World Development Report 2019

THE CHANGING NATURE OF WORK

Working Draft

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Overview

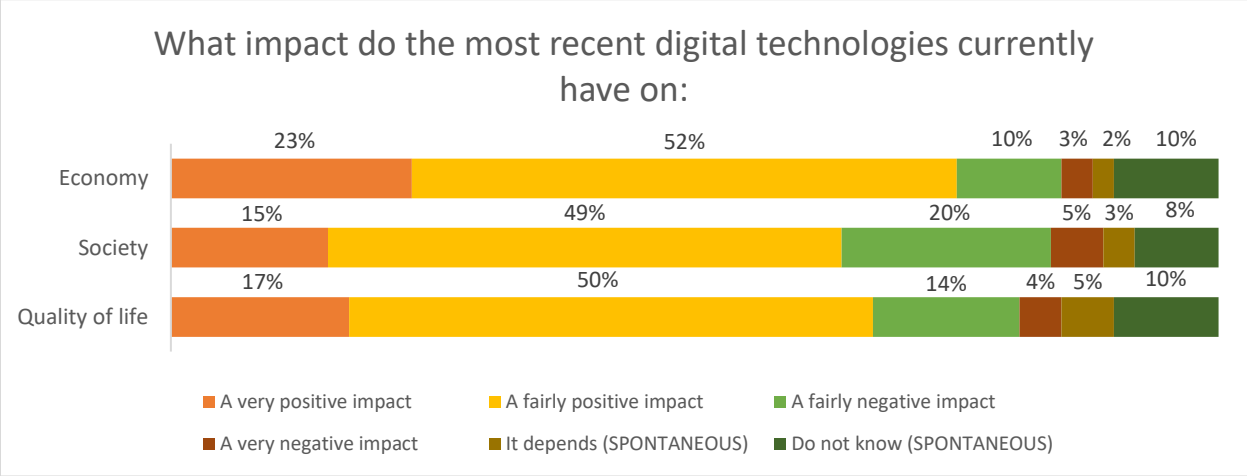
1. Concerns over technology-led disruption are far from new. Karl Marx worried that "machinery does not just act as a superior competitor to the worker, always on the point of making him superfluous. It is the most powerful weapon for suppressing strikes."[1] Economist John Maynard Keynes warned in 1931 of widespread unemployment due to technology.[2]

2. The balance of evidence in this study does not suggest the world is today, any more than it was in 1867 or 1931, on the cusp on an era of widespread, technology-induced unemployment. A more informed view predicts that some jobs will be lost due to automation. The adjustment to this loss will be especially challenging because many of the new jobs will require significantly higher levels of human capital.[3] In the absence of countervailing policies, some workers are likely to be pushed into lower-wage jobs or temporary spells of unemployment.

3. The changing nature of work disrupts markets. Automation shortens global value chains, obviating jobs in the process. At the same time, improved digital infrastructure extend the market for services—creating the gig economy. Reshoring (due to automation) along with the renegotiation of multilateral trade agreements create concerns about rising anti-globalization sentiment. However, emerging new leaders such as the BRIC countries (Brazil, Russian Federation, India, China) push integration forward.

4. Meanwhile, other trends such as demographic change, rapid urbanization and climate change, affect the composition as well as the location of jobs. In a March 2017 survey conducted by Eurobarometer, 74 percent of the respondents envisioned technology beneficial to jobs, 64 percent thought technology would improve society, while 67 percent of Europeans thought the quality of life would rise (figure 0.1). Individuals, firms, governments and society can prepare for the adjustments ahead.

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



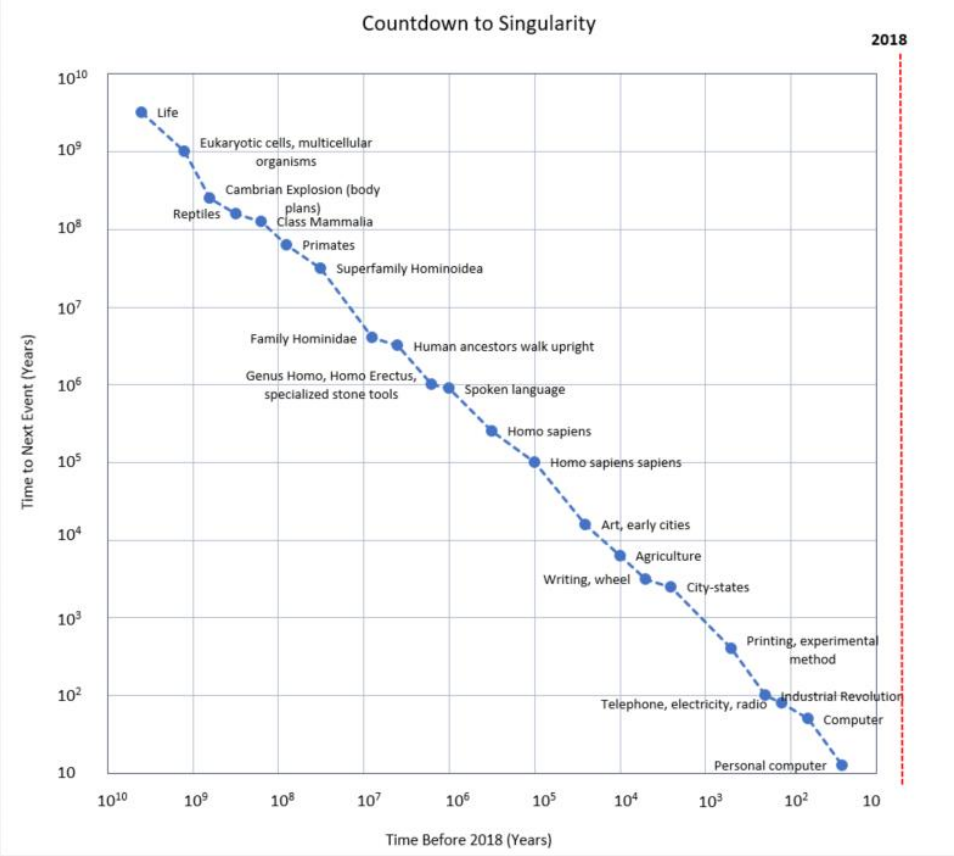
Source: European Commission 2017, Special Eurobarometer 460 "Attitudes towards the impact of digitisation and automation on daily life," Question 1.

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

Running Order

6. The first chapter of this study focuses on how technology changes the nature of work. The countdown to the time when artificial intelligence matches human intelligence is coming (figure 0.2). In some sectors robots are indeed replacing workers. But technology absorption rates in many parts of the world are slow. In many sectors, robots enhance worker productivity. Technology also creates new opportunities for workers. At the same time, technology changes the relative demand for skills, placing greater emphasis on those that cannot be replicated by technology. The concern is not mass employment, but potentially rising inequality. Retooling workers for the future world of work is expensive. Meanwhile, tax avoidance by large firms constricts public budgets.

Figure 0.2. Artificial Intelligence is Taking Over, Eventually



Source: Kurzweil, Ray. 1990. The Age of Intelligent Machines. Cambridge, MA: MIT Press.
Note: Kurzweil predicts a "translating telephone" by 2010.

7. Those who will create future jobs or compete for them are currently in day-care and primary school today. What skills are built in the family pre-school? Are schools building the right skills for the next generation of workers? Can workers learn on the job to achieve better job status and higher pay? The second chapter addresses the link between human capital accumulation and the future of work.

8. Some jobs will disappear due to automation. Others will not be created (due to reshoring). The majority of jobs will remain the same. How should workers' skills be shaped or re-shaped to align with the changing nature of work? Chapter 3 answers this question by exploring skills investments that can protect workers as the nature of work changes. Spells out of employment can be used to acquire new skills. The chapter also discusses ways to make the delivery of these skills more effective.

9. Work is the next venue for human capital accumulation after school. Chapter 4 evaluates how successful economies are in generating human capital at work. Large informal sectors limit the ability of emerging economies to accumulate human capital through work. This leaves them unprepared for the future of work. Other economies put obstacles on women who wish to work or run a business. Society suffers as a result. In the majority of emerging economies, agriculture still employs a large number of workers. Improving the productivity of these workers as well as in agri-business, makes the largest difference in reducing poverty.

10. Chapter 5 explores how technological change affects the nature of the firm. Technological progress has made firm boundaries more permeable, shifting incentives toward coordinating economic activity in a decentralized manner. Labor demand and employee-employer arrangements have also become more flexible. The line between professional and personal relations has blurred. Platforms are the new revolutionary way of exchanging goods and services. New labor-saving technologies automate routine tasks, making firms flatter. These changes are studied in the chapter, with a focus on policy concerns related to ways of organizing future production.

11. 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 obsolete. In developing countries, where informality is the norm, this structure has always failed workers. The combination of old and new labor market challenges calls for reexamining social protection and labor market institutions in different contexts. These policies are assessed in chapter 6 of the Report.

12. The changes in the nature of work, compounded by rising aspirations linked to the spread of social media, make it essential to rethink the social contract. New elements of the social contract will need to respond to the rising concerns with unemployment, inequality and unfairness that are accompanying these changes. Chapter 7 discusses what these new elements could be, how to finance them, and how technology meets the increasing demands of the changing nature of work.

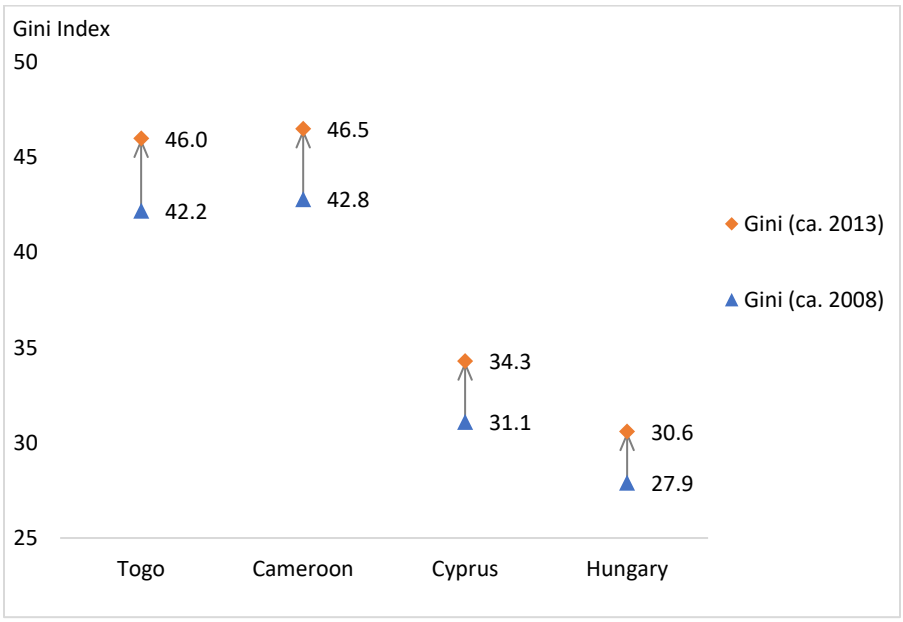
Findings

13. The study's main finding is that the threat to jobs from technology is exaggerated. History repeatedly teaches us this lesson. Doomsday scenarios on robots impoverishing workers will

continue to strike a societal nerve. The creators of such scenarios are so far sighted that few of their predictions have yet come true.

14. The bigger concern is the rising income inequality in some developing countries like Togo or Cameroon, or even in middle-income countries like Hungary (figure 0.3). Perceptions of rising inequality abound even in countries where the income data suggest no change, for example France. Addressing inequality, often ascribed to technological advances, is the focus of politicians.

Figure 0.3. Countries with Increased Inequality since 2008



Source: Authors' calculations based on World Bank (2016).

15. There are examples to learns from. Populous countries with falling inequality (as measured by Gini indexes) include Vietnam and Pakistan. Among middle-income countries Uruguay has managed to reduce inequality in the last decade.

16. This study provides a blueprint of how to think about a new social contract that reduces inequality. The most significant investment that people, firms and governments can do is in enhancing human capital. The jobs of the future require more socio-emotional skills. These skills are rarely taught at school. Their accumulation needs to start from birth and continue throughout life.

17. Accumulating human capital requires investment at all levels. Public investment alone is insufficient. Firms have to invest in their employees. Workers, in turn, need to invest in their continuous education. The World Bank's Human Capital Project aims to provide the impetus for enhancing investment in human capital.

18. The new social contract depends on efficient tax policy. The solutions are simple: 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.

19. The politics are simple too. Government have a choice between favoring a handful of tobacco, energy, or digital companies at the expense of their citizenry; or sharing the benefits of growth in a fair way.

20. Social contracts are about equality of opportunity. 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.

21. 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.

Chapter 1: The Changing Nature of Work

22. 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 productivity to many sectors, reducing the need for workers. It has opened new sectors, previously in the field of science fiction only. On balance, technology has historically created more jobs than it has displaced.

23. Work is continuously reshaped by technological progress. Society evolves as technology advances, new ways of production are adopted, markets expand. Workers, firms and governments build new comparative advantages as conditions change. For example, learning foreign languages became necessary for many workers in Vietnam in responding to the extension of global value chains to the country. Danish firms became the global exporters of hearing aid products in the 2000s by adopting 3D technology first.[5] The Indian government has built excellent technical universities as springboards into becoming leader in hi-tech sectors.

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

25. Amidst all this change, there is a technological revolution underway. Between 1999 and 2017, mobile phone penetration (unique subscribers) in Sub-Saharan Africa increased from 10 to 66 percent.[6] Increasing access to digital infrastructure—via laptops, tablets, and smartphones—is providing an enabling environment for on-demand services to boom. Social media has flourished, overhauling the way information is disseminated in society. The role of robots is rising in production processes that involve well-defined routine tasks.

26. This technological revolution is expanding opportunities. Technology can enhance the productivity of workers, individuals can seek flexible job arrangements, social discrimination can be alleviated, and consumers enjoy more product choice at lower prices. In addition, firms can use new technologies to improve capital utilization, overcome information barriers, outsource, and innovate. Online trade platforms increase market size for firms, especially small and medium ones. The firms selling on eBay in Chile, Jordan, Peru and South Africa are younger and smaller than firms in the offline markets.[7] In the Alibaba platform, smaller firms are also disproportionally represented.[8] Even small firms can be global: 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.

27. Notwithstanding the opportunities created by technology, the displacement of workers generates anxiety, just as it did in the past. The invention of the printing press rendered religious scribes redundant. 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."[9] 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.[10] With steam power and industrial machinery, the economic growth of industrializing nations accelerated rapidly, but not to everyone's immediate benefit. Luddites sabotaged machines to defend their jobs in the "Machine-breaking" movement in Britain during the early 19th century. Socialist and communist revolutions followed.

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

29. In contrast, concerns about growing inequality, as well as the social and private costs from job transitions, are underestimated. The Occupy movement in the last decade, for example, has rallied against rising income inequality, claiming that the top one percent benefits disproportionately from technological progress. In fact, technology complements high-skilled workers by making them more productive. However, many technologies can also replace workers in low or middle-skilled, routine jobs that can easily be automated. Middle skilled, routine occupations have been losing ground in places such as Guatemala, South Africa or Turkey. In Mexico, clerking occupations decreased at an annual rate of 2.5 percent from 2000-2010.[11] The result can be higher inequality. Service jobs may offer an alternative path for low- and middle-skilled workers, but these jobs are typically low paid with little upward mobility. For workers that are displaced by technology and for whom it is not that easy to be retrained and find new jobs, the transition is painful.

30. Regardless of how work may be changing, for low and middle-income countries, it is persistent informality and low-productivity employment that poses the greatest challenge. Informal employment is 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 91 percent notwithstanding rapid economic growth. Many informal workers face limited prospects. Both wages and productivity are significantly lower for informal workers. They exist day-to-day without health insurance or social protection.

31. 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 should care.

The rise of the robot?

32. "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.[12] Such statements give workers reasons to worry.

33. People start to fear the advent of a "jobless economy" when tasks previously performed by people are taken over by robots, especially those enabled with artificial intelligence. Data for the United States shows that one additional robot per thousand workers reduces the employment to population ratio by approximately 0.18-0.34 percentage points, and wages by 0.25-0.5 percentage points.[13] 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, up from 1.6 million in 2015.[14] Robot density per worker in 2016 was highest in Republic of Korea, Singapore, German and Japan, respectively. Currently in 23rd place, China aims to be within the top 10 by 2020.

34. 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, 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).[15] Ant Financial, a fintech firm in China, uses big data to assess loan agreements instead of hiring thousands of loan officers or lawyers.[16]

35. These robots, and technology more broadly, will continue to replace workers. Machines are mostly replacing workers in routine tasks that are "codifiable." The most notorious cases are taking place in manufacturing. Since the 1970s, manufacturing jobs in the United Kingdom have been steadily decreasing (notwithstanding the marginal increase that followed the 2008 financial crisis), even though there has been no absolute decrease in manufacturing output.[17] In the United States, manufacturing jobs declined by 31 percent between 1990 and 2016.[18] Automation partly explains these trends.

36. But automation has cross-sectoral impacts. In 2017, 3-D printing technologies enabled Adidas to establish two "speed factories" for shoe production in Ansbach, Germany and Atlanta, United States, eliminating more than 1,000 jobs in Vietnam.[19] 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. Philips Electronics shifted production facility from China back to Netherlands.

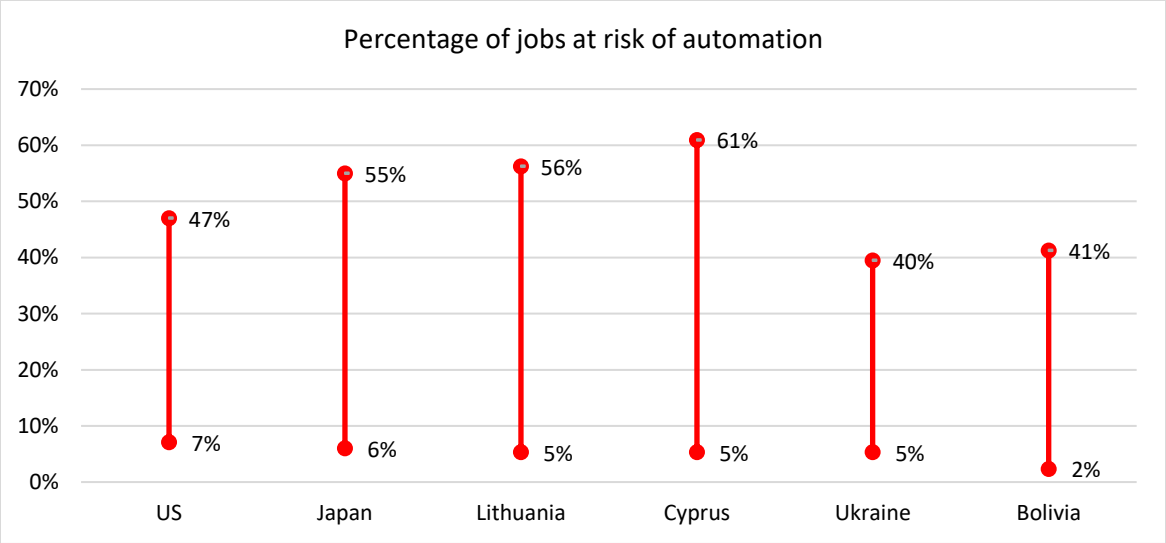
37. Some service jobs may also be susceptible to automation. Israeli company Mobileye, which builds sensors for driverless vehicles, will work with Moovit (a transit app that boasts 120 million users across 2,000 cities) to develop driverless vehicle navigation units.[20] The Chinese technological giant, Baidu, is working with King Long Motor Group 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.[21] Financial analysts, who spend much of their time conducting formula-based research, are also experiencing job cuts—Sberbank already 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.[22] "Robot lawyers" have already substituted for 3,000 jobs in Sberbank's legal department. Such efforts and others will reduce the number of back office employees overall to 1,000 by 2021, down from 59,000 in 2011.

38. Although a range of workers will be replaced, the overall impact of technology on employment is unlikely to be as large as many fear. This is because of measurement issues, historical trends, pace in technology absorption, and creation of new jobs.

39. 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."[23] This prediction about the future of jobs has not come true. Nor have many other predictions about huge job losses resulting from technology.

40. The great variation in estimates shows the high uncertainty involved in predicting how technology will affect jobs (figure 1.1). Wide differences stand out. 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 the US, 7 to 47 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).

41. The wide range of estimates calls into question the methodologies underlying these calculations. Experts were asked to strictly categorize a sample of 70 occupations taken from official US occupational categories as either strictly automatable or not (1-0). Using these probabilities, initial estimates placed 47 percent of US occupations at risk of automation.[24] Basing probabilities on the opinion of experts is instructive but not definitive. Moreover, using US occupational categories to estimate possible job losses due to automation elsewhere is problematic.

42. Job loss estimates may not always account for industrial structure or comparative advantage of economies. British political economist David Ricardo taught us that economies specialize in sectors in which they produce goods and services more efficiently, as compared to other sectors. This basic economics principle, along with attention to countries' industrial structure, is often forgotten when predicting jobs losses due to technology. For instance, in one estimate by German economists, the risk of automation across the Spanish labor market is 12 percent; in the Slovak Republic it is 11 percent.[25] The Slovak Republic is a large exporter of vehicle parts – a sector highly vulnerable to automation. Spain too has a large automotive industry. Estimates do not account for the precise specialization of workers. They also do not account for the ability of other sectors to absorb displaced workers. Spain also has a large, vibrant tourism sector that looks to be immune to automation and is growing. If governments make the right investments in sectors that are less susceptible to automation they can reduce overall job losses despite the changing nature of work.

43. Job loss predictions have also struggled to incorporate technology absorption rates. 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.[26] 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.[27] The divergence in these results prompts skepticism.

44. Technology absorption can be painstakingly slow. Such absorption differs not only between countries but also across firms within countries—it therefore influences the potential for technology to destroy jobs. Mobile phones and the internet use spread amongst individuals very rapidly compared to earlier technologies. But this is not the case for firms, especially in the informal sector. Among these firms, internet use is very low, especially beyond basic email functions.[28] The uptake of mechanization in agriculture paints a similar picture: persistent trade barriers, the relatively low cost of labor compared to agricultural machines and poor information all contribute to the low rates of mechanization in low and some middle-income countries. Even with the spinning jenny, the relatively low cost of labor in France and India delayed its introduction in those countries—in 1790, for example, there were only about 900 jennies in France compared to 20,000 in England.[29] Today, too, automation is used in some countries while others continue to rely extensively on workers.

45. Technology can raise productivity. When robots take over routine jobs, productivity can increase and workers can 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 retooled to include tasks that involve data analysis. The extent to which productivity gains result in more jobs depends on the responsiveness of demand to changing prices and incomes. Historically, household consumption has kept pace with household incomes. Today, consumers in advanced economies have responded to declining prices of goods and higher incomes by spending more of their money on services, including education. In developing countries, incomes are still catching up with consumption needs.

46. New jobs can be created in this process. An example is the technology sector. Thailand's software industry has grown by 160 percent since 2013.[30] The enterprise application software industry in the Middle East and North Africa grew 7 percent in 2017 alone.[31] 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 from $157 billion in 2016 to $457 billion by 2020, at 28.5 percent per annum growth rate.[32] Humans are central to the creation of the online interfaces that will drive this growth. With consumer interests changing fast, there will only be more opportunities for individuals to pursue careers in mobile app development or virtual reality design. App Annie reports that the mobile application ("app") industry generated a gross annual revenue of $41 billion in 2015; this figure will more than double by 2020.[33]

47. Jobs are also being created through digital commerce, online work, or in the gig economy. Andela, a New York start-up founded in 2014, has built its business model on the digitization of Africa. To-date it has trained 20,000 software programmers across Africa using free online learning and training tools. Once qualified, programmers work with Andela directly or join other Andela clients—such as Viacom, Mastercard Labs, GitHub and SeatGeek in the United States, as well as companies in 10 other countries. It aims to train 100,000 African software developers by 2024. Ninety percent of its workers are in Lagos, Nigeria, with other sites in Nairobi, Kenya, and Kampala, Uganda.[34]

48. Taken together, however, the jobs directly created by technology account for a relatively small percentage of total employment. More important is how new technologies have the potential to increase productivity in emerging economies and increase proximity to markets. For example, in Sub-Saharan Africa, the food industry is expanding to feed the growing middle class. Technology facilitates 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, etc., while collecting data for buyers, governments, and development partners. The company is expanding to include credit services.

49. Non-tradeable goods and services sectors—usually intensive in non-routine manual skills—may offer a promising avenue for future work. Notwithstanding the rise of the robot, such sectors will continue to rely on workers as the primary factor of production precisely due to the unique characteristics that humans offer. Artificial intelligence cannot yet think up new industries, lead teams, or develop policy. Nor can it engage in artistic expression. Automation's comparative advantage is its ability to optimize routine tasks. As such, creative disciplines, such as the arts, or sectors that rely heavily on innovation, will continue to draw upon human labor for the foreseeable future. The same applies to jobs involving social interaction, such as teamwork, care, relationship management, leadership: all of which require people to interact based on tacit knowledge. In sectors that rely on these skills, sectoral growth will lead to job growth.

50. The global market for creative goods and services grew by 81 percent between 2003 and 2012. Amongst developing economies alone, export earnings tripled during the same period, from $87 billion to $272 billion.[35] Governments can capitalize on increasing demand for tourism to generate jobs. Emerging economies increased their global market share from 30 percent in 1990 to 45 percent in 2016; it is expected to reach 57 percent by 2030, equivalent to over 1 billion international tourist arrivals. Arrivals in emerging destinations will increase at twice the rate of

those in advanced economies. In countries with high population growth, teachers will become even more important. Estimates suggest that at least 69 million new teachers worldwide are needed if supply is to keep up with population growth. Africa has the world's largest teacher shortage—by 2030, 19.6 million primary and secondary teachers will be needed in Africa, 17 million of which will be in Sub-Saharan Africa.[36]

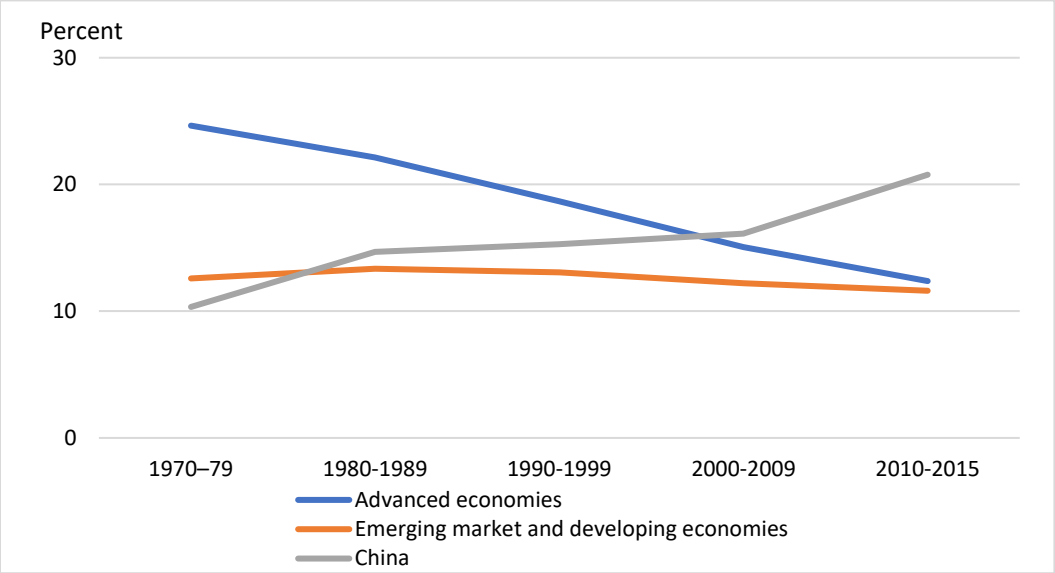
51. Given current demographic trends, jobs in healthcare may present one of the safest career choices in the future. By 2030 global aggregate demand for health workers will reach 80 million.[37] With a current stock of just 43 million health care workers worldwide, this forecast opens the possibility of 40 million new jobs. Aging populations only increases demand. In Asia, the number of older people is increasing faster than anywhere else in the world: by 2030, the over 60 population will increase from 57 percent in 2017 (549 million) to 60 percent (857 million) of the world's total. In Latin America, the number of people over 65 will quadruple between 2013 and 2050.

52. A jobless future is, thus, unlikely. But there are still reasons for policymakers to be concerned.

How the nature of jobs is changing, and how it is not

53. In many advanced economies, the share of manufacturing in employment has been steadily declining in the past forty years (figure 1.2). In contrast, manufacturing employment in China has become ever more significant; in the rest of the world, it has remained stable. Informality in the developing world has barely moved. Even outside of agriculture, at least 8 out of 10 workers remain unregistered or in small-scale private unincorporated enterprises in countries Bolivia, India, Indonesia or Tanzania. In some respects, thus, the nature of jobs is remarkably stable, especially in low and middle-income countries. In other respects, things are changing, rapidly in the case of advanced economies. Technology has given rise to the gig economy, although it is still small in terms of employment. Employers increasingly want workers with more advanced skills that complement technology. Permanent work contracts are becoming rarer in richer countries.

Figure 1.2. While the role of manufacturing in employment in advanced economies has declined, it has risen in China and remained stable in the rest of the world



Source: IMF World Economic Outlook April 2018.

54. Labor markets are being disrupted by technology, even if mass unemployment is not a major concern. First and foremost, technology is changing the skills that are being rewarded in the labor market. The premium for skills that cannot be replaced by robots and that help workers be more adaptable—namely general cognitive skills such as critical thinking, and socioemotional skills such as managing and recognizing emotions that help in teamwork— is rising. Technology is also disrupting the production process, by challenging the traditional boundaries of firms and changing the geography of jobs. Technology facilitates the expansion of global value chains. It has also given rise to digital entrepreneurs and dominant digital platforms such as Alibaba, Amazon or Facebook. All of this affects workers. Finally, technology is changing where and how people work. In particular, it makes remote work possible, expanding significantly the range of flexible work arrangements or expanding markets through online work or online trade.

55. In other words, the nature of work is becoming more diverse and more demanding in terms of human capital. These changes, not surprisingly, are more noticeable in advanced economies where technology is more widespread and where labor markets start from higher levels of formalization and stability in employer-employee relationships. But the implications of these changes are also relevant for developing countries that have been grappling with many of the same issues for decades, even if not caused by technological change.

56. Technology is changing the skills required at work. Machines, including robots, replace workers 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. At the same time, robots complement workers that engage in non-routine tasks that require advanced analytical, interpersonal or manual skills that require significant dexterity.

Designing, producing art, doing 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. So, a computer program can replace many of the repetitive, structured, legal research tasks carried out by a junior attorney in a law firm. But that program will complement the tasks carried out by the law firm's partner who uses analytical skills to craft an argument.

57. These changes in skills demands are a major shift. 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 developing countries, and from 33 to 41 percent in advanced economies (figure 1.2). There has been an even larger decline in occupations intensive in routine skills from 50 to 44 percent in developing countries and from 42 to 32 percent in advanced economies. If current trends continue, future workers will be concentrated in occupations that involve non-routine tasks. For example, teamwork, relationship management, people management, care: these activities require people to react to one another based on tacit knowledge.

58. Several studies document the importance of these compositional changes in employment over negative overall impacts on employment levels. In Argentina, for example, the adoption of information and communications technology in manufacturing increased employment turnover through the replacement of workers, elimination of occupations, creation of new occupations, and a decrease in the share of unskilled workers. However, employment levels increased across all skill categories.[38] In Norway, broadband adoption in firms improved employment among skilled workers and worsened it among unskilled workers as it complemented skilled workers in executing nonroutine abstract tasks, and substituted for unskilled workers in performing routine tasks.[39]

59. The changing skills content of jobs has been documented extensively in advanced economies, where many labor markets have been polarizing.[40] That is, employment has been growing most rapidly in high-skilled occupations that require advanced cognitive and interpersonal skills as well as in low-skilled occupations that require dexterity. In contrast, employment has shifted away from middle-skilled occupations, such as machine operators. This translates into an increase in the demand for high-skill and low-skill workers at the expense of middle-skill workers, which results in job polarization. Both middle and low-skilled workers could see falling wages: the former, because of automation; the latter, because of increased competition unless demand for low-skilled services significantly picks up. This can lead to higher wage inequality: increasing wages at the top of the skills distribution and lower wages elsewhere.[41]

60. In middle and lower-income countries, skills needs are also changing, although labor market polarization is not the norm. In middle-income countries in Europe, as for example in Bulgaria and Romania, while the demand for nonroutine cognitive and interpersonal work is rising, there is no increase in low-skilled nonroutine manual work.[42] Routine cognitive work has increased in countries like Botswana or Ethiopia. More common than polarization, is the observation that, in most cases, the demand for nonroutine cognitive and interpersonal skills is rising much more than for any other skills. High-skilled workers are gaining with technological change while low-skilled workers—especially those in manual jobs— seem to be losing. Mixed trends reflect the diversity of labor markets and technology absorption in these contexts, as well as the complex interaction of technological changes with other mega-trends, such as trade.[43]

61. Even within a given occupation, the nature of the skills needed to perform a job is changing. The job of a personal assistant today is very different from what it was 15 years ago. Travel agents, whose job for a while seem to have been automated away by online travel websites, are seen a resurgence, albeit these are very different travel agents than before. Data indicates a renewed interest amongst travelers, particularly younger travelers, to work with human travel agents to plan the details of their vacations, recognizing the benefits of tailored suggestions that leverage specialized local knowledge and sensitivity to individual preferences.

62. Sometimes these changes are not in the direction one may expect at first glance. In Europe, for example, it has been found that, while the relative importance of routine jobs has declined, the actual content of routine tasks in other jobs—even nonroutine ones— has often increased.[44] Computing relies on the processing of standardized information, and an increasing use of technology can both facilitate and require a further standardization of work. So, for a machine to do complex computations, it needs to be fed information in a standard manner, which would require cognitive routine work. Something similar can take place for machine operators.

63. Not surprisingly, impacts also differ depending on the precise technology considered. In Chile, the adoption of complex software used for client, production, and business management between 2007 and 2013 reallocated employment from skilled workers to administrative and unskilled production workers. This led to an increase in the use of routine and manual tasks and a reduction in the use of abstract tasks within firms.[45]

64. Because of these trends, demand for three types of skills is being disrupted. First, returns to general cognitive and socio-emotional skills appear to be rising.[46] In Vietnam, within a given industry, workers performing nonroutine analytical tasks earn 23 percent more; those on interpersonal tasks 13 percent more. In Georgia and Armenia, the earnings premium for problem solving and learning new things at work is close to 20 percent.[47] Second, returns to job-specific skills that are routine are declining. Third, pay-offs to the combination of different skill-types appear to be increasing.

65. Not surprisingly in a world of work that is rapidly evolving, the skills that are increasingly in demand are skills that can easily be transferred from one job to another, thus making workers more adaptable. Across countries, higher-order cognitive skills and socioemotional skills are consistently ranked among the skills most valued by employers. This is the case even in lower income countries. Employers in Benin, Liberia, Malawi and Zambia rank teamwork and communication, and problem-solving skills, for example, as the second and third most important set of skills. These are considered at least as important as technical skills.[48] Hence, while there are many unknowns when thinking about the future of work, there is a better idea of which underlying skills are most likely to be on demand.

66. Beyond the skills content of jobs, technology is reshaping the geography of jobs. Other waves of technological change have also redefined the geography of jobs. The industrial revolution, which mechanized agricultural production and automated manufacturing, led to mass migration of labor from farms to cities. The advent of commercial passenger planes expanded tourism from a clientele previously limited to aristocrats and other elites. Thousands of new jobs were created in new industries, in new locations.

67. Improvements in transcontinental communication technologies and the fall in transportation costs have allowed the dramatic expansion of global value chains. This has supported the outsourcing of jobs to the developing world. Robots and automation offer now 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 labor costs and taxes.

68. Online trade is another example of how technology is changing 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—now 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.[49] While sales have been strongest in traditional goods such as apparel, furniture, shoes, luggage and leather goods, and auto accessories, sellers are now diversifying their offerings to include high-tech goods such as drones and robots.[50]

69. Online work platforms, which eliminate many of the barriers related to geography in a number of tasks, are also part of the changing geography of jobs. UpWork, the largest freelancing website, noted that nearly two thirds of US companies have remote workers today, primarily to ensure they can attract top talent but in a flexible manner that accords with their needs.[51] Bangladesh, for example, contributes about 16.8 percent to the global labor pool online with around 650,000 freelance workers.[52] 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 McKinsey & Company and Dominos India. Wonderlabs in Indonesia follows a similar model. 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.

70. Remote work can also make work more flexible in more traditional sectors. Digital technologies, for example, allow people to work on different schedules or from different locations. Email and video conferences make it easier to do work away from an office. In the United States, for example, thirty-seven percent of workers say they have telecommuted, up from 30 percent ten years ago and four times greater than the 9% found in 1995.[53] In the European Union countries, on average, 17 percent of employees are engaged in different forms of telework at least occasionally.[54] Women carry out more regular home-based telework than men. This may present opportunities for women in places where family responsibilities or social norms make it difficult for women to engage in work outside the home. This is, of course, not an optimal solution, and could in fact, delay more fundamental changes to bring gender equality into the world of work.

71. Digital platforms, and technology more generally, are rapidly transforming the "standard" model of work. This is a model of work common in advanced in economies (not so in most developing countries) based on a contractual, often stable, relationship between an employer and an employee. These are often called "gigs" as, for example, short-term jobs carried out in online work platforms. Another clear example of how technology is disrupting the standard employer-

employee relationship is the on-demand economy. Technology makes certain types of work accessible to every individual on a more flexible basis. Examples range from grocery delivery to sophisticated tasks like accounting. Increased access to digital infrastructure—via laptops, tablets, and smartphones—provides an enabling environment for on-demand services to boom. For example, a student can become a Yandex driver in Moscow almost at will. She can identify peak hours in different locations where she can achieve the highest level of passenger turnover.

72. While these jobs provide new earning opportunities and a flexibility that is welcomed in many cases, they are in a grey regulatory area and lack access to benefits. Platform workers are emerging as a separate labor category. But most current labor laws are very unclear on roles and responsibilities in such situations. In these gigs—contrary to the case of formal jobs, but just as in other informal ones in the traditional economy—there is no pension, no health or unemployment insurance, no minimum wage, or other workers' protections. This shifts the standard pattern (in advanced economies) of demanding workers' benefits from employers to directly demanding welfare benefits from the state, forcing a debate on the need for a new social contract.

73. All in all, labor markets are becoming more fluid. Job tenures are becoming noticeably shorter in some cases. In the United States, for example, the median job tenure for men aged 45-54 has fallen from 12.8 years in 1983 to 7.9 in 2016.[55] In some European countries, it is younger workers who have seen their job tenures decline, probably linked to the rise of temporary contracts. Among workers aged 25-29, for example, the share of workers with job tenures less than 12 months, 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; and from 19 to 24 percent in Italy.[56] Part-time employment is also on the rise in many places: since 2000, part-time employment went from 5 to 17 percent of total employment in Chile, and from 17 to 22 percent in Germany. A similar trend can be observed in temporary employment. In Poland, for example, temporary employment increased from 46 to 68 percent of total 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 trade.

74. What is most striking is that many of these changes amount to a convergence in the nature of work between advanced and developing economies. The changes outlined above are most profound in advanced economies, where labor markets are deformalizing. Given the nature of work in developing countries, this means that labor markets in advanced and in less advanced economies are converging. This type of convergence is not what would have been expected for most of the past century, however. Then, 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.

75. Yet, this transformation has hardly taken place in developing countries. With some notable exceptions, mostly in East Asia, informality has been hard to tackle. Self-employment, informal wage work with no written contracts and protections, and low-productivity jobs more generally, are the norm in most of the developing world. Most workers in developing countries are either self-employed (65 percent) or on informal wage employment (20 percent).[57] They are often

farmers or own accounts workers in informal, low productivity activities. Only 15 percent of the labor force in middle and low-income countries is in formal wage employment. This was the case before this wave of technological change, and it seems that it will continue to be the case. In fact, recent technological developments accentuate the divide between formal and informal work in many cases, though it can also be harnessed for good. Managing this old and new informality is a crucial challenge for policymakers.

The concern of rising inequality

76. "Concerns about inequality trump all other dangers, and the gap between the rich and the poor is increasingly considered the world's top problem". This was the finding by the Pew Research Center when asking respondents in advanced economies about the "greatest danger in the world".[58] In Latin America, public opinion polls show that over 70 percent of people perceive income distribution to be unfair or very unfair.[59] Field experiments with over 50,000 respondents in 11 high-income and developing countries reveal high levels of concern about inequality.[60]

77. Technology can brighten the prospects for upward mobility. However, the process towards such aspirational goal can be bumpy or disruptive. Economic prosperity is the result of economic dynamism: research shows that firm death rates are higher in richer developing countries than poorer ones.[61] Such vibrant process of job creation and destruction works society-wide – and not just for the few – when rules of the game are fair and equal opportunity is provided to all. While the extent to which technology affects inequality is an empirical question,[62] there are worrying signs.

78. First, the share of labor in national income is declining in many countries around the world. Several factors can help explain this trend, including increasing returns to capital due to the nature of technological change, the mechanization of production, decline in the bargaining power of labor, and industry concentration. Cross-country analysis shows that, since 1975, the labor share is falling in 71 percent of high-income countries and 73 percent of developing countries. Dwindling labor shares can be found not only in countries such as the United States and Germany, but also India or China. In contrast, labor shares have increased in in the U.K, Brazil or Korea.[63] Evidence on the total labor share, which includes the self-employed and government sectors for a larger set of developed and developing countries, points in the same direction. In this analysis, the labor share has been falling in 82 percent and 84 percent of advanced and developing economies, respectively (figure 1.3).[64]

Figure 1.3. The labor share is declining in most countries around the world

[Pending]

Source: Cirera et al. (2018)

79. Second, technology and other mega-trends shift skills demands in favor of high-skilled workers, while reducing the need for low-skilled, and often even middle-skilled workers. Technology is augmenting the productivity of many high-skilled workers, as reflected in rising returns to advanced cognitive and socioemotional skills. Globally, private returns to education, at about 10 percent per year, remain high despite the significant expansion in the supply. Returns to

tertiary education are the highest at almost 15 percent per year.[65] Individuals with more advanced skills can take better advantage of new technologies and adapt to the changing nature of work. In fact, the more volatile the state of technology, the more productive education could be.[66] For example, returns to primary schooling in India increased during the Green Revolution, with the more educated farmers adopting and diffusing new technologies.[67]

80. In many countries, low and middle skilled workers are concentrated in occupations that have a high content of routine tasks. These are the occupations that are most susceptible to automation and offshoring. Displaced workers are likely to compete with (other) low-skilled workers for jobs with low (and possibly decreasing) wages. Even when new jobs arise, retooling is costly, and in many cases, not possible. This is concerning. 83.7 percent of the 'extreme poor' in developing countries are 'workers', especially self-employed in the informal sector.[68] Put differently, a core reason why people are poor monetarily is their low-paying jobs: for example, between 54 and 63 percent of workers in Africa and Asia live on less than $2/day.[69] Cross-country evidence shows that jobs are indeed a key driver of poverty reduction: in 10 out of 18 Latin American countries – as well as in Germany and the United States – more than half of poverty reduction came through jobs.[70] Finally, a job is more than earnings: having a job can shape psychological wellbeing, identity-shaping, civic engagement, and social cohesion.[71]

81. Third, many superstar corporations, including many in the platform economy, are getting ever more profitable but, often, not contributing a fair share of taxes. Evidence on tax-avoidance by platform companies has brought into question their "don't be evil" social imprint. Corporations like Google are shifting profits to places where corporate taxes are low. Again, this phenomenon is centuries old. "The bourgeoisie are today evading taxes by bribery and through their connections; we must close all loopholes," Lenin stated in 1918.[72]

82. According to the latest figures, 63 percent of all the profits made outside of the United States by American multinationals are reported in low-tax jurisdictions like Bermuda, Luxembourg or Ireland. The shareholders of these corporations benefit while all others lose. An estimated $8.7 trillion, 11.5 percent of the entire world's GDP, is held offshore by companies and wealthy households (who in turn benefited from investments in companies) in a handful of tax shelters. The collection of taxes on this income should be a priority for governments and international institutions. These additional revenues can go a long way towards funding a new social contract.

83. A new social contract is, in fact, what may be required to stop concerns about rising inequality from materializing. Technology is not destiny. Governments can play a significant role in ensuring that the benefits from technological progress are widespread. The rest of the report discusses how.

Chapter 2: Building Human Capital

84. Technology is transforming lives, economies, and societies.[73] While these transformations bring opportunity and convenience, they also unleash anxiety and dislocation. In one recent survey nearly 79 percent of respondents agreed that technology has led to healthier, easier lives.[74] In another survey, nearly 50 percent felt that technology displaces jobs, increases income inequality, and disrupts social order.[75] Society can maximize the gains inherent in rapid technological change by investing in people.

85. The world is healthier and more educated than it has ever been. Schooling has expanded tremendously, even in the poorest countries. Between 1970 and 2010, the gross primary enrollment rate in South Asia increased from 47 to 100 percent.[76] Life expectancy in Sub-Saharan Africa increased from 52 years in 1980 to 62 years in 2015.[77] And by 2030, a girl born in South Korea is expected to live to 91 years.[78] Around the world**,** people are living longer, healthier, and more skilled lives, on average.

86. However, a large unfinished agenda remains. Nearly a quarter of children under 5 are malnourished.[79] 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.[80] 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.[81]

87. This chapter shows that investments in human capital—health, education, social protection—hold the key to benefiting from the opportunities in today's changing world. However, governments routinely under-invest in these dimensions. This is not just because they lack fiscal resources. Governments often lack political incentives to invest in human capital. Unlike "hard" investments in infrastructure, the benefits of these "soft" investments take time to materialize and are not always highly visible to voters.

88. Health and education have always been good investments. 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."[82] This is still true in 2018.

89. Benefits of human capital transcend higher incomes. In Nigeria, the introduction of universal primary education enhanced people's engagement in political life years later.[83] In Brazil, adding adolescents aged 16-17 to the coverage of *Bolsa Família*, a cash transfer program conditional on school enrollment, vaccination and other health requirements, decreased crimes in school neighborhoods by 6.5 percent.[84] An additional year of female schooling in Turkey reduced teenage fertility by 33 percent.[85] In Nigeria, a program providing malaria testing and treatment increased worker earnings approximately 10% in just a few weeks.[86]

90. For all these reasons, human capital feeds—both directly and indirectly—into economic growth. Between 10 and 30 percent of per capita income differences can be attributed to cross-country differences in human capital.[87] This fraction could be significantly higher if we were able to investigate this relationship with improved measures of human capital.[88] More importantly, one-time investments continue to generate returns over the long term. Investments in the education of

girls today, leads to healthier, more educated children in the next generation.[89] In Pakistan, children whose mothers have even a single year of education spend an extra hour a day studying at home.[90] The number of engineers in 1880 in the United States is shown to impact the level of income today.[91]

91. Returns to human capital are even higher during periods of high uncertainty, as in the current era of rapid technological change. Individuals with stronger human capital can reap higher benefits from new technologies. They are also able to better adapt to changing work. During the Green Revolution in India in the 1970s-80s, it was the more educated farmers who were able to adopt and diffuse new technologies.[92] In Mexico, the benefits of increased labor productivity resulting from the North American Free Trade Agreement were concentrated among more skilled workers.[93] In fact, the productivity of human capital increases during more volatile stages of technological disruptions.[94]

92. The importance of human capital is heightened because future success depends on working with machines, instead of fearing them. In 1997, one of the greatest chess players in history, Garry Kasparov, lost a chess match to a supercomputer called Deep Blue. Some years later Kasparov developed "advanced chess," where a human and a computer team up to play against another human and computer. This technological advance is mutually beneficial: the human player has access to the computer's ability to calculate moves, while the computer benefits from human intuition. This idea applies to most forms of human endeavor. Automation and artificial intelligence are the ultimate tools to augment human creativity and foster human achievement. But to master them, higher levels of human capital are required.

93. Not surprisingly therefore, ongoing technological disruptions have increased the premia on human capital. Returns to education remain high (at 10 percent on average). Firms with a higher share of educated workers do better at innovating and exploiting new technologies.[95] At the economy-wide level, human capital is positively correlated with overall levels of research, innovation, and the adoption of advanced technologies.[96] For example, 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 today.[97]

94. In fact, the very understanding of human capital has expanded to include not just cognitive skills, but also socioemotional skills. The ability for teamwork, empathy, conflict resolution, and relationship management are now recognized as skills that can be developed as a part of human capital. The labor market returns to these skills have increased.[98] This is because increasingly globalized and automated economies put a higher premium on human capabilities that cannot be fully mimicked by machines. Abilities such as grit and conscientiousness have economic returns that are often as large as those associated with cognitive ones.[99]

95. On the other hand, when technological disruptions are met with inadequately realized human capital, existing social order may be undermined. People's sense of well-being is associated with their reference income—the perceived average income of peers. As internet access and social media become more widespread, reference incomes are constantly increasing, sometimes to a degree that cannot be easily achieved. When young people in one part of the world realize they are

being denied healthcare and educational opportunities that others in the world can access, it creates a strong sense of grievance. Rising aspirations associated with expansions in human capital could, when left unmet, also spill over into political violence[100]—an effect highlighted recently in the Arab Spring and its antecedents.[101] This risk looms especially large in countries that are experiencing a youth bulge at a time when social media has reduced the costs of political activism. Recent research suggests that people who are educated but underemployed are more likely to support violent extremism.[102]

96. While this gap in opportunity leads to an erosion of social capital, policies to bolster human capital accumulation help. A cash transfer program in Tanzania conditional on human capital investments led to an increase in trust in local government.[103] 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.[104] 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.[105]

Why Governments Need to Invest

97. Governments need to intervene to invest in human capital because left to their devices individuals will underinvest. This is because these investments produce significant social returns but individuals do not always count social returns when making investment decisions. 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 about the social return, i.e., the fact that other children will be less likely to get infected. Some of these benefits are hard for parents to quantify, let alone internalize. 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 3-5-year-olds developed in Michigan in the 1960s, estimated a return to society of between about $7 and $12 for each $1 invested.[106] Without government intervention or incentive, families might not choose to invest enough in these types of programs.

98. The social returns of human capital include improved social participation. 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.[107] Human capital can also play an important role in building "social capital" by making people more trustworthy. Social capital in turn is associated with a number of positive societal and economic features, including higher economic growth.[108] 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.[109]

99. Increased human capital also helps reduce crime.[110] In Mexico, high school dropouts are significantly more likely to be caught up in the violence of the war on drugs.[111] In Liberia men at risk of committing violence when enrolled into a cognitive behavioral therapy program intended to stimulate skills such as recognizing emotions, improved their self-control, and ability to navigate

difficult emotional situations. When combined with a small cash transfer, the program significantly reduced the chance that these men would fall back into a life of crime.[112]

100. Overall, human capital is a highly efficient investment because different dimensions of human capital complement each other. For instance, healthier children learn more. Evidence in the United Kingdom shows that providing healthier diet for school children significantly increased their achievements in English and Science.[113] In a multi-country study, both underweight and obese children had lower IQ scores than healthy weight children.[114] At the same time, educated individuals lead healthier lives—they suffer less anxiety and depression and have a lower probability of having a heart condition, stroke, hypertension, high cholesterol, emphysema, diabetes, asthma and ulcer.[115]

101. At the economy level, increased human capital plays an important role in decreasing poverty.[116] Ghana's success story is testament to this relationship: throughout the 1990s and early 2000s the country doubled its education expenditure, drastically improved its primary enrollment rates, and increased literacy by an astonishing 64 percentage points by 2012.[117] This led to an increase in the salaries this newly-educated labor force took home and a substantial reduction in poverty. [118] The East Asian Miracle also exemplifies how human capital can translate into economic growth and social development.

102. Not only does human capital boost economic growth, these returns persist over the long term. For example, in the mid-19th century, the state of Sao Paulo, Brazil, encouraged the immigration of educated Europeans to specific settlements. More than 100 years later, those settlements continue to have higher school attainment, a progressive shift of employment from agriculture to manufacturing, and higher per capita income.[119] One estimate suggests that a one standard deviation increase in the number of engineers in United States in 1880 is associated with a 16 percent increase in income and 10 percent increase in patenting capacity today.[120]

103. Social benefits are not the only reason governments need to intervene. 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. Indian newspapers recently featured findings from the Economic Survey in 2017-2018 estimating that India could have as many as 21 million "unwanted girls," daughters whose parents wanted sons instead.[121] There is evidence that these girls receive much less parental investment both in terms of health and education. In China, 23 percent of men and 18 percent of women surveyed felt that a university education is more important for boys than girls.[122]

104. There are also cases in which families would like to invest in the human capital of their children, but cannot afford it. As of 2013, 10.7 percent of the global population live below the poverty line of US$ 1.90 a day.[123] For such families, 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. [124]

105. 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. For instance, *Shombhob*, a conditional cash transfer piloted in Bangladesh, has been found to reduce wasting among children between 10 and 22 months of age and improve mothers' knowledge about the benefits of breastfeeding.[125] The effects of these programs last over time. For instance, 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.[126]

106. 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.[127]

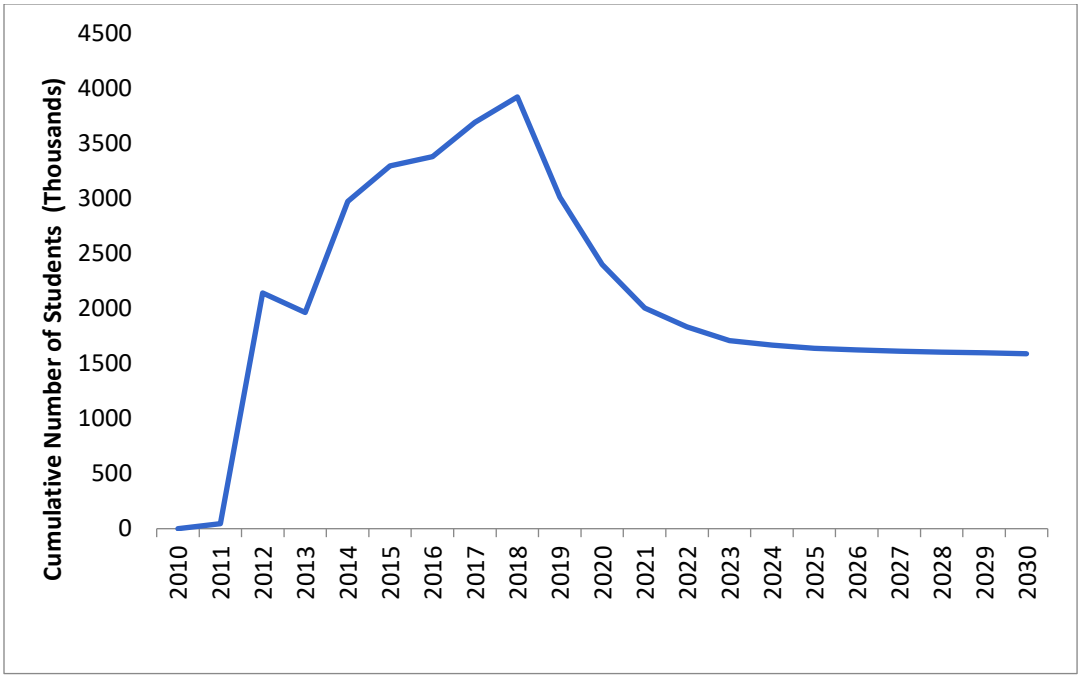
107. Too often governments do not step in to the level they need to. In 2014, governments of low-income countries on average spent 4.0 percent of GDP on education, and 5.7 percent on health, while corresponding expenditures in high-income countries are 5.2 percent and 12.3 percent, respectively.[128] This underinvestment is starkly visible in the extent to which human capital outcomes for the poor are much worse than those for the rich. It is also visible in the way governments spend much more on the politically visible aspects of human capital like school and hospital buildings; but much less on the less visible aspects – such as teacher and health worker effort and competence. Election campaigns often promise a new school or hospital; but rarely discuss actual learning levels or stunting rates.

108. 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.[129] In Nepal, 46 percent of education spending goes to the richest fifth, only 11 percent to the poorest. Gaps in spending for the poor show up as gaps in outcomes for the poor. In Lao PDR, 75 percent of children from the wealthiest quintile complete lower secondary education, while this share is only 3 percent among the poorest quintile.[130] In India, the infant mortality rate among the poorest versus richest wealth quintiles is 82 and 34 per 1000 births, respectively.[131]

109. In many contexts, school quality is systematically worse in poor neighborhoods. This helps reinforce—or even exacerbate—existing inequalities. As a result, individuals who live in high-poverty areas fare worse than those who live in lower-poverty neighborhoods on a range of educational outcomes.[132] In fact, the fraction of childhood spent in a high-poverty area is negatively correlated with outcomes such as high-school completion,[133] and every year spent in a better area during childhood increases college attendance rates and earnings in adulthood.[134]

110. Human capital is also one of the first things to suffer when societies fracture. Wars can prevent whole generations from realizing their potential. World Bank estimates for Syria show that between 2011 and 2017 almost four million children left school as a result of the civil war, and many of them will likely never make up for these lost years of school (figure 2.1).[135]

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



Source: World Bank 2017.

111. Another common problem with human capital investments is a lack of attention to "quality." Too often public services fail to be of sufficient quality to actually generate human capital. Sometimes, they fail only the poor. Sometimes they fail everyone—and the rich simply opt out of the public system.

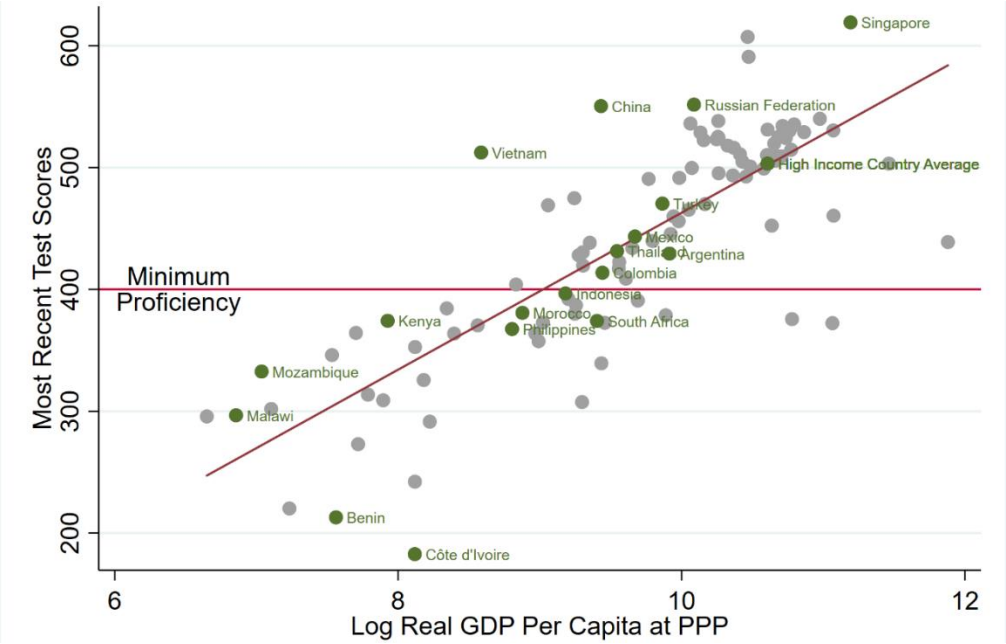
112. World Bank's Service Delivery Indicators surveys, recently fielded in seven Sub-Saharan African countries that together represent close to 40 percent of the continent's population, found that, on average, only 66 percent of fourth-grade teachers had mastered the language curriculum they were supposed to be teaching, and only 68 percent had the minimum knowledge needed to teach math.[136] Similar surveys conducted in healthcare facilities paint an equally mixed picture: while about 80 percent of Kenyan doctors could correctly diagnose a basic condition such as neonatal asphyxia, fewer than 50 percent of Nigerian doctors were able to do so.[137]

113. Lack of motivation is another issue. In the seven countries that were surveyed, on average, teachers taught for only half of the time they were supposed to spend teaching. In Senegal, nearly 69 percent of teachers claimed it was acceptable to be absent from class as long as students were left with work to do.[138] For teachers and doctors working in politicized bureaucracies—where promotions are based on political connections, not performance—lack of motivation may not be surprising. In these contexts, reform is not simply a question of identifying the problem and finding

the optimal solution, but also of understanding the incentives of bureaucrats and aligning them with program objectives.

114. The inequality and inefficiency of human capital investments leads to low outcomes. In some parts of the world, the quality of education is so poor that it is leading to little accumulation of measurable human capital. Children in many countries struggle to meet a "minimum proficiency" threshold for school performance. 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

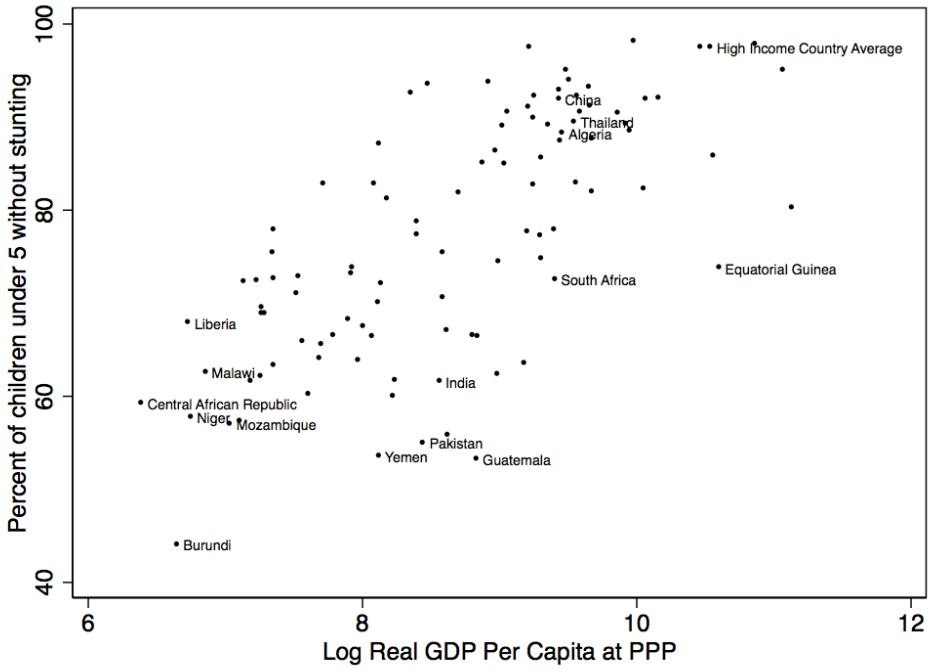


Source: Altinok, Angrist and Patrinos 2018. Data for China refer to PISA tests administered to students in Beijing, Shanghai, Guangdong and Jiangsu.

115. Another illustration of low learning comes from differences in retained learning among adults. In Nigeria, only 11 percent of adult women who completed grade 6 can read a sentence. In Rwanda, this number is 97 percent.[139] These gaps in the actual level of learning or skills acquired within the education system may be the single biggest reason why education has not translated into economic development in certain contexts. To better understand whether schooling effectively translates into learning, the World Bank Group is developing a comprehensive new database of international student achievement test scores, harmonizing results from international, regional, and national testing programs covering over 150 countries so they are comparable to an international assessment scoring standard.[140]

116. Health also affects learning and stunting rates remain extremely high in some parts of the world (figure 2.3). Over one-third of children under the age of 5 in the South Asia region have low height for age,[141] which reflects chronic malnutrition and severely limits the ability to learn. In countries such as Benin, Burkina Faso and Côte d'Ivoire, 10 percent of children born today never see their fifth birthday. Rates of anemia caused by iron deficiency—the leading cause of morbidity in children and adolescents age 0 to 19—are particularly high in Afghanistan (41 percent) and Yemen (40 percent).[142]

Figure 2.3. Percentage of children under 5 without stunting



Source: UNICEF, WHO, and World Bank 2017.

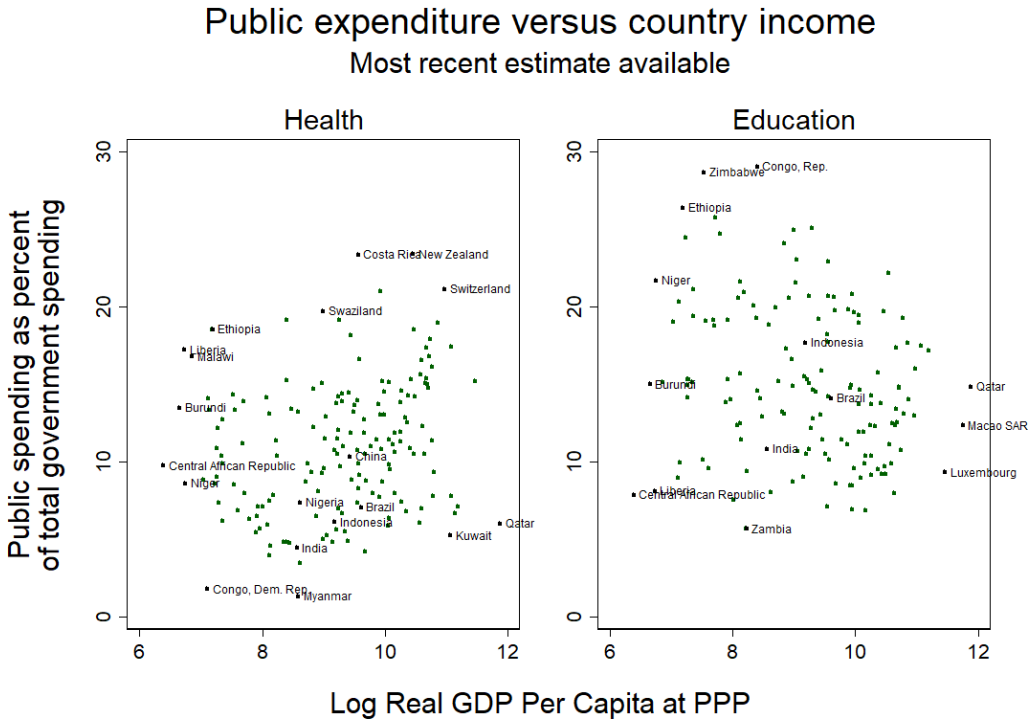
117. Human capital matters—a lot—for people, for economies, for societies, and for global stability. And it matters over generations. When countries fail to invest productively in human capital, the costs are enormous, especially for the most disadvantaged. These costs put new generations at a severe disadvantage. With technological progress placing a premium on higher-order skills, failing to lay the groundwork for productive lives will not only carry high costs, but is likely to generate more inequality. It will also put security at risk, as unmet aspirations lead to unrest.

Why Governments Often Fail

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

human capital does not just depend on available budgets (figure 2.4). These investments are influenced by political incentives and implementation constraints.

Figure 2.4. Spending on Health and Education not correlated with Log Real GDP



Source: WDR 2019 team, based on data from World Development Indicators (public expenditure) and Penn World Tables (GDP).

119. 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.

120. 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,[143] 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.[144]

121. Implementation problems are equally daunting. Delivering health and education services involves a massive coordinated effort, especially in more populous countries. This effort often falls prey to capacity constraints and bureaucratic inefficiencies. In contexts where such services are expanding rapidly to the poorest and most vulnerable populations, there is the added challenge of input shortages and fiscal constraints.[145] For example, the roll-out of Ghana's national health insurance scheme, in 2003, suffered from insufficient management capacity and the poor distribution of health facilities and workers. These led to significant delays in provider reimbursement and the provision of membership cards.[146] In Tanzania, less than 8 percent of health providers received direct financial support from the central or local government.[147]

122. Leakage and inefficiencies can also pose significant challenges. In 2015, the Indian government implemented biometric machines to record the attendance of government employees. After less than two months of use, over 50 machines were found to be damaged or stolen.[148] In Malawi, a program on School Improvement Grant, designed to promote decision-making and discretionary spending at the school level, also suffers from significant delays in the approval process, wastage, and abuse of the system.[149]

123. But there are success stories where change has happened. When the incentives between central and local government are aligned on one side and those between local governments and service providers are aligned on the other, countries can make significant improvements in human capital outcomes. That is the case of the Plan Nacer in Argentina that provides insurance for maternal and child health care to uninsured families. The program, which was supported by lending from the World Bank, used indicators measuring health outcomes and the use and quality of maternal and child health care services to allocate funding. Recipient provinces then used these resources to pay health facilities to provide maternal and child health care services to beneficiaries. An impact evaluation shows that Plan Nacer reduced the probability of low birth-weight by 19 percent among beneficiaries.[150]

How Better Measurement Helps

124. 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.[151] 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.

125. Better measurement helps create 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.[152] The World Bank's own Service Delivery Indicators, released around the same time, shined a spotlight on the low levels of teacher competence and high levels of absenteeism. Together, these results led to substantial public outcry and the introduction of Tanzania's "Big Results Now" initiative, a government effort to track and address low levels of

learning. The World Bank has been supporting these reforms through a program linked specifically to learning outcomes, which is already leading to tangible results.

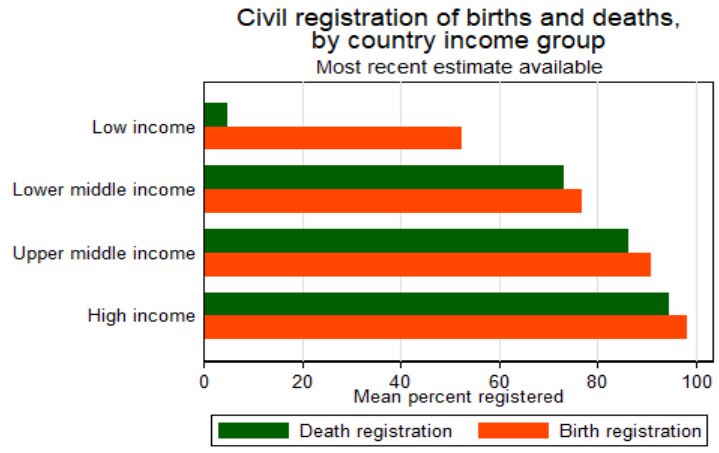
126. Better information can also provide technical guidance for policy reforms. A review of community accountability interventions in public sector primary schools in low- and middle-income countries identified 11 key mechanisms through which these operate to improve school performance.[153] These types 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 multi-faceted reading program, including teacher training. An evaluation of the program found that it improved students' reading comprehension abilities. These results went on to inform the government's standards-based curriculum.[154]

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

128. However, information on human capital outcomes is scarce. One estimate suggests that US$1 billion is needed annually to enable 77 of the lowest income countries to develop and maintain systems for measuring progress towards the Sustainable Development Goals.[155] In education, only 1 in 6 governments publish annual education monitoring reports.[156] Many countries, especially the poorest, do not regularly participate in internationally comparable assessments of student learning. Across 121 countries, nearly a third lack any data on reading and mathematics proficiency for children at the end of primary school.[157] This prevents education systems from systematically helping children who lag behind. As a result, millions of children in low- and middle-income countries spend 4 or 5 years in school without gaining functional literacy or numeracy.

129. Monitoring of even the most basic health information—births and deaths—is woefully inadequate in low- and middle-income countries (figure 2.5) and the pace of improvement in these systems has been slow. Between 2000 and 2012, worldwide, the percent of deaths registered changed little from 36 percent to 38 percent and the percentage of children under 5 whose births were registered only increased from 58 percent to 65 percent.[158] This prevents governments from accurately understanding the health needs of their populations and complicates proper planning for the allocation of public services.

Figure 2.5. 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 registration coverage based on available data for 180 countries. Estimates for death registration coverage based on available data for 120 countries.

130. Easily implementable solutions are available. A key step is increasing the number of countries where the learning achievements of children are measured—both those in and out of school. This would allow much better tracking of how countries are performing in terms of both school access and learning. The Annual Status of Education Report (ASER) survey, a rare example, provides an annual assessment of learning levels of children in rural households in India, capturing both youth who do and do not attend school.[159]

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

132. Similar efforts are underway in health. In an attempt 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.[160] New technologies are helping. Biometrically-authenticated systems for public sector salaries and pension payments, covering 19 million people in Andhra Pradesh, India, found this led to faster, more predictable and less corrupt disbursements.[161]

133. 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 can help elucidate, for example, the discrepancy between relatively high average years of schooling yet relatively low student achievement in Latin America.[162] 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.[163] An emerging body of research shows provider effort and competence as two critical factors driving poor quality in health.[164] Similarly, unqualified and unmotivated teachers are detrimental to student learning.[165]

134. Research on pathways can help illuminate 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.[166] 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 technology, teacher training, smaller class sizes, and grouping students by ability level.[167] A large body of literature on social determinants of health explains a myriad of 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.[168] These health determinants must be tackled through effective policies in a wide range of sectors and cannot be sufficiently addressed through health policies alone.

135. Generating new information on the economic benefits of human capital is key to making the case to governments that these interventions are worthy of investment, particularly to Ministries of Finance that typically spend more time worrying about stocks of debt than stocks of human capital. Many studies have explored the role of average education levels in explaining economic growth, but more recent research has focused on the added dimension of the quality of schooling received.[169] The recently-released "Changing Wealth of Nations" study has produced estimates of the monetary value of human capital, based on a comprehensive analysis of how earnings respond to education for individuals.[170] Demonstrating the beneficial effects of investing in human capital on economic growth can get policymakers to worry as much about what is happening in their schools as what is happening in their current account.

136. Three things alone—an explicit commitment to support regular learning assessments around the world; developing a systematic measure of cognitive and non-cognitive development at early ages; and scaling up the measurement of quality health and education service delivery—can provide an unprecedented boost for evidence-based reforms. These are the objectives of the World Bank's Human Capital Project. The project is designed to address the incentive problem for human capital investments. This is envisioned through a program of advocacy and analytical work that raises awareness and increases demand for interventions to build human capital in client countries.

137. The first step of this process is developing an international metric that captures key elements of human capital. A new Human Capital Index (HCI) will measure 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 today will 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.

138. The design of HCI is intuitive. Imagine the trajectory from birth to adulthood of a child born today. In the poorest countries in the world, there is a significant risk that the child does not even survive to her fifth birthday. Even if she does reach school age, there is a further risk that she does not start school, let alone complete the full cycle of 13 years of school from Kindergarten to 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. 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.

139. The goal of the HCI is to quantify the key stages in this trajectory and their consequences for the productivity of the next generation of workers. Accordingly, it has three components: (i) survival, as measured by under-5 mortality rates; (ii) *Expected Years of Quality-Adjusted School* which combines information on the *quantity* and *quality* of education; and (iii) health. Capturing quality of education and health through intuitive but broadly available measures is challenging. The *quality* of education measure in HCI reflects new work at the World Bank to harmonize test scores from major international student achievement testing. On 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: (i) adult survival rates and (ii) the rate of stunting for children under age 5.

140. The HCI is measured in terms of the productivity of next generation of workers, relative to the benchmark of complete education and full health. This gives the units of the index a natural interpretation: a value of x for a particular country means that the productivity as a future worker of a child born today in that country is only a fraction x of what it could be under the benchmark of complete education and full health. 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.

141. 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 today persist into the future. Over time, new entrants to the workforce with "status quo" health and education will 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 will be higher than in the "status quo" scenario, through two channels: (i) direct effects of higher worker productivity, and (ii) indirect effects reflecting greater investments in capital induced by having more productive workers.

142. Benchmarking countries 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

143. 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."

144. Automation, platforms, and social media are reshaping not just work but the skills needed for work. Part of the ongoing skills re-adjustment is happening outside schools and jobs. Where? Three domains—early childhood, tertiary education, and adult learning outside jobs—are increasingly central to the acquisition of specific skills that the changing nature of work demands.

145. In terms of skills for the future, two concerns have heightened. First is inequality. Within advanced countries, job polarization—the expansion of high- and low-skill jobs coupled with the decline of middle-skill jobs—is well documented.[171] Yet whether these changes will unfold in low- and middle-income countries in the same way remains to be seen. With the exceptions of Indonesia, Mexico, and Brazil, job polarization has not been observed so far.[172] Second, linked to job polarization, is the trade-off between skills adjustments in the labor market vs. skills adjustments among those who will be entering the labor market in the next decade.

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

147. How is the demand for these three skill-types changing? First, labor market returns to general cognitive and socio-emotional skills appear to be rising. Second, returns to job-specific skills are increasingly uncertain—with returns increasing for some jobs and declining (often dramatically) for others. For example, the demand for home electronics repairing skills is decreasing because technology drives down equipment prices and improves reliability. On the other hand, the rising renewable energy sector is demanding more professionals with technical skills such as building, maintaining and operating power generation installations. Third, pay-offs to the combination of different skill-types appear to be increasing.

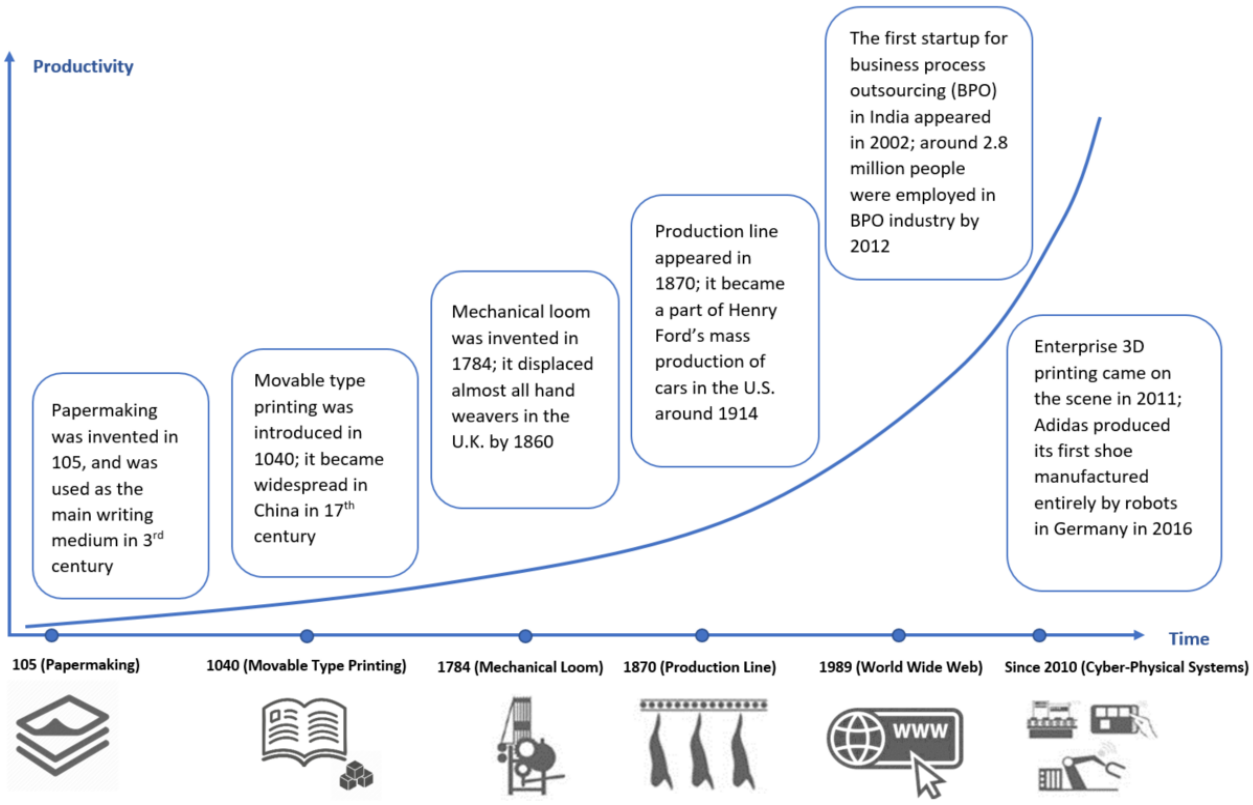
148. Given these changes, three types of skills investments can have big pay-offs: early childhood investments, tertiary education, and adult learning outside jobs. This is in addition to skill acquisition in schools and jobs. World Development Report 2018 goes into depth on the importance of skills acquired during schooling.

149. The increase in returns to general cognitive skills is due to rising job uncertainty. A large share of children entering primary school today will work in occupations that do not yet exist. Even in low- and middle-income countries, many young people are employed in jobs that did not

exist three decades ago. India has nearly 4 million app developers; Uganda has over 400,000 internationally certified organic farmers; China has 100,000 genetic counselors. In such a rapidly transforming context, it makes sense to invest in skills that can easily be transferred from one type of job to another.

150. Higher-order cognitive skills that are transferable across jobs appear to have the strongest premia. This is because of the specific demands of an increasingly technological world—that keeps changing. In the past, shifts in skill demands prompted by technological advancements took centuries to manifest (figure 3.1). Today technology demands new skills seemingly overnight. Consequently, demand for transferable higher-order cognitive skills like mathematics, logic, critical thinking, complex problem solving, and reasoning is rising. In fact, it is expected that nearly all jobs of the future will become more intensive in higher-order cognition.[173] Irrespective of the region of the world, higher-order cognitive skills are consistently ranked among the skills most valued by employers.[174]

Figure 3.1. Time needed for technological diffusion keeps getting shorter



Source: Authors' calculations.

151. Socio-emotional skills often cover human capabilities that machines are unable (for now) to replicate. Creativity, innovation, and social interaction are some examples of skills that will remain high in demand. A finer-grained list could include elements like curiosity, emotional intelligence, empathy, leadership, teamwork, conflict resolution, relationship management, etc.

For example, even when medical diagnostics have been taken over by computers, doctors and nurses will continue to play a vital role given the need to offer empathy, manage information, and negotiate difficult situations humanely. Labor market returns to socio-emotional skills are much higher today than they were in the mid-1980s.[175] These returns will continue to grow.

152. A fascinating trend is the increasing importance of skill combinations. Technological change appears 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. A study from Middle East and North Africa predicts strong demand for professionals who can blend digital and STEM skills with traditional subject expertise, such as digital-mechanical engineers or business operations data analysts.[176] 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.

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

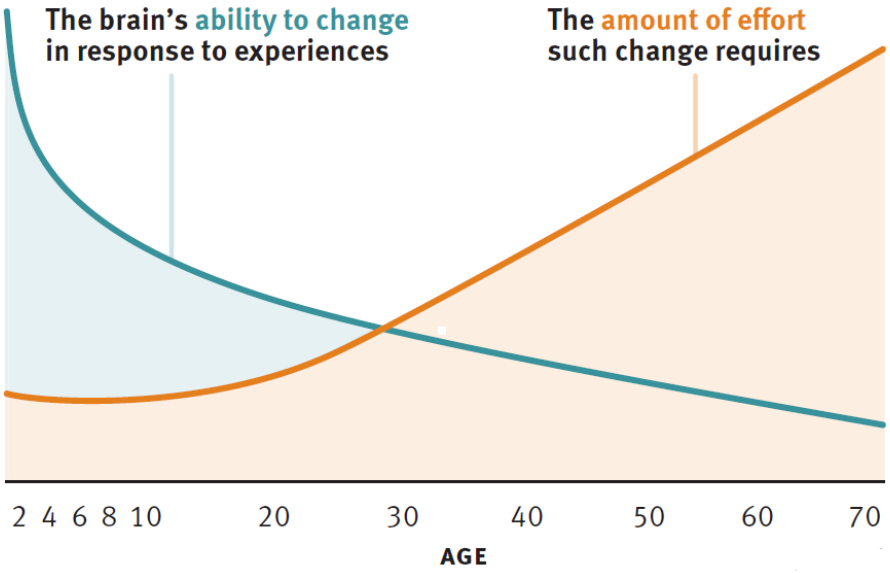
Learning Before Age 7

154. 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, helping children from disadvantaged backgrounds remain competitive in the education system.[177]

155. The most effective way to acquire the skills demanded by the changing nature of work is to start early. Early investments in nutrition, health, and education lay strong foundations for future acquisition of cognitive and socio-emotional skills. They also make future skill acquisition more resilient to uncertainty. Currently, early childhood investments are underprovided, especially for poor and disadvantaged children who can benefit the most from them. Prioritizing these investments through quality interventions can have big pay offs for economies.

156. The foundations of brain architecture are set in the ages of 0-6 years—making it an important stage to develop cognitive and socio-emotional skills.[178] During this window the brain's ability to learn from experience—its "plasticity"—is the highest. This ability decreases with age (figure 3.2). This means two things. First, by impacting brain architecture—early childhood investments can influence the very 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.[179]

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



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

157. Quality early childhood development programs enable children to "learn to learn." Adequate nutrition, health, and stimulation in ages 0-3 years contribute to developing children's language, motor, and self-regulation skills, as well as various social behaviors. In Colombia, for example, exposure to psychological stimulations through home visits with play demonstrations significantly improved cognitive development of children aged 12-24 months.[180] In Pakistan, *Lady Health Workers* program, which provided nutrition supplementation, and encouraged mothers to engage in responsive play with children aged 1-2 years also led to sustained positive effects on children's cognitive abilities and pro-social behaviors.[181]

158. Quality preschool investments during 4-6 years form children's executive functions (e.g., working memory, flexible thinking, and self-control) and increase their school readiness, launching them on higher learning trajectories.[182] In Bangladesh, rural children who attended preschool performed better in first- and second-grade speaking, writing and mathematics, compared to those who did not.[183] 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.[184]

159. 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.[185] Hence, the returns for early investments are the highest and the advantages conferred by these investments grow overtime.[186] It is estimated that an additional dollar invested in quality early childhood programs can yield a return of 6 to 17 dollars.[187]

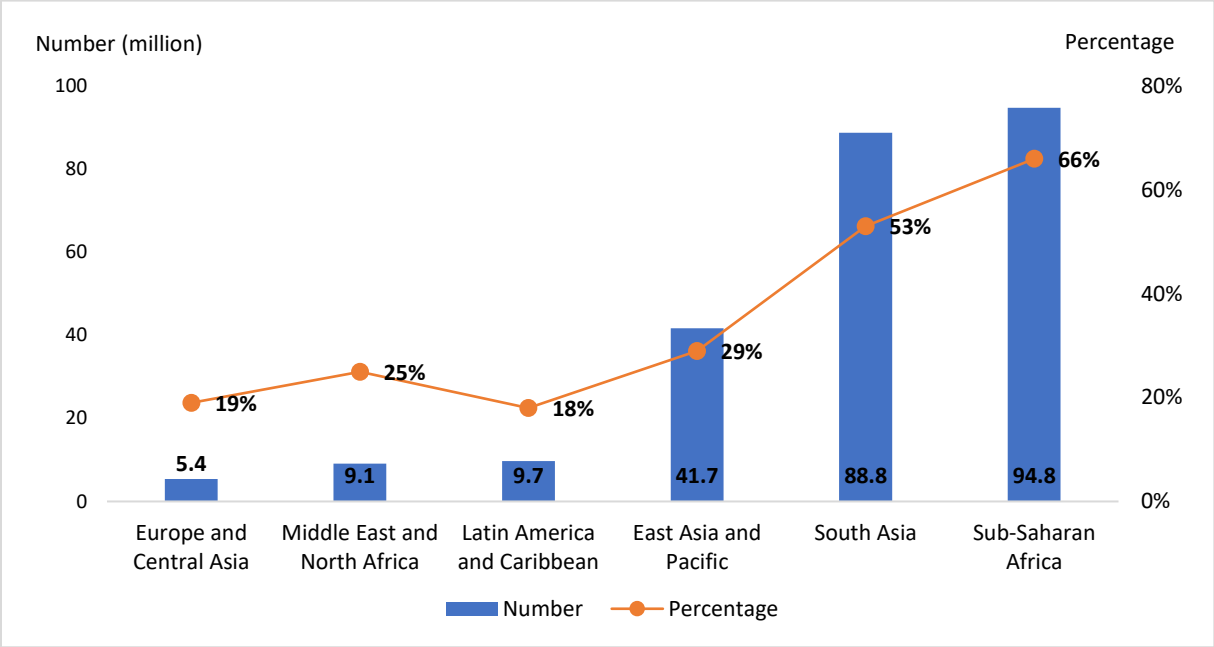
160. Early childhood investments are also effective in increasing equity. They close developmental gaps between children from different socioeconomic backgrounds. For children

exposed to poverty and other adverse conditions, quality early childhood programs increase adult competence, reduce violence, depressive symptoms and social inhibition, as well as foster growth in the subsequent generation.[188] For example, in rural Guatemala, an early childhood development nutrition program for poor families significantly increased wages for these children in adulthood.[189] In Jamaica, early stimulation for infants and toddlers increased their future earnings by 25 percent—equivalent to adults who grew up in wealthier households.[190]

161. In addition to having long-lasting benefits on children, early childhood development programs improve labor force participation of mothers. Many women do not work due to time-consuming childrearing responsibilities. In England, half of the stay-at-home mothers would prefer going back to work if they could get high-quality, affordable childcare services.[191] 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.[192] During the same period, in Spain, offering full-time public childcare for three-year-olds increased maternal employment by 9.6 percent.[193]

162. 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 (figure 3.3). Worldwide, only half of all three- to six-year-olds have access to pre-primary education—in low income countries this share is one in five.[194] In middle income countries like Cambodia and India, less than 20 percent of pre-school-age children are enrolled in such programs. 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 0.3 percent.[195]

Figure 3.3. Two-thirds of under-5 children in Sub-Saharan Africa were at risk not reaching their developmental potential due to stunting or extreme poverty in 2010

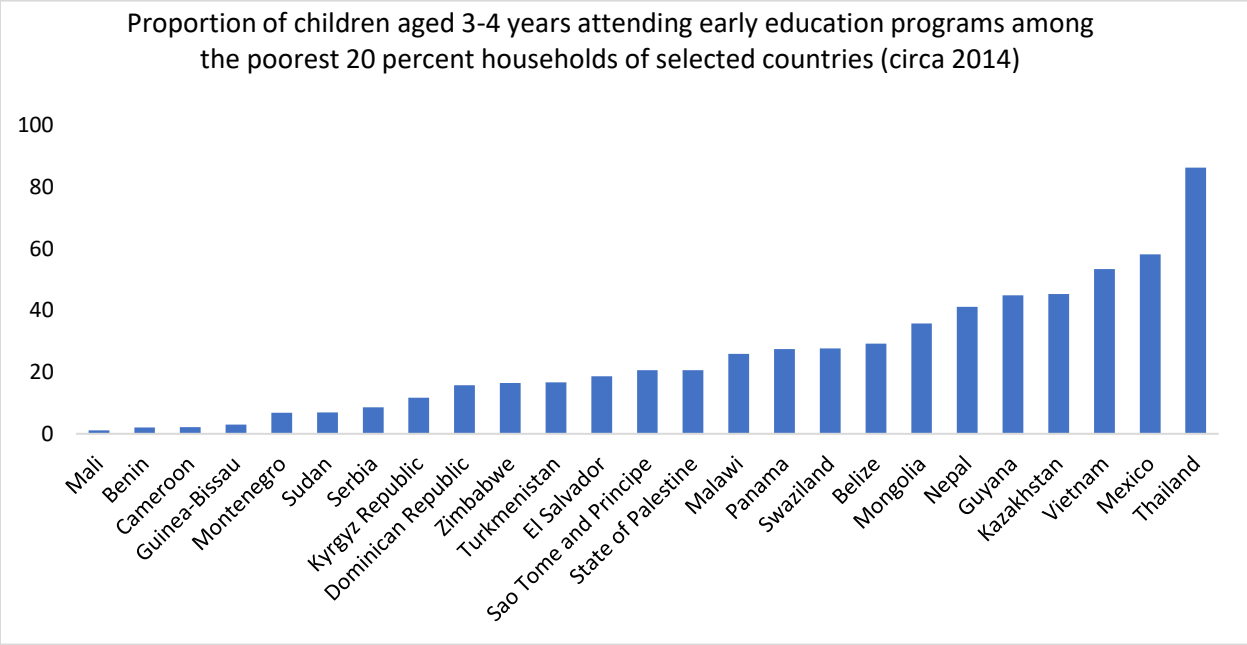


Source: Authors' calculations based on Black et al. 2017.

163. Children from poor families are the least likely to attend early childhood development programs (figure 3.4). They are also the ones who can benefit 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.[196] 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.[197]

164. Even for those who have access to care services or early learning, quality is often a concern. Poor-quality early childhood development programs can lead to disappointing results in children's language development, cognitive skills, and sociability.[198] 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.[199] In Peru, while the national *Wawa Wasi* program has provided safe community-based day care 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.[200]

Figure 3.4. In many countries, children from disadvantaged background are least likely to attend early childhood education programs



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

165. Cost-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.[201] In Tonga, organizing play groups for children aged 0-5 significantly improved their early grade reading skills.[202] 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.[203] With successful local adaptations, Montessori and other child-centered approaches—including Steiner, Reggio Emilia, and Tools of the Mind—can now be found in diverse settings from Kenya to Haiti.

166. Social science research has highlighted two concrete ways to increase take-up of early childhood development investments. First, cash transfers can be an effective way to support early childhood development for the poorest children. A cash transfer program in Bangladesh significantly reduced the incidence of wasting among children 10–22 months old.[204] Second, integrated approaches that combine health, nutrition, and stimulation investments can be highly effective. 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.

167. However, the need for local adaptation of global evidence remains strong. A highly successful child nutrition program from Southern India failed to have any impacts in Bangladesh. Why? Partly because the program targeted mothers. Unlike Southern India, decisions about the

feeding of young children in Bangladesh were being made by mothers-in-law, not mothers. Local context matters for effective early childhood development. Some have called it a search for "best fit" rather than "best practice."

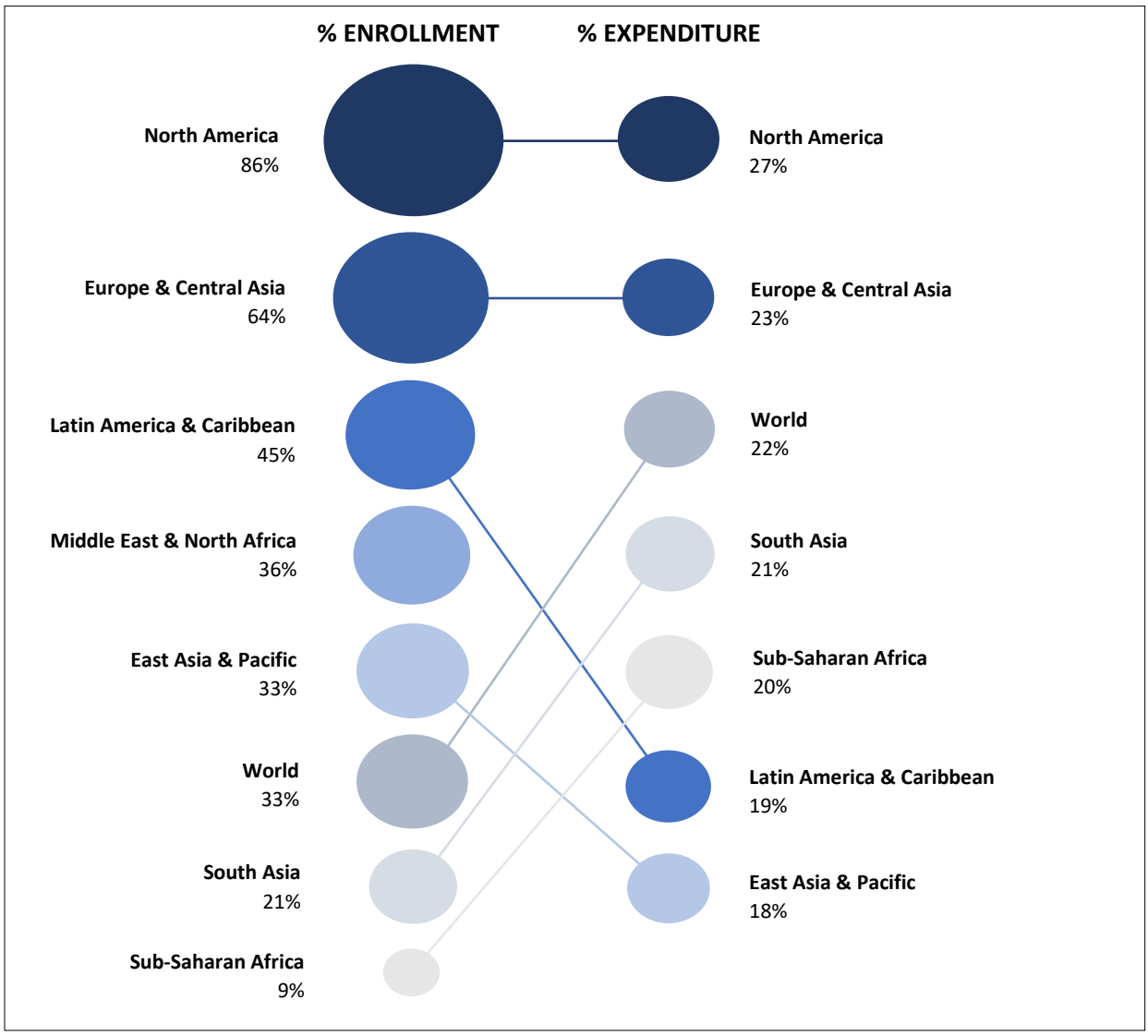
168. Ultimately, concrete measurement is necessary to understand where investments are needed, find effective solutions, and adapt them locally. The World Bank-supported *Measuring Early Learning Quality and Outcomes* (MELQO) consortium is an effort in this direction. It is developing measurement modules 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.[205] The Nicaraguan government incorporated MELQO results into the design and planning of the country's preschool measurement system.

Tertiary Education

169. Tertiary education is worthwhile investment for the future of work. Only if it meets the specific demands of the future. Tertiary education 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.

170. More integrated and technology-driven economies appear to reward tertiary education. The global average private return to tertiary education is 14.6 percent per year—significantly higher than the returns to primary and secondary education.[206] 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, etc. 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.[207] 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.[208] Tertiary enrollment and expenditure also vary considerably by region (figure 3.5).

Figure 3.5. Gross tertiary enrollment ratio and percentage expenditure on tertiary education by region, 2013



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

171. The changing nature of work makes tertiary education more attractive in three ways. First, technology and integration have increased the demand for higher-order general cognitive skills—like complex problem solving, critical thinking, and advanced communication that are transferable across jobs but cannot be acquired through schooling alone. Rising demand for these skills has enhanced the wage premia of tertiary graduates, while reducing the demand for less educated workers.[209] Second, by increasing the demand for lifelong learning. Workers are now 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.

172. The relevance of tertiary education systems for the future of work depends on how well they deliver on these three fronts. To do so, these systems would need to become more flexible, more effective at producing transferrable higher-order skills, and more actively facilitate innovation.

173. 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 (universities) or vocational training. Universities prepare students in transferable higher-order skills that determine their overall learning-readiness or trainability, while vocational training is directly related to specific occupations. Students need to choose one or the other and once this choice is made—especially if it is for vocational training—it can be difficult and expensive to reverse.

174. This rigidity in tertiary systems is inefficient and inequitable given the future of work. This is because 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. At the same time, vocational training continues to be a viable career path for many. In 2012, 63 percent of Dutch higher education students were attending vocational training. This share was more than 50 percent in Malaysia, and 31 percent in Kenya in 2013. Vocational training meets immediate demand for technical skills, enables faster education-to-work transitions for some, and alleviates pressures on the university system.

175. 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, the Democratic Republic of Congo offers "bridging" arrangements for vocational graduates to continue to university. 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 including cloud computing, which features practice-based curricula, practitioner-led instruction, and professional certification.

176. Greater flexibility is also needed within course formats. Demand for lifelong learning implies that the working population will need to top up existing skills with just-in-time qualifications. This demand calls for flexible delivery models that allow individuals to access tertiary education while working. Also, for sharper, self-directed, and practical training—a greater

mix of degrees and shorter courses. It is possible to imagine future tertiary education systems that provide "stackable credentials" in which qualifications can be fitted together in flexible and customizable ways.

177. Technology-enabled platforms are already making higher education more agile, especially to those with historically low access. Examples include 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 now the second largest consumer of Massive Open Online Courses (MOOCs) after the United States.[210] XuetangX, the major MOOCs and blended learning portal from China, crossed 2.7 million students in May 2016.[211] However, some caution is warranted. A recent study shows that the return on investment of online courses for post-secondary education is lower than that of brick and mortar education when labor market returns and opportunity cost are taken into account.[212]

178. 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.[213] 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.[214]

179. Providing flexible pathways to general education 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.[215] 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.[216] Another channel is through better metrics that reliably assess student gains in complex cognitive skills at the higher education level.[217]

180. Tertiary education can also teach 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.[218] Employer surveys in Bulgaria, Georgia, Kazakhstan, Poland, the former Yugoslav Republic of Macedonia, Russia, and Ukraine indicate that employers see the lack of socioemotional skills at least as binding as technical skills.[219]

181. Socio-emotional skills can be acquired in adulthood. Forward-looking universities are finding ways to do this. The University of California, San Diego developed an interactive course on "Learning How to Learn," which is offered at the Coursera platform. Dutch Vocational Colleges provide entrepreneurial courses with the objective to improve non-cognitive skills such

as teamwork and self-confidence.[220] In Tunisia, introducing an entrepreneurship track that combines business training with personal coaching reshaped behavioral skills of university students.[221] In Spain, cooperative learning strategies (learning in small teams with peers of different ability levels) improved empathy, assertiveness, cohesion and the ability to accept different views and reach agreements among university students.[222] In China, a combination of cooperative learning and role play enhanced self-educational abilities and communications skills among undergraduate students in pharmacology classes.[223]

182. Tertiary education systems often serve as epi-centers of innovation clusters, this role will be increasingly valued in future economies. In 2015, countries on average spent 2.2 percent of GDP on R&D activities.[224] Since universities provide R&D for several sectors, embedding innovation investments in and around universities makes sense. In industries such as pharmaceuticals and electronics, more than 10 percent of the new products and processes have been commercialized thanks to academic research.[225] One study suggests that universities and research institutes, rather than firms, have driven scientific advances in sectors like biotechnology.[226] 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.[227] Further, knowledge spillovers from university activities remain strong. In the United States, a 1 percent increase in university expenditure leads to a 0.08 percent increase in local labor income of other sectors. In Sweden, the presence of university research contributes to 0.5 percent more patents awarded in labor markets each year.[228] In Chile and Colombia, firms are more likely to introduce new products and patent them if they collaborate with universities.[229]

183. However, not all countries can afford to invest in expensive research universities. An alternative is a regional-cooperation approach. 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, etc. The project has supported at least 1,000 PhDs and 5,000 master students. Regional "centers of excellence" can be a great way to build regional specialization, concentrate limited top-level faculty, generate knowledge spillovers, and meet private sector demand for skills.

184. To prepare its students for the changing labor market, more and more tertiary institutes are offering entrepreneurship trainings, creating business incubators, or hosting venture capitalists. In 2016 alone, Stanford University licensed 32 start-up companies, and filed 289 patents.[230] 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 50 Crores.[231] Egypt, Arab Rep. launched its first university incubator, *Venture Lab*, in 2014.[232]

185. There are well-known examples of successful university innovation clusters in the developed world—Silicon Valley, Boston's Route 128, Cambridge-Oxford-London "Golden Triangle", 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. In China, Peking University aims to

build *Clinical Medicine Plus X*, a research cluster for precision medicine, health big data, and intelligence medicine. 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.[233] In Mexico, the Research and Technology Innovation Park currently houses more than 30 research centers covering R&D in biotechnology, nanotechnology, robotics, etc.; seven of them are led by universities.

186. But university-based innovation hubs do not always work. There seems to be a standard formula for innovation clusters: identify a "hot" industry, build a science park next to a research university, provide subsidies and incentives for chosen industries to locate there, and create a pool of venture capital. However, successful university-based innovation cluster is a rare breed.

187. 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.[234] An appropriate mix of research quality, budget, culture, as well as institutional arrangements is essential for a good university candidate.[235] It is also important to note that the agglomeration effects of universities vary by sector. For example, university R&D has been shown to be almost irrelevant for sectors such as furniture.[236] Finally, the concept of physical innovation clusters might become obsolete. Today, university spillovers tend to be mostly spatially bounded,[237] but digital platforms make the physical institutional structures of innovation clusters irrelevant.

188. Second, create an enabling environment. Just because successful innovation clusters exist, does not mean that government can create them. However, they "set the table"—providing necessary local infrastructure, increasing expenditure on R&D, facilitating universities to attract high-quality researchers and connect with private sector innovation, easing rigid labor market regulations, to name a few.[238]

Adult Learning Outside Jobs

189. As the nature of work changes, what can be done for adults who are caught in the cross-hairs of the ongoing skills disruptions? As economies adjust skills provision for the flow of human capital, what about the current stock of human capital?

190. One approach is adult learning for reskilling and upskilling those who are not in school and not in jobs. Unfortunately, this approach has shown more promise in theory than in practice. Too often bad design gets in the way. There are three ways to improve adult learning—more systematic diagnoses of the specific constraints that adults are facing, pedagogies that are customized to the adult brain, and flexible delivery models that fit well with adult lifestyles. Adult learning is an important channel for skills readjustments in the future of work, but it needs a serious design re-think.

191. Worldwide more than 2.1 billion working-age adults (ages 15-64) have low reading proficiency.[239] In Sub-Saharan Africa, nearly 61 percent of youth 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.[240] 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 $5 billion a year.[241]

192. 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.[242] A pool of unemployed adults is not only an economic concern, but also a political time-bomb. 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.[243] Changing demographics add additional pressures to the labor market. With population ageing, many rich countries are trying to equip a smaller, older workforce with skills to sustain economic growth. Other countries with big youth bulges struggle with a low-skilled labor force trapped in low-productivity jobs.

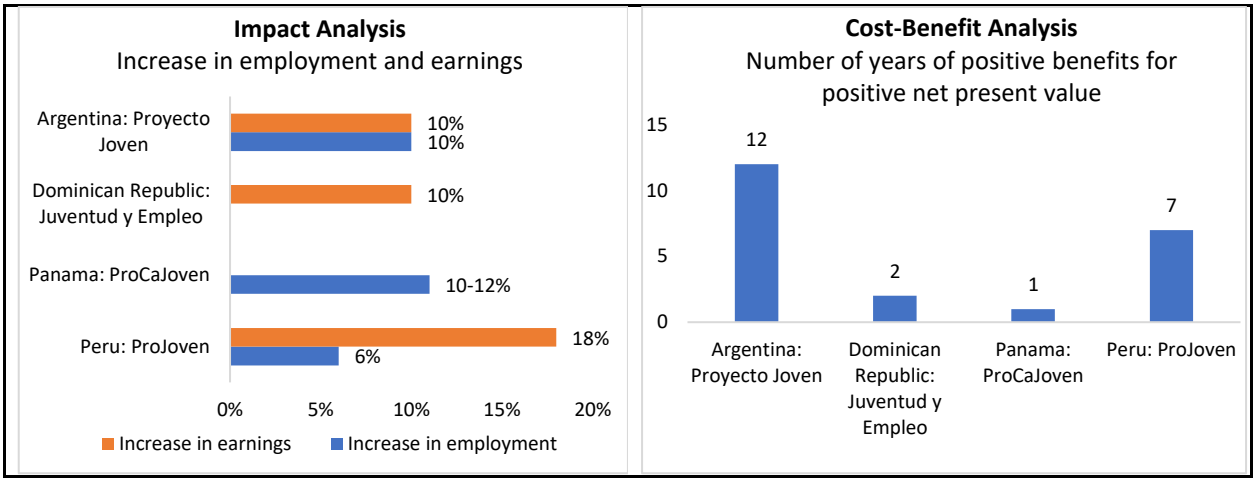
193. Adult learning programs can help. India's *Saakshar Bharat* initiative from 2009 aimed to provide adult literacy to 70 million adults. Under the World Bank's Nepal *Adolescent Girls Initiative,* vocational training for women increased their non-farm employment by 174 percent.[244] The Argentinean *Entra21* program provided adult skills training and internships, leading to 40 percent higher earnings among participants.[245] 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.[246]

194. But many adult learning programs fall short of impact. Adult literacy programs often improve word recognition but fail to improve actual reading comprehension. In Niger, although an adult education program increased the number of words that participants can read, it did not improve their reading speed to one word per 1.5 second—the speed needed for comprehension.[247] Entrepreneurship programs often improve business knowledge but not income or employment.[248] In Peru, training improved business practices among the targeted female entrepreneurs, but did not generate significant impacts on employment.[249] In France, a program comprising of collective business training, individual coaching as well as financial support had no impact on business creation or employment.[250] 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.[251] Turkey's vocational training had no significant impacts on overall employment, and even the positive effects on employment quality faded in the long term.[252]

195. Even among the successful adult learning programs, cost-effectiveness tends to be low. In Liberia, even though young women with access to job skills training enjoy higher monthly earnings—$11 more than the comparison group—the program cost is $1650 per person.[253] 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 (figure 3.6).[254] Adult learning is frequently one part of a comprehensive package, which makes it difficult to understand the cost-effectiveness of the—frequently more expensive—"learning" component. The Chilean Micro Entrepreneurship Support Program (MESP), boosted self-

employment by 15 percentage points in the short run.[255] However, it is not clear how much of this can be attributed to the 60-hour business training, as opposed to the $600 capital injection.

Figure 3.6. Impact and cost-effective analysis of selected Jóvenes programs in Latin America and Caribbean



Source: Authors' calculations based on Kluve 2016.
Note: The Juventud y Empleo program of Dominican Republic did not have significant impact on employment; the ProCaJoven program of Panama did not have significant impact on earnings. The employment increase in Argentina's Proyecto Joven program was for women; and that of Panama's ProCaJoven program was for women and Panama City residents.

196. Yet adult learning programs—so desperately needed—are often low in effectiveness. There are two main reasons: suboptimal design and incorrect diagnoses.

197. Adult brains learn differently—this is not always factored in program design. The brain's ability to learn decreases with age.[256] Therefore, adult learning programs face a built-in challenge—acquiring knowledge when the brain is less efficient at learning. Advances in neuroscience suggest how to tackle this. Adult brain's ability to learn is significantly dependent upon how much it is used. Practice is central to adult learning. Consequently, adult learning programs have a greater chance of success if lessons can be integrated into everyday life. For instance, Nigerians 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.[257]

198. Adults face significant stress which compromises their mental capacity—this is not always factored in program design. Emotions impact what we pay attention to and what we remember. For adults, emotions are constantly mediated by demands of family, child care, and work. These demands compete for cognitive capacity required for learning. Sugar farmers in India, for example, were found to have markedly diminished cognitive capacity when poorer (during pre-harvest) than when richer (during post-harvest).[258] Creating emotional cues linked to learning content—such as goal-setting—can be an effective strategy to increase adult learning.[259] Such behavioral tools are only rarely integrated in adult learning programs.

199. Adults face specific socio-economic constraints—these are not always factored in program design. Adult learners have high opportunity cost—in terms of lost income, lost time with children, etc. However, programs often have inflexible and intensive schedules. Also, cultural norms can significantly impact women's participation in adult learning. In Malawi, participation in training resulted in a decline in personal savings for women at a rate nearly double that of men.[260] Distance to training locations and lack of child care were significant barriers to vocational training program completion for women in India.[261] Dropout rates are often high for adult literacy programs, ranging from 17 percent in Niger to 58 percent in India.[262]

200. 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.[263] In Ghana, demand for training in the informal micro- and small-enterprise sector is low as the majority of managers do not see skills as a constraint.[264]

201. 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. Qualitative work from Uganda shows women in female-dominated trades were frequently mistaken regarding the earnings of women in male-dominated trades.[265] In Sub-Saharan Africa, youth entrepreneurs in the informal economy have limited information about relevant training programs.[266] 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.[267] Hence mere information provision enables skills-constrained individuals to seek best-fit training on their own.

202. In some cases, the binding issue might be lack of credit—not lack of skills. When compared to adult training programs, cash (or capital) transfers have a stronger impact on self-employment and long term earning potential in some contexts.[268] 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.[269] In Liberia, *Action on Armed Violence* program provided 3-4 months of agricultural training plus $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.[270] On the other hand, cash alone can stimulate self-employment and other high return investments and is not misused by recipients.[271] Further, cash transfers are much cheaper to administer than most skills training programs. It can then allow those constrained by a lack of skills to invest in quality, suitable training on their own.

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

204. 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, Democratic Republic of Congo, 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.

205. 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. This helps policymakers to 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.[272]

206. 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.[273] 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.[274]

207. 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.[275] Given competing demands on adults' time, training programs with short-modules delivered through mobile applications are particularly promising. In the US, *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.[276] Delivering training programs via mobile phones can also shield adult learners from potential stigma.

208. 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.[277] 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.[278]

209. 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, a program that coupled training with financial assistance helped 54,000 people find employment.[279] 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.[280] A World Bank supported program in South Africa is attempting to increase support job search through peer support, SMS reminders, and action planning.

210. Incorporating soft-skills or socio-emotional skills in training design has shown a lot of promise. In Togo, teaching microenterprise 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 and overall cost-effective, breaking even within a year.[281] For factory workers in India, acquiring soft skills such as time management, effective communication as well as financial management increased their productivity.[282]

211. The need for better targeting comes out clearly in the highly heterogeneous returns to training. 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.[283] Similarly, the World Bank's Kenya *Youth Employment and Opportunities* project is experimenting with the design of a youth-friendly entrepreneurship aptitude test. Finally, governments might be more effective as facilitators—but not actual deliverers of training. For instance, India's *Vikalp Voucher* program incentivizes students to choose between multiple private training providers and courses—paid for using a voucher.

Chapter 4: Returns to Work

212. 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 rise 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. Ms. Zhou is now the owner of Lens Technology, worth over $7 billion. She is one of the world's richest self-made women.[284]

213. There are many examples of self-taught entrepreneurs. With just a high school education, Yoshiko Shinohara started a temp-staffing agency in her one-bedroom apartment in Tokyo, ultimately turning it into a billion-dollar company. Sir Li Ka-shing was forced to leave school at the age of 15 to work in a Plastics Trading company. Eventually he would start his own company and end up with a net worth of $37 billion.

214. However, these are the exceptions. Successful entrepreneurs with advanced degrees far outnumber those without. Indira Nooyi, CEO of Pepsico, holds a master's degree from Yale University. Liu Qing, president of Didi Chuxing, has a bachelor in computer science from Peking University and a master's degree in computer science from Harvard University. Dr. Victoria Kisyombe, founder of SELFINA, acquired a bachelor's degree from Dar es Salaam, and a master's degree in Veterinary Science from Edinburgh University. Nguyễn Thị Phương Thảo, CEO of VietJet Air, holds a doctoral degree in economic management at the Dimitri Mendeleev University of Chemical Technology of Russia.

215. The experience of entrepreneurs illustrates two points. First, learning in school go hand in hand with learning in work. School enhances what can be learned at work. Second, work continues to build human capital after school—*work is school*. Skills built through work advance a person's capacity to work successfully in the future. Just as different subjects in school dispense different knowledge, different jobs will 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.

216. But opportunities to learn at work may not always materialize. Where you are, what you do, and what you know, influence your payoffs at work. 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 will be limited. If society does not promote gender equality, many women would not be able to work.

217. 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."

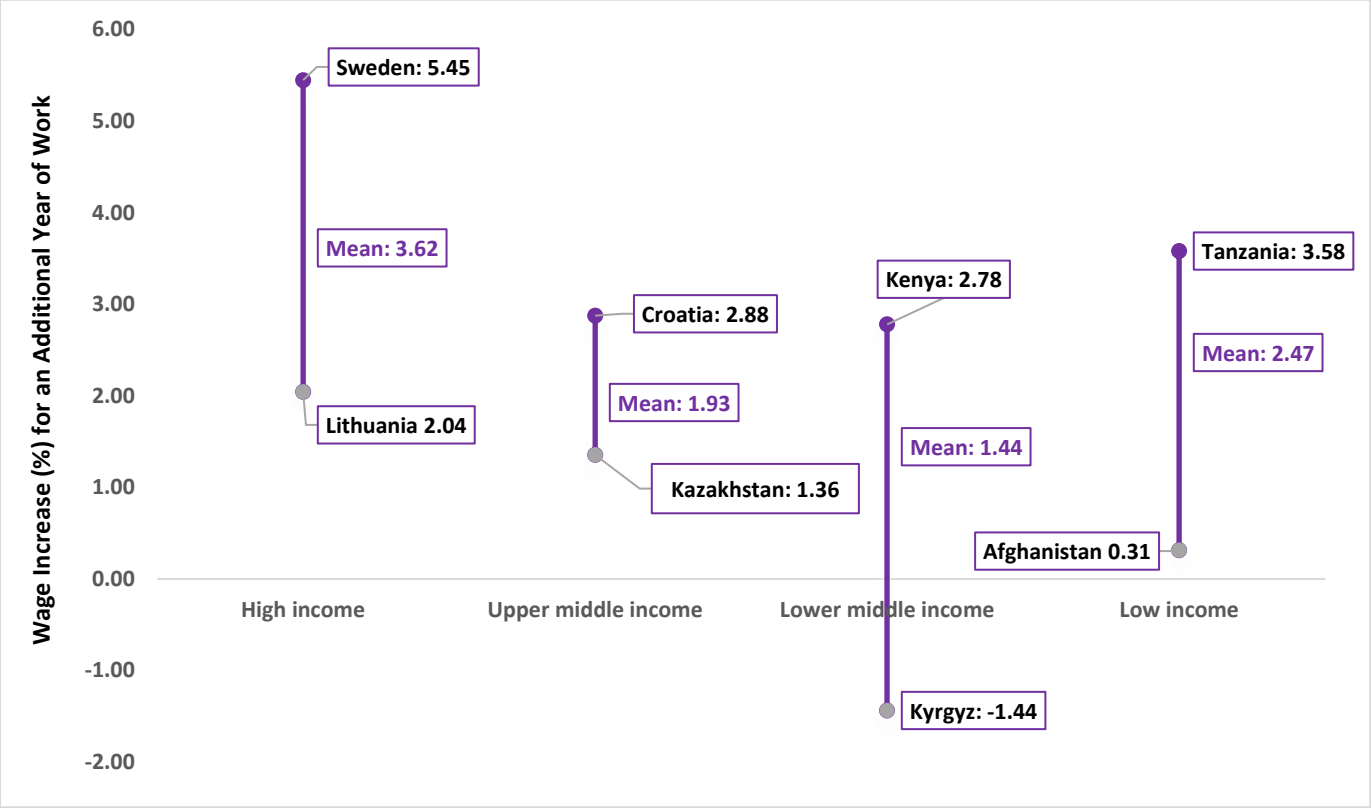
218. Before Mincer's work, the common belief among his contemporaries was that luck determined one's ability, which in turn determined one's payoffs. Mincer confronted this viewpoint by showing that earnings differentials are determined by deliberate investments in human capital. Human capital grows 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".[285] For example, a 10.7 percent returns to education, as found by Mincer for white males in non-farm wage jobs in the US, means that an additional year of education increases earnings by 10.7 percent.

219. 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?

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

221. Workers in emerging economies experience lower payoffs to work, for similar levels of experience, than workers in advanced economies (figure 4.1). In the Netherlands and Sweden, one additional year of work raises wages by 5.5 percent. In Afghanistan the corresponding figure is 0.3. This result is surprising but has an explanation. Compared to advanced economies, emerging economies have a poorly educated workforce with a larger proportion of workers engaged in manual jobs in the informal sector. Advanced economies, meanwhile, are often at the cutting edge of technology. Their workers tend to be highly educated, formally employed, and have access to a wide range of jobs intensive in non-routine, cognitive tasks.

Figure 4.1. Returns to experience by income group



Source: Authors' calculations using household survey data.
Note: The figure provides estimates of the percentage increase in wages from an additional year of potential experience across 133 economies by income level. The first bar presents the estimates for High-Income economies. The middle figure presents the mean (3.5 percent). On average an additional year of experience increases monthly wages by 3.5 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 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 Lagakos and authors[286] where years of experience is categorized into bins. 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 with a 6 percent discount rate. The top and bottom economy listed for each income group are ranked after the estimates account for income and life expectancy of the economy.

222. 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, 8 years in Guatemala, and 12 in Malawi to match the benefits 1 extra years of schooling has on wages.

223. Also, educated workers learn more at work than uneducated workers. For each additional year of work experience, poorly educated workers have an annual wage growth of 1.9 percent. Workers with high levels of education, on the other hand, have annual returns to work experience of 2.7 percent.

224. 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.

225. Consider Jordan, a country with low returns both on education (5.16 percent) and experience (1.22 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 more than 5 times higher than for the worker in Jordan.

Informality

226. 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.[287] 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.[288] Juma represents the average Kenyan.

227. The informal sector is a means of survival. Maria, one of the 4.5 million people working in the informal sector in Guatemala, dropped out of school as her family could not afford the fees. Forced to provide income for her family, and unable to find formal work, she took up selling trinkets on the street. She earns about $2.5 a day – barely enough to afford her meals.[289] 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.

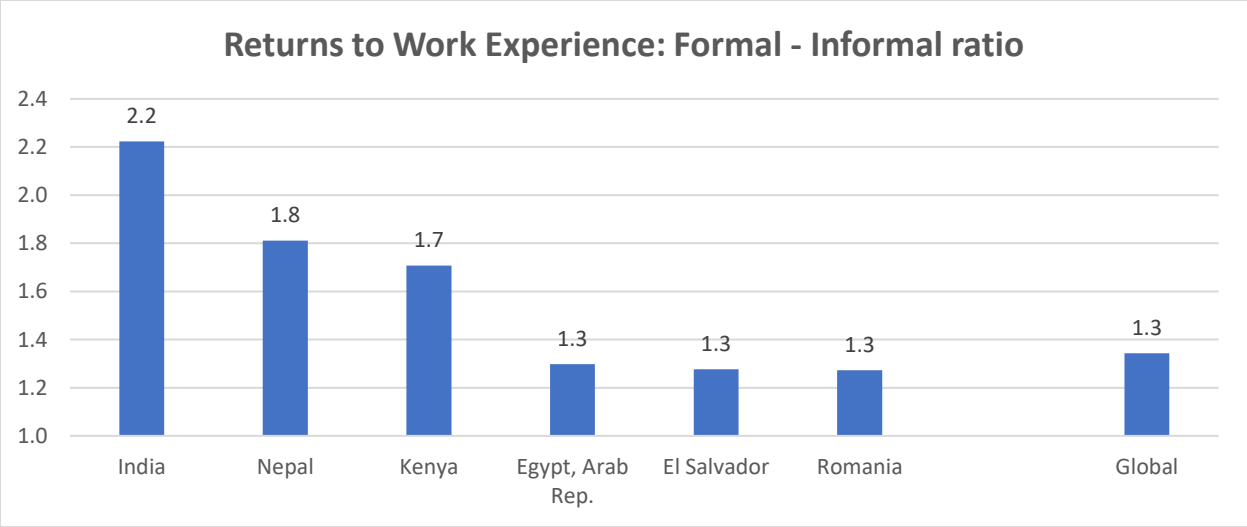
228. From the rickshaw pullers in the buzzing streets of Dhaka, Bangladesh, to the mobile fruit vendors of Nairobi, Kenya, the informal economy is omnipresent. Informal employment is more than 70 percent in sub-Saharan Africa and South Asia, and more than 50 percent in Latin America. Although informal workers outnumber formal ones, their productivity is significantly lower for the typical developing economy. Informal workers are only 75 percent as productive as formal ones.

229. 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.

230. Turning back to Juma, a year spent in the informal sector will only raise his income by 2.4 percent per year. In contrast, a worker in the formal sector in Kenya will raise his income 4.2 percent every year, which is 1.6 times higher than the informal sector. The difference is potent.

231. 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 1.8 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 1.3 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 survey data.
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.

232. Informal workers show resourcefulness to handle the harsh constraints they face. Consider the trash collector in Guntur, Andhra Pradesh.[290] 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.

233. 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, 87 percent of firms with labor productivity below $10,000 per worker are in the informal sector.[291] 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.[292] They also rarely transition to the formal sector.

234. 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. 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.

235. Governments can encourage formal private jobs for the poor. Stable jobs are desirable as they allow workers to make commitments to expenditures. Consider the zinc factory that enabled a village in Udaipur district to prosper.[293] At least one member of every family in the village worked in the factory. The presence of the zinc factory not only provided opportunities for employment, but provided a career – workers could climb up the ladder from the factory floor to foreman. Research has found rigorous evidence of how factory jobs improved the lives of the poor.[294]

236. 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.

237. Countries with heavier regulations have larger unofficial economies. Such countries also display higher levels of perceived corruption.[295] 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.

238. Mexico provides a good illustration.[296] 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.

239. Between 2001 – 2004, Russia 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.[297]

Working Women

240. 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.[298] 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.[299]

241. 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.

242. Several gender restrictions were transferred from colonial powers to colonies.[300] 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 the majority of 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.

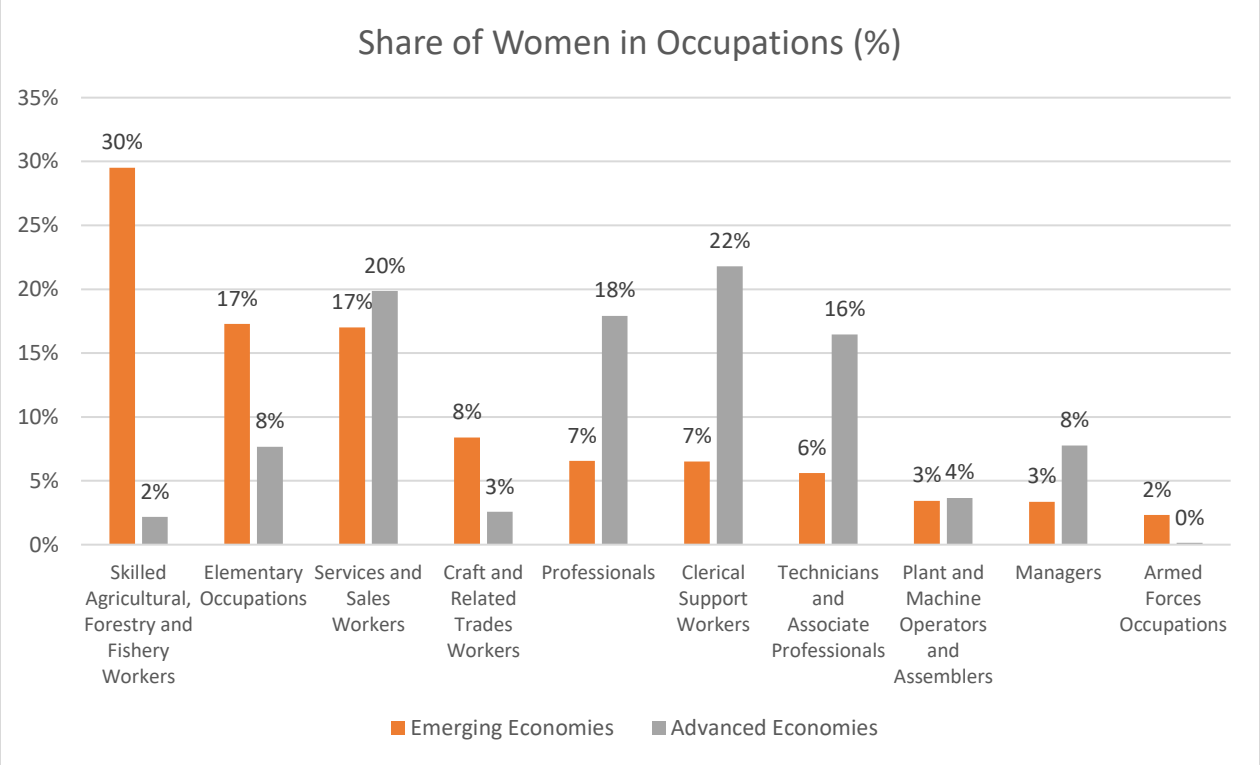
243. Dalia and Zaid, two siblings of similar age in Yemen, live different lives. Dalia faces several restrictions; her brother does not. She may not be able to work at night for certain jobs. The law does not protect her from any form of discrimination in hiring. Zaid's testimony in court carries more weight than hers. Zaid will inherit more than her from their parents. Once she gets married, the limits to her freedom multiply. She is required to obey her husband. She cannot travel outside the home the same way as Zaid. Dalia is one of 2.7 billion women globally who are legally restricted from having the same choice of jobs as men.

244. 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 restriction women in construction jobs. Furthermore, in 29 out of 189 economies explored, women cannot work the same hours as men.

245. Property rights are essential to provide the right incentives to participate in economic activities. Mounira, a recently married woman in Chad, will have no control of any property she and her husband shares. Her lack of rights to property will prevent her from using it as collateral to obtain financing for any business ventures. Furthermore, Mounira worries for her physical safety. In Chad about 29 percent of women between 15-49 years experienced intimate partner physical and/or sexual violence at least once in their lifetime. Chad is one of 45 economies that do not have laws on domestic violence.[301]

246. Women in advanced economies are in better paying jobs when compared to women in emerging economies (figure 4.3). In the latter, almost half of women employed work in skilled agriculture or elementary occupations, while in advanced economies most women are employed as clerical support workers. Services and sales is the one occupation where the proportions of women are similar for emerging and advanced economies (17 percent versus 20 percent). Around a quarter of employed women in advanced economies work in higher paying occupations such as managers or professionals. For emerging economies, it is only 10 percent. Most female managers of formal firms in emerging economies are found to be in the retail sector.[302]

Figure 4.3. Women fare better in the workplace in advanced economies



Source: Authors' calculations using household survey data.

247. 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 Bangladesh, every additional year spent at work increases men's wages by 1.4 percent, but women's wages only by 0.7 percent. In Venezuela, men's wages increase by 2.2 percent, while women's do so by only 1.4 percent for

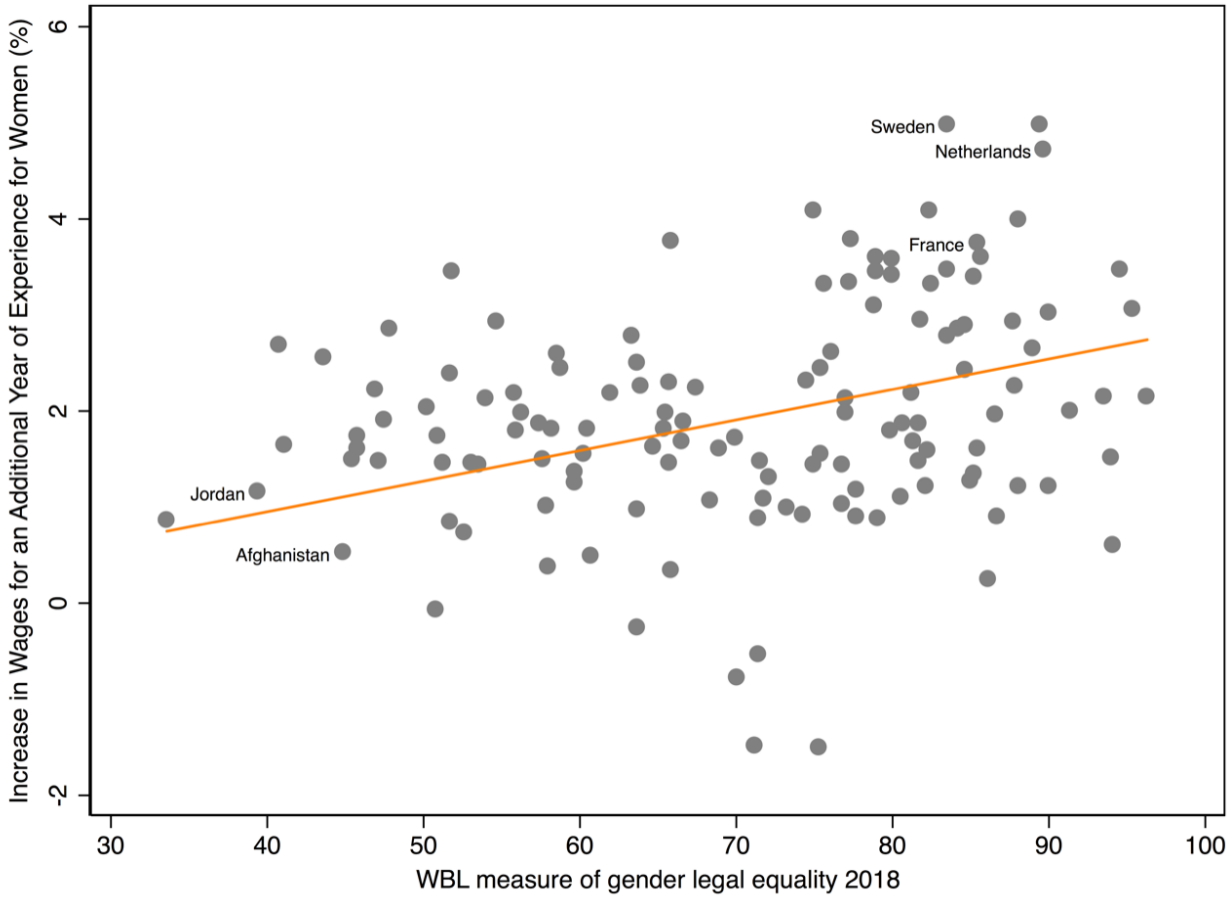
each additional year of work. The difference is even larger for countries like Sierra Leone, where returns for men are 3.2 percent, while for women are only 0.37 percent. To put this in context, a woman in Sierra Leone would need to accumulate almost 9 years more experience for every year her male coworker accumulates to earn the same wage increase. In Denmark, on the other hand, this figure is 5.1 percent for men, and 5 percent for women.

248. The reasons for such different payoffs between men and women are multiple. Consider a working couple from Bangladesh. They are facing the decision of conceiving their first baby. However, Bangladesh's laws do not contemplate 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 contemplate flexible/part-time schedules. They ultimately decide to have the baby with the caveat that the mother will stay outside the workforce until she can find a new job after giving birth. Bangladesh's returns to work experience for women is 0.73 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.

249. 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.[303] 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.[304]

250. The larger the number of legal restrictions women face, the lower the payoff from working (figure 4.4). At one end of the spectrum, France, Sweden and Netherlands have fewer legal gender restrictions and higher returns to work for women. In Afghanistan and Jordan, where women and men are treated differently by law, the payoff from work for women is among the lowest. Increasing legal gender-specific restrictions have been found to discourage women from both owning and managing firms.

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



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

251. Countries are reforming. Take the case of Madame Ngetsi.[305] Following reforms in the family code in the Democratic Republic of Congo in 2016, she can formalize her small business, open a bank account, get a loan, sign a contract, register her business and register land without her husband's permission. Zambia's Gender Equity and Equality Act of 2015 prohibits gender discrimination in employment. Iraq now guarantees workers a similar position with the same wage after maternity leave. China increased paid paternity leave. Afghanistan now forbids sexual harassment in employment and education. In total, 65 economies reformed towards gender equality from 2015 to 2017.

252. 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.[306] 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.[307]

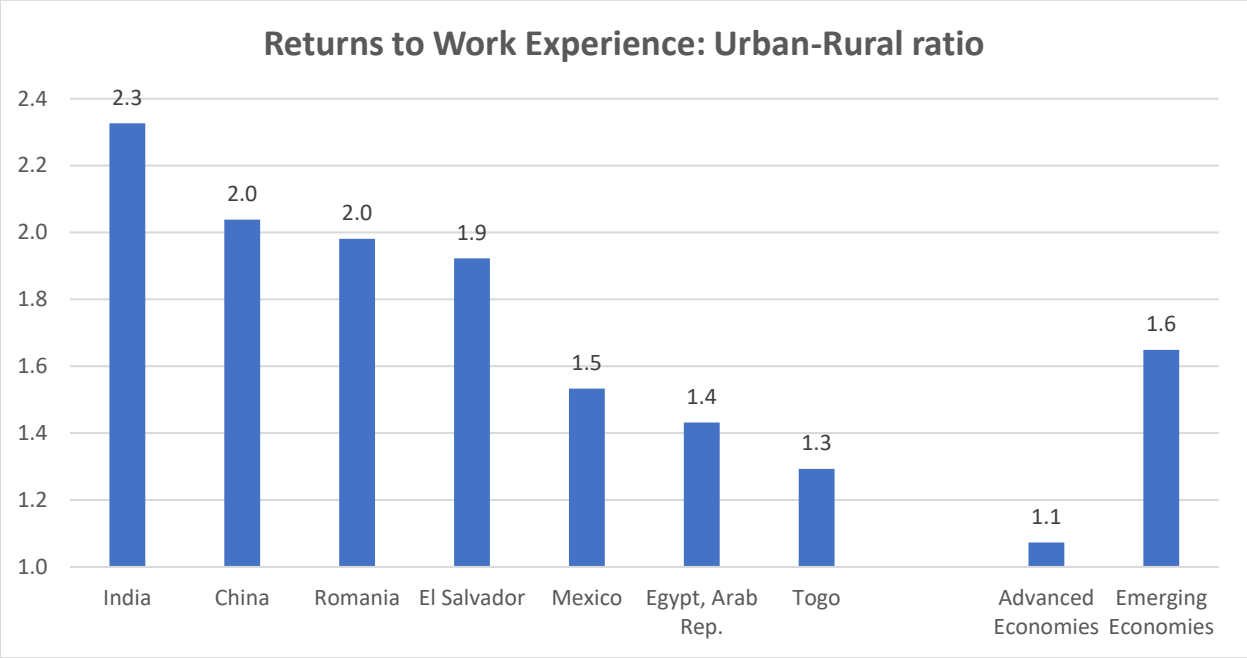
Working in Agriculture

253. Bella works in the rice fields in the rural area 90 kilometers north of the Togolese capital city of Lomé. She is one of several rural smallholder farmers in the area. Her crops suffer from erratic rainfall. Insurance is unavailable. She doesn't have access to finance to buy tools or fertilizer. Poor roads deter her from accessing markets. Her story is not unusual. More than half of Togo's population is in agriculture. Around 60 percent of the population lives in rural areas, and 65 percent of these households are in poverty.[308]

254. Although agricultural employment tends to decline as countries develop, it remains the main economic sector in low income economies. In 2017, agriculture accounted for 68 percent of employment in low income economies. Because the livelihoods of the majority depend on the agriculture sector, improving agricultural incomes is an effective way of reducing poverty. Agriculture has a strong record as an instrument for poverty reduction. Growth from agriculture has a larger effect on reducing poverty than growth from other sectors. [309]

255. Bella's life could be different if she moved to the city where she may have more career opportunities. Her earnings could be higher – her returns for an additional year of work experience in the city would be 2.8 percent. If she remained in the village in Togo, her returns to experience would be 2.1 percent. The returns to work in the city is 1.3 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 1.6 more than rural areas. For India and China, payoffs to work in urban areas are double that of rural areas.

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



Source: Authors' calculations using household survey data.
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.

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

257. 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. [310] First, there is no housing—the extreme poor squeeze themselves often in swamps or 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.

258. Overall, workers in emerging economies experience half of the payoffs to work (1.93 percent) than workers in advanced economies (4.06 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 26 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 77.9 percent.

259. A similar hypothetical story plays out for Bangladesh. Adopting Spain's employment pattern would just narrow the payoffs gap between Bangladesh and Spain by 7.9 percent. In contrast, achieving Spain's payoffs to work in urban and rural areas would narrow the gap by 91.8 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.[311]

260. There are a number of 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 in their operations. This section explores three areas that are of enormous importance, but also areas where policymakers have made strides: programs that transfer knowledge, technology, and improve regulatory systems.

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

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

263. A little bit of knowledge can go a long way. When Jan Agha's animals suffered a bad cut, he would put chewing tobacco, petrol or mud to stop the wound. He laughs thinking about how his poor animals must have suffered. He knows better now - he uses iodine instead. Jan Agha is

one of many livestock farmers in Merak Bela village, Nangarhar province in Afghanistan who benefited from Farmer Field Schools. The classes are twice a month and are an important part of the National Horticulture and Livestock Project, a government initiative supported by the World Bank. Agha, a father of 11 children, says his income has tripled since the project – his cows can produce almost 10.5 liters a day, while before they produced just 3.5 liters a day.

264. A year ago, Marie Behane produced only 8 bags of sorghum in the Far North region of Cameroon. Today, 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.

265. Adekalie is hopeful that his hard work may finally take him out of poverty. He adopted a new variety of rice in his one-acre plot in Kambia, Sierra Leone. He is one of thousands of rice farmers being assisted by the System of Rice Intensification that is part of the implementation of the West Africa Agricultural Productivity Program in Sierra Leone. The program supports farmers with herbicide, organic fertilizers, and new farming methods. Kamara believes that increases in productivity remove the need to have his children weed the farm. His children can now concentrate on their studies.

266. 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.[312] 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 will raise the returns of the training budgets.

267. 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 now signs that mechanization is taking hold, facilitated by information and communication technologies. Real time measurements help farmers in their real time decisions. Aerial images from satellites, drones, and soil sensors improve measurements and allow for the monitoring of crops in real time.[313] Detailed and precise information inform farmer decisions on how much fertilizer and irrigation is needed for their crops.

268. 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.

269. M-Farm in Kenya is another example of a mobile service that aims to reduce information asymmetries in the agricultural sector by connecting farmers with one another to share market information and create learning opportunities. M-Farm goes a step further by also connecting the government and NGOs to farmers. The idea was generated in a weekend-long "boot camp" where participants must conceive of an idea and formulate it into a product in only 48 hours. M-Farm was created by AkiraChix, an all-female team of developers.

270. 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 now evolved into ACRE Africa. By 2017, over a million farmers in Kenya, Tanzania, and Rwanda have been insured.[314]

271. Orchards in the Kastamonu Province in Turkey face two main challenges – pests and harmful frost weather. National weather broadcasts are not helpful. 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.[315]

272. Regulations play a role in shaping the business environment for players in the agricultural sector through their impacts on costs, risk, and competition. High transaction costs can reduce trade volumes, restrict access to finance, and lower productivity. Faced with such challenges, firms are liable to slip into the informal economy.[316] The right institutional and regulatory framework can enable agricultural entrepreneurs to integrate into formal markets.

273. 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 will benefit 43,000 farmers who will be able to sell pyrethrum in a more competitive market.

274. 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.

275. Finance is another important component of a commercialized agriculture sector. Working capital, long-term credit, access to savings accounts, and payment services can be used to expand operations. Financial regulations that support innovative ways of delivering financial services, can increase access to finance in rural areas. In Mozambique, following an amendment to the law to allow for agent banking activities in 2015, Moza Banco now 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 adult population in Ghana now has access to a mobile banking account, which is higher than Africa's average.

Chapter 5: The Changing Nature of Firms

276. Technological progress is changing the boundary of the firm.[317] This change, in turn, is having consequences for workers.

277. Historically, firms have operated within certain boundaries. In 1937, British economist Ronald Coase explained this phenomenon in *The Nature of the Firm*.[318] 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. Firms also facilitate the keeping of commercial secrets.

278. Firms today operate within wider boundaries. Informational costs related to price discovery are practically non-existent. Free trade agreements and improved infrastructure have reduced the cost of cross-border trade, allowing transactions to take place wherever costs are minimized.[319] New technology also allows management from a distance.

279. Compare the Ford Motors of 1930 with Apple Inc. Henry Ford owned the farms that raised the sheep that provided the wool for automobile seat covers. He also owned the iron ore and coal freighters that fed Ford's sprawling River Rouge manufacturing complex. Apple, on the other hand, sources components from over 200 suppliers across the globe.[320] For the iPhone, displays come from Samsung in South Korea, communication chips for ApplePay come from NXP Semiconductors N.V in Taiwan, China, flash storage technology comes from Toshiba Corp. in Japan, audio components are produced by Cirrus Logic in Texas, in the United States. All parts are then assembled by Foxconn in China before the device is shipped to one of Apple's 500 stores worldwide, or any number of other mobile phone suppliers in the world.

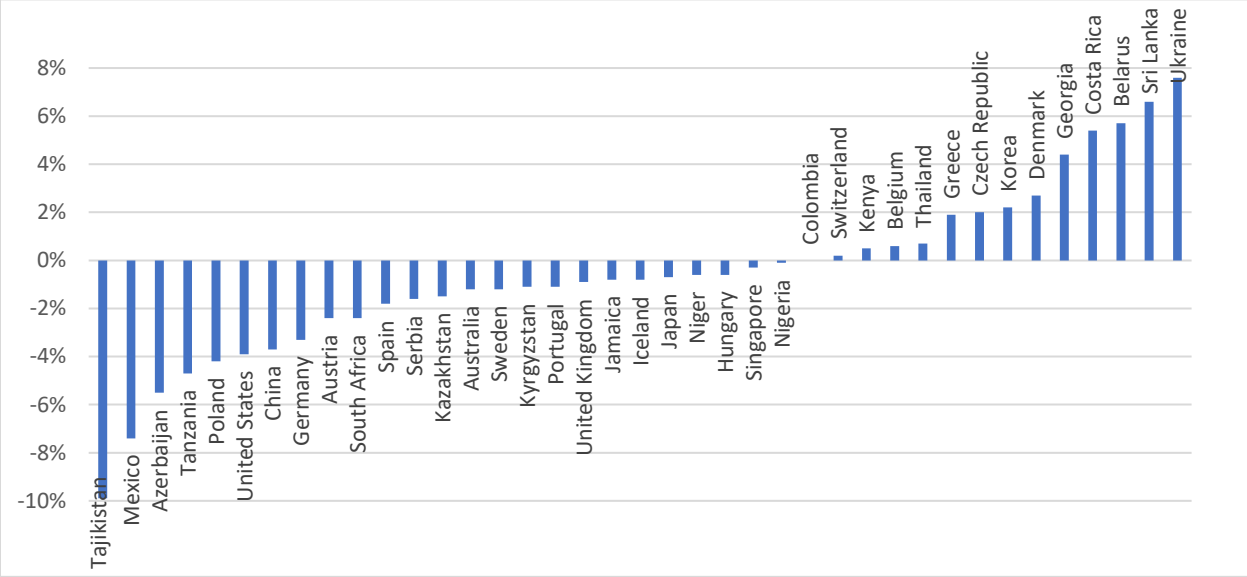
280. The rise of these superstar firms like Apple would have made Joseph Schumpeter proud. "Capitalism requires the perennial gale of Creative Destruction," Schumpeter opined.[321] He did not worry about the jobs possibly lost in the process. Politicians do.

281. Politicians blame technology as the main reason behind the decline in labor share in many countries. Superstar firms riding this technology advancement take the brunt of rebuke. Whether politicians are right depends on the country: technology is destroying jobs in Mexico, while creating jobs in Korea (figure 5.1). Between 1975 and 2012, the overall labor share (employee compensations as a proportion of GDP) went down in 73 out of 112 countries (approximately 65 percent).[322] In Niger, the overall labor share of income decreased from 19 percent in 1995 to 15 percent in 2011. China, Sweden, and Tanzania all fall into this category. However, nearly 40 countries experienced an increase in overall labor share of income, including Thailand and Costa Rica.

282. The same pattern of most countries losing labor share while some gaining ground in payments to workers is seen in corporate data. Considering the corporate labor share (employee compensation as a proportion of corporate gross value added), around the same proportion of countries experienced a decline—51 out of 75 countries (approximately 70 percent). In Azerbaijan, for example corporate labor share of income decreased from 41 percent in 1992 to 16 percent in 2010. In Poland, the share dropped from 62 percent in 1995 to 48 percent in 2011. Countries that

experienced an increase in corporate labor share of income include Brazil (38 percent in 1995 to 51 percent in 2010), as well as Ukraine (34 percent in 1993 to 58 percent in 2010).

Figure 5.1. Changes in the overall labor share of income across countries, 2000-2010



Source: Authors' calculations based on the methodology developed in Karabarbounis, Loukas, and Brent Neiman (2014).
Note: The total labor share of income is calculated as the ratio of employee compensations to GDP. The percentage reflects the change of total labor share from 2000 to 2010. Data in 2011 or 2012 are used if available.

283. This result is corroborated by previous studies.[323] A study that focuses on the corporate sector shows that the corporate labor share decline has happened across a large group of industries and countries. Conducted for 59 economies with at least 15 years of data between 1975 and 2012, finds that 37 countries exhibited declines in labor shares, while only 9 saw increases. Korea was again among the countries with increasing labor shares. Clearly, other countries can benefit from its experience. In contrast, Azerbaijan experienced the fastest decline in labor share. This outcome coincides with the rapid re-emergence of the oil industry.

284. Governments struggle to craft a coherent response to the decline in labor shares. Mostly, they use knee-jerk solutions. One is to support SMEs. Another is to inhibit the expansion of superstar firms, to "leave space for small firms." A third is to bar platform companies from entering their markets. The evidence gathered for this study suggests better solutions are available.

285. In an attempt to create jobs, politicians often finance programs for the development of SMEs. Such programs are rarely cost efficient. More importantly, they are based on the false premise that SMEs create sustainable jobs. Yet the evidence shows that economies where labor shares are rising rely on large firms. Korea is one example. Denmark is another. The Czech Republic is yet another (figure 6.1).

286. A better solution is to ease the entry of new firms. The majority of these firms will not grow beyond small size. Those who do may become the superstars of the future. They require a

business-friendly environment, one that is not tilted towards state-owned enterprises or firms run by politicians and their families.

287. Consider an example from Togo. Akouélé Ekoué Hettah originally ran a clothing boutique shop to rent out wedding dresses in Togo. After completing a World Bank-sponsored entrepreneurship training, she developed a plan to expand her business. In addition to renting out wedding dresses, she sells dresses, jackets, shirts, gowns, and evening outfits. Her formal wear and accessory company, Ameyayra, has shops in both Togo and Benin, with another planned to open in Ghana in 2018. In this period, Akouélé has created 165 jobs. If enough start-ups are established and grow in employment, the destruction of old firms or sectors would be less troubling.

288. A second solution is to allow the rise of local superstar firms.[324] Technological change favors the most productive firms in each industry, incentivizing the reallocation of resources toward them. Superstar firms have a beneficial effect on the labor demand by boosting production. Superstar firms are also large integrators of young, innovative firms, either by buying their technology or recruiting them as suppliers. To succeed, in many economies these firms need the freedom to compete against state-owned firms, firms connected to politicians, and foreign companies.

289. There is some evidence that digital platforms destroy jobs in established sectors. This destruction happens in two ways. First, traditional brick-and-mortar competitors go bankrupt. Second, global platform firms reach out to markets that previously were serviced by local firms. Economies of scale dictate the demise of these local suppliers. A constructive approach is to ensure that global platform companies pay their fair share of taxes in every country, not just in the country of their headquarters. These revenues can be used towards financing a new social contract.

High-Growth Firms

290. For firms in France, 49 is a magic number. There are sharply fewer employers (by more than a factor of two) with exactly 50 employees than with exactly 49 employees. The reason is burdensome business regulation. French companies employing 50 or more workers are, among other things, obligated "to establish a committee on health, safety and working conditions and train its members," whereas companies with 49 employees are not.[325] France also has various regulations that become binding at employment levels of 10 and 20. Not surprisingly, there are sharply more firms with 9 employees than with ten employees; with 19 than 20 employees.[326]

291. Identifying firms that create jobs preoccupies politicians worldwide. Development banks participate in this exercise too. Tens of billions of taxpayers' or foreign donors' money are spent each year on initiatives that seek to increase employment through small and medium enterprises (SMEs). Rarely do such initiatives succeed in identifying or promoting high-growth firms.

292. Relying on relatively abstract, subjective analysis to select potential high-growth firms excludes too many from opportunity. Instead, by creating a better business environment for all firms, the more successful firms will naturally rise to the top. The World Bank's Doing Business project lays out the basic regulatory requirements for private initiatives to grow.[327] 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.

293. High-growth firms display several characteristics: they typically operate in business-friendly environments, they are run by well-educated entrepreneurs, they hire workers with high human capital, they innovate (bringing new products or service solutions to the market), and they export (directly or as subcontractors of superstar firms).[328]

294. Examples abound. EuroPATC, a Serbian start-up established in 2015, invented a wearable tracking device for children with autism, to improve child safety. The company exports its products to 60 countries. Exporting is easy for Serbian companies: the country ranks in the top-25 in trading on time.[329] SailRouter, a Croatia-born desktop-cloud application, reduces fuel consumption during shipping by adjusting engine speed in response to wave power and currents. The company also collects data on ship performance that can be analyzed by artificial intelligence to improve routing.

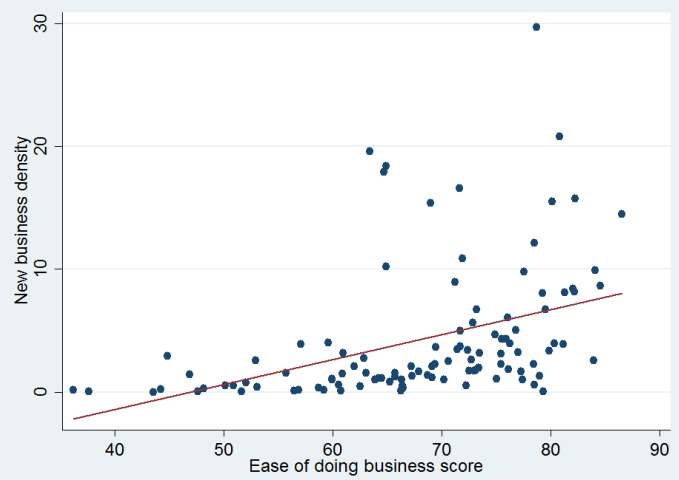
295. Not all high-growth firms are high tech, either. Akouélé's wedding dress boutique in Ghana succeeded by introducing new clothing products for unexploited market niches.

296. These three start-ups have benefitted from improvements in government policy towards businesses: for example, no legal requirement to put money upfront in starting the company.[330] Serbia and Ghana have eliminated the minimum capital requirement altogether. SailRouter established its headquarters in Amsterdam, the Netherlands, rather than in Zagreb. Croatia, alongside 30 other economies, still imposes significant costs on start-ups.

297. The most efficient way to encourage the emergence of high-growth firms is to have more start-ups in the first place. The more start-ups there are, the more innovation and competition.[331] Resources are allocated toward their most productive uses. Under conditions that facilitate business, it is more likely that one of these start-ups will transform into a high-growth company that creates jobs. Faced with new competition, less productive firms—so long as they are not state-owned or politically connected—exit the market. World Bank research finds that in Ben Ali's Tunisia new firms were simply prevented from competing with companies connected to the President's family.[332]

298. Numerous studies show that increased start-up activity is associated with ease of doing business in a country (figure 5.2). Where formal entrepreneurship is higher, job creation and economic growth also tend to be higher.[333] One study estimates that the failure of small firms to grow into large firms lowers productivity growth in manufacturing by 25 percent in Mexico and India as compared with the United States.[334]

Figure 5.2. The easier it is to do business in a country, the greater the number of start-ups



Source: The World Bank's Doing Business and Entrepreneurship database, 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).

299. Still, politicians like to assist specific firms. In most cases, SME-focused initiatives have positive effects by making firms earn more for the families involved. But rarely do they lead to new jobs.[335] Moreover, government programs to support SMEs are often open to manipulation. Men might register businesses in the names of their wives to gain access to preferential financing set aside for female entrepreneurs. Applicants might apply from their ancestral communities in order to benefit from regional preferences. The growth aspirations of entrepreneurs are easily overstated. In the majority of cases, support to specific groups of SMEs, either by sector or location, is inferior to overall improvements in the regulatory environment.

300. Some initiatives are more useful than others. In particular, business plan competitions, programs that prepare entrepreneurs for partnerships with equity investors, as well as programs that increase export competitiveness, have the potential to increase the prospects of start-ups.

301. In Nigeria, young firms that won a $50,000 grant in a business plan competition created more jobs in three years than those that did not win. The cost per job was also lower than the costs of vocational training, wage subsidy, management training, and small grants taken together.[336] Competitions have had similar positive impact in assisting start-ups in Ethiopia, Tanzania, and Zambia.[337] However, help does not equate with identifying high-growth firms. A creative study in Nigeria finds that the scores start-ups receive in business plan competitions are poorly associated with the subsequent employment growth of these firms.[338] Using machine learning methods does not improve forecasting either. The predictive power of both approaches is low, highlighting the fundamental difficulties involved in picking future winners from a pool of start-ups.

302. Programs that prepare young firms to receive outside investment are another tool. Start-ups in emerging countries often have good business ideas, but they are not prepared to attract

outside funding. 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 potential high-growth firms, including on how to leverage the knowledge that equity partners bring.[339] 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 start-ups' performance.[340]

303. Investment readiness programs are emerging in developing countries. In Kenya, Swahilibox in Mombasa, LakeHub in Kisume, along with other business incubators provide access to training, mentoring, and networking opportunities with potential equity investors. Investments usually follow. In 2017, startup funding in Africa increased by 51 percent as compared to 2016, with a record number of 159 startups raising US$195 million.[341]

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

305. Governments also assist high-growth firms by facilitating exports. Export promotion agencies focus on access by domestic firms to foreign markets. In Egypt, a group of academics partnered with an Egyptian rug supplier to secure export orders from foreign buyers through trade fairs and direct marketing channels.[342] Trade fairs broker linkages between local firms and multinational companies. National branding initiatives or geographical indications, such as "Made in Morocco" or "Lübecker Marzipan" also differentiate products, potentially improving marketability abroad.

306. Export competitiveness is best enhanced by linking high-growth firms to large exporters. For instance, Alquería, the third-largest dairy company in Colombia, maintains a large network of raw milk producing/collecting local farms. These farmers benefit from Alquería's export capacity and adherence to international quality standards. In Ethiopia, PVH Corporation, one of the largest global apparel companies and owner of brands such as Calvin Klein and Tommy Hilfiger, is an anchor investor in a new industrial zone generating 60,000 jobs and US$1 billion in export revenues. The presence of PVH attracts domestic firms to join the industrial park, offering sub-contracting services.

307. One under-researched policy area to ease doing business is by opening public procurement to small firms. In Brazil, an online competitive bidding system for government contracts increased employment by 2.2 percentage points amongst winning companies.[343] Notably, 93 percent of the new jobs created were for people that were either unemployed, in the informal sector or out of the labor force. The employment effects persist beyond the initial contract period.

Superstar Firms

308. 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 moneyed corporations, which dare already to challenge our government…". A century later, in a speech in 1910, Theodore Roosevelt warned corporate giants dominated the American economy. A further century has passed, and those words are still applicable. The firms have changed however.

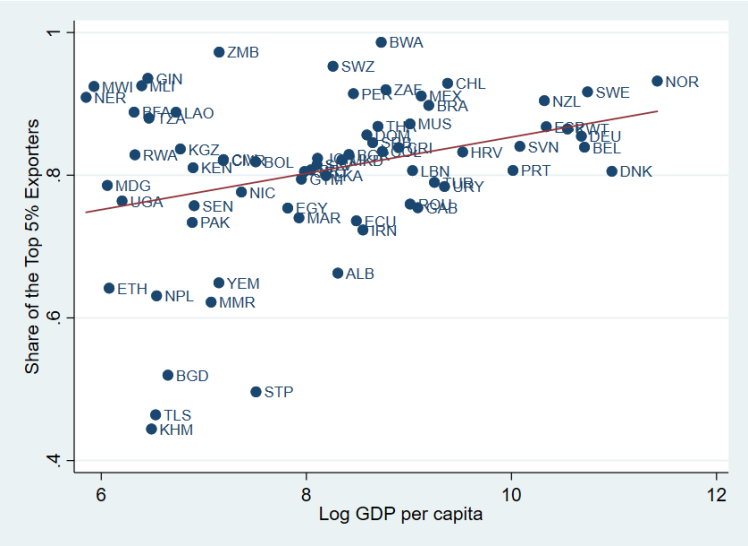
309. Natura Cosmetics S.A., the largest cosmetics maker in Latin America, was founded in 1969 as a door-to-door business in Brazil. Natura distinguishes itself via its direct sales model, as well as its environmentally-sustainable business practices. It now sells personal care products through representatives in more than 3200 stores in 70 countries across the world, with US$2.65 billion in sales last year. It employs 7,000 staff and operates a network of 1.7 million sales consultants globally.

310. 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. Today the Tata Group operates in high-tech sectors. Tata spent US$2.6 billion on research and development (R&D) in 2017, 2 percent of its annual turnover.

311. These are just two examples of superstar firms: large, productive, innovative firms. These firms dominate the global economy: 10% of the world's public companies generate 80% of all profits. Superstar alone can transform a country's industrial structure, shift comparative advantages, and shape a country's exports. A study on exports superstars in 32 developing countries shows that 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.[344] The upsurge of superstar firms would have made Joseph Schumpeter proud "Capitalism requires the perennial gale of Creative Destruction," Schumpeter opined.[345]

312. The superstars' dominance has been driven by open trade. Richer countries have larger sized exporters, as well as higher concentration in the top 5 percent of firms (figure 5.3). Superstar growth is particularly strong in markets undergoing rapid technological advances.[346] Low or absent informational costs related to price search, free trade agreements, and improved infrastructure have reduced the cost of cross-border trade, allowing transactions to take place wherever costs are minimized. New technologies allow management from a distance. Against this backdrop, the share of sales by superstar companies is expected to grow. A 2018 World Bank study on China, Chile, Colombia, and Mexico confirms that economic activity reallocates towards the most productive firms.[347]

Figure 5.3. Richer countries have greater density of export superstar firms



Source: Exporter Dynamics Database version 2.0 with additional data updates.

313. There are plenty of reasons to argue that superstar firms have a beneficial effect on economic growth. Superstar firms have accelerated growth in developing economies by pulling resources out of subsistence agriculture.[348] They increase aggregate productivity by upgrading their internal capabilities to become more efficient, while promoting the exit of unproductive firms. They often pay higher wages, although in some advanced economies, evidence indicates that the large-firm wage premium is shrinking.

314. Superstar firms are at the forefront of adopting new technologies. Catepillar, one of the global largest construction machinery and equipment company in the world, is adopting Internet of Things (IoT) technology. By connecting equipment with sensors and actuators, it accumulates data on equipment location, operating pattern, standby time, to optimize the operation and maintenance system. In disrupting many industries, tech giants are changing them for the better. Didi Chuxing, the leading Chinese ride-hailing company offers app-based mobility options for more than 450 million users. The service is superior to that of established taxi companies, and is forcing them to improve.

315. Superstar firms create the majority of jobs. In Romania, workers of top 1 percent manufacturing superstar firms hold a quarter of total employment; the top 5 percent absorb almost half of the total labor force. Côte d'Ivoire and Georgia show similar picture.

316. Superstar firms are also responding to new way of employment. Most superstar firms are increasingly employing large share of workers under temporary work arrangements. Twenty percent of Fortune 500 companies use Upwork, a global freelancing platform, to build hybrid teams made-up of long-term employees and temporary workers. In Samsung, 65 percent of its data science work, 17 percent of software development work as well as 10 percent of marketing automation work, are now sourced through freelancing platforms.

317. Superstar firms are large integrators of young, innovative, dynamic firms. Digital giants can benefit small businesses by connecting them with larger markets to source inputs, offers convenient payment solutions, and reach targeted customers. In India, numerous technological startups act as digital partners for overseas technological giants, providing payment solutions 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. Since 2009, clusters of rural micro e-tailers have opened shops on Taobao.com Marketplace, one of the largest online retail platforms in China owned by Alibaba. Empirical researches show that one additional active online shop in Taobao Villages creates 2.8 jobs. Numerous Taobao Villages have created more than 1.3 million jobs over the past years, creating opportunity for those who choose to stay in rural areas.

318. Superstar firms can provide important financing for small business. Large buyers of agricultural produce satisfy 40 percent of the credit needs of commercial farmers or farmers organizations. For instance, as the leading agricultural manufacturer and service supplier in Vietnam, Loc Troi Group provides working capital for agricultural cooperatives in order to purchase inputs, which helps improve agricultural productivity as well as household income.

319. New digital technologies accelerate the trend toward superstar firms. Digital giants, such as the Alibaba Group, entered the Global Fortune 500 within less than two decades. The majority of growth was driven by its e-commerce platform—Taobao. Similar breakthroughs are taking place in other countries. Jumia, an e-commerce company in Lagos, spearheaded the e-commerce trend in Africa in 2012. It is already present across 23 African countries, bringing electronics, groceries, fashion etc. to customers. Jamalon, an online books retailer in Amman, Jordan, within eight years and with less than 100 staff, delivered 10 million titles to most of the MENA countries. Its "Print-on-Demand" platform enables global publishers to offer books in the region with significantly reduced transportation cost.

320. Technology is changing finance too. Ant Financial, the most valuable fintech firm in the world, took off within just a few years due to advances in artificial intelligence. It uses big data to disburse loans in less than 1 second from the moment of application. Its famous "3-1-0" online lending model involves a 3-minute application process, 1-second processing time, with zero manual intervention. In 2018, loans total RMB700 billion to over 4 million small businesses.

321. Digital platforms allow for rapid and inexpensive scaling. 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.

322. The market position of superstar firms has attracted political opposition, mostly around concerns of abuse of economic power of these firms. One valid concern is the ability of superstar firms to leverage their power in adjacent markets by bundling or at least connecting different types of services. In the late 1990s and early 2000s the Microsoft cases demonstrated the risks that a dominant provider of computer operating systems would try to leverage its power to internet browsers.[349] As another example, Google has been sanctioned for promoting its own shopping services through its browser.[350] Today, Amazon is not only an online retailer, but also publishes books, manufactures hardware, and has even entered the grocery-store business after purchasing

WholeFoods. Starting from Taobao.com marketplace, the Alibaba group now dominates the mobile payment market with Alipay, and enjoys a significant share in the online entertainment sector through Youku.com.

323. Superstars firms expand by buying rival firms. Amazon has acquired Careem, the "Amazon in Arab World". Alibaba acquired Lazada, the e-commerce giant in Southeast Asia. Local mobile payment service providers such as Ascend Money in Thailand and Paytm in India are part of Ant Financial, the fin-tech giant within the Alibaba Group.

324. The rise of superstar companies poses a great policy challenge over the coming years. Governments will have to deal with worries about market concentration and taxation without imposing obstacles for firms to grow. While monopoly power has been a source of concern for governments and the society, higher markups can help cover the large fixed costs associated with innovating and deliver efficiency gains at the industry level. Yet, if monopoly power is not related to efficiency, then government interventions will be required to level the playing field. Further, tax evasion is another concern as taxation systems have often failed to keep up with the changing nature of firms and deal with superstars' tax-avoidance.

Platform Firms

325. The list of the world's most valuable firms by market capitalization in 2017 reveals an important feature of the changing economy— firms are leveraging online platforms to reach customers. Seven of the top-ten non-financial firms on the list fit this category.

326. While global players such as Amazon dominate this list, platform-based businesses are on the rise in every country. Take Souq, an English-Arabic language e-commerce platform, was established in Dubai, the United Arab Emirates. Souq sells more than 8 million products, in Saudi Arabia, UAE, Qatar, Egypt, Kuwait, Bahrain and Oman. Or 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 now links 200,000 students with 30,000 teachers in the U.S and Canada.

327. Platforms are the new way of trading services. They often reach beyond traditional markets. For example, VulaMobile, a South African service platform, links tens of thousands of individuals in rural areas to specialized medical services in fields as diverse as ophthalmology, dermatology, HIV treatment, cardiology, and oncology. Hello Tractor, a Nigerian asset-service sharing platform, has established a network of tractor owners, offering equipment as well as maintenance to those who can't afford to buy machines for farming activities.

328. Digital platforms, such as Flipkart in India as well as Jumia in Nigeria, exemplify the goods platform in emerging economies. Launched in 2007, Flipkart facilitates sales of consumer electronics between suppliers and customers. Jumia, started in Lagos, brings electronics, groceries, fashion to customers in 22 African countries. Jamalon, an online books retailer in Amman, Jordan, has been able to establish partnerships with over 3,000 Arabic plus 27,000 English-language publishers, delivering 10 million titles to the Middle East.

329. Platforms, such as Wechat Pay in China or M-Pesa in Kenya, enable firms to do payments electronically. Ant Financial, a financial company in Alibaba Group, incorporates in its loan assessment model transaction data gained through Alibaba's Taobao marketplace, to offer credit to traders on its platform.

330. Digital platforms reduce trading costs. Efficiencies increase as costly intermediation disappears. For example, Teleroute, a platform that matches freight forwarders and carriers in Europe claims its platform services reduce empty runs by up to 25 percent. In addition, digital platforms provide mechanisms to build trust (e.g., brand certification, digitalized social capital, third party validations), which further expands market reach.

331. Digital platforms can create jobs. For example, since 2009 many clusters of rural e-tailers have opened shops on Taobao.com Marketplace, fostering a "Taobao Village". Taobao Village merchants produces consumer goods, agricultural products and handicrafts 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.

332. To create jobs, internet connectivity and mobile phone penetration are prerequisites. M-Pesa, a mobile payment platform started in Kenya, would not be able to take off without the high level of mobile phone ownership, at 88 percent. Logistics infrastructure is the next step in facilitating trading of non-digital products. To facilitate rural e-commerce, Chinese government has invested $300 million in 200 counties to establish local logistics centers. In 2018 the World Bank partnered with GSMA, uniting nearly 800 operators with more than 300 handset and device makers, software companies, equipment providers and internet companies, to intensify connectivity in developing countries.

333. Digital platforms can either disrupt markets themselves or help others take on incumbents. In 2017, ride-haling apps surpassed traditional taxis in New York City with over 12 million monthly taxi pickups. Taxi service providers that used to be protected by fixed caps on licenses are now exposed to competition. E-money platforms have achieved coverage where the traditional banking model failed in Kenya: M-Pesa reached 9.5 million customers within three years in operation, in a country with only 8.4 million bank accounts.

334. Regulated professions such as accountants are facing platforms as competitors: As of 2015, Upwork, already connected 5 million client businesses with more than 12 million freelancers and sourced its fourth largest community of task providers from Ukraine. Start-ups used to need data centers, IT systems, custom software and a user support infrastructure to take on large conglomerates. Now, entrepreneurs worldwide can source these from Zendesk, Python and others. In Kenya, many have attributed the country's start-up boom to the presence of M-PESA, which is used as a base for business of entrepreneurs.

335. Successful platforms expand into other business lines and often provoke 'legacy' operators to catch up. For example, ride-hailing platform, Grab holds 95 percent of the Southeast Asian market and now offers additional services that range 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. Grab's rival, Go Jek, processes over 100 million digital-wallet transactions

per month. Platforms also expand through commercial partnerships or mergers. For example, Grab started providing microloans in a partnership with Japan's Credit Saison while Go Jek acquired three companies to become a dominant player in payment systems in Indonesia. Electronic freight exchanges such as uShip and Mober that match carriers with cargo holders forced global logistics providers such as Schenker and DHL to develop their own digital exchanges.

336. With the good comes the bad. These firms often skirt existing regulation. For example, Airbnb tenants affect neighbors, who do not share the benefits of fuller occupancy. Youtube removed a feature to report copyrighted content after an inflow of reports on unauthorized videos. The intense competition created via some platforms prompts a race to bottom in price. Drivers with Go-Jek and Grab in Indonesia held large demonstrations in early 2018 demanding an increase in their tariffs. In response, the government began the process of amending its laws to require such firms to register as transport companies, comply with safety requirements, impose a minimum floor price for such services. Customers of platform firms also worry about the selling of their private information.

337. Banning platforms is a route some countries have taken, particularly in Europe. Outright bans are, however, suboptimal – they simply deprive countries of the good, too. Bulgaria's Supreme Court ordered Uber to stop operating in 2016. In Hungary changes in government regulation made it effectively impossible for Uber to operate leading to its exit. In Spain, the government barred Uber from entering the market while a local company provides car sharing services with the same license as other taxi services.

338. Many regulators have been resisting pressures to erect barriers for platforms to operate. Competition authorities across developed and developing countries have successfully advocated against disproportionate restrictions for platforms in transport and accommodation. For example, the UK withdrew a proposal that would have obliged private-hire vehicles to offer pre-booking seven days in advance. Spain's Supreme Court ruled against a regulation that required a minimum number of nights for any accommodation other than hotels. In Italy, a ban on Uber was overturned the month after it was imposed.

339. Alternative solutions impose on platforms standards of safety, privacy and honesty. In some cases, standard-setting can be partially replaced by tracking technologies and user feedback on observable features such as driving skills, cleanliness, reliability and customer support. For example, the application "Safemotos" in Rwanda allows users to find a motorbike taxi driver whose driving safety has been monitored by reviews.

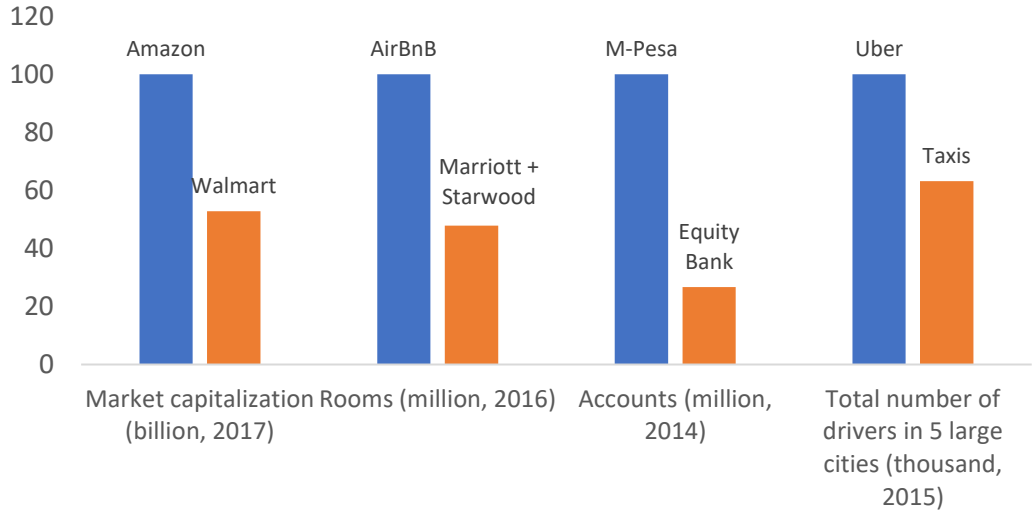
340. In most cases, however, regulators will need to adjust rules to new business models. The financial regulator in Peru limits the size and volume of e-money transactions and has set up a special e-money license with a leaner regulatory burden. Mexico City created a new regulatory category (network transportation service) for ride-sharing apps. The municipal government in Milano reached a data sharing agreement with Airbnb. This agreement limits tax evasion on platform transactions.

341. Even as platforms disrupt incumbents, new problems may arise over time as they increasingly become entrenched themselves (Figure 5.4). The ascent of platform firms relative to

nearest competitors raises additional issues related to market power. First, 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.

342. Beyond China, where UnionPay holds a monopoly, roughly every second payment is made with a Visa-branded card. Platforms can obstruct the growth of competing offers, for example by charging high fees for other networks to interconnect: High fees for terminating phone calls or accepting wire transfers make it difficult for smaller platforms to attract users. In 2013, sending around $200 in e-money from M-Pesa to its rival Airtel Money was over four times more expensive than sending it within the network.

Figure 5.4. Platforms and their offline competitors



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

343. There are solutions here, too. Governments can regulate competitive coexistence of platforms. When businesses and individuals can use several competing platforms at once and switch easily between them, competitive pressure remains. Brazil forced card payment acquirers to accept more than one card network to ensure that customers could pay with several cards at points of sale. Israel and Mexico ensure that merchants can charge differently for accepting certain cards to signal to card holders which one provides better terms. South Africa regulates interchange rates for card payments.

344. Regulators can also pay attention to mergers. Uber sold its operations in China, Russia and Japan to its main competitors in exchange for equity stakes or joint-ventures. Large logistics companies have been absorbing their innovative competitors. DB Schenker, a global logistics company first entered an exclusivity agreement with uShip in 2016, later acquiring a minority stake and a seat on uShip's board. These transactions should be subject to the same anti-trust rules as for brick-and-mortar companies.

345. Second, conglomerates with multiple platforms, networks and services may exclude competitors in some of their services. In Kenya, while Safaricom's M-Pesa service started in the payments system market as a maverick, it quickly gained a dominant position, holding around 70

percent of mobile money agents under contract. In Peru, the telecom regulator had to force the largest communication networks to offer messaging services to banks that were expanding into e-money. Amazon accounts for 10 percent of UPS' return and is able to negotiate 70 percent discounts in delivery rates, which delivery companies make up by charging other independent sellers more.

346. Exclusion of competitors warrants regulator's attention. Zimbabwe mandated interoperability and infrastructure sharing among e-money operators raising the total number of subscribers by 15 percent. Peru regulated the conditions at which telecom operators would sell services to e-money providers. With World Bank support, Kenya ruled that Safaricom could not contract small stores under exclusivity. This decree was followed by an increase in income for small agents in rural areas by 49 percent. Kenya further ensured that Safaricom would offer its competitors in the e-money business the USSD session at cost-reflective prices – between one fifth and one tenth of what it had been charging.

347. Third, the gathering and processing of data gives rise to new sources of market power. Algorithms become better the more data they are fed, which benefits large platforms. Today, over 80 percent of searches happen over Google. Facebook and Google account for 73 percent of all digital advertising in the United States. 43.5 percent of US retail e-commerce sales take place in Amazon's platform . Data becomes a tradable good itself.

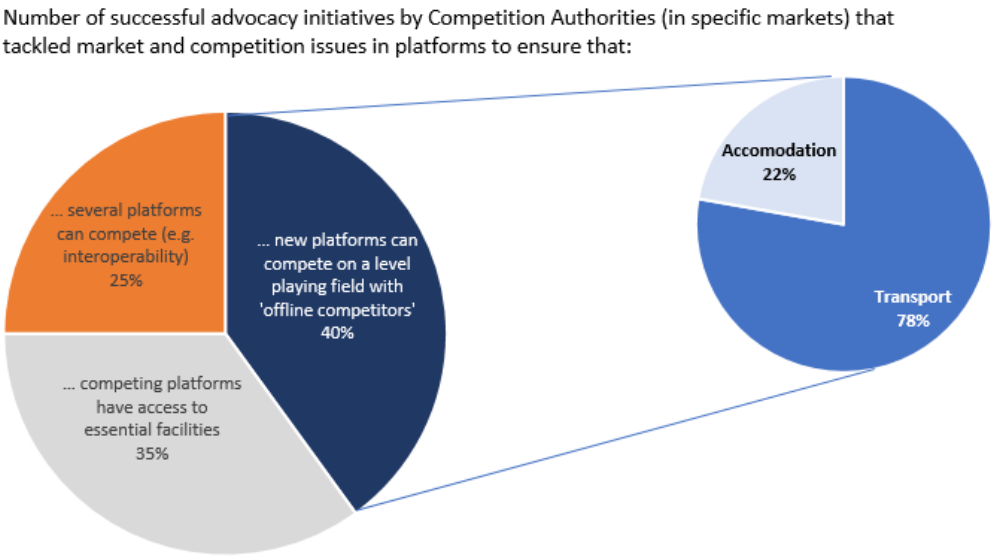
348. Facebook is under investigation in Europe over allegations that it used its market power to make customers give up excessive amounts of private data. While instant comparison and adjustment of prices through automatic algorithms can benefit consumers, these algorithms can also be programmed or learn not to compete. In 2016, a UK retailer admitted using automated repricing software configured to achieve higher prices jointly with its competitor.

349. Moreover, data surveillance may allow tech companies to notice at early stages when a product or service gains customers, giving them an advantage to copy the innovative product or acquire the start-up before it develops into a stronger competitor. Google is fighting multiple lawsuits for predatory behavior.

350. Where data becomes indispensable to compete, governments can regulate its access. Malawi advocated with the banking association to provide their data to *all* credit referencing bureaus. Mexico's competition authority mandated the terms and fees that banks may charge FinTech companies for sharing transaction data of individual customers. Governments can also publish the data they collect to create opportunities for smaller firms or support "data co-operatives". In Switzerland, a project called Midata collects health data from patients, who can then decide whether they want them to be included in research projects.

351. Platforms bear opportunities for individuals, firms and governments. When operating with antiquated regulation, they can dodge rules and standards. Regulatory innovations should address this gap without obstructing the potential for platforms to disrupt incumbents' business. Some platforms evolve from market entrants to dominant firms themselves. This market power should be curbed to ensure markets remain contestable (figure 5.5).

Figure 5.5. Case studies of successful advocacy for pro-competition solutions



Source: WBG-ICN Competition Advocacy Contest, 2014-2018

Chapter 6: Social Protection and Labor Market Institutions

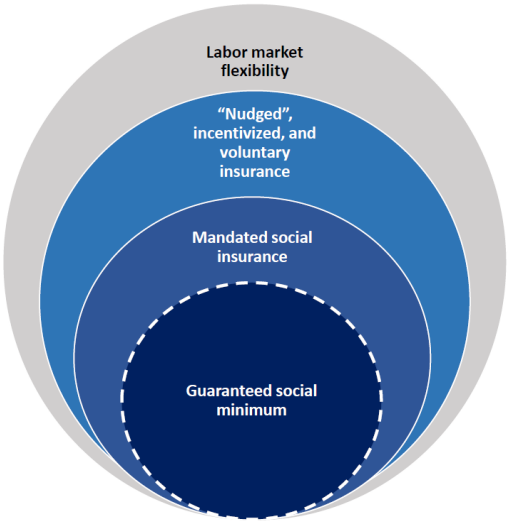
352. Otto von Bismarck, Chancellor of the German Empire in the late 19th Century, is widely accredited for having invented social insurance as we know it: one where (formal) workers and firms contribute through taxes on wages. What is less known, however, is that such model was Bismarck's plan B. The Chancellor's original intention was to create a system of 'social' pensions financed revenues from a state monopoly on tobacco. As his plan was thwarted, Bismarck resorted to wage-based contributory financing for pensions for workers over 70. Life expectancy in Prussia at the time was 45. This system is still largely in place today in most countries. Yet, it is increasingly challenged in advanced economies. In developing countries, where informality is the norm, it never matured.

353. Social protection systems and labor market institutions are a central plank of societies. Even in low-income countries, almost one-fifth of the population is now covered by social protection – a share that increases to about 40 and 60 percent in lower and upper middle-income countries, respectively. Such progress ought to be celebrated. The next question is 'how' to best adapt them to the changing nature of work.

354. The challenges ahead leave little room for complacency. Many individuals, certainly the majority in developing countries, lack formal protection. Labor markets trends are becoming more fluid, including workers pursuing a portfolio of activities like self-employment, multiparty employment arrangements, or dependent self-employment. Social protection systems conceived around long-term employer-employee relationships are increasingly disconnected from these trends. For developing countries where systems are less mature, the changing nature of work may present an opportunity to consider options that better fit their contexts.

355. Three inter-dependent components of social protection systems – a basic minimum (with social assistance at its core), social insurance, and labor market institutions – can manage the headwinds of labor market challenges (figure 6.1). The kind of guaranteed income discussed here should be read through the lens of 'progressive universalism': this includes options that put a premium on first adequately reaching the poorest while also extending support to other vulnerable groups. Coupled with basic social insurance and more flexible labor markets, such a minimum could better protect people in a changing world of work.

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



Source: Adapted from World Bank 2018.

356. The good news is that there is plenty of experience to build upon. The quest for a 'guaranteed minimum' has always been a goal of social assistance. The British Old Poor Law of 1601, for example, formalized the provision of a modest minimum for some specific risks. With the industrialization process skyrocketing the cost of such program, in 1834 a New Poor Law established stricter participation requirements, such as the use of 'workhouses'. After over a century, these were closed with the implementation of the Beveridge Report in 1948.

357. In addition to Europe, the poor laws influenced social protection approaches in the United States, India, and parts of Africa. Labor institutions are similarly rooted in the late 19th century, with the first minimum wage legislation emerging in New Zealand in 1894. The industrialization process also led to new contributory insurance schemes, such as the German Bismarckian model of 1889. This model was based on employer and employee contributions, with benefits proportional to the workers' salary as well as the history of contributions. The scheme's coverage increased as labor markets formalized. While this model has served many advanced economies well, in developing countries—which also largely adopted it, at times through colonization—the model remained mostly aspirational due to the prevalence of informality.

358. The growth in social assistance in developing countries is a testament to a direction of travel towards ensuring a societal minimum. Eligibility to most programs depend on certain criteria – like if income or proxies for it fall below a given threshold (e.g., many means-tested cash transfer programs); if people have a certain age or disability (e.g., school feeding, social pensions, etc.); or if they are willing to work (public works) or fulfil co-responsibilities (conditional cash transfers).

359. A newer set of instruments is designed to achieve a societal minimum, but they do so in more universal terms. These include universal basic income (UBI), a negative income tax (NIT), and other similar interventions like a 'tapered UBI' or TUBI.[351] If a wider societal minimum is the strategic goal, then these instruments should be among the options to be considered, with their comparative merits subjected to research.

360. These instruments require investments in targeting systems. As countries expand coverage, targeting would still play a salient role, consistent with the mentioned principle of progressive universalism – that is, coverage expansion need to prioritize those at the bottom of the distribution. Fulfilling this principle entails identifying who are the most vulnerable, where they live, and how vulnerable they are. However, a core difference between current approaches and a UBI, NIT or TUBI is that the latter target from the top or "exclude the rich", instead of "selecting from the bottom". Such process occurs by either distributing transfers to most of the population, or distributing to all and then taxing away the transfers to the rich. Where exactly in the distribution one becomes net beneficiary depends on the financing structure. These approaches have pros and cons but may address challenges in coverage and take-up of programs, e.g. exclusion errors, stigmatization, etc. At the same time, they also raise new administrative and financing challenges that should be carefully gauged.

361. A guaranteed income ought to be complemented with a social insurance system that does not fully depend on having stable wage employment. Such a system provides basic universal social insurance, including subsidies to low-income individuals. Such basic insurance would cover all workers, regardless of where and how they work. In addition, supplementary savings through labor taxes would need to be made obligatory to reach an adequate level of savings. At least initially, such a system would most likely cover only formal workers. Finally, additional insurance across the board could be achieved through voluntary savings incentivized by the state. A three-tiered model would expand access to insurance while at the same time reducing labor costs related to the financing of today's system.

362. As all workers become better protected through reformed social assistance and insurance systems, labor markets can be made more flexible to facilitate work transitions. After all, labor regulations are often used as a tool to provide the protections that social assistance and insurance systems fail to provide: ensuring a livable wage through the minimum wage or unemployment benefits through severance pay, for example. Yet, too often labor regulations protect the few who hold formal jobs while leaving out most workers.

363. High minimum wages, undue restrictions on hiring and firing, strict contract forms, all make workers more expensive vis a vis technology. For example, after ten years of continuous employment, severance equals 132 weeks of salary in Sierra Leone; 130 weeks of salary in Mauritius, and 120 weeks in Bahrain. If workers are expensive to dismiss, fewer will be hired in the first place (at least formally). Burdensome regulations also make it more expensive for firms to rearrange their workforce to accommodate changing technologies. Hence, stronger social protection systems can go hand in hand with more flexible labor markets. This flexibility would need to also be coupled with more effective job search support as well as new arrangements for expanding workers' voice.

Social assistance

364. "I can bet, within the next two years, at least one or two [Indian] states will implement universal basic income". [352] The prediction of India's Chief Economic Adviser, Arvind Subramanian, seems part of a wider hype. The March 2018 elections in Italy propelled the Five Stars Movement and the center-right coalition to the top of the electoral chart. Both campaigns

featured variants of universal basic income (UBI), dubbed 'citizens' or 'dignity' income. Ricardo Anaya, candidate for Mexico's presidential elections in July 2018, is also championing a UBI.

365. The idea of a guaranteed societal 'minimum' is at the forefront of social protection thinking in high and lower income countries alike. The changing nature of work sparks intense debates on the shape of that minimum. The erosion of the standard employment relationship is undermining the set-up of firm-based, "Bismarckian" social protection. In the context of high informality in developing economies, this model presents severe limitations. Growing uncertainty around work leaves larger swaths of the population exposed in need of protection, even if they participate at times in formal employment.

366. The move toward a guaranteed minimum is already happening. This trend is made tangible in the wave of expanded social assistance around the world in the last quarter century. Programs take many shapes: poverty targeted cash transfers, conditional or unconditional; public works programs; targeted or universal child grants and old age pensions; ubiquitous school feeding; less frequent but often large food oriented programs; and even various allowances or subsidies for heating or utilities.

367. Most countries have some type of social assistance, often layering together in a complex mosaic. Spending on such programs in developing countries averages 1.5 percent of GDP. Flagship programs in Egypt, India, Iran, and Saudi Arabia reach between half and 90 percent of the population. In Iraq, the public food distribution system is fully universal. In Brazil, the combined coverage of many programs results in high population coverage.

368. Despite this progress, several challenges remain. In advanced economies, social assistance often faces the bottleneck of low 'take-up' rates, or the extent to which eligible beneficiaries participate in a program. For example, in the European Union only about 60 percent of social benefits are claimed. [353] This deficiency stems from lack of awareness of benefits, misunderstanding of eligibility rules, perceived stigma associated with assistance, and opportunity costs to access benefits.

369. In low-income countries, only 18 percent of the poorest quintile receives some form of transfer, though coverage rises to 77 percent for upper middle-income countries. Among those that receive benefits in both low and middle-income countries, about one-third belongs to the poorest quintile, while the others are spread across the income distribution. [354] Where poverty is widespread, people across the income distribution face similar levels of deprivation. Hence, narrowly-targeted programs can exclude the rich, but also fail to reach many among the poor.[355] In addition, most interventions are designed for chronic poverty. Yet, poverty is dynamic: in Africa, one-third of the population is persistently poor, while another third moves in and out of poverty.[356] In some middle-income countries, those living just above the poverty line, e.g., $6/day, face a 40 percent chance of falling into poverty at one time or another.[357]

370. Various innovations enhance existing programs. 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 reduced

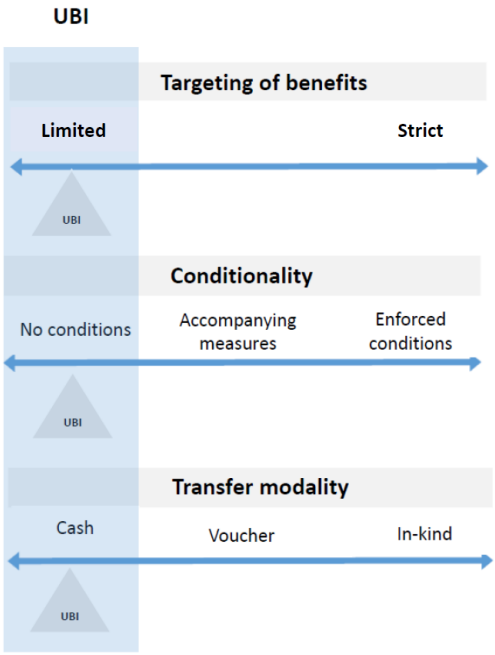
'leakages' from 52 percent in 2005 to 9 percent in 2012. Social registries are connecting different programs. In the Philippines, the *Listahanan* database links 60 interventions. When linked to a unique ID number, such platforms can reduce costs due to inclusion errors. In Pakistan, the social registry, which includes 85 percent of the population and connects 70 different programs, saved $248 million. In South Africa, and Guinea, a similar process saved $157 million, and $13 million, respectively.

371. These innovations can, in addition to sparking further improvements in existing programs, also expand the range of possible interventions. For instance, a universally-oriented guaranteed minimum may display traits that may be limited among current approaches. For example, by being 'gentler' in shape and wider in coverage, it might avoid sharp changes in benefits between people whose welfare differs little. In this manner, a guaranteed minimum may also ameliorate possible work disincentives. Moreover, it could reduce administrative costs compared to having a variety of programs with similar intent and beneficiaries.

372. The United States has 82 federal programs targeting low-income households. Bangladesh has over one-hundred. India has nearly one thousand centrally-sponsored schemes, with many more provided at the state level. Too much bureaucracy. Too high administrative costs. Perhaps more fundamentally, universally-oriented programs may be more effective in reducing the exclusion of the poorest from programs.

373. Among the options for ensuring such form of societal minimum, UBI elicits intense debate. For a program to be considered a UBI, it needs to meet three criteria. First, a UBI 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. In other words, a UBI represents a frontier combination of three design choices (figure 6.2). Such systemic option holds the potential to overcome many existing challenges, but also entail significant risks.

Figure 6.2. Design features of a UBI



374. A UBI can be conceived in different ways. For example, it can envisage limited transfers to supplement household income, to lift people out of poverty, or to meet additional needs (for example tuition fees for children). When transfers are modest in size, a UBI is more likely to be complementary to work. A more radical and contested option envisages UBI as a substitute for work. Advocates of this approach posit UBI as an antidote to automation, providing emancipatory economic freedom, and adhering to rights provisions. Few countries can afford this type of UBI.

375. In addition to the size of transfers, other parameters of UBI design matter. For instance, a UBI can be provided as substitution for or in addition to existing welfare schemes; eligibility criteria can envisage a minimum (e.g., 18 years); and citizenship or residency requirements may also apply.

376. In general, the appropriateness of a UBI depends on countries' preferences toward redistribution, fiscal space, the performance of current social protection programs, and implementation capacity. Some countries may choose a UBI, while others may prefer a more tapered option. A UBI provides the same level of transfers to the entire population, and then claws back part of it through taxes. An alternative 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). In countries with well-developed and progressive tax systems, UBI benefits can be considered part of taxable income and thus, like an NIT, clawed back from the wealthy. In such case, a UBI is analytically equivalent to an NIT.[358] However, a UBI and NIT may differ in terms of administration and political economy. An NIT uses the tax system itself to deliver benefits, while in a UBI benefits are provided separately from the tax structure. In economies where taxation capacity is limited and informality is large, a UBI could be easier to implement and have wider reach than an NIT. In terms of political economy, the NIT

makes it more explicit that the rich would not benefit from the program, a common objection to a UBI.

377. In places with limited tax systems, administrative data could be used to assess wealth and exclude the rich from the program (e.g., people in the upper two quintiles). One of these is named "tapered UBI", or TUBI.[359] This would direct more resources toward the bottom of the distribution. The drawbacks with such option include possible work disincentives (substitution effects), and the difficulty in ranking individuals in informal contexts. A tapered option requires intensive data collection efforts. However, the true impact and distributional effects can only be understood after considering how the program is financed. Given the regressivity of many possible funding sources like energy subsidies, either option, a UBI or a tapered program, can improve countries' income distribution. Equality appears to improve even when financing these programs via consumption taxes in low-income countries.[360]

378. Clawing back benefits from the top of the distribution (through taxes or administrative data), instead of selecting beneficiaries from the bottom, can reduce exclusion errors, thus increasing the poverty impact of transfers. Excluding the rich certainly entails new technical challenges. But since exclusion occurs at the more affluent segments of the distribution it has less severe social consequences. Like many current social assistance programs, a UBI or similar tapered options implicitly assign a higher societal weight in reducing the exclusion of the poor relative to inclusion of the non-poor. Coverage of the poor, however, is a challenge for current programs under different targeting methods.[361] By 'targeting from the top', a UBI, NIT or TUBI is posited to attain the same goal (ensuring that the poor are fully covered) in a different way (excluding the rich instead of distinguishing the poor from the non-poor). The cost would be a wider coverage of the program beyond those strictly in poverty. Such wider coverage is desirable because of growing vulnerabilities, high societal weight on reducing exclusion of the poor, and pragmatic considerations on how to achieve that.

379. But what do we know about how UBI works in practice? Only one country, Mongolia, had a short-lived UBI covering the entire population. The program provided up to $16.5 a month and lasted 2 years (2010-2012), before being cut due to fiscal constraints.[362] 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. Then it gradually downsized from 21 million households to 17 million. The program provides $45 a month per person.

380. There are several small-scale experiments that labelled as UBI, but are mostly targeted programs. Finland is undertaking a randomized controlled trial providing 2,000 unemployed citizens with $600 a month over 2 years; in Oakland, California, 100 families are provided with up to $2,000 per month over a year, while 250 Dutch households in Utrecht receive $1,100 per month over two years. The Canadian province of Ontario is preparing a test providing 4,000 people with $13,300 per year. In Kenya, a pilot is underway providing a UBI to 11,500 people over 2 years (plus a second group of 6,000 people covered for 12 years). The pilot in Kenya is the one that is closest to a pure UBI.

381. Similarly, a range of sub-national, resource-dividend schemes are in place. The Alaska Permanent Fund, for example, is designed to redistribute oil revenues to all residents. In 2016, the

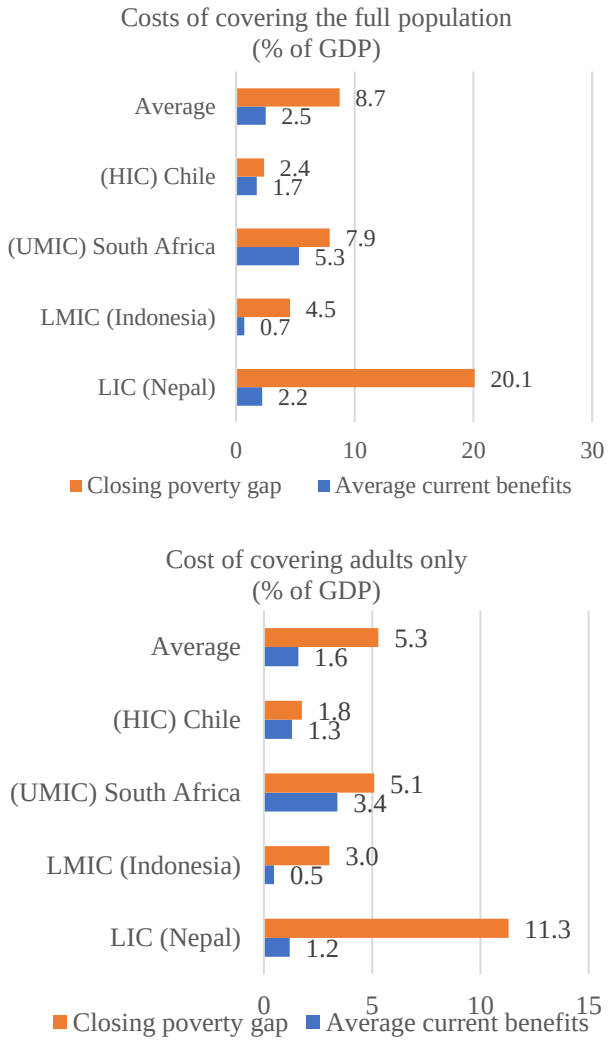
Fund distributed about $2,000 to 660,000 individuals. A similar program relates to sharing dividends from gambling: for instance, since 1997 the tribal government of the Eastern Band of the Cherokee Nation distributes a portion of its profits to 16,000 adults. An analogous scheme is underway in Macau.

382. The fiscal burden of universal basic income is large. Estimates for four European countries assessed the costs of a UBI with benefits equal to those of existing cash transfer programs.[363] Since the latter only cover a fraction of the population, a UBI would obviously be more expensive. 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.

383. 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 UK, taxing cash benefits and eliminating tax allowances is not enough to cover for a UBI.

384. The emerging evidence in developing countries points to the need for significant additional spending in some countries. 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.[364] In comparison, today's low and middle-income countries spend on average 1.5 percent of GDP in safety nets. In India, estimates from the Economic Survey 2017-18 show that a quasi-UBI excluding the top 25 percent could be largely paid by replacing existing schemes.[365] While these account for about 5 percent of the GDP, the results of the survey have been widely debated.[366] New simulations are providing further cross-country evidence. For instance, the cost for a UBI for adults (or above 18 years of age) sufficient to eliminate absolute poverty ranges between 11.3 percent of GDP in a low-income country like Nepal to 1.8 percent of GDP in high-income Chile (figure 6.3).[367] If transfer amounts are lower – for example set a at the average level of current benefits – costs could be reduced by about two-thirds.

Figure 6.3. Simulated cost of UBI for different amounts in select countries



Source: Gentilini et al. (forthcoming)

385. A wide-ranging intervention like UBI will generate winners and losers among the population. The direction of those effects would depend on various factors, such as if and what programs would be replaced to help finance the UBI; the performance of existing social protection systems (e.g., in terms of coverage and incidence); current tax structures and financing options; the size of UBI transfers; and the profile of beneficiaries (e.g., family size, income, and age).

386. For example, in Finland, France, Italy, and the UK, lower-income households already receive income support under existing policies. Therefore, they would be less likely to gain as 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. For example, current low social assistance coverage in Italy means that most individuals in all income groups would receive higher transfers through a UBI. In France, and to a lesser extent in Finland and the UK, income gains from UBI would be most common in middle-income households. 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 would be worse-off, as a UBI, which is traditionally conceived for those above the age of 18, would not provide additional support. Additional distributional effects would arise once the impacts of any additional taxes needed to finance the added benefits are considered.

387. Adopting a similar method, estimates for ten developing countries suggest strong distributional effects.[368] In Nepal, for instance, most individuals would experience gains from a UBI. In Indonesia, while a UBI providing the same average amount of benefits of current programs would make most of the population better-off, about 40 percent of the poor would get less benefits. Under the same scenario, in South Africa a UBI would make most of the elderly and the poor worse-off. A similar negative effect on about 40 percent of senior citizens would be observed in Chile. When a UBI is provided for more generous amounts, it will benefit more people, poverty impacts would be larger, but fiscal costs soar.

388. A main concern around UBI is the risk of labor supply disincentives. This risk is bigger the higher the benefit level. In theory, a UBI is less distortive than other social assistance programs. Targeted interventions can generate disincentives by either increasing demand for leisure (income effect) or by making work less rewarding (substitution) through a benefit structure that declines as incomes rise. A UBI, instead, 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 (although substitution could occur through an increase in taxes).

389. Available evidence indicates likely limited effects on work incentives. A study on the Alaskan dividend program shows no impact on employment. Instead, it finds increases in part-time employment of 1.8 percentage points (or a 17 percent increase).[369] However, the size of the average transfers under the Alaska Permanent Fund dividend 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.[370] There was a negative effect among youth, however. It has been argued that a UBI may empower individuals, both within households (e.g., 'making unpaid work pay') and in the labor market (e.g., the power to 'say no').[371]

390. A recurrent debate is whether a jobs-guarantee program offers a better alternative to UBI. For example, India's National Rural Employment Guarantee Act offers 100 days of work per year at the minimum wage. UBI proponents point to public works as a variant of 'forced labor' resembling old workhouses.[372] Those favoring jobs schemes contend that there is a range of activities implementable beyond manual works (e.g., social care services). Also, the right to work promises that everyone who wants work can find it, but it does not impose a duty to work on anyone.[373] A UBI could be an alternative to public works schemes when their overwhelming function is income support. However, when works envision more productive activities, public works emerge as a complementary instrument. 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 by participants.[374]

391. To administer a UBI, countries need credible personal identification systems. These vary widely in developing countries. For example, 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 would also entail widespread payment mechanisms and markets capable to meet additional demand from cash transfers. The program also calls for carefully monitoring inflation, which was a major issue in the case of Iran's switch toward a quasi-UBI. It would still need core delivery building blocks for social assistance, like outreach, social registries, information management systems, recertification, monitoring and evaluation, grievances and redressal mechanisms.

392. A UBI or similar tapered interventions would not happen overnight. Governments would naturally place a higher weight on ensuring that the poorest benefit from the program before, or at least at the same rate as other groups. For such prioritization to happen, systems able to identify those most in need are required. Hence a UBI needs targeting information as a mechanism for steering the universality process in a progressive, bottom-up manner. Systems developed for targeting were critical in the scale-up of social assistance over the past decade, and would continue to be so to ensure pro-poor expansions in the future.

393. A gradual approach is particularly compelling in low-income countries, where the cost of a UBI or similar programs can absorb an alarming double-digit share of GDP. Compared to current spending, a full-fledged UBI will entail significant costs in most countries. As such, it is important that the sources of funding are carefully identified. For instance, a lesson from Mongolia is to not overly-rely on volatile funding streams. At the time, the country relied entirely on natural resource revenues to finance its UBI. When mineral prices collapsed, so did the scheme. Given the nature of the investment, it is important that countries pace the introduction of a universally-oriented societal minimum with their fiscal capacity. Distributional effects should be closely examined, including assessing the effects of tax-benefit systems before and after the introduction of those programs.

394. The road towards a more universal societal minimum may include combining, expanding or replacing some programs. These decisions must only be considered for programs that play a similar income support function to UBI's or similar schemes. This becomes more complex for programs that pursue multiple functions. For example, large scale food assistance interventions support low-income households, but also stabilize food prices. Before modifying those programs, it would be important to ensure that those goals are met with appropriate interventions. Similarly, a UBI or tapered UBI should not replace services in health and education; also, cash may not always be the more effective transfer modality for nutritional goals.[375]

395. Some lessons may emerge from learning-by-doing, including considering trials of 'real' UBI schemes at local level. None of existing pilot programs are a full-fledged UBI programs. As such, they may not bring about the experience needed for an option with wide-ranging implications like a UBI or its tapered versions. Such programs would include the device of financing arrangements, institutional bargaining for resources, and carry a hefty dose of political economy. Those schemes would also stress-test local implementation capacities, and generate system-wide effects. Experimentation that sheds light on those issues would infuse current debates with more practical implications.

396. The prevailing definition of UBI establishes that transfers should be universal, cash-based, unconditional. In this essay, universality is interpreted in progressive terms: it is a process that

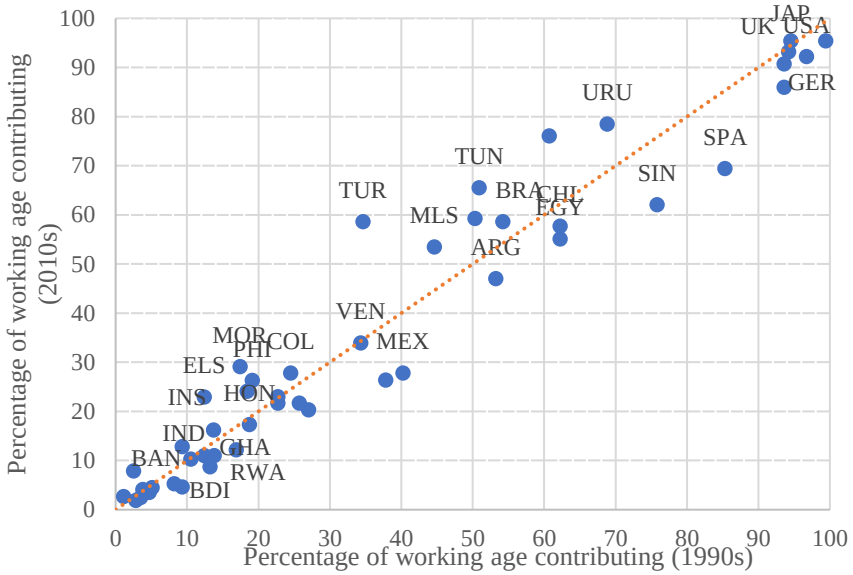
serves the poor first, it recognizes that wider coverage is desirable (e.g., including non-poor but vulnerable people), and allows countries to claw back benefits from the rich. Also, within this approach there should be room for implementation flexibility. When poverty is a core concern, design choices are context-specific: whether and how to condition, as well as what transfer modality to provide, should be based on societal preferences, evidence, and local conditions instead of being rigidly defined from the outset.

Social Insurance

397. After six years of double-digit growth, in June 2011 Ethiopia introduced a landmark social insurance law. For the first time, the government mandated pension and disability benefits to firms in the formal sector. The policy aimed to expand social protection and reduce poverty. However, the consequent rise in labor costs had the unintended effect of inducing firms to replace technology for workers. As a result, employment among low-skilled workers dropped, exacerbating the formal-informal divide in the labor market.[376]

398. Today's "Bismarckian" social insurance model – the one pursued by Ethiopia – was conceived in late 19th century Germany. The model is premised on steady wage employment, clear definitions of employers and employees, and a fixed point of retirement. It relies on taxing formal wages. In rich countries, this scheme was effective in increasing coverage as workers were steadily absorbed into factories, then onto formal jobs in services. However, this model is increasingly unsuitable for a changing world of work where the formal, long-term employer-employee relationship is eroded and where there are more risks and uncertainty. This approach is ill-fitting for most developing countries where formal jobs are few. Indeed, due to informality, social insurance excludes as much as two-thirds of workers in these countries. In India and in many countries in Sub-Saharan Africa coverage barely reaches ten percent of the working population (figure 6.4). The system also makes employing workers more expensive, as illustrated by the Ethiopia case. Thus, rethinking this model is a priority.

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



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

399. A reformed system needs to ensure that low-income individuals have access to basic social insurance. Options that support stable consumption patterns, or consumption smoothing, for higher income workers is also important. A three-parts system can meet these goals. First, the provision of universal basic social insurance can reduce the risk of poverty by covering against catastrophic losses. An additional layer of contributions can be mandated to achieve an adequate level of savings. A third layer of insurance could be achieved through market-based nudged or voluntary savings. Elements of this model exist in different countries.

400. Attaining universal basic social insurance requires making it mandatory plus covering the costs for the poor. In universal basic social insurance, the premium for the poor is paid by the government, possibly by an earmarked tax other than payroll. This approach can, along with a guaranteed minimum income, reduce reliance on the payroll tax as the source of social insurance financing. Beyond the poor, this insurance needs to be mandatory, otherwise not enough people would participate in the system. In low and middle-income countries, however, a mandate alone would not be enough given high levels of informality and poverty.

401. Some countries are already moving in this direction. The significant extension of the rural pension scheme in China is a case in point. Currently, around 360 million rural and urban informal workers are contributing to the scheme and around 150 million older people are receiving payments.[377] 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 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 pensions 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.

402. Beyond the basic level, additional insurance is required. This additional mandated contribution would serve two purposes. First, it would be an instrument for consumption smoothing, one often missing in countries with underdeveloped capital and insurance markets. Second, it would prevent people from abusing the subsidized system since they would also have to pay for part of the insurance. 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 employment. The average payroll tax rate used to finance contributions is almost 23 percent in advanced economies.[378]

403. In richer countries, reducing the reliance on payroll taxes will be difficult. Except for Australia and New Zealand, social insurance in rich countries is financed through payroll taxes. The size of the pension and health liabilities in mature, high coverage systems, including Eastern Europe and the Southern Cone of Latin America, is large. 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.[379] Therefore, while they have largely halted pension increases, most of the advanced economies are counting on continued flows of resources and future benefit cuts to deal with their aging populations. Nevertheless, there could be a gradual morphing of part of the payroll tax into other taxes.

404. In most of the emerging world, social insurance liabilities are limited since coverage is low. In countries like Bangladesh, Namibia, Lao, Nepal, Somalia, and South Africa, pensions are not financed through labor taxes but from general revenues. These initial conditions make it possible to imagine a partial or even complete decoupling from payroll taxes. A significant portion could be replaced with other taxes while broadening the coverage beyond formal sector workers.

405. Yet, despite clear advantages, efforts to move away from payroll taxes are often resisted. There are various arguments against a shift to general tax financing. Chiefly, a payroll tax is earmarked for social insurance. It is argued that this distinction better protects it from political interference than if financed through general revenues. While valid, there are alternatives and trade-offs to consider. Although independent, earmarked sources of revenue like a payroll tax can give considerable autonomy to social insurance administrators, they also limit the extent to which these institutions are accountable. That said, any new sources of revenue that are used to finance social insurance would probably need to be earmarked. Finally, although payroll taxes certainly confer a sense of entitlement, in a poor governance context, it may lead to elite capture.

406. In sum, in richer countries it will be difficult to move completely away from payroll taxes. However, they seem to have prevented further liability increases through budget cuts and occasionally through earmarking other taxes.[380] Middle income countries may have more scope to replace part of their financing. Finally, the best chance for avoiding the pitfalls of the 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 pensions and health insurance with fewer labor market distortions. These are also the countries poised to reap the benefits of emerging technologies that provide viable alternatives to today's models.

407. Once universal insurance and mandated schemes are in place, governments are advised to proceed with a light touch. In particular, 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.

408. For example, as an alternative to a mandate, policy makers have tried making participation in savings or insurance schemes the lowest-effort, default option. Some measures include adding an "opt-in" default on business registration and income tax returns. These measures can lower transaction costs.[381] Other approaches also rely on behavioural insights. In Kenya, giving people a golden colored coin with numbers for each week to keep track of their weekly deposits doubled their savings rate.[382] Another form of nudging may include 'commitment devices' in which, for example, people agree to incur a loss if they do not reach a savings goal. Evidence from the Philippines shows that the strategy increased savings by 81 percentage points.[383] Technology vastly increases possible nudges. For example, it facilitates the defaulting of rounding from individual fintech and credit card transactions into savings.

409. 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.[384] The UK's National Employment Savings Trust operates similarly.[385] In both programs, although people can withdraw, incentives dissuade people from doing so.

410. In countries that have mandatory savings, the mandate can be softened by allowing people to access a portion of their savings for fundamental life events.[386] Participants can be allowed to "borrow" from their individual account. Interest can be set at higher-than-market rates to encourage even quicker "repayment". Participants can be restricted from taking a second "loan" from their account until the first was paid back. Singapore grants workers access to their mandatory savings for specific aspirational investments, such as housing and education. In the United States, individuals can draw on their individual savings accounts, although taxes dissuade many from doing so. The dilemma for policy makers is to balance individuals' liquidity preference with their long-term consumption smoothing objective.

Protecting workers

411. In many countries, labor regulations were adopted at the time of colonialism. Through Napoleonic conquest, French civil law was transplanted throughout Western Europe and subsequently to the colonies in North and West Africa, all Latin America, and parts of Asia. Repercussions are still felt today: French (and socialist) legal origin countries have significantly more stringent labor regulations than do common law countries.[387] These regulations were ill-fit to many countries' reality from the start. Designed with industrial economies in mind and at a time of weak or non-existent social protection systems, they fail to protect most workers when informality is the norm. This is the case because labor regulations apply only to formal work and favor subordinate, full-time wage and salary employment. In many developing countries, these types of jobs are an exception, mostly found in the public sector or among high-skilled workers.

412. Reforms need to address three main limitations of 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 estimated to be informal, and even in non-agricultural activities, close

to seven in ten workers are informal or work on the informal sector in countries like Guatemala, India, Liberia and Pakistan.[388] 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, in many cases, they impose a high cost on firms and society by excluding many, especially youth. While there are cases when these regulations set necessary rules, they can also be excessive in other cases. Yet, the social cost of protecting jobs is increasing. Rapid changes to the nature of work put a premium on flexibility for firms to adjust their workforce, but also for those workers who benefit from more dynamic labor markets.

413. To address these problems, policymakers need to rethink labor regulations. The challenge is to increase flexibility conditional on strengthening social protection, labor market programs and arrangements for expanding workers' voice. Beyond basic uniform regulations, protections need to be provided independently of work contracts. This approach may reduce benefits for the few covered by current arrangements, but will add protection to the many workers—often the most vulnerable— who are effectively excluded today.

414. While regulations that protect employment can encourage firms to invest in training or can increase workers' commitment to their jobs, they are an added cost to firms.[389] Technology adoption is negatively associated with the strictness of labor regulations, specifically with burdensome dismissal procedures.[390] Technology-intensive sectors are smaller in countries with stricter labor regulations.[391] Within countries, similar evidence is also emerging.[392] While the overall evidence on labor regulations shows limited impacts on overall employment, except in cases of very stringent laws, they do have important distributional effects. Importantly, at this time of change, stringent regulations make it costlier for firms to adjust the composition of their workforce, an important condition for translating technology into productivity.

415. One of the tools that merits rethinking is minimum wages. The main objective of a legislated minimum wage is to ensure a fair remuneration to workers that protects them against "abuse" from employers who may have market power. In part due to weaknesses in the social protection system, the minimum wage has also become an instrument to ensure a living wage. But the minimum wage can affect, depending on the level, (formal) job creation as a largely uniform minimum wage is applied to firms of varying productivity. It can also have important distributional impacts, adversely impacting youths, for example.

416. It is important, thus, to rethink the minimum wage both because it adds to the cost of labor (particularly of low-productivity workers) but also because it is a weak tool for securing minimum living standards now that countries know how to set up social protection mechanisms. The role of the minimum wage to ensure a livable wage is further weakened if universal social assistance and insurance is implemented. Yet, some countries set minimum wages at high levels: in low-income countries, minimum wages are, on average, 85 percent of the value added per worker; in middle-income and high-income countries, they are around 53 and 30 percent of the value added per worker, respectively.[393] Even in correcting imbalances in market power, a legislated minimum wage is blunt. It assumes that the unjust distribution of marginal labor product is the same across sectors and space, is unintentionally distortive, and slow or unresponsive to changes in market power.

417. If the original objective of protecting workers against market power is prioritized, reforms can increase potential beneficial effects of minimum wages. Governments can adopt an automatic adjustment formula for updating it. More weight can be given to aggregate productivity changes in these formulas, for example. In addition, lower minimum wages for the kind of workers where it is more likely to have negative effects—such as young, first time job seekers—can be helpful.

418. When thinking about alternatives or complements to minimum wages, the goal would be to align market incentives of firms and workers by tightening the link between wages and productivity. Labor unions—with a broader constituency and membership—play an important role in meeting this objective. Technology 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.[394]

419. A more ambitious set of instruments that could be combined with lower minimum wages would link productivity and wages explicitly. Many workers—as sole traders, self-employed or workers in family businesses — are often sharing in the profits of firms already. 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.

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

421. It is important to give firms more flexibility in managing their human resources when the law already mandates proper advance notice. 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. More flexible dismissal procedures when current regulations are very 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 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.

422. Severance pay is another area ripe for reform. Severance is the most prevalent form of protection in case of redundancies in most low and middle-income economies that have not implemented unemployment benefit schemes. Some countries have 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.

423. 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.[395] In addition, firms rarely fund or insure this liability. Placing greater reliance on unemployment benefits organized nationally as individual savings arrangements would give workers more reliable options, and would open this form of protection to all workers no matter where or how they work.[396] 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. Austria, Chile and Jordan, for example, have individual savings accounts for unemployment. Singapore has individual accounts that can be used for unemployment, housing or education.

424. 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 increasingly 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.

425. As labor markets become more complex with new forms of work, the design of contracts can become simpler as to accommodate growing diversity. That is, rather than aiming to define in advance as many contracts as working forms emerge, policymakers can aim to define a single contract resting on a set of uniform basic protections (e.g. in terms of work safety, protections from abuse, the right for workers to organize). Recent reforms in Italy and Slovenia are a good example.[397] But uniform protections ought to be basic to foster job creation and support the economy in adjusting to the changing nature of work. Many countries have introduced more flexible contracts in recent years, such as "mini-jobs" ones in Germany, or zero-hours contracts in the United Kingdom. Workers and employers would then negotiate bilaterally benefits above those specified in the base contract.

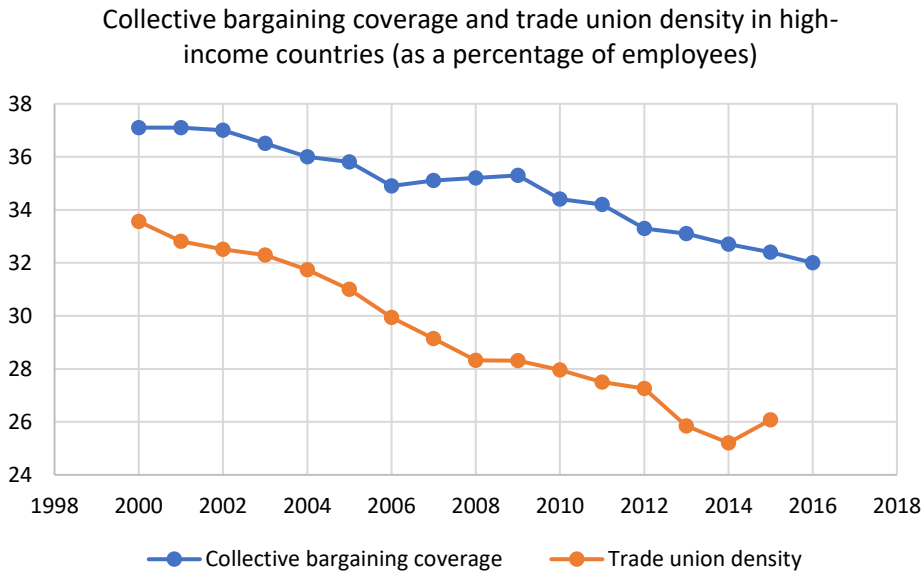
426. As a transition to a uniform contract, governments would need to ensure that worker protections in the labor code are neutral with respect to working forms. Brazil's 2017 labor code reform moved in this direction. Any benefits that are part of the base contract would also be pro-rated depending on hours worked. A starting point is to do away with regulations that severely constrain flexible work arrangements. In Montenegro, for example, contracts for part-time employment cannot be less than 10 hours per week. In Serbia, the "reference" wage (determining a minimum social contribution) is not adjusted for hours worked.[398] Reforms are also necessary in terms of working time arrangements. The traditional 5-day, 8 hours per day work week is no longer desirable for many workers.

427. As the industrial-era employment protections are scrutinized, so too need to be rigid, possibly outdated legal specifications of market engagements. 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 ought to redefine what it means to be an employer to ensure the basic set of protections discussed above. This redefinition would be based, for example, on the extent to which the worker determined her working conditions (e.g. when to work). 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.[399] 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.[400] Notably, 21 countries made the use of fixed-term contracts more restrictive and 17 made severance pay costlier.

428. Finally, there is also a need to strengthen the enforcement of labor laws and mechanisms to expand workers' voice.[401] Employer, labor and collective bargaining institutions remain important, especially given potential unequal changes in information and power. But their significance has been declining: On average across high-income countries, the share of workers covered by a collective agreement has shrunk from 37 percent in 2000 to 32 percent in 2015; 24 percent of employees are members of trade unions, down from 30 percent in 1985 (figure 6.5). In developing countries, given high informality, unions and collective bargaining tend to play a limited role. Unionization rates vary from between 15 and 20 percent of workers in Brazil, Moldova, Senegal, or Tunisia to less than 10 percent of workers in countries like Ethiopia, Guatemala, Indonesia or Turkey. Countries like South Africa, where almost 30 percent of workers are estimated to be unionized and a similar share is covered by collective bargaining agreements, are an exception.

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



Source: Authors, based on OECD Employment and Labor Statistics.
Note: Figure covers OECD countries. Collective bargaining coverage is calculated among workers that have collective bargaining rights.

429. These institutions need to be updated to remain relevant, reflecting the diversity of enterprise and 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 fact,

the most effective arrangements for achieving voice, may not necessarily be linked to the labor market. In the new "Duty of Vigilance" law in France, although not a prerequisite, any concerned party can request that a judge compels a company subject to the law to establish, implement, or publish a vigilance plan that establishes mechanisms to prevent human rights violations and environmental impacts throughout their production chain. 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 for example, the informal sector is organized and represented in many national discussions.

430. Technology can strengthen voice. Digital technologies can improve today's systems which over-rely on labor inspectors. Digital technologies can bring down enforcement costs by more cheaply monitoring compliance with laws. In Brazil, the Annual Social Information report is used to monitor compliance with the Apprentice Law.[402] Oman has a Worker Protection Scheme that allows for monitoring wage payments.[403] Workers could also check online whether their employers have paid their social contributions. 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.

431. Most countries have active labor market programs to support people in the labor market. 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. But even in countries that spend more, many programs have a poor track record. For instance, among 90 youth employment programs that were rigorously evaluated only 30 percent had a positive impact on employment rates and/or earnings and the effect was small. As a result, there are two formidable challenges for governments to face: increasing scale and improving the approach.

432. There are emerging lessons from a range of successful programs that address these challenges. First, the importance of tailoring programs to the specific needs of individuals, recognizing that typical target groups of such interventions—such as youths or women—are far from homogenous. Second, countries need to consider moving from ad-hoc, self-standing, interventions, to an integrated package of services that can be adapted to needs. Third, there is also a growing role for private non- and for-profit organizations in providing active labor services, depending on their assessment of needs. A promising approach is to split the role of provider from that of purchaser of services. The state can focus on providing financing and ensuring quality. Private providers, paid for employment results, can provide the required support.

Chapter 7: Ideas for a New Social Contract

433. "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."[404] Not long after the revolution of 1917, ownership of all assets was transferred to workers and peasants.

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

435. A social contract envisions the state's obligations to citizens and what the state expects in return. This basic conception has evolved over time. For much of history, social contracts have been imposed by force or threat of it. Rulers governed by the so-called 'divine law', wherein protection was provided in return for obedience. This idea was challenged in the 1600s by Thomas Hobbes and John Locke who embedded the relationship between state and citizens in rational thought rather than religion. A social contract imposes an obligation on citizens to respect and obey the state, in exchange for security.

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

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

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

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

440. The rationale for the social contract is fairness. As Jawaharlal Nehru, the first Prime Minister of India, warned, "... the forces in a capitalist society, if left unchecked, tend to make the rich richer and the poor poorer". Fears of losing jobs, climbing inequality in some economies, and failure to deal with informality in developing countries are straining the relationship between citizens, firms, and governments. At the same time, social media are rising aspirations, especially among youth. When met, aspirations can foster opportunity and prosperity. But when unfulfilled, they could lead individuals and countries down a track of frustration. At their core, social contracts are about putting societies on the right path for fulfilling aspirations.

441. "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.[405] In many developing countries, a dysfunctional social contract may lead to exerting less demand on the state to improve public service provision. As a result, evidence from developing countries suggest that the middle class may sometimes "… send their children to private schools, use private healthcare, dig their own boreholes for water, and buy their own generators".[406] Ineffective public services impact the poor disproportionately: a cross-country review shows that in poor urban slums, average water prices charged by private vendors were 4.5 times higher than those by the public network elsewhere.[407]

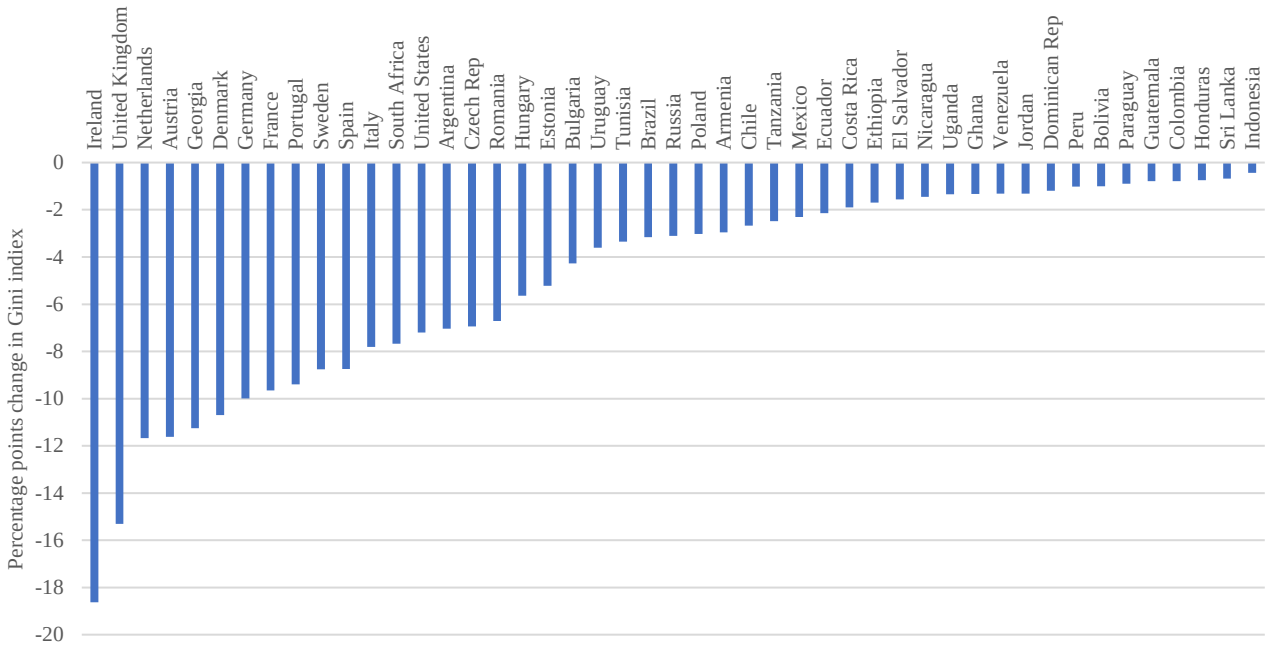
442. The middle-class is key for ensuring better and more coverage of services, as both a tax-payer and benefit-receiver. Such involvement of the middle-class may reactivate demand for accountability and better service provision for the broader population, including the poorest.[408] Lack of trust in governments, however, can preempt those virtuous dynamics. For example, evidence from India has shown that farmers who trust the government are more willing to replace energy subsidies (which they benefit from) with reliable electricity provision (which they would pay for). In other words, even those with vested interests may be willing to support better policies when they trust government's provisions.[409]

443. Ensuring equal opportunity is central to fairness, but mechanisms to achieve fairness often fall short – especially in developing countries. For example, countries are under-investing in early years, particularly among disadvantaged groups, and an unequal education system perpetuates inequality. In Latin America per capita government spending on children under 5 is one-third that for children 6 to 11. In Sub-Saharan Africa, only 2 percent of the education budget goes to pre-primary education.[410] 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.

444. High levels of informality stymie social contracts. Informal employment is more than 70 percent in sub-Saharan Africa and South Asia, and more than 50 percent in Latin America. Informal workers are beyond the reach of the state with respect to provision, protection, and redistribution. However, they also miss the obligations to the state, for example in paying taxes. Informality can reflect a lack of trust in the state.[411] Evidence from Latin America shows that inequitable social spending, regressive social protection coverage, and inefficient tax regimes can break social contracts. When social contracts are found to be unfair or exclusive, informality can become the opt-out option. In other words, high levels of informality can be the symptom as well as the cause of an unfulfilled social contract.

445. Redistribution of wealth is a 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 reduce income inequality by 3 Gini percentage points, while they reduce income inequality by 7 percentage points in the US, and 9 percentage points in the European Union (figure 7.1).[412]

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).

446. New elements can be embedded into the social contract to promote equality of opportunity for people and firms. For people, this inclusion entails fostering job creation, as well as making early childhood investments. One estimate suggests that expansion of early childhood development in the United States could reduce inequality by 7 percent and increase intergenerational mobility of income by 30 percent.[413] Impacts are likely to be even higher in more unequal societies. In addition, it means providing a minimum guaranteed income as well as basic protection from rising risks.

447. 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 will be higher than 2.7%.[414] Instead, East Asia and Pacific are fast-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.[415] The social contract in Sub-Saharan Africa and South Asia would need to be particularly responsive to the needs of large youth cohorts entering the labor market. In Eastern Europe, social contracts emphasize relatively more care services; in East Asia - securing productivity.

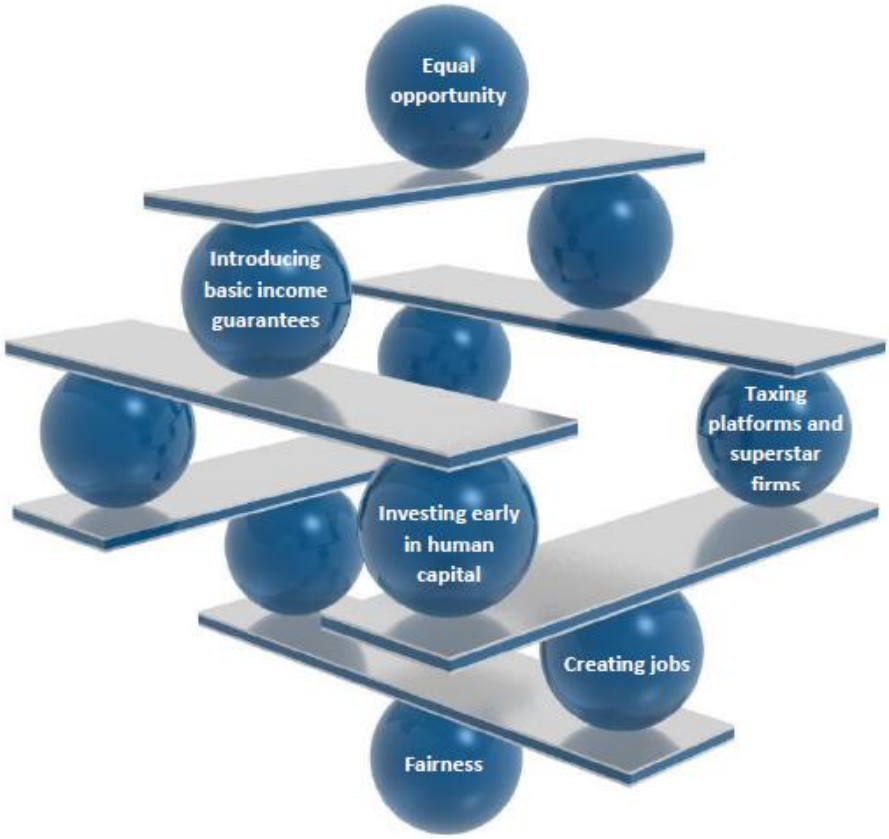
448. For firms, technological change—combined with globalization and other mega-trends—is exposing weaknesses in taxation and regulation systems. Digital platforms have emerged as a global economic force, but they do not pay taxes accordingly. A new social contract calls for a reflection on the international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

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

Possible elements of a new social contract

450. Social contracts are wide-ranging. So are policies that could feed into them. This section discusses a set of elements that countries could consider when designing their social contract. The objective is to position options discussed in previous chapters within a broader societal framework. This scenario offers further insights on these elements should countries pursue them based on their preferences. Possible elements of a social contract could include: (i) creating jobs; (ii) investing early in human capital; (iii) taxing platforms and superstar firms; and (iv) introducing basic income guarantees (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.

451. Governments have an important role to play in promoting job creation. Most countries will want a mix of policies to support enterprises, and large firms. However, a job creation strategy rests on two policies. First, support to large, highly-productive, and export-oriented companies. These firms are most likely to create the largest number of jobs. Since there are only a few of them in a country, it is easier to predict which ones are the most important engines of job creation. Possible policies include improving the general business environment, promotion of foreign direct investment, and infrastructure policies. More targeted industrial policies need to be undertaken with caution given concerns about political capture and fairness.

452. Second, governments can promote employment growth by supporting high-growth entrepreneurship. Young, high-growth firms are important for innovation and job creation. The first step towards ensuring the existence of high-growth firms is to have start-ups. Easing business regulations is associated with start-up activity. For more targeted policies, high-growth firms need to be identified. Although this is notoriously difficult, business plan competitions are one promising instrument to do this. Such instrument could be particularly useful in screening out the subsistence firms that have little chance of success.

453. For these firms, policies can aim to improve the regulatory environment, expand access to venture capital, and support the expansion of their markets. Also relevant are programs which provide individualized training, mentoring, or matching services. These programs remain rare in developing countries but are growing: the World Bank's Investment Readiness Program, "Pioneers of the Balkans," for example, provides business support services to entrepreneurs.

454. Part of the jobs creation agenda includes reducing the cost of hiring workers. As a first step, countries can relax some of the most stringent labor regulations, especially those negatively affecting low-productivity workers. This change could level the playfield between workers and capitalists while protecting all workers – not only the few in formal jobs. In many cases, labor regulations—centered around legislated minimum wages, constraints on hiring and dismissal decisions, severance pay and a limited set of contracts— make it expensive for firms to hire workers. 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. These costs can be detrimental for many workers. Linking protections to how and where people work provides a false sense of security, including leaving unprotected most informal workers. Instead, more flexible labor regulations would come in tandem with enhanced social protection provided independently of the work contract.

455. In most countries, existing social contracts guarantee access to basic education. However, the changing nature of work necessitates a reexamination of this basic contract. On one hand, there is a clear decline in returns to low-skilled jobs. On the other hand, returns to higher order skills are increasing. This means that unless everyone has a fair shot at acquiring higher order 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.[416] A new social contract would level the playing field for skills acquisition. The most direct way to provide fairness is to support early childhood development. Guaranteeing that every child has access to adequate nutrition, health, education, and protection in early years ensures that they have the required foundations for developing skills in the future. As skills acquisition is cumulative, returns to early investments is the highest.

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

457. A social contract on early childhood development could comprise of two elements: (i) cash transfers and community outreach to support the first 1,000 days of a child's life in terms of nutrition, health, and stimulation; and (ii) at least 1 year of pre-school for every child. Part (i) includes cash transfers for supporting deworming, immunizations, micronutrient supplementation

and fortification; and community outreach for monitoring child outcomes, parental education, and support. These elements present an integrated package to ensure children receive basic standards of nutrition, health, stimulation, and protection in the early years. The package outlined above only includes basic ingredients towards this end. An enhanced package would add items such as pregnancy and birth assistance, child protection services, and investments in water and sanitation.

458. Some countries are already trying to deliver on this type of social contract. In Cuba's early childhood development program, children's growth and development are regularly monitored. At the beginning of each school year the education sector identifies families who need specific attention, to monitor and prevent any negative impact on child development. Similarly, Uruguay's *Crece Contigo* includes a *programa de acompañamiento familiar* that works with families, pregnant women and children under the age of 4 who are in situations of health and social risk. France recently passed a law to ensure that all children have access to pre-school.

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

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

461. A social contract also requires all actors to contribute their due share in taxes across countries. This is not the case today. Many large digital platforms —for example, Alphabet, Amazon, Apple, Facebook—are a case in point. It is estimated that in the European Union traditional companies have paid an effective tax rate of 23.2 percent, while digital companies pay on average only 9.5 percent in taxes.[417]

462. 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", Airbnb has no hotel rooms; Didi Chuxing 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).

463. These features may be particularly salient in digital platforms, but they are not unique to these firms. For example, pharmaceutical companies also have many intangible assets, and traditional exporters sale with no physical presence at destination. Estimates suggest that the level of assets sheltered in tax heavens is around 8 percent of global GDP.[418] This is estimated to cost around $200 billion. The share of financial wealth held abroad ranges from more than 50 percent in Russia 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.[419]

464. 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.

465. 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 has recently released a proposal 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 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.

466. 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.

467. The new social contract would also include elements of social protection. Increased risks in the world of work make it imperative to adapt how societies protect workers. A new social contract could consider providing an inclusive minimum income, combined with basic universal social insurance, that is decoupled from how or where people work. Such minimum could take many forms. For example, it could be achieved via a Universal Basic Income (UBI) program, where benefits are clawed back from the rich; leveraging the tax system to deliver transfers (Negative Income Tax); or other 'tapered' programs that rank people based on social registry databases. Each of these modalities present different comparative advantages, fiscal, political, and administrative implications.

468. Low and middle-income countries have made significant headways in social assistance. For example, in Tanzania spending on conditional cash transfers increased tenfold between 2013 and 2016. The program currently reaches 16 percent of the population and claims 0.3 percent of GDP. Similarly, spending on conditional cash transfers in the Philippines grew five-fold over

2009-2015: the *Pantawid* program covers 20 percent of the population at a cost of 0.5 percent of GDP. These trends mirror the growth in categorical or age-based programs like the Child Support Grant in South Africa. Between 2001 and 2014, the scheme's coverage increased from 1 to 11 million beneficiaries, and absorbed from 0.2 to 1.2 percent of GDP, respectively.

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

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

Delivering the new social contract

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

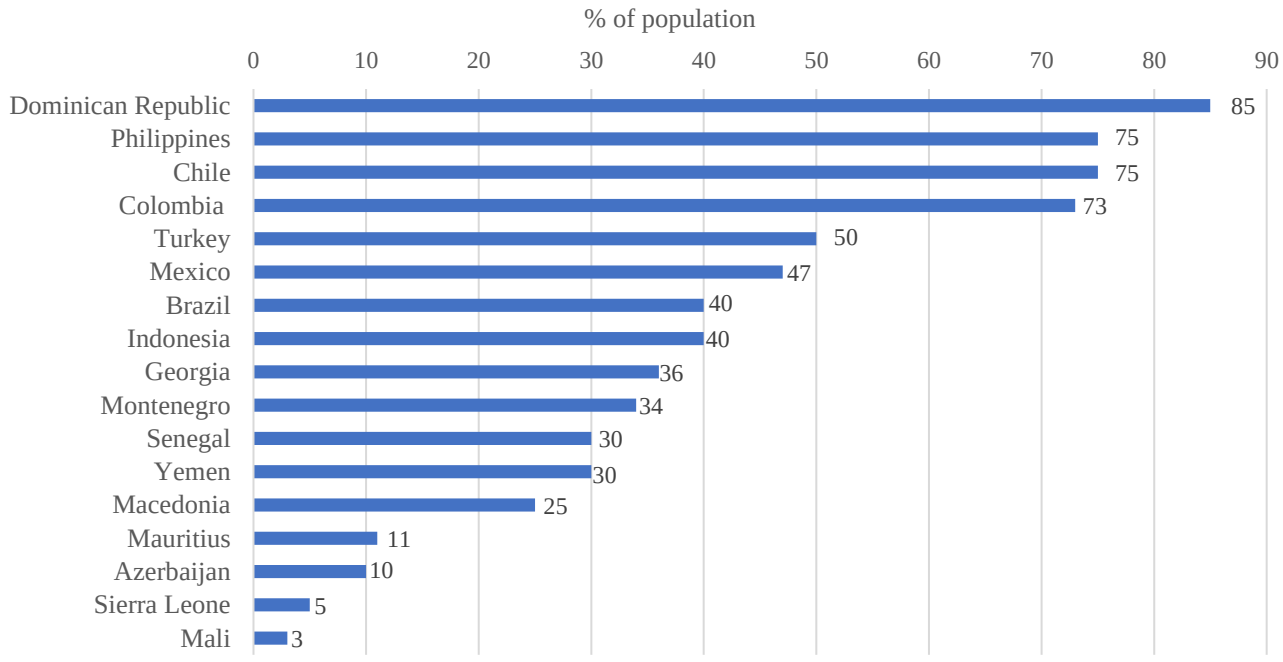
472. Technology broadens the reach and inclusiveness of social programs. In Mexico, geospatial mapping tools are used to identify the most vulnerable areas in cities, including at block-level. Mobile phone data was leveraged to construct poverty maps in Côte d'Ivoire. In Benin, GPS-based data collection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

473. Digital devices have also delivered assistance in fragile settings. In Lebanon, electronic smartcards provide food vouchers to nearly 800,000 Syrian refugees. In Jordan, the Read to Kids initiative provides refugees with free access to high-quality Arabic reading materials through a mobile application. When schools were closed during the 2014-15 Ebola epidemic, an emergency

radio education program was launched in Sierra Leone providing academic broadcasting five days a week.

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

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



Source: Leite et al. (2017).

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

476. Experiences indicate that countries investing in technology can improve the delivery, efficiency and accountability of programs – sometimes dramatically so. However, the sizable benefits of technology should be carefully weighed against its risks. For example, Equifax, a global information solutions company, lately faced a major cybersecurity incident affecting 145 million consumers in the Unites States. The event revealed the names, Social Security numbers, birth dates and addresses of almost half of the US population.[420] India's flagship Adhaar system, which stores the biometric information of nearly every citizen, was recently breached by unauthorised personnel: access to names, email addresses, phone numbers and postal codes was made available after paying for bribes.[421]

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

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

Financing the new social contract

479. Simulations suggest that the human capital component of the new social contract – comprising of early childhood investments and support for literacy and numeracy by grade 3 - would cost around 2.4 percent of GDP in low income countries and 0.8 percent of GDP in middle income countries. These are estimates based on unit costs of fully-costed models in low- and middle-income countries combined with data-driven assumptions on demographic structures and prevailing proficiency rates. These costs may vary across countries depending on programs already in place, demographic structures, input prices, and salary levels of program staff.

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

481. Nearly 96 percent of the total costs of the human capital component in low income countries comes from the early childhood investments. This is because these investments include a range of inputs considered crucial for providing integrated support in early years (immunization, deworming, micronutrient supplementation, community outreach for monitoring, education, and support, and pre-school). These investments need to be cover multiple dimensions - health, nutrition, and stimulation. Literacy and numeracy support is cheaper in comparison. It includes sample-based learning assessments for grade 3 literacy and numeracy, teacher training, and

remedial education for students who are lagging behind (based on available data on proficiency rates).

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

483. The cost of a guaranteed minimum options would also vary considerably by context and objectives. Simulations on a UBI would serve the function of providing an upper-bound estimate for an expanded societal guaranteed minimum. For example, transfers as a share of the poor's income or consumption are low, i.e., 13 percent and 18 percent in low and lower-middle income countries, respectively. In other words, the average level of transfers does not lift people out of poverty. Keeping those average levels and distributing them to the whole population would be significantly cheaper than providing larger transfers that close the poverty gap.[422] In the former case, preliminary estimates for a handful of low and middle-income countries show that the cost of a UBI would be nearly 2.5 percent of GDP. In the latter case, the cost would be almost 6 percent of GDP in middle income countries; in the poorest countries, the cost of a UBI that eliminates poverty would be double-digit.

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

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

486. A new social contract would require additional government revenues. One way to collect such revenues is through closing loopholes in indirect taxes. Such taxes do not distort productive activity. They do not penalize the most successful companies and individuals. For a second source of revenue, governments can ensure that platform and superstar companies pay their fair share of taxes. Evidence has surfaced on a number of cases where companies use tax havens or direct

negotiations with governments to avoid taxation. For example, Apple uses an accounting technique known as the "Double Irish With a Dutch Sandwich", which reduces taxes by routing profits through Irish subsidiaries and the Netherlands and then to the Caribbean.[423]

487. These two sources – closing loopholes in indirect taxation and collecting taxes on global corporations – are sufficient to cover the needs of financing a new social contract. The elimination of energy subsidies also provide potential streams of funding, as does the imposition of inheritance or estate taxes.

488. The share of indirect taxes in total revenue has risen in most countries in the past decade. This increase has been driven in part by the adoption of the value added tax in large emerging economies, such as India and Saudi Arabia, and the establishment of carbon taxes in nearly every large economy apart from Brazil and the United States.[424] 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. The median carbon tax in 2016 was $8 per ton of CO2 emissions, with wide variance across countries. Sweden charges $130 per ton, while Poland charges $1 per ton.

489. Indirect taxes have become important for state revenues in Europe, yielding nearly 14 percent of GDP on average. Value added tax rates in the European Union range from 17 to 25 percent, with an average of 21 percent. The revenues from these indirect taxes vary less than from other taxes, from 10.5 percent of GDP (Slovakia) to 18.9 percent of GDP (Sweden) in 2016.

490. The value-added tax is regressive, as the poor spend a larger share of their income on consumption than the rich. 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. Some countries exempt textbooks or print items more generally. Among advanced economies, France has the most generous value added tax exemptions scheme.

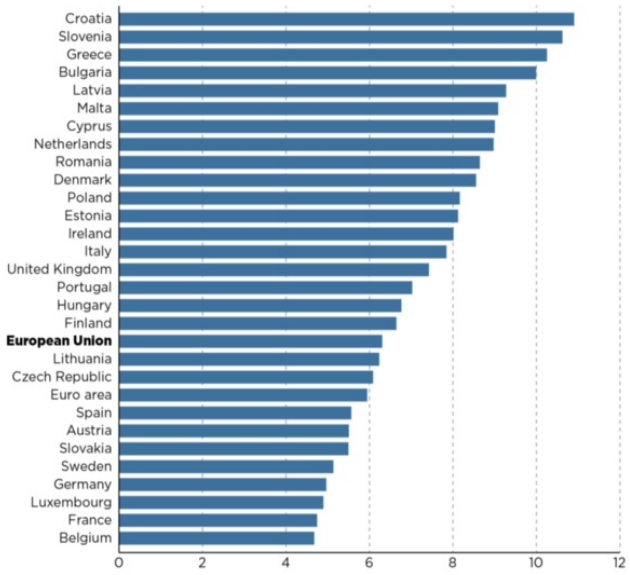
491. China implemented a value added tax in 1994 and currently collects nearly 48 percent of its revenues from it. The main rate is 17 percent with a number of exceptions where the prevailing rate is set at 13 percent. Russia charges an 18 percent value added tax, while Brazil charges a base value added tax of 17 percent, and some Brazilian states add a percentage point or two above that base.

492. 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.

493. Another indirect tax gaining momentum is the carbon tax. 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 $8 per ton of CO2 emissions, but the tax varies widely from $130

per ton in Sweden to $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)

494. 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—$5 per metric ton of emissions in Chile and $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.

495. 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.

496. China's new emissions trading system covers key industry sectors such as iron and steel, power generation, chemicals, building materials, papermaking, and nonferrous metals. It currently has seven pilot emissions trading systems, which combined form the largest national carbon pricing initiative in the world in terms of volume. Since the start of the pilots in Beijing, Guangdong, Shanghai, Shenzhen, and Tianjin in 2013, and in Chongqing and Hubei in 2014, the designs of some of these systems has evolved—their scope has expanded and their stringency has

increased. For example, Shenzhen expanded its emissions trading system to include transport, Guangdong included buildings and transport, and Hubei added 49 large companies to its emissions trading systems. Korea imposed caps on emissions from 525 of the country's biggest companies, creating the second-largest market globally. The World Bank estimates that China's emissions trading systems are equivalent to charging between $7 (Beijing) and $2 (Shanghai) per ton, while the Korean emissions trading system is equivalent to charging $9 per ton.[425]

497. Another form of indirect taxation includes excises. For example, the average revenue from excise taxes on alcohol and tobacco in the European Union is 0.3 percent of GDP. However, several countries have larger dependence on such taxes: Estonia at 4.8 percent in 2016; Luxembourg at 2.5 percent; the Czech Republic, Ireland, and the Netherlands at about 1.5 percent. Saudi Arabia adopted excise tax regulations in 2017: 50 percent on soft drinks, and 100 percent on energy drinks, tobacco, and tobacco products. The "sugar" tax is a new phenomenon. Croatia has had such taxes on all sugar and coffee-based products since 2014. Ireland approved a "soda tax" set to start in mid-2018, which is around the same time a similar tax takes effect in the United Kingdom.

498. Financing the new social contract may include reallocating resources from energy subsidies. 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 $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, Russia, and Uzbekistan.

499. 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.

500. Beyond indirect taxes and subsidy conversion, another potential revenue is more orthodox: charging platform companies taxes equal to what other companies are paying. This is rarely the case. Regulators with the European Commission are conducting an investigation into whether Amazon and Apple are getting unfair support from countries such as Ireland and Luxembourg. Google channels most of its European revenue through a subsidiary in Ireland. Google, which generated more than $4.5 billion from the UK in 2014, paid just over $28 million in corporation tax. As another example, Amazon attributed more than $7 billion worth of sales to the United Kingdom in 2013, but paid only $6.5 million in tax. On average, Apple, Facebook, Amazon and

Google have paid less than one percent tax on corporate earnings in the United Kingdom in 2014.[426]

501. More generally, the US Government Accountability Office estimates that the tax code allows corporate deductions, credits, and deferrals to the tune of $180 billion a year, or about 40 percent of the actual corporate income tax revenue. More than half of US business activity, measured by sales, is conducted by pass-through entities, which do not pay taxes.

502. 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.

Consultations and Timetable

503. Simeon Djankov and Federica Saliola are co-Directors of the 2019 WDR. The core team comprises Rong Chen, Davida Connon, Ana Paula Cusolito, Ugo Gentilini, Asif Mohammed Islam, Shwetlena Sabarwal, Indhira Vanessa Santos, Consuelo Jurado Tan, and Yucheng Zheng. Stephen Commins provides consultations support.

504. 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.

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

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