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Counting heads

Aug 26th 2004
From The Economist print edition

A breakthrough in measuring the knowledge economy

TO WHAT extent is economic growth driven by the acquisition of “human capital”? Many economists have pursued the answer over the past 20 years, but without great success. Despite building and rebuilding elaborate growth models, they have failed to prove that better education and training significantly raises a country's long-term growth. Recently, though, a Canadian team made a breakthrough. It found that, if you measure actual skills rather than educational qualifications, human capital becomes a strong predictor of economic growth.

For individuals, the rewards to education are clear: those with higher qualifications earn, on average, far more over a lifetime than the less qualified. But studies of whole economies over time have found only weak evidence that high or rising completion rates of secondary or university education are associated with stronger growth. The most marked effects, unsurprisingly, show up in comparing more and less developed countries; for countries at similar stages of development, there is no consistent evidence that education makes a difference to growth.

One possibility is simply that human-capital theories are flawed. If education acts as a signalling or sorting device, allocating better-qualified individuals to better jobs rather than improving the overall productive capacity of the population, then individual gains from education need not add up to collective gains. Yet micro-studies of skills and productivity have long shown that acquiring certain defined competencies not only confers advantages on individuals but also raises productivity.

Another explanation is that economists were measuring the wrong thing. Having a high-school diploma or university degree is a weak indicator of whether one has skills that increase productive capacity. Educational qualifications may be relatively easy to measure,

but offer only a poor proxy for human capital. What one wants is a direct measure of economically relevant skills. The 1990s saw a step in this direction, with the development of a new form of testing that assesses the extent to which young people and adults in different countries acquired certain key competencies required for work and everyday life. These centre on measures of literacy, understood in the widest sense as the ability to use different kinds of written material to perform real-world tasks of varying complexity. This is the kind of general competency that the micro-studies find to be closely linked to productivity.

It will be 20 years or so before analysts can use these new human-capital indicators to track the long-term effect on growth of having people with more or fewer skills entering work. However, a team of economists at the University of Ottawa, working with Statistics Canada, has found a clever short-cut allowing them to gauge this human-capital effect now*. They use the International Adult Literacy Survey, which tested 16-65-year-olds in the mid-1990s, to estimate the skills of people in 14 countries entering the workforce at different times between 1960 and 1995. This is achieved by looking at tests of different age cohorts. For example, the literacy levels of people aged 52-60 when tested in 1995 are used to estimate the competencies of 17-25-year-olds in 1960, and hence the human-capital investment that had just been made in the course of that cohort's education.

The team identified a clear and significant association between investments in human capital in each period and a country's subsequent growth and labour productivity. Specifically, a rise of 1% in literacy scores relative to the international average is associated with an eventual 2.5% relative rise in labour productivity and a 1.5% rise in GDP per head.

These are much clearer effects than those found in previous studies. In the three countries in the study where human capital improved the fastest between the older and the younger generations (Belgium, Finland and Italy), growth in output per worker rose much faster than average between 1960 and 1995, while in those with least improvement in skills (New Zealand, Sweden and the United States), growth was slower.

Seeking potential

This analysis also sheds light on the nature of the link between human-capital improvements and economic growth. For instance, the benefit of reducing the number of people with very low skills shows up more clearly than that of increasing the number with the highest skills. This does not mean that the supply of highly skilled personnel is irrelevant to growth: the survey may be incapable of picking up the kinds of talents that drive the top end of knowledge economies. However, the results do indicate that these are not the only skills that drive growth. Raising the basic skills of the whole population can bring tangible macroeconomic gains that can help justify the cost of remedial literacy programmes.

Another finding is that raising women's literacy improves productivity more than raising

men's. One reason is that women have been undervalued in the past, making gains in literacy more powerful in unlocking potential than comparable gains for men. A second possibility is that more low-skilled men are in manual jobs where human capital has fewer economic benefits.

The Canadian study provides only a rough measure of the human-capital effect. Its biggest flaw is that testing adults today gives an imperfect idea of what skills they brought into the workforce many years ago. However, the fact that it finds such a strong correlation between skills and growth gives a significant boost to human-capital theory, and to the view that investing in skills brings long-term economic rewards.

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* Literacy scores, human capital and growth across 14 OECD countries. By Serge Coulombe, Jean-François Tremblay and Sylvie Marchand. Published by Statistics Canada.