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Jesus Felipe

That Elixir Called Productivity: Ten Implications for Singapore

What can the public sector do to ensure broad and inclusive growth?

WHAT IS PRODUCTIVITY AND WHY DO WE CARE ABOUT IT?

Productivity – the ratio of output to an input and therefore an indicator of whether we are doing more with the same – is one of the most elusive and misunderstood concepts in economics. It is linked to the notions of technical progress and profitability, but these are not synonymous.[1] The problem with productivity is that its measurement is not a simple issue[2] and that its determinants, both at the firm-level and external to it (the environment), are not well understood.[3] Moreover, the role of government encouraging productivity growth is unclear. Nevertheless, its importance is crucial since economic models conclude that long-run growth (what economists call *steady state*) is determined by productivity. As differences in labour productivity aggregate level explain most of the differential in GDP per capita around the world, it is considered key to achieving higher living standards.

WHAT CAN GOVERNMENTS DO TO ADVANCE PRODUCTIVITY GROWTH?

Clearly, there is no generic formula that guarantees permanent success, and no quick to-do list. However, there are some areas that a country like Singapore should pay close attention to:

1. The regulatory environment matters

It is important to understand that governments cannot intervene, affect, or act upon the firm-level determinants of differences in productivity. On the other hand, there is room for governments to influence labour productivity by acting upon the environmental determinants. Although we do not know which factors affect productivity growth the most (i.e. their quantitative impact), the generic recipe is to continue fostering undistorted competition, to deregulate what is incorrectly regulated, and to promote flexible input markets.

The question is, what types of reforms would be most effective? Reforms, if decided upon, should be very well targeted to tackle very specific issues. Pagés (2010) provides a discussion of policies for productivity and offers a simple check list of "what to do":

- Make productivity a central theme of the public discourse
- Disseminate the effects of policies on long-term productivity
- Incorporate business and labour into the policy debate
- Invest in developing the capacity of the state and adopt long-term policies
- Involve entities that guarantee credibility
- Anticipate the indirect consequences of reforms on political actions

2. Do not get over-fixated with productivity (or competitiveness)

While productivity matters, the correct variable for purposes of cost-competitiveness analyses should be unit labour costs: the ratio of nominal compensation to labour productivity. However, empirically, researchers have failed to find a statistically significant inverse relationship between the growth in unit labour costs and output growth.[4]

3. Growth only makes sense in the broader context of what Singapore wants to be as a nation

A clear answer to this question for the next decades will help chart the path for the future and then the role of productivity growth. The recommendations of the Economic Strategies Committee (2010) do indicate directions, e.g. "Make Singapore a distinctive global city and endearing home", "Make Singapore a leading cultural capital", and "Provide the best quality of life in Asia". Today, most governments are evaluated based on their performance, not on their ideology. As a consequence, Singapore

should gauge its performance not by the rate of labour productivity growth (or even of GDP growth), but by its ability to deliver key services and to provide its citizens with what they need to live a decent life: enough food, adequate shelter and health services, a well-paying job, elimination of poverty, modernisation of the economy, employment for all those who want to work, leisure and family time and a good education. This is a much more complex and challenging set of objectives.

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In Felipe (2010), I argue that the objective of public policy should be to achieve *inclusive growth*, defined as "growth with equal opportunities". This has three components: (a) Effective delivery of public goods and services, e.g. health, education, water, power, especially for the poor; (b) Elimination of inequalities; and (c) Achievement of full, productive and decent employment. It is in this broader context that labour productivity, as a tool and not as an end in itself, matters and should be understood for policy purposes.

4. Long-term growth is about structural change

Economic models conclude that, in the long run, overall growth is determined by the growth rate of productivity. From a policy perspective, it is very useful to understand long-run growth as a process of structural change, defined as the shift of resources across sectors of the economy, from sectors of lower productivity into sectors of higher productivity. Structural change also implies the creation of new sectors and an increasing diversification and sophistication of the production and export structures. In the last decades, the most successful economies in the world, including Singapore, have been the ones that have been able to induce fast structural change.[5]

5. Change involves displacement

The relationship between employment creation/destruction and productivity growth is a complex one, akin to a love-hate relationship. On the one hand, without structural change it would be very difficult to achieve sustained growth. On the other hand, structural change entails significant labour reallocation across sectors, whereby

old jobs are constantly being destroyed and new ones created. It is impossible to coordinate this process. Moreover, if productivity in some sectors increase, while demand for new goods and services reaches a saturation point, an imbalance arises. The consequence is unemployment. To solve this imbalance, a market economy needs to be constantly generating new products/services to absorb the labour displaced by sectors that have achieved the saturation point.

6. What matters is jobs for the people

Many governments have realised that unemployment and underemployment bring about enormous economic and social illnesses and waste (Felipe 2010). Today, Singapore enjoys a state of quasi full employment. This should not be taken for granted. Macroeconomic policies need to be redirected towards the achievement of full employment on a permanent basis. Furthermore, Singapore needs to create employment for the people it has, and not for the people it wishes it had.

7. Trainability matters more than educational levels

Education is a fundamental human right that should not be compromised. However, this does not imply that all citizens should obtain a PhD. The public debate on education is often confused, and should shift to *trainability on the job*. While Singapore needs to be able to generate and retain a sufficient number of highly qualified professionals with tertiary and postgraduate education to support its manufacturing and services sectors, as well as its attempt to succeed it into the advanced biotechnology and biomedical sciences (e.g. Biopolis), most of the jobs being created today do not demand at least 20 years of formal education (PhD level). Most of the jobs created are in wholesale and retail trade, tourism, or transportation: these jobs require excellent and qualified professionals with secondary and vocational education, not doctorates.[6]

Education beyond the level required to perform these jobs adequately can lead to a problem of *overeducation* (Mehta et al. 2010). Trainability, on the other hand, is the ability to learn fast on the job and to adapt to changing circumstances and to the environment. Productivity in many workplaces could increase substantially by simply reorganising the way work is conducted in many offices and factories. To achieve this, one does not need more years of formal education, but good on-the-job training mechanisms. This requires a very flexible and innovative educational system coupled with an efficient interface with the business community.

8. Foster strategic collaboration between public and private sectors

The key lies in understanding the role that each of the two sectors has to play, and the inputs that each has to provide. While the role of the private sector and what motivates it is straightforward, that of the public sector is more controversial. The public sector has to provide public inputs such as basic infrastructure and address market failures that prevent private investment, in particular when they entail *information* (e.g. incentives to enter a new market and defer uncertainty costs) and *coordination* (e.g. the provision of an airport for the development of the hotel industry). Singapore excels in these areas, and coordination between its private and public sectors is outstanding, in comparison with that of many other countries around the globe.

> Singapore needs to create employment for the people it has, and not for the people it wishes it had.

9. Follow your capabilities and find niches

Thinking of new sectors and how to move ahead should be a function of one's own capabilities, as development is path-dependent. This suggests three things for Singapore. First, Singapore is the largest transhipment port in the world and has one of the best (if not the best) airports in the world. This translates into a large stock of accumulated capabilities in the area of logistics. Singapore should continue developing (and excelling in) the *complex* services that these activities provide.[7] Second, if Singapore wants to succeed in the advanced technology sectors (e.g. biomedical), perhaps it should study how countries like Switzerland have developed outstanding capabilities in infotechnologies, nano-technologies, clean technologies, and in biotechnology, medical services and pharmaceuticals. Switzerland has been able to develop a superb culture of innovation based on outstanding SMEs and linkages between research and firms. Excellent tertiary education matters to excel here. Third, after five decades *depending* on multinationals (especially in the electronics sector), Singapore has not been able to develop its own indigenous and world-class champion in manufacturing. This is particularly obvious in the electronics sector.[8] To remedy this deficiency, Singapore should encourage the development of startups and the transfer of technology among universities and companies. Activities that should be supported are those:

- subject to increasing returns to scale
- with high-income elasticity of demand
- produced under conditions of imperfect competition

10. Be aware of constraints

In the same way that Singapore must know and nurture its strengths and advantages, it should equally be aware of its constraints and limitations. In particular, Singapore as a city-state with a very open economy will always have to be vigilant of the international environment, and in particular the region in which it operates; it must always take into account its perennial land constraint; it should keep track of the changing structure of its population, and be aware of the potential pressures brought about by immigration.

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NOTES

1. For an entrepreneur, technical progress refers to the introduction of machinery or processes that increase *profitability*. Entrepreneurs act under competitive pressure to be the first to adopt a profit-rate increasing technology. As individual entrepreneurs race to adopt more profitable technologies, they raise labour productivity in their sector and set in motion forces that raise wages as well. When economists speak of technical progress, they also refer to the introduction of machinery or processes, but often focus on its impact on aggregate growth, and study questions such as how its introduction affects labour (wage rate) and capital (profit rate).

2. Labour productivity is generally derived by dividing the somewhat misleadingly termed "volume of output" by total employment (or hours worked) in a sector (or in the economy). To calculate capital productivity, economists sum up the book values of capital, often based on dubious assumptions. In the 1930s, economists thought that there should be a way to devise an index of multifactor or total factor productivity, such that the denominator would not be only labour or capital, but both. During the 1940s, 1950s and 1960s economists devoted a great deal of time to this issue both theoretically and empirically. I will not discuss this literature here for reasons of space. This is a complex subject. The interested reader can see Felipe (2006, 2008).

3. Syverson's (2010) recent survey sheds some light on the determinants of productivity and provides a framework for understanding inter-firm productivity differences. He summarises a wealth of literature and classifies the determinants into two groups: (i) factors that operate primarily within firms and under the control of the management; and (ii) factors external to the firm. These operate indirectly through the environment by affecting producers' willingness and ability to harness factors that affect firms.

4. See Fagerberg (1988, 1996); Felipe and Kumar (2011).

5. See Felipe et al. (2010) for an analysis of the relationship between development and structural transformation.

6. Lutz et al. (2008) provide empirical evidence on the importance of primary and secondary education.

7. See Abdon et al. (2010) for an analysis of economic complexity. Singapore is the 19th most complex economy in the world, out of a total of 124 countries.

8. Felipe et al. (2010) show that the problem with the electronics sector is that while the different activities in this cluster are very well connected to one another, and this has allowed countries like Singapore to diversify and to increase the sophistication of its exports, the sector is not particularly well connected to more sophisticated activities outside the cluster.

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