

# PRODUCTIVITY REDESIGNED

Looking at productivity,  
not just of the plant,  
but of society as a whole.

*By Joergen Oerstroem Moeller*

**E**conomists disagree about almost everything. The exception to this rule is when they extol the virtues of productivity...as long as one does not dig deeper to find out what it is and how it works. Otherwise, disagreements start. For a start, there is no consensus on how productivity is defined, what production factors it includes, how it is measured and, most importantly, how it is achieved.

East Asia, especially Southeast Asia, was the focus of such a debate in the 1990s when economists quarrelled about whether high economic growth can be explained by adding more production factors (higher labour force and capital stock) or with an unchanged stock of production factors (higher productivity). These opposing theories still reverberate and are brought to the fore when discussing growth in Asia and/or other parts of the world. If higher growth is primarily a consequence of more production factors, economic development becomes endogenous and outside the control of policymakers.

Yet history tells a different story. China before 1979 and India before 1990 had very large labour forces, but low growth. Therefore, we can conclude that production factors per se are not enough for growth. A discussion on productivity needs to be brought in despite difficulties embedded in the concept. Similarly, new capital investment alone may not lead to increased output, while existing capital stock can continue to generate higher output if combined with a workforce having the right skills.

## **Talent development**

The skills factor is attracting more and more attention from business leaders. New technology is wonderful, but its virtue as a booster for productivity depends largely on the skills of the people using it. Here, the education system comes into play, determining whether people joining the labour market and those already employed possess the skills that complement technology, allowing them to get the most out of new technology. If not, much investment in new technology will be wasted and social problems may arise among frustrated workers. The German concept of

Fachhochschulen is a form of tertiary education mainly found in the engineering field, with greater focus on practical skills. Businesses are involved in defining what is taught, ensuring that the graduates learn skills that are in demand.

We can go one step further. It is not only about skills; if so a ponderous education system turning out a large number of graduates would be sufficient. The crux of the matter is to match supply with the demand for skills. Yesterday's skilled worker in a manufacturing plant would not be employable today. One of the reasons the global economy is mired in lacklustre growth is that skills in demand today must be met by people educated 10, 20 or 30 years ago. How can you expect a university in 1990 to foresee skills currently demanded by IT, biology, environmental science, and robotics? They couldn't and didn't. This gives rise to the importance of Life Long Learning (LLL), or continual enhancement and upgrade of worker skills, for them to stay relevant in the workforce.

Many well-educated people cannot find a job. They have skills, yes, but the wrong skills. Businesses are unable to fill positions, as illustrated by a survey carried out over five years (2006-2011), disclosing that between 30 and 40 percent of 39,641 employers in 39 countries ran into difficulties searching for staff with the right skills. We encounter the skills gap throwing spanners into the workings of the economy.

Maybe we should invent some kind of productivity yardstick for education by comparing the skills currently embedded in a cohort and what skills businesses expect to be in demand ten years down the road. Statistics disclose—not with 100 per cent certainty, but good enough—that countries getting this

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right experience the highest growth rate per capita. From 2006 to 2016, Germany's Gross Domestic Product (GDP) per capita grew 1.51 percent per annum, compared to Switzerland at 0.79 percent, the U.S. at 0.65 percent and Britain at 0.52 percent.

A mismatch between supply and demand of skills opens up an opportunity for high remuneration for those having the right skills, explaining the growing inequality and the rise in student debt. In the U.S., over the last ten years, the Gini coefficient, a measure of income inequality, has risen slightly to 0.45. China, during the same period, has managed to bring it down from 0.487 to 0.465. Since 1980, Singapore's Gini coefficient has gone through three main phases. First, it declined from around 0.44 in 1980 to about 0.41 in 1990. Subsequently, the Gini increased in the 1990s and early 2000s to a peak of about 0.48 in 2007, thereafter it declined and is currently 0.433. Germany reaps the benefit of alternative policies with a Gini coefficient of 0.27, Switzerland at 0.287 and Denmark investing heavily in LLL at 0.248; Britain is at 0.324.

The reaction is almost venomous as students queue to enter the right universities offering the right skills and which are able to hike tuition fees. Students do not have the money so they borrow and start their careers mired in debt. Over the past 10 years the amount of student loan debt in the U.S. has grown by 170 percent, to US\$1.4 trillion, driving the economy into a debt trap.<sup>1</sup>

### Quality infrastructure

In a stringent economic analysis, the quality of infrastructure will not be incorporated into a calculation of productivity, at least not fully. This is true despite the rather obvious fact that the more goods and services can be moved during a time interval, the higher the productivity—not for every manufacturing plant, but for society. A good infrastructure built through investments made in the past boosts efficiency by allowing factors of production to be used to their full capacity. Low quality infrastructure is a barrier. What is the virtue of producing a component designed for a finished product if it cannot be transported or if transport costs are prohibitively high? During World War II, the Allies discovered that Nazi Germany was producing highly efficient engines for U-boats that could turn the tide of the battle of the Atlantic. It was not possible to bomb the factories. But, it was possible to bomb the railroads leading to the shipyards in Baltic ports where the U-boats were being built!

The Asian Development Bank predicts that Asia needs to spend US\$26.2 trillion on infrastructure between now and 2030 to maintain its growth trajectory. The World Bank estimates that Indonesia loses one percent of GDP every year because it lacks adequate infrastructure to support development and connect its 17,000 islands. Meanwhile, high logistics costs raise the price of goods, stunting trade and manufacturing potential.

### Waste as a resource

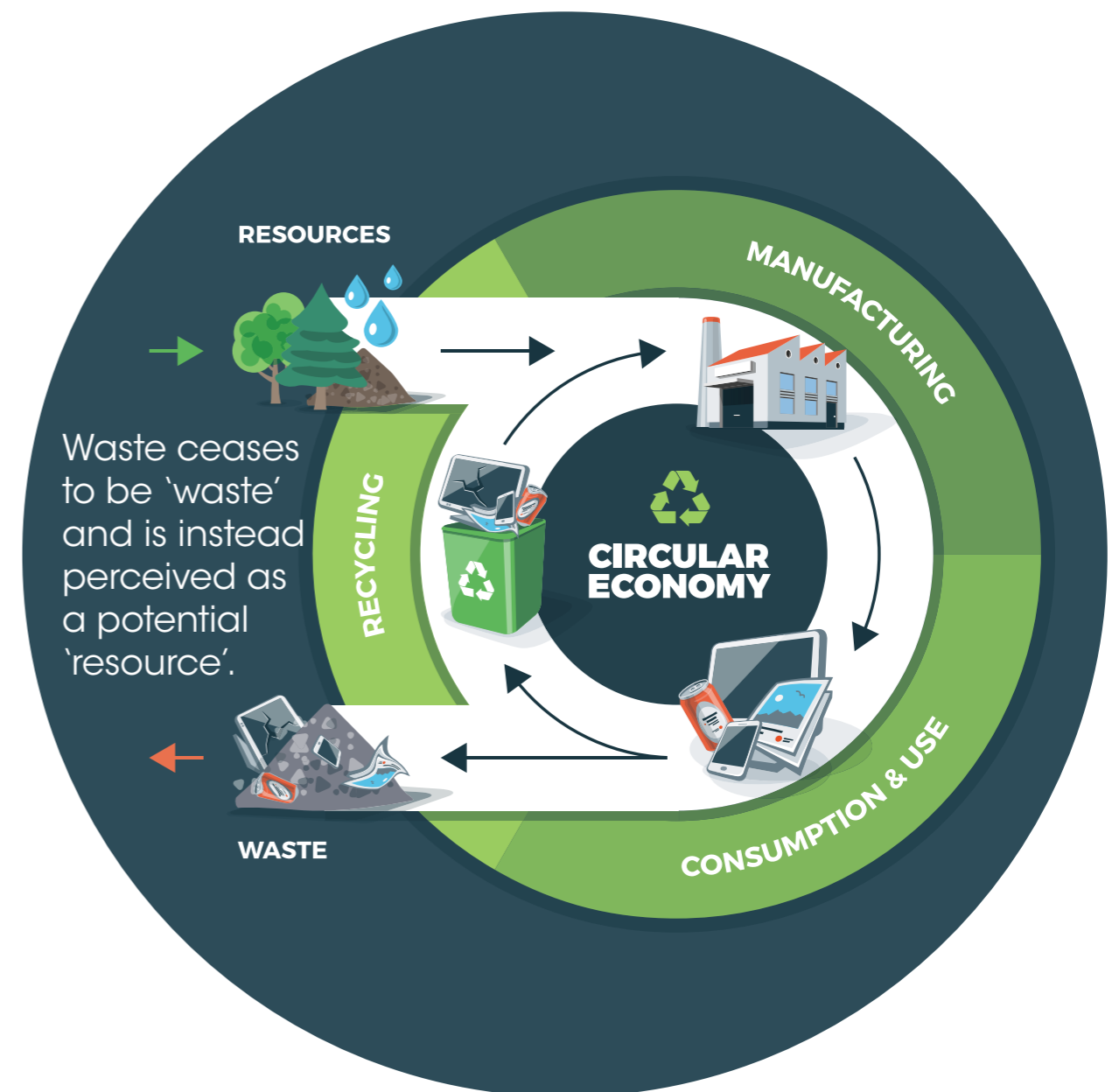
Higher productivity for each plant and society should also include how much total output can be squeezed out of one unit of resource input. Commodity prices are not cheap anymore as the scarcity factor is being felt. Efforts to combat environmental damage reinforce endeavours to reduce waste. Waste then ceases to be 'waste' and is instead

perceived as a potential 'resource'. To turn waste into resources, infrastructure (for collecting waste and recycling) must be built. Fortunately, many countries have grasped this and are moving fast towards a policy whose ultimate goal is to be 'waste neutral'. Since the age of industrialisation, technology and innovation has been focused on labour savings because labour was

comparatively expensive compared to other resources. Now, the pendulum is gradually swinging the other way, making it more profitable to save or recycle resources.

### Diversified economic structure

An economy's performance level—not necessarily productivity—can be measured



by its ability to produce complex products—the number of components needed for a final product and its ability to put them together. Complex products are not necessarily in the high value-added bracket as special skills may be required to make components fit together even for simple products e.g. some chocolate specialities. Such products are sophisticated and command a high price, with or without high value-added (such as organic chemicals and ultrasonic machine-tools). Statistics show that for the top 10 most complex products, the U.S. is among the top five exporters in all 10, followed by Japan in nine, Germany in eight and the U.K. in seven of the 10.<sup>2</sup>

To produce complex products, a highly diversified economic structure supported by efficient sectors outside the economy such as education, labour market policies and infrastructure is indispensable. Except for Japan tuning its manufacturing onto high-quality, high-cost investment goods, only one other Asian country, Malaysia, appears on the list. For Asia, the message is that a long-term effort is called for involving almost all societal sectors, not least higher education and the training of the labour force. On top of that business must realise that this is not a low-hanging fruit, but requires a long-term outlook and, in the short-term, possibly a non-profitable effort.

### Regional supply chains

Small- or medium-sized countries face the challenge that a large market is indispensable for growth. For them the solution is to jump out of the national box and plug into the international supply chain. Over the last decade, the global supply chain is yielding ground to regional supply chains. The Eurozone and the Southeast

Asian, or rather the East Asian economies, have gradually turned towards creating self-sustaining economic areas. This provides a large market, but only if barriers for economic transactions are removed. The Eurozone has reaped big economic benefits from greater connectivity, among other things, making it possible for small- and medium-sized countries to move into complex products. The list of top five exporters for the 10 most complex products shows eight EU member states out of 13 countries. Taking the EU as a whole, it is present for all 10 products. The same can be done in East Asia as indeed the ASEAN Economic Community has started to do. The crucial element is connectivity in a broad sense as stimulating not only the economy, but productivity redefined as how can the production level or national income targeted be achieved with the lowest total cost for society as a whole.<sup>3</sup>

### Growth and productivity

With luck (and that is normally required however competent policymakers are) growth will rise. The window opens for another issue fuelling discord among economists: Does high growth lead to higher or lower productivity? One theory says that productivity largely depends on new technology, research, and innovation, which are not related to economic growth. The IT revolution would have come and affected productivity—irrespective of the growth rate. Another theory claims that high economic growth automatically leads to a tight labour market with a subsequent hike in hourly wage rates. Business technology and innovation offer two opportunities—bringing new products to market with higher performance and a reduction in labour costs. It is of crucial importance

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that technology and innovation go beyond cost saving measures, thus putting the onus of engaging the stakeholder on business: it cannot thrive without support from the rest of society and it contributes to the development of the societies in which it operates—it goes both ways!

### Preparing for the future

The disagreement among economists and policymakers on how to define and measure productivity can, to a large extent, be resolved if the hitherto yardstick of productivity is replaced with several indicators that, when taken together, can effectively reveal the extent to which an economy or business is efficient. Total factor productivity (as traditionally defined) is still relevant but less so, especially if allowed to stand alone.

First, skills, investments and technology must match one another at all levels of production, logistics, marketing, and after-sales service. Second, the ability of the education system to groom students with skills that will be in demand 10 or 20 years down the road will be instrumental in avoiding a mismatch between supply and demand. Third, skills upgrading is not always about being high tech, but includes talent development at all parts of the production cycle. Fourth, efficient infrastructure saves time and costs, but can only

be brought about by combining social and business goals, particularly keeping in mind sustainable business processes.

The winning formula for the future will be a combination of creativity, individualism and teamwork—not easy to bring about, but worth its weight in gold if done well—and achieving greater productivity through highlighting the human factor and not solely through economic policies. Is it time to turn our attention from minimising the cost of production for plants to minimising the cost for society as a whole in order to deliver a higher national income?

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#### References

- <sup>1</sup> Rana Fohooahar, "The US College debt burden is becoming dangerous," Financial Times, 14 April 2017.
- <sup>2</sup> Jesus Felipe, Utsav Kumar, Arnelyn Abdon and Marife Bacate, "Product complexity and economic development", Structural Change and Economic Dynamics, 2012, vol. 23, issue 1, 36-68.
- <sup>3</sup> In my recent book "The Veil of Circumstance" there is a discussion of how much it costs to run a society taking the paragraphs above some steps further.