

# What innovation means for the Philippines

May 22, 2023 | 7:04 pm

By Jesus Felipe



THE ADMINISTRATION argues that the future of the nation is “innovation,” as this is the catalyst to sustaining growth. On paper, this certainly looks like a very defensible strategy. The Philippine Development Plan (PDP) 2023-2028’s Chapter 8: Advance Research and Development, Technology, and Innovation, lays out strategies, programs, and legislative priorities to be pursued to promote innovation among industries, and

identifies metrics to measure the country's progress in harnessing research and development, technology, and innovation.

In this article, I clarify where the idea that innovation matters comes from, and discuss what type of innovation the Philippines needs in order to sustain growth.

Innovation refers to the creation of a new idea, method, device, product, service, or process; or to the introduction or use of such novelties in economic and social spheres. Innovation matters to an economist because it leads to productivity gains. These can be passed on to workers in the form of higher wages, and to consumers in the form of lower prices and products of higher quality. The term "innovation" is used in the literature to mean both original inventions and the creative use of existing products or processes. Economists argue that the former is what advanced economies do — that is, invent. This is so because their governments and companies have developed national innovation systems and invest in research and development (R&D). This is what allows them to make high cost, complex (unique) products and systems such as airplanes, robotics equipment, satellite systems, intelligent buildings, submarines, dams, luxurious yachts and cruise liners, or nuclear power plants. These are not just products but entire "systems" that require knowledge and coordination that most developing countries do not have. Historical experience tells us that this type of innovation is passed on to workers in the form of higher wages.

A country's potential (maximum) growth is given by the sum of the growth rates of the labor force and labor productivity. Both are low in advanced economies, with the consequence that growth is low. In many of them, labor force growth is zero or even negative. Labor productivity growth is also relatively low because they are on the technological frontier, which means that firms are already highly mechanized and have high organizational capabilities (these refer to how to organize the flow of work in both a manufacturing shop floor and in an office). Therefore, the level of labor productivity is high in developed countries but, at the same time, the growth rate is low. If they want to grow, they need to create new products, invent. Innovation and R&D became buzzwords in the 1980s and 1990s in the literature that was created to explain growth in the developed countries, and not in the developing nations. Yet, many scholars started trying to explain growth in developing countries by appealing to the innovation paradigm.

Aren't developed countries inventing new products? Yes, but many economists believe that today's technologies are not as revolutionary as those of the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, the Second Industrial Revolution (electricity, the internal combustion engine, running water, indoor toilets, communications, entertainment, chemicals, petroleum). The introduction and spread of these technologies lasted until the 1970s, and delivered very high growth rates and huge increases in humanity's living standards. The technologies of the Third Industrial Revolution (computers, mobile phones, the web) did not do the same, with the consequence that growth since the 1970s in the developed nations declined significantly. We do not know yet whether the technologies of the Fourth Industrial Revolution (Artificial Intelligence, nanomaterials, blockchain, neuro technologies, synthetic biology) will do the same as those of the Second.

The situation in developing countries is different. They do not create new products. At best, they do process innovation (small changes in products created by developed countries). These types of innovations most often are not transferred to workers in the form of higher wages but instead lead to lower prices. In these countries, potential growth can be high, as labor force growth is still positive (certainly it is in the Philippines), and labor productivity growth is significant because developing countries are adopting the technologies created in the advanced economies. This type of progress is called behind-the-frontier catch up. This is what the East Asian countries did during the period of high growth in the 1970s and 1980s. South Korea is the best example. China's labor force growth has already reached developed-nation rates — zero and even negative. Hence, output growth is about labor productivity. China is still adopting technologies from the advanced nations and, at the same time, developing its own (innovating and inventing) and competing with the advanced economies in the most advanced sectors. No other developing nation can do this.

The Philippines is clearly far from the technological frontier. Moreover, it does not have the capabilities to invent and compete through research at the frontier, certainly not in the areas of the Fourth Industrial Revolution. The optimal strategy is to accelerate the behind-the-frontier catch up by adopting technologies from the advanced nations. This is about learning, adopting, and improving fast what others have done. It is also about improving firms' organizational capabilities — low in many Filipino companies. This is productivity-enhancing and a form of innovation that does not require huge investments in capital. This is where the government should help small- and medium-size Filipino companies. There is nothing wrong with this — quite the opposite. This is what the successful East Asian countries did. Filipino innovation that translates into productivity will hardly come from pure research and development.

The above considerations do not imply that a relatively poor nation cannot innovate at the frontier in some sectors. Besides China, take the case of Vietnam. It has developed its own electric automobile, the VinFast. What is impressive is that it has done it in less than a decade. It is already making inroads in Europe and in the United States, some of the world's most sophisticated markets. Vietnam is clearly determined to nurture its new national champions with a package of proactive trade and industrial policies. This requires a very clear and well-focused industrial policy that targets a few products, led by the government and a group of companies willing to invest, develop a competitive product, and sell it to the whole world, not just in the domestic market. Vietnam will certainly move forward. It is already slightly ahead of the Philippines in GDP per capita, and it will continue opening the gap in the coming decades.

I close this article with a reference to education. What type of workers needed to undertake behind-the-frontier catch up? Surely education matters for innovation and growth. Yet, one can hardly argue that for the Philippines as a whole, the key constraint on growth is education. There might be specific sectors that lack good professionals but this is not true at the aggregate level of the nation. This is a country where helpers, guards, and drivers, have college degrees. Claiming that education is the binding constraint is barking up the wrong tree. When today's advanced economies reached high income status in the 20<sup>th</sup> century, it was not because half of their labor forces had PhDs.

What is true is that today's technological world has magnified the returns to those with strong math and science skills and who can use them in fields such as finance, software development, or genetics. This is increasing inequality in both developed and developing countries. In the Philippines, and given that it is not a leading nation in the development of advanced technologies, this group represents a very small percentage of the labor force. What the Philippines needs is a well-trained labor force: workers who can perform in an office and in an assembly line, who can read and write, understand a manual, and who can be easily redeployed to perform new tasks. I am talking about plumbers, electricians, carpenters, bricklayers, mechanics, workers who can build a road properly, mid-level technicians, and workers with skills to make quality products (shoes, furniture) that meet international standards and can compete in world markets. The skills of these workers do not require college degrees, and much less graduate degrees. And while it is important to think about the skills that will be needed for tomorrow's jobs, the nation needs jobs for the workers it has today. If the education paradigm were true, it would imply that the Philippines would have to wait for a new whole generation of "well-educated" workers; and also, that today's Filipino workers cannot do what Korean or Singaporean workers did in the 1970s, what Chinese workers did in the 1990s and 2000s, and what Vietnamese workers seem to be doing today.

I reiterate that certainly innovation matters for the future of the nation, but we must be clear about what type of innovation makes sense and is feasible in the Philippines. This will be the result of fast assimilation and adaptation of advanced technologies, not of research and development (except in well targeted areas), and improvement of firms' organizational capabilities to increase productivity.

Jesus Felipe is a distinguished professor of Economics and the director of the Angelo King Institute, De La Salle University.