

Australia needs clear R&D objectives

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Commodity trade involves large volumes of raw materials which are of low value compared with moderately transformed or highly transformed manufactured goods.

The main drivers of economic growth are productivity due mainly to improvements resulting from the application of technology and the new creation of intellectual property and its application, particularly by adding value to lower value products.

MIT and Harvard have come up with a new method of measuring this and forecasting economic growth. It is called Economic Complexity. (ref. Hausmann, Hilgalgo et al., "The Atlas of Economic Complexity", 2014.)

This is a good indicator of the sophistication of a country and can be used as a guide to future growth. The key is innovation.

As the accompanying table in Hausmann et. al. shows, Australia performs very badly by this measure when compared with the UK, USA, Germany and Japan.

In simple terms the economic complexity index (ECI) is a measure of the productive knowledge that is implied in our export structures. It is a measure of innovation, knowledge and our use of and understanding of the economic factors that will be paramount in the future.

In Australia's case, it is a reflection of our under-achievement in mathematics, physics and chemistry... the so called hard subjects.

It is interesting to correlate this with the total expenditure on R&D in these countries, Japan at 3.67% of GDP and Australia less than 1.1%.

We must create a value adding society, which has a focus on innovation and education and acknowledges our natural comparative advantages. Some of this can be in the service industry (e.g. education, design, research, medicine). But the opportunity is greater in manufacturing because some significant comparative advantages are there already.

It is essential in an advanced developed nation that equal opportunities are given to all talented people regardless of their profession or special skills (provided that these are in the general national interest).

Increasing our manufacturing capability is one significant way of achieving this. It would also broaden intellectual opportunity at the same time as improving our standard of living and balancing our trade.

We urgently need to develop an intellectual culture that values science and engineering. This starts with our education system.

An innovation policy must aim to create wealth from industries and activities in which, at least in the first instance, we have a comparative advantage. Later we can create such strategic advantages. Such advantage must factor in natural and human resources as well as moral considerations.

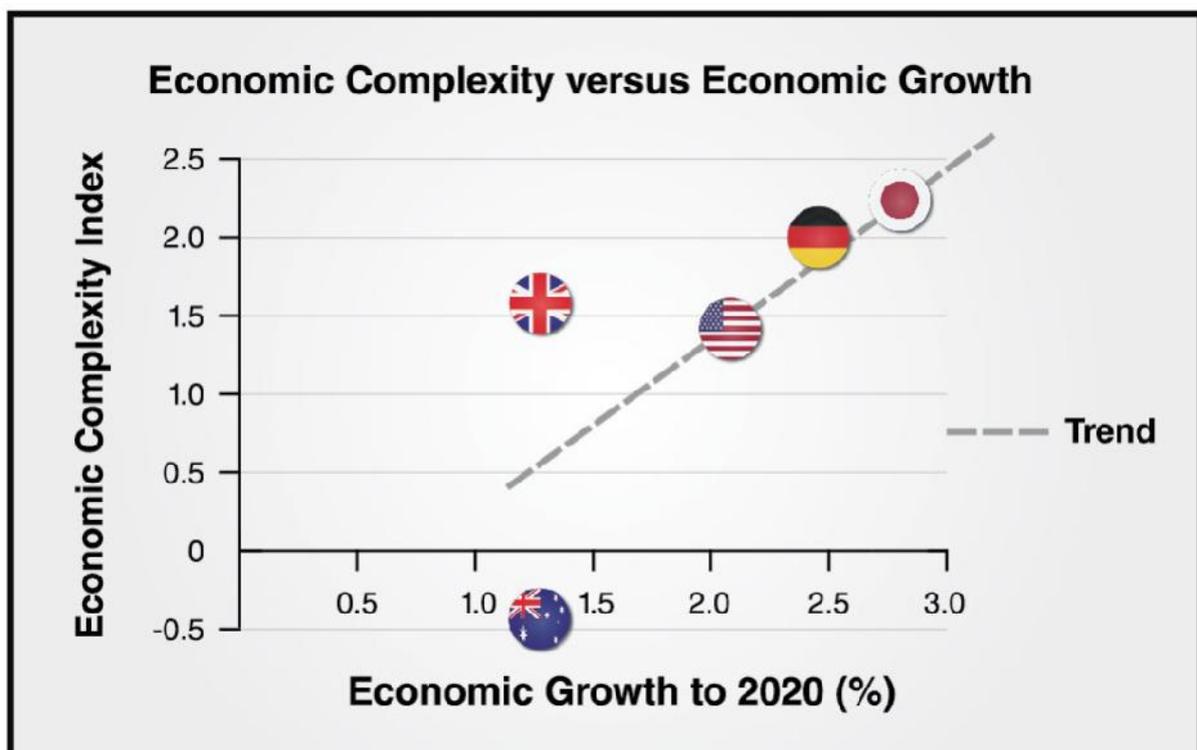
This means we must develop an innovative system which enables small Australian owned businesses to tap into the world's intellectual knowledge quickly and seamlessly. They need access to technological, scientific and engineering resources. It is useless, however, to train more scientists and engineers if there are no jobs for them.

Professional bodies can also play a significant role in the wider community. Scientists and engineers should no longer be invisible.

As the current financial crisis has illustrated, a totally free market is not the answer. Denmark, a country which balances the welfare state with Adam Smith's invisible hand and flexible security systems offers a possible alternative path.

Such a model could improve Australia society significantly, but first we need to trade in surplus.

The government and Keynesian economics are the way forward. Incentives are needed in a truly cooperative system with an emphasis on the need to create a new society focused on long term growth. The drivers for all this need to be education, science and engineering. They need to be harnessed to help us come up with innovative products and processes.



As the figures for Australia, Japan, UK, USA and Germany show, there is a correlation between ECI and projected economic growth. (Graph by Manufacturers' Monthly. Statistics from "The Atlas of Economic Complexity").