7 What impact does technology have on jobs?

In keeping with the mood of economic despondency, there has been lots of pessimistic talk in the U.S. and the rest of the industrial world about innovation in today's economy, or the lack thereof. For instance, Tyler Cowen's best-selling e-book *The Great Stagnation* argues that innovation is occurring at a slowing rate and that the innovation that is taking place, such as through the application of the Internet, has had a relatively limited impact on living standards and job creation. In a similar vein, the economist Bob Gordon hypothesizes in a recent paper that the presumption of continuous growth can no longer be taken for granted when today's innovations do not generate sustained improvements in labor productivity. One area where everyone agrees that technological change is making a difference is in driving a wedge between high- and low-skilled wages, leading to widening inequality and a stagnant median income since the 1990s.

One of the questions posed at the Brookings Blum Roundtable was to what degree these concerns have salience in the developing world, especially in low-income countries. Because developing countries stand some distance from the global productivity frontier, a speculative slowdown in technological development or a decline in the impact of these technologies should not concern them. They can continue to raise their prosperity by harnessing the existing technologies employed in the West. However, that still leaves the question of the impact of technology on jobs.

There is a growing recognition that jobs are an economic and political priority in developed and developing countries alike. Given demographic trends, merely sustaining current rates of employment around the world during the next 15 years will require the creation of 600 million new jobs worldwide. Jobs are not just a by-product of growth but are also central to improving living standards and social cohesion. For instance, supporting job creation has been identified as one of the first priorities for fragile states, especially those emerging from conflict.

How, then, does innovation affect jobs in the developing world? The participants in the Brookings Blum Roundtable noted the complex relationship between innovation and employment. There is an important distinction to be made between *process* innovation, whose direct effects are most associated with job losses as productivity gains eliminate the need for labor, and *product* innovation, which is typically associated with job gains to serve new markets. Low levels of research and development from domestic firms and public investment mean that most technical change in developing countries is reliant on trade and foreign direct investment and engendered in the capital goods imported from rich countries. However, the ultimate effect on employment of these technologies depends on the net impact of labor productivity gains and the output growth these technologies propel. Whether countries are able to fully develop the growth and employment potential of imported technologies depends on the absorptive capacity of domestic firms—a daunting challenge for many businesses in low-income countries.

The impact of innovation on the quality of jobs in developing countries is similarly hard to unpack. As in the developed world, many new technologies shift the demand for labor in

favor of more skilled workers—an effect known as skill-biased technical change. However, this is counterbalanced by the expectation that trade in global markets, especially in the presence of new technologies at the frontier, will lead developing countries to specialize in the production of labor-intensive goods that capitalize on their comparative advantage, creating opportunities for the unskilled.

The latter effect could create new opportunities for Africa's workforce in the imminent future. As its wages rise, China is expected to graduate from its focus on low-skilled manufacturing in the coming years, freeing up an estimated 85 million jobs. This is more than four times the number of industrial jobs in Africa, where there remains an abundant supply of unskilled labor. Whether this could spark a broader take-off in Africa's development is a much larger question and is threatened by the spread of skill-biased technological change. The model of labor-intensive manufacturing growth that singularly drove the development of South Korea, Singapore, Taiwan and China is difficult to emulate as technology transforms industry to become more dependent on skills and capital. Technology is more readily transferred in manufacturing than in other sectors, but today's poor countries can no longer rely on this to drive their economies, and so must try to foster the skills and institutions necessary to support other sectors.[22]

The impact of skill-biased technological change in developing countries is therefore a legitimate concern. So far at least, the trend toward widening income distributions remains limited to the West and a few large emerging economies. Within most developing countries, the evidence suggests that inequality has likely moderated over the last decade, despite assumptions to the contrary. Nevertheless, roundtable participants concluded that today's low-income countries face a daunting challenge in identifying a sustainable development path that utilizes their abundant unskilled labor, given today's technology and the competitiveness of global markets.

Photo by Alex Irvin

"Over the last decade or so you have many countries where the share of labor in low productivity activities is actually increasing because technology is displacing labor. It's worth thinking about what kind of transformational technologies are increasing employment versus other types of technological developments which may in themselves be very powerful and make some people much more productive and healthy and so on, but overall may have an employment-shrinking effect."

— Kemal Dervis

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