

The question the 3 panellists had to address was stated as:

“Will improvements in technology always lead to an increase in productive work and economic growth? What do we need to consider before introducing an innovative technology into low-income / fragile state economies?”

My summary response appears below:

There is no question in my mind that technology plays a disruptive role in society. What matters is that we ensure this disruption brings with it good outcomes. But can the delivery of good outcomes be guaranteed? For me, this forms the main premise of the first part of the question I’ve been asked to speak to.

Mainstream economic thinking generally assumes that improvements in technology is always welcome, particularly when these improvements result in labour-saving methods being adopted (when labour is relatively more scarce than other resources); and capital-saving methods being adopted (if capital is relatively more scarce than other resources).

But in standard economic thinking measuring the exact contribution of technical progress has been problematic and often simply treated as the contribution of ‘the residual’ that remains once we’ve identified the role of labour, capital and other factors.

With the immediate above point notwithstanding, does this mean that technology always increases productive work and economic growth? Improvements in technology have to be seen as a necessary but not a sufficient condition in helping to bring increases in productive work and economic growth. Improving technology can result in us witnessing significant positive change in the productivity of many resources. But is this guaranteed and will it bring about long-term economic growth?

For this to happen we need a whole range of complementary factors to be in place. Some of these would include the following:

- Availability of innovators and entrepreneurs who are prepared to take risks with their decisions and investments.
- Good regulations and governance structures, and the presence of political and social stability.
- And of course, we need research and scientific and commercial innovation to support improvements in technology. Universities provide the lifeline to these activities and everyone here has an important part to play in that story.

So, without these elements in place, it is difficult to see how improvements in technology alone can deliver the stated outcomes embedded within the question.

The second part of the question wants to know what we need to consider before introducing an innovative technology into low-income / fragile state economies.

First point I would make is that not all low-income economies are necessarily fragile, and not all fragile states are necessarily of low-income. This distinction is important as without it we could end up advocating policy measures and advice that is inappropriate to the question on offer.

The most reliable measure of state fragility may be found within the Fragile States Index (produced by the Fund for Peace)¹. They offer data for nearly 180 states. Interestingly they also offer data for 'Agile' States and for the past decade or so Finland emerges as the top ranked in this category. The worst (most fragile) currently is Yemen. Yemen has been in the top 8 list of the most fragile for the best part of the past decade. Tanzania is an example of a low-income country but is only borderline 'fragile'.

The index of fragility used is a composite based on 4 sets of data, each comprising of 3 elements. So, 12 in total covering **Cohesion** (security, etc.), **Economic** (development), **Political** (human rights), and **Social** (demographic, etc.) aspects.

In the interests of time let's assume that we are considering low-income countries that also happen to be fragile. For these, what do we need to consider before introducing innovative technology?

I go back to my very first point which was to note that technology always plays a disruptive role. The task ahead, therefore, requires us to consider the likely impact of such a disruption, and when the economy, due to its fragility, may be least ready for it.

The following questions may help in terms of knowing what needs to be considered:

- a) **Population and labour market impact** – What is the existing demographic spread within the labour markets? How is the population distributed across towns, cities, villages? Is there meaningful universal suffrage, and access to educational opportunities?
- b) **Infrastructure impact** – What transport links exist and how comprehensive are they? Presence of reliable communications tools (phone networks, broadband, etc).

¹ <https://fragilestatesindex.org/>

- c) **Markets** – What proportion of all economic activity is generated privately?
- d) **Governance structures and regulation** – What is the extent of public liability and accountability? Is there meaningful press freedom?
- e) **Finance** – Are there viable credit markets present? What is the tax net? Are savings being generated?

All are important.

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