

Briefing Papers

Education and growth: the seed and flower of economic development

Dr Ralph Lattimore

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Introduction

New Zealand has had an increasing problem with low rates of economic growth over the last 50 years. This means that our material living standards have been falling progressively further behind those of other OECD countries. This situation does not just affect our personal and household living standards but also our ability, as a community, to finance education, health and social services. A clear indicator of this trend is the difficulty New Zealand employers have retaining newer graduates in teaching and medicine.

There have been a number of attempts to break out of this slow growth trap going right back to the mid 1950s when the adverse trend was first noticed. The most recent of these strategies is the present government's emphasis on economic transformation and initiatives to create a 'knowledge wave' in New Zealand. Like earlier strategies, the objective is to try to increase the quantity of economic resources the community has at its disposal, to reallocate our resources to

more valuable uses and to increase the skills of the workforce so that it is more productive. Herein lies a potential link to education and training – hence the title of this piece, education and growth.

Slow economic growth creates a type of vicious circle in New Zealand education because the provision of education services is largely funded by government through tax revenues and provided by government through state schools and tertiary institutions. The education vote takes up a large share of total government expenditure. Furthermore, the total tax revenue that government can collect is constrained by and implicitly tied to the rate of growth of the economy as a whole. The education system is represented by large lobbies, which attempt to raise the profile of vote education as a means of increasing the resources that they can access via government. A potentially powerful argument used by such lobbies is the economic theory that more education for the community increases economic growth. If this were the case, additional education funding would pay for itself!

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Qualifications pay for some

Perhaps the most direct method of measuring the payoff to education is to estimate the relationship between the amount of education and training people received in the past and their current earnings. This focuses on the benefit of education to the individual recipient. To make these studies tractable, education is usually measured by highest formal educational qualification obtained – School Certificate, Bursary, diploma or degree. Sholeh Maani of the University of Auckland, Maani (1999 and 2000), has conducted some of the most recent work in this area for New Zealand. She finds, even allowing for forgone earnings during study, that the returns to many post-compulsory educational qualifications are high for all societal groups, females and males, Maori and non-Maori. Normally, this rate of return for average students moving from a final qualification of School Certificate to Sixth Form Certificate, or from Sixth Form Certificate to a bachelor's degree, is above 10 percent. However, there are some exceptions.

The rates of return to a student moving from Sixth Form Certificate to Bursary (as a terminal qualification) or to a diploma are lower than 10 percent and can be negligible or negative. This is a very interesting result that is worth further investigation. Has the technological advance recently experienced in the economy leapfrogged over intermediate levels of tertiary education? Has the very large increase in the supply of new graduates with degrees had an effect on the market for new recruits in industry, which is disadvantaging new diploma holders? Or is it simply a short-term phenomenon that will disappear by the time the next census results appear?

The rates of return are very adequate up through post-graduate degrees and they have been increasing over the period 1981-96, especially for Maori (from a much lower base, however).

These results are interesting in relation to the increasing gap between skilled and unskilled wages over the last 25 years in New Zealand and elsewhere in the OECD (though it may have stopped widening recently). The most likely explanation for this gap is not the effects of globalisation and freer trade but the gradual introduction of more sophisticated technology in all avenues of employment – making more highly trained employees more valuable (Deardorff and Lattimore, 1999).

The 1981-96 period is also interesting because it covers a period of rapid increase in post-secondary education. The number of women in the workforce with degrees increased over 100 percent from 1986 to 1996, for example.

These positive returns to individuals are not the same thing as returns to the economy as a whole, however. To measure this effect we have to try to find the relationship between education and growth in labour productivity or economic growth more generally. After all, in the extreme, qualifications can simply identify good potential employees regardless of what they have learnt – the credential or signalling effect.

The individual returns measured via earnings may also be biased because they do not encompass the spillover effects of education and training in the workforce and the community (eg increased socialisation, reduced crime and welfare dependency). Of course many of these benefits arise where the education investment is made in disadvantaged groups rather than advantaged groups (Krueger and Lindahl, 2001).

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It is important to note that the above rates of return refer to averages over large groups of individuals. They are a poor guide to the return that any particular individual might receive. A wide range of individual characteristics are important determinants of income, besides formal qualifications.

Human capital

As we have said, the earnings approach to valuing education does not directly link education and growth. Direct approaches tend to be based on the theory of human capital. The concept of human capital is a very old one in economics stretching back before Adam Smith. In the 1950s and 60s two eminent economists from the University of Chicago, Theodore Schultz and Gary Becker, were involved in refining the theory.

Human capital theory focuses on the mental capacity of people engaged in the workforce, differentiating this capacity from the physical attributes of workers. The stimulus for this theory was to try to explain the long-noted gap between trends in the number of workers and machines involved in production and the amount of output they produced – some rather important factor of production appeared to be missing.

Conceptually, the theory of human capital is very rich and broadly encompasses the development of individual abilities to work more productively and to work in groups through the acquisition of basic reading and numeracy skills, socialisation skills, technology, learning how to learn, research skills, on-the-job training and experience. The basic conclusion of the theory is that we can expect people to invest in education up to the point where the expected marginal rewards are equal to the marginal costs.

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Les Oxley of the University of Canterbury and a number of his colleagues (Oxley and Zhu, 2001) have carried out research work in New Zealand to measure the amount of human capital in our community and Statistics NZ is continuing this work.

This human capital approach assists us in looking for wider effects of education on economic growth.

Labour productivity and education

A wide range of research techniques have been applied directly to the question of education and growth in recent decades. New Zealand is included in a number of the cross-country studies. Temple (2000) and Krueger and Lindahl (2001) provide excellent surveys of this research.

The research findings are highly varied and generally show more modest gains than the earning approach (where they find gains at all). The forty-year-old conclusion of Sir Arthur Lewis (1964) tends to summarise the results: "it is not possible to draw a simple straight line relating secondary education to economic growth".

There does appear to be a consensus that basic primary school education has a positive effect on economic growth rates. It is further tempting to infer from this conclusion that basic study skills, numeracy and language skills are influential in terms of economic growth. Primary schooling may be an important seed of economic development.

Beyond these basic skills it is difficult for researchers to separate out the causal effect of education from the growing demand for education as parents' income increases (this is the idea that education is a flower of economic development).

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Endogenous growth models

In the last decade researchers have focused on a new area of research that attempts to combine the human capital approach with macroeconomic models. These endogenous growth models are attempting to find direct links between human capital and investment in physical capital – with its link to economic growth. The results are heartening but highly variable. The search continues in a field where it is intrinsically difficult to draw strong conclusions.

A synthesis

New Zealand is spending about the same proportion of GDP on education as other high-income countries – around 6 percent. This is a significant investment by the community. The objectives lying behind this expenditure are diffuse: personal development, community stability, civic responsibility and financial gain. One study has even found a relationship between increased education and happiness!

Another objective of education policy is to use the medium to stimulate economic growth through increases in labour productivity and through spillovers that individuals bestow on the community at large. In this context research has found important gains from education in many areas in terms of increased lifetime earnings. However, these very positive results need to be tempered by other research which is much more equivocal. Temple (2000) sums it up best perhaps when he says “For policy-makers who wish to raise the growth rate, policy on education remains a natural place to look, but it is by no means a panacea.”

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