these rising aspirations. When met, aspirations can foster opportunity and prosperity. But when unfulfilled, they could lead individuals and countries down a track of frustration, potentially leading to fragility. The sustainability of a social contract hinges, thus, on a sense of fairness.

467. 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 "divine law", wherein protection was provided in return for obedience. This idea was challenged in the 1600s by Thomas Hobbes and John Locke who embedded the relationship between state and citizens in rational thought rather than religion. A social contract imposes an obligation on citizens to respect and obey the state, in exchange for security. In most societies, the obligation of the state extends beyond simply providing safety. It includes broad provisions around services, jobs, and public goods.

468. Arguably, the sustainability of social contracts hinges, at least partly, on how fair it is perceived to be. This echoes Rawls' need for a veil of ignorance when thinking about the social contract, that is, ignoring, among others, one's place in society, traits, or skills. Similarly, in the 1762 book "On the Social Contract; or, Principles of Political Rights", Rousseau posits that everyone will be free because they all forfeit the same number of rights and are imposed the same duties. This is the view this chapter takes of the social contract: a policy package that aims to contribute to a fairer society.

469. This chapter addresses three questions: how can governments and citizens think about a new social contract in the context of informality and the changing nature of work? If the government is given a mandate to prepare a social contract aimed at improving fairness in society, what could its basic ingredients be? Related, 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 a menu of policies that could ignite a renewed societal dialogue.

A New "New Deal"?

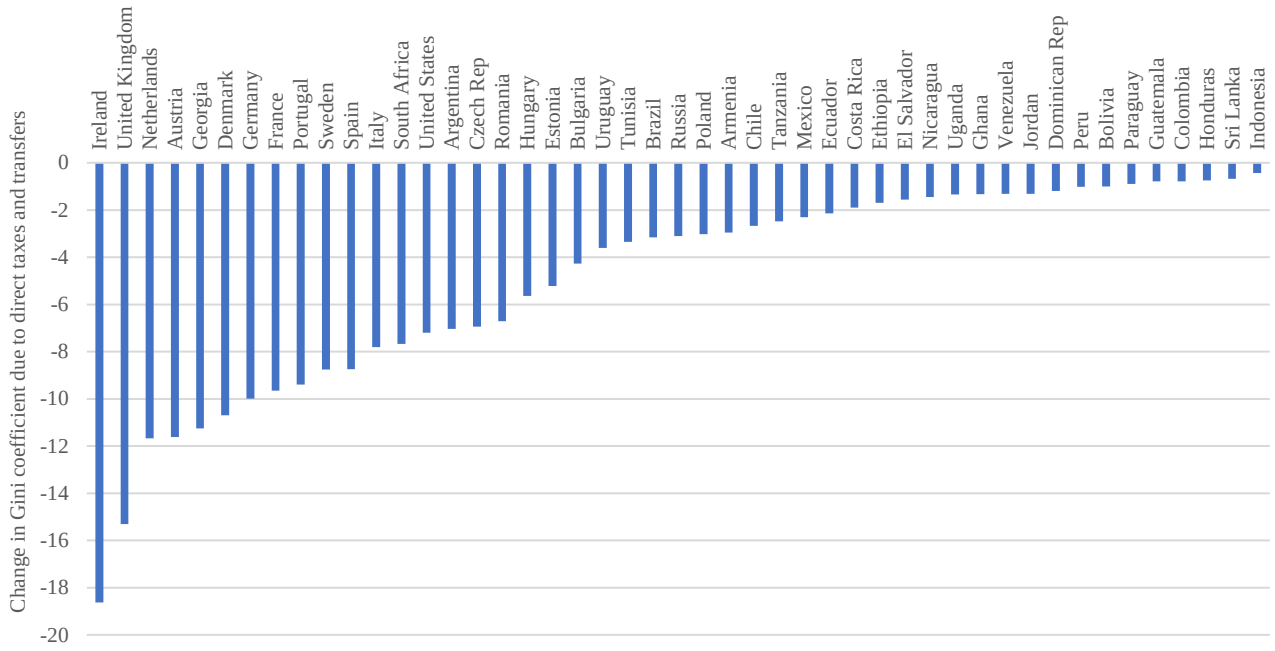
470. "The social contract is broken... there is a culture of not participating, of not caring, of silence", was one of the voices from areas affected by rampant insecurity in Mexico.[491] Cracks on current social contracts are already evident in, for example, the Arab Spring and the backlash against globalization reflected in rising protectionism. 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 suggests 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".[492]

471. One possible explanation for pervasive dissatisfactions with existing social contracts is the sense that these contracts are fundamentally unfair. Societies offer limited opportunities for upward mobility to the poor and marginalized. The more limited these opportunities—the more unfair a social contract becomes. This perceived "unfairness" is only heightened in the current era of rapid change and high uncertainty because risks of income instability are higher.

472. Mechanisms to ensure equal opportunity, which ensure the fairness of any social contract, often fall short, especially in developing countries. For example, countries are under-investing in the early years of children's lives, 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.[493] 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.

473. 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).[494] 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).

474. Persistently high levels of informality are also symptomatic of, and at the same time, a cause behind, the erosion of 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. At the same time, those operating in the informal economy evade their obligations to the state, for example in paying taxes. When social contracts are found to be unfair or exclusive, informality can become the opt-out option. Informality can reflect a lack of trust in the state.[495] In other words, high levels of informality can be the symptom as well as the cause of an unfulfilled social contract. The changing nature of work makes it even more urgent to update the social contract.

475. Recent examples of substantially new social contracts, or their elements, include "flexicurity" in countries like Denmark or Sweden, with its roots in the nineteenth century, and combining labor market flexibility with strong social security and active labor market programs; the economic reforms introducing market principles that began in China since 1978; the Balcerowicz Plan in Poland in 1989; as well as the Hartz reforms in Germany in 2003. Arguably, however, when people think about social contracts that involve significant reforms associated with the world of work, the New Deal under Franklin Roosevelt's presidency of the United States is a common yardstick for ambition and approach. In fact, many observers have called for a new "New Deal" in the context of the changing nature of work. The reference evokes, even if not always

intended, the need to substantially subsidize employment (or tax robots) in response to technological progress. The comparison, however, is disingenuous.

476. Between 1929 and 1933, with the Great Depression, the unemployment rate in the United States had skyrocketed from 3 percent to 25 percent. Industrial output had halved. Given the dismal state of the economy, as Franklin Roosevelt accepted his party nomination for President of the United States in 1932, he pledged "a new deal for the American people." While at the time Roosevelt did not have specific policy proposals, the "New Deal" came to encompass the programs and reforms his administration put in place between 1933 and 1938 to lift the country out of the Great Depression and manage its social costs.

477. The New Deal is, still to date, one of the boldest and most comprehensive packages of interventions in history, featuring both time-bound job-creation schemes as well as more permanent national institutions. The New Deal created a broad range of federal government programs that sought to offer economic relief to the unemployed and other groups, promote economic recovery through federal spending and job creation, and enact reforms aimed at regulating private industry and creating new social welfare programs.

478. The job-creation component of the New Deal included four main programs.[496] The Public Works Administration (PWA) was the primary source for public works funding until 1938. With an average spending of about 1.3 percent of GDP, PWA projects accounted for nearly 70 percent of all new schools built in the country. Programs were active in nearly every county and employed about 0.3 percent of the labor force. The Civilian Conservation Corps (CCC) operated between 1933 and 1942. Works were mainly implemented in rural areas and targeted unemployed youth. Participation was limited to a maximum of two years. The program generated employment for about 3 million individuals (or 0.4 percent of labor force each year), with about one-third of the budget spent on wages. The United States Jobs Corps later introduced in 1964 was modeled after it.

479. The Civil Works Administration (CWA) was introduced as an emergency initiative in the winter of 1933-34. While it lasted only 5 months, the CWA's scale-up speed and overall coverage were impressive: in 10 weeks, it reached up to 4.2 million beneficiaries or 8 percent of labor force. Finally, the Works Progress Administration (WPA) employed about 2.4 million individuals every month between December 1935 and June 1940 (or 28 percent of unemployed at any point of time), costing about 2.6 percent of GDP. The target population included the long-term unemployed which were largely excluded from the labor market. This program ended in 1943.

480. Job creation measures were complemented by a series of additional regulatory and system-wide reforms: the Federal Deposit Insurance Corporation to insure bank deposits and supervise state banks; the Securities Act of 1933 to codify standards for sale and purchase of stocks; the Social Security Act, financed through payroll tax contributions, to provide financial assistance to the elderly and the disabled; the Surplus Commodities Program to give away food to the poor, later converted into the Supplemental Nutrition Assistance Program ("food stamps"); the Wagner Labor Relations Act to guarantee workers the right to unionize and bargain collectively; the Fair Labor Standards Act to regulate working hours, set an hourly minimum wage, and restrict child labor.

These programs still exist today in 2018. The latter four are the foundation of social welfare and workers' protections system in the United States.

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

482. Managing informality and the consequences of the changing nature of work requires solutions that recognize that—while these areas are amenable to policy—they generate changes that are not transitory. Solutions focused on providing a temporary boost to labor demand, delaying technological change, or propping up sectors or occupations that become uncompetitive are bound to be wasteful and, ultimately, unsuccessful.

483. The prospects and challenges associated with the changing nature of work are an opportunity for revisiting social contracts and putting equality of opportunity for people and firms at their center. This approach would recognize the non-transitory nature of the changes ongoing and expected while managing the adjustment costs and adverse impacts that are likely to be concentrated on particular groups. For people, equality of opportunity 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.[497] In addition, it means boosting social protections, including both social assistance and insurance, in ways that are compatible with all forms of work.

484. 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 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.

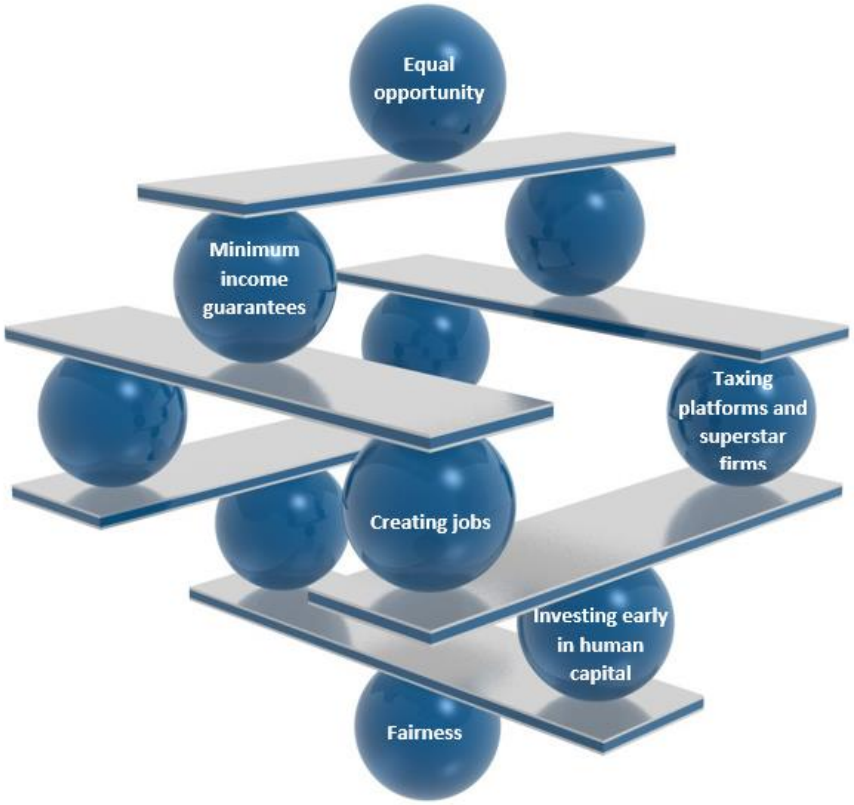
485. A new social contract should also foster open social dialogue with diverse actors: from small informal enterprises to superstar firms—and from informal self-employed workers to wage employers—different voices are emerging in the world of work. An effective social dialogue promotes this diversity. Social media tools open the door for engagement. These elements of the social contract, hence, echo the three freedoms discussed by Nobel Prize winner Amartya Sen in "Development as Freedom": political freedoms and transparency in relations between people; freedom of opportunity; and economic protection from abject poverty.

486. 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 percent.[498] 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.[499] 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.

Possible Elements of a New Social Contract

487. Social contracts are wide-ranging. So are the policies that 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.

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

489. In most countries, existing social contracts guarantee access to basic education. However, the changing nature of work necessitates a reexamination of this basic contract. The labor market increasingly values advanced cognitive and socio-emotional skills, which complement technology and make workers more adaptable. 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. 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 a solid foundation for skill development in the future. As skills acquisition is cumulative, returns to early investments is the highest.

490. The changing nature of work makes basic literacy and numeracy survival skills. They are required for simply navigating life—for buying medication, for applying to jobs, for interpreting

campaign promises. The ability to read and manipulate numbers also serves as a prerequisite for acquiring advanced skills. However, 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. Consequently, guaranteeing access to basic education is not enough. A new social contract needs to guarantee actual learning, ensuring that schooling leads to literacy and numeracy for all.

491. A social contract for early childhood development would ideally have three pillars. The first pillar ensures that children have the essential inputs so they are healthy, well-nourished and stimulated during their first 1,000 days (-9 months to 24 months of age). This means access to prenatal healthcare, immunizations, micronutrients, and parental outreach on the importance of breastfeeding and early stimulation. The second pillar ensures access to quality early learning during their "next 1,000 days" (25 months to 60 months). This means at least one year of quality preschool so that they are ready for primary school. These pre-primary programs need to be designed for young children with age-appropriate curriculum and capable and qualified teachers. The third pillar ensures that children are safe and not subject to violence. An important step to help ensure this is birth registration which helps ensure that children are recognized by the State and can access essential services throughout their life. The elements outlined above—prenatal healthcare, immunizations, micronutrients, parental outreach, quality pre-school, and birth registration—present a basic package to address children's early development and learning needs. A more comprehensive package would also include investments in safe air, water, and sanitation.

492. Some countries are already trying to deliver this type of social contract. In Cuba's early childhood development program, children's growth and development are regularly monitored. At the beginning of each school year the education sector identifies families who need specific attention, to monitor and prevent any negative impact on child development. Similarly, Chile's *Crece Contigo* includes a *programa de acompañamiento familiar*, which works with families, pregnant women and children under grade 4 who are in situations of health and social risk. Government of Peru has simplified birth registration process for easier access to early childhood development services. Its multi-sector program also supports parents in monitoring children's growth and health, and engaging in early stimulation activities. France passed a law in 2018 to ensure that all children have access to pre-school starting at age 3.

493. 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 at all. 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 no more than 40:1 in primary grades.

494. 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 daily support. 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.

495. 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.

496. 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.

497. Part of the jobs creation agenda in the formal sector includes reducing the cost of hiring workers. Lower hiring costs enables firms to 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.

498. A social contract also requires all actors to contribute their due share in taxes across countries. This is currently not the case. It is estimated that in the European Union traditional companies have paid an effective corporate tax rate of 23.2 percent, while digital companies pay on average only 9.5 percent.[500]

499. 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 bare little relationship to where the company has a physical presence and a significant part of their value is user-generated (e.g., social media).

500. 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 sell with no physical presence at the destination. Estimates suggest that the level of assets sheltered in tax heavens is around 8 percent of global GDP.[501] 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.[502]

501. 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.

502. 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.

503. 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.

504. The new social contract would also include elements of social protection. Increased risks in the world of work make it imperative to adapt how societies protect workers. A new social contract could provide a minimum income, combined with basic universal social insurance, that is decoupled from how or where people work. Such minimum could take many forms. For example, it could be achieved through a multiplicity of programs or by expanding individual interventions. It could also be achieved through a Universal Basic Income (UBI), an option that remains untested but is, with some modifications, an extension of familiar unconditional cash transfer schemes. Each of these modalities present different comparative advantages, fiscal, political, and administrative implications.

505. Low and middle-income countries have made significant headway 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.

506. 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 a 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 a negative income tax. 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.

507. 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.

Financing the New Social Contract

508. Arriving at a new social contract is likely to be costly (table 7.1). The costed elements of the social contract reflect possible priorities to promote equality of opportunity and a fairer society. These include interventions aimed at early quality investments in health and education, improvements in quality basic education, the provision of opportunities for increasing productivity among disadvantaged youths, and strengthened social protection. The costs presented here are indicative of costs for the total package; for countries that already provide some of these services, costs would naturally be lower.

509. Simulations suggest that the component of building human capital, including early childhood development and support for literacy and numeracy by grade 3, would cost around 3.2 percent of GDP in low income countries and 1.1 percent of GDP in lower middle income countries. Costs for a more comprehensive human capital package are estimated at 10.6 and 2.3 percent of GDP in low income and lower middle income countries, respectively. These estimates are based on component-wise unit costs derived from reliable studies and beneficiary numbers based on UN population estimates. Given that costs are likely to differ by country, estimates are provided for

three scenarios, one low income country (Mali), one lower middle income country (Indonesia), and one upper middle income country (Colombia).

510. The cost of enhancing social assistance to provide a guaranteed minimum would also vary by context and design choices made. Being the option that would attain the highest coverage and have the highest cost, a UBI could illustrate the upper-bound of a social assistance package. In this regard, a "basic" social assistance package that would cost 9.6 percent of GDP in low income countries, 5.1 percent in lower middle-income countries, and 3.5 in upper-middle income settings. These estimates use a UBI set at the average poverty gap level and aimed at just adults. A more ambitious package, exemplified by a universal basic income that reaches everyone including children, would cost 9 and 5.2 percent of GDP in lower and upper middle-income countries, respectively; in the poorest countries, the cost of such a package would be in the double-digits.[503]

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

	Human Capital Package		**Social Assistance Package (as exemplified by UBI)**	
Income Group	***Basic***	***More Comprehensive***	***Basic***	***More Comprehensive***
Low Income Countries	3.2	10.6	9.6	19.3
Lower Middle-Income Countries	1.1	2.3	5.1	9
Upper Middle-Income Countries	0.8	3.0	3.5	5.2

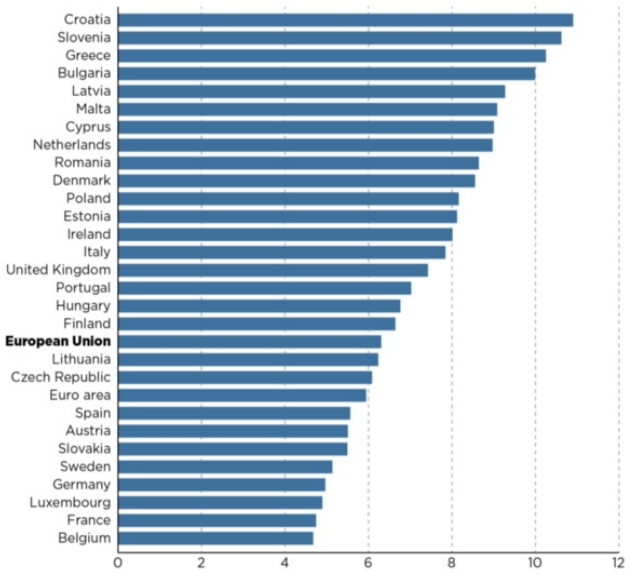
Source: Authors, based on preliminary results (for Human Capital Package, see Zheng and Sabarwal 2018). Note: The basic human capital package includes (1) supporting early childhood development, including prenatal healthcare, immunizations, micronutrients, parental outreach, birth registration, and at least 1 year of quality pre-school for every child; (2) learning assessments at end of grade 3 to shine a light on those who are at risk; and (3) early grade reading and math assistance for students in grades 1-3 who need additional support. The more comprehensive human capital package includes, in addition to the basic package, the following elements: (1) access to safe air, water and adequate sanitation; (2) a pupil-teacher ratio of no more than 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 specific countries for each country grouping. As such, results are meant to be indicative. See chapters 2, 3 and 6 for more details on the costing.

511. A new social contract would therefore 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 are more dependent than others 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 the poorest families tend to allocate larger shares of their budget to them. However, when looked at 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.[504]

512. 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.[505] 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.

513. 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.

514. 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.

515. 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.

516. China's new emissions trading system covers traditionally high-emission sectors such as iron and steel, power generation, chemicals, building materials, papermaking, and nonferrous metals. 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 these systems has evolved—their scope has expanded and their stringency has increased. For example, Guangdong expanded its emissions trading system to include buildings and transport. A nationwide emission trading system was officially launched at the end of 2017. The national system will be rolled out gradually, starting with infrastructure building (registry, trading platform), followed by trial trading and finally introducing spot trading and scaling up in sector coverage and trading products.[506] 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.[507]

517. 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 are investigating whether certain companies are getting unfair support in some cases. 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 has much of it's intellectual property located in low or zero income tax jurisdictions. On average, Apple, Facebook, Amazon and Google have paid less than one percent tax on corporate earnings in the United Kingdom in 2014.[508] 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.[509]

518. The European Commission's recent proposal to tax the profits of the digital economy is expected to raise around 5 billion euros a 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.

519. 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.[510] 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.

520. 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.

521. 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.

522. 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.

523. 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.[511] 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.[512] 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.

524. 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.[513] Similar results have been obtained in more advanced economies.[514] 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.

525. 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.

526. 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

527. 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.

528. 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.

529. 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.

530. The work on the WDR 2019 report does not rely on trust funds. The budget spent on drafting the study to-date is US$816,005.

Notes

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[373] 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.
[374] OECD Taxing Wages 2017.
[375] Benartzi and Thaler 2004.
[376] Akbas et al, 2016.
[377] Ashraf et al. 2006.
[378] Thaler and Sunstein 2008.
[379] NEST by design offers only a small number of simple choices and, partly for that reason, has low admin costs.
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[385] Caballero et al 2013.
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[387] Botasso et al 2017.
[388] Brambilla and Tortarolo 2018.
[389] Adhvaryu et al 2013.
[390] Betcherman 2012.
[391] 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).
[392] Palacios and Robalino forthcoming.

[393] Kuddo, forthcoming.
[394] Kuddo et al 2015.
[395] Krueger and Posner 2018.
[396] Holzmann et al 2012.
[397] Robalino and Weber 2014.
[398] Pinelli et al, 2017; Vodopivec et al 2016.
[399] Krstic and Schneider 2015.
[400] Sestito and Viviano 2016.
[401] Kuddo, forthcoming.
[402] Almeida and Carneiro 2011.
[403] Silva et al, 2014.
[404] World Bank 2016a.
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[406] Card et al 2015.
[407] Kluve et al 2016.
[408] Coase 1937.
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[410] http://inter.ikea.com/en/about-us/milestones/
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[414] https://founders.archives.gov/documents/Jefferson/03-10-02-0390.
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[416] Freund and Pierola 2015.
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[418] Goldberg et al. 2010.
[419] Cirera et al. 2018.
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[421] Enterprise Surveys.
[422] Freund 2016.
[423] Dalberg 2016.
[424] Sundararajan 2016.
[425] https://www.entrepreneur.com/article/286368
[426] Decker, Haltiwanger, Jarmin and Miranda 2017.
[427] The cluster of rural e-tailers is referred as a "Taobao Village" where 1) those e-tailers operate businesses within an administrative village; 2) annual village e-commerce transaction volume exceeds 10 million yuan (around $US1.6million); and 3) at least 10% of village households actively engage in e-commerce or there are 100 or more active online-shops, primarily with the use of Taobao.com Marketplace.
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[437] Nightingale and Coad 2014.
[438] Djankov, Georgieva and Ramalho 2018.
[439] Haltiwanger, Jarmin and Miranda 2013.
[440] Bruhn 2011.
[441] Hsieh and Klenow 2014.

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[469] See Chapter 3 of the International VAT/GST Guidelines, OECD 2017.
[470] There are two principal ways to collect value added tax (VAT) on services provided by a foreign supplier: require the domestic customer to account for the tax by way of a recharge, or require the foreign supplier to account for the tax. The first option is administratively burdensome and difficult to enforce in the context of digital services supplied to consumers, as it involves a large number of low value transactions, although it is easier in business to business transactions. The second option is the approach recommended by the International VAT/GST Guidelines.
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