The Future of Work in Developing Economies

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Pablo Egaña del Sol and Connor Joyce

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We know that economic growth brings significant shifts toward higher-skilled occupations and that the economies of many developing nations rely largely on manual labor and routinized manufacturing work. Because some types of manual and routinized work can be easily handled by computers, machinery, and artificial intelligence, it’s clear that large-scale automation could have significant and wide-reaching effects on workers in developing countries.

We wanted to get a more detailed understanding of how automation might affect developing economies compared with those of the developed world. To do this, we examined a database of more than 13,000 workers from 10 countries that contained the workers’ descriptions of the tasks they completed at their jobs and in their households. We combined this data with an occupation-level assessment of which jobs would most likely be automated, in order to quantify the risk of displacement.

Taking a Task-Oriented Approach

Our findings were dramatic and surprising. In the countries we studied, the percentage of jobs susceptible to automation ranged from a low of 11% (Armenia) to a high of 42% (Ghana). For comparison, according to a 2016 study, the average number of jobs at risk of automation among member countries of the Organisation for Economic Co-

Much has been written about the rise of automation in developed countries. Economists have been busily creating models seeking to quantify the likely impact of automation on employment. However, far less has been written about the potential effects on work in developing nations. This is surprising, given that automation may be especially troublesome for developing economies.
operation and Development was 9%, with a range of 6% (South Korea) to 12% (Austria).  

We also compared occupational categories to see which ones were the most highly automatable. For example, it’s widely assumed that some jobs (for instance, driving buses and trucks) will eventually be automated, but others (such as teaching in secondary schools and graphic design) are less vulnerable. However, a key insight of our study — and one that has broad implications for both developing and developed economies — is that separating jobs into their component parts provides a much richer way of looking at jobs than estimating the effects of automation by occupation category. Taking a more component-oriented approach helps economists and government officials understand recent economic changes and allows them to understand the forces at work across economies. Furthermore, it allows them to forecast the tasks that future jobs will consist of and assist the workforce in developing the knowledge and skills required to excel under these conditions.

Consider the job of food processing. Depending on where the jobs are located, the content of what workers do can be quite different. In an advanced economy such as the United States, food-processing jobs might be focused on filling soda cups or using automated machines to cook hamburgers. In a developing economy like Ghana, however, the job may be more like the role of a home cook. Although some of the tasks themselves might be similar across economies, the worker’s role in society is heavily tied to cultural values and resource availability.

Countries facing the greatest risk from automation are those that have labor economies in which many jobs involve manual or routine tasks, such as sorting, lifting, and tracking, that can be easily automated. Prime examples are Ghana and Sri Lanka, where 42% and 35% of jobs, respectively, have an estimated automation likelihood greater than 70%. In contrast, in Armenia and China’s Yunnan province, relatively few jobs are threatened by automation.

Viewing automation through this lens highlights the importance of not just modernizing industries within developing countries, but also ensuring that the specific tasks workers do in those industries are modernized. Upgrading the tasks matters for obvious reasons: Advanced occupations consist of different tasks that require increased levels of knowledge and ability. Jobs that require interpersonal and creative skills are relatively easy for humans to do but are difficult, if not impossible, for computers, which are better suited for well-defined analytical tasks. Generally, occupations that comprise critical tasks that can be automated will be more at risk as technology advances.

Governments should encourage workers to develop skills and expertise that will enable them to take on more challenging tasks that are less automatable. As individuals gain more knowledge and experience (whether through academic coursework or experience), they can become less susceptible to automation.

More research and monitoring will be necessary to track the effects of automation on developing economies. Countries will have to pursue different strategies to determine how best to approach the automation of diverse occupations and job tasks, based in part on factors such as the quality of local infrastructure. For example, the more advanced a country’s roads, electricity, internet, and other types of infrastructure, the quicker and more likely it is that automation will occur. However, automation requires capital investments, which may be limited for companies in developing countries. In other words, the lack of proper infrastructure can protect low-skill workers, reducing the negative impact on the labor market in the short term, but in many cases compromising the overall productivity of a developing economy.

It is critical that foreign companies thinking about outsourcing work to developing countries compare personnel costs with the costs of automation. But until we know how much companies are willing or able to spend in either area, it is hard to make predictions about the rate of replacement of humans by machines in the developing world. One of our most significant findings was that analyzing occupations according to their individual tasks can be extremely helpful in preparing for the future. A useful follow-up to our analysis would be to map out the changes to a subset of jobs, identifying which tasks are core to the occupation and which can be or have already been
automated. Likewise, tracking job creation, either as a result of the demand from local organizations or from outsourcing by companies in developed nations, would be useful in understanding earlier and ongoing impacts of automation.

Yet we also need to look beyond the effects of automation on the most obvious tasks and jobs and probe the future of occupations that seem less likely to be automated. Understanding what's happening in “safe” areas will enable industry, nongovernmental organizations, and political leaders to think bigger and longer term. Although it's important for every country to look for ways to respond to the effects of automation, it's especially critical for developing nations, which will be hit hardest and have the fewest resources to cushion the blows.

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References


2. The countries in our sample were Armenia, Bolivia, China (Yunnan province), Georgia, Ghana, Kenya, Laos, North Macedonia, Sri Lanka, and Vietnam.


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