

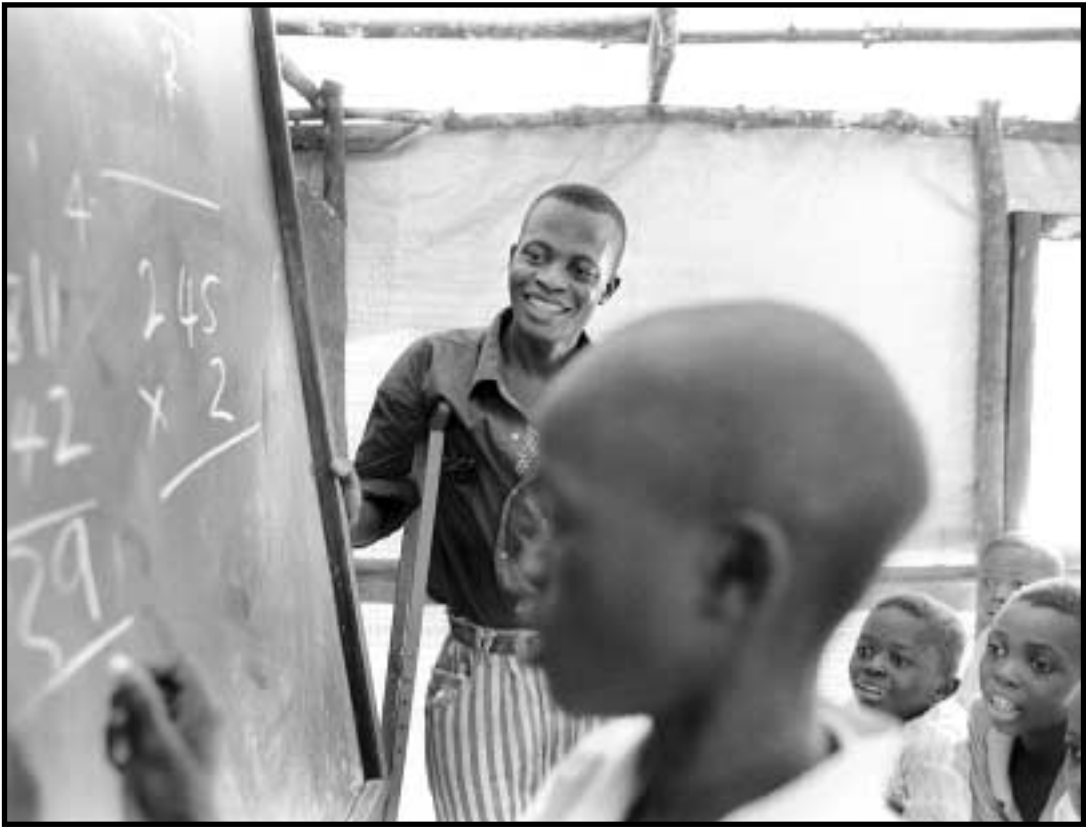
Does Education Matter?

BY ALISON WOLF

If the Milken Institute stands for anything, it's the value of education. Why, then, are we excerpting part of a book called *Does Education Matter?*, which hasn't even been published on the western side of the Atlantic? ¶ Because the author, Alison Wolf of the University of London's Institute of Education, is a marvelous provocateur who forces us to defend some very basic assumptions about education and economic growth. She is not questioning the overall importance of education to a civilized society, but is asking some very tough questions about how much education (and what sort) is enough. ¶ David Card, a distinguished economist at the University of California (Berkeley) and an expert on human capital, offers a rebuttal, which follows the excerpt. If you have views on the matter, too, we'd be delighted to hear from you – and we may even print your two cents' worth.

— Peter Passell





For decades, politicians have been obsessed by and with education. They are convinced that it is in a uniquely parlous state – and that this matters as never before. This obsession rests on the belief that the world economy has changed. Lip service may still be paid to learning for personal enrichment and development, but the emphasis is unremittingly on what education can do for the economy.

But is education truly the elixir of economic growth? Does it deserve ever-greater government expenditure because it can deliver ever-increasing prosperity?

The more educated do indeed tend to earn more, but there are good reasons to question whether this is because education made them

skilled. We cannot conclude that if everyone had the same education as the top earners, everyone would have the same incomes. And the more we expand and lengthen education, the less reason we have to claim this.

It is true that rich, developed countries tend to have high levels of education. But

again, the link between national wealth and education spending is less straightforward than it seems. You can't conclude that more education, at any level, automatically spills over into benefits for society at large. Even the idea that education and success will be more closely linked than ever in the globalized 21st century is less obvious the harder you look. Politicians may think it is clear that everyone's work will soon depend on their knowledge capital in a way that is quite different from the past. But it is just as likely that we need a workforce with basic skills as it is that we need more college graduates.

IT'S THE INCOME, STUPID

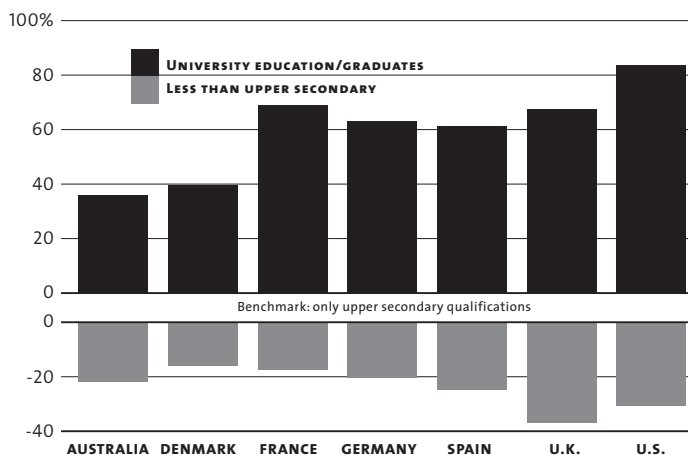
Whether or not education is economically good for a country, the past half-century teaches that it is good for the wallets of the educated. The more education you acquire, the higher your income is likely to be and the less likely you are to experience unemployment.

Among British men born in the 1950s, a higher degree meant that, after 20 years in the labor force, you would be earning on average almost twice as much as someone who had left school with no formal qualifications. For women, the picture was the same. Not only did they benefit hugely from university degrees. Higher vocational qualifications (typically nursing or higher level administrative/secretarial diplomas) gave them a greater advantage vis-à-vis unqualified women than was the case for the men.

This looks like a pretty good advertisement for education, and there isn't anything particularly British about it. The same pattern

holds for developed countries in Europe, North America and the Pacific Rim. While the gap between the less and the more educated varies, the basic pattern is exactly the same. Those who leave school without a high school diploma, earn on average about a quarter less than high school grads, while those with some university education earn an average of almost two-thirds more.

AVERAGE EARNINGS, 1997-98
RELATIVE TO WORKERS WITH UPPER SECONDARY QUALIFICATIONS
(BUT NOTHING BEYOND)



Percentage difference between the average earnings of individuals aged 25-64 with (a) less than a completed upper secondary education, and (b) some university education, compared with those of workers with upper secondary qualifications (but nothing beyond).
SOURCE: OECD, 2000.

Higher earnings aren't the only benefit associated with education. The more educated you are, the more likely you are to enjoy stable, long-term employment. Here, we compare male and female university graduates with men and women who left school before completing upper secondary education – many of them with no formal academic qualifications. Unemployment for this latter group is calculated as a percentage of the rate for the university educated; for example, the figure for German men is over 300 percent –

meaning that the unqualified are more than three times as likely to be out of work as are the university educated. In the U.S., the difference is more than fivefold.

The results vary far more between countries than do earnings. Nonetheless, the favored position of the educated is confirmed again and again. Compared to graduates, the least qualified have two, three or even five

group in 2000, you would find that the latter had much more varied earnings, with a larger gap between the top and the bottom. But there are also widening differences between groups defined by their different educational backgrounds, suggesting that educational qualifications are increasingly important to people's chances in the job market.

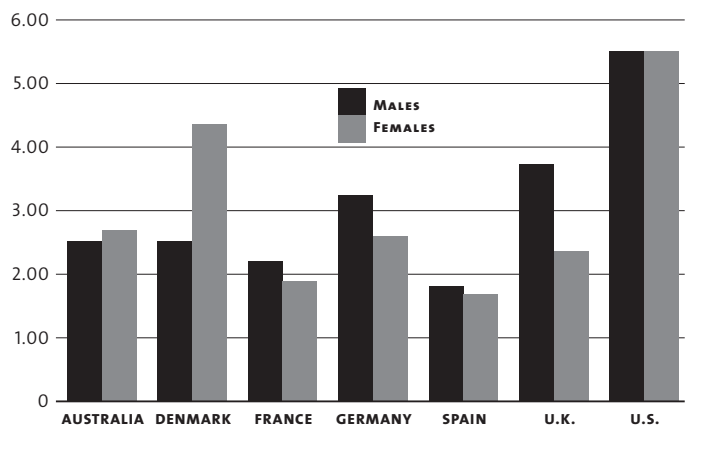
Trends in the U.S. attract particular attention, partly because of its huge economy, but also because of its relatively unregulated labor market. This makes it more plausible to interpret wage changes as a reflection of individual skills and productivity. (In most other countries, centralized wage bargaining, government controls and/or political values have a greater impact.)

There is also the belief that what happens in the U.S. today will spread to the rest of the world tomorrow. In that case, education will start to look like even more of a sure-fire bet. For, in the U.S., the

wage differential between the more and the less educated is now less a gap than a gulf. In 1970, for example, high school dropouts earned two-thirds as much, on average, as college graduates. By 1993 the figure had fallen to well under half. Put another way, the gap between dropouts and those with a high school diploma was as large by 1993 as the one between dropouts and college graduates had been 20 years before.

These figures are averages. And, of course, there are individual differences in skill and ability that matter irrespective of education. Nonetheless, the success of Richard Branson (of Virgin Atlantic fame), the Spice Girls or, at

RATIO OF UNEMPLOYMENT FOR HIGH SCHOOL DROPOUTS TO UNEMPLOYMENT FOR COLLEGE GRADUATES



SOURCE: OECD, 2000.

times as high a chance of being jobless. Not all graduates find the job of their dreams within a month of leaving university, and not all are equally in demand. But compared to their contemporaries, not only are their bank balances larger, their work lives are more pleasant and secure.

Moreover, there are signs that the personal benefits of education are getting more marked, not less. The U.K. (in common with the U.S.) saw big increases in wage inequalities over the past decade. Much of this takes place within groups; if you took all the workers of the same age, education and gender in 1980 and compared them with the parallel

the other extreme, the odd homeless graduate, does not change the general picture. Pick a highly educated and a poorly educated person at random and you can almost guarantee that the first will be earning more than the second.

So far, “get educated, get richer,” seems like sound advice. This isn’t quite the whole story though, because education isn’t free. Tuition is the most obvious up-front cost; in many poorer countries it cuts in well before university level. Less obvious, but no less real, is the income you forgo by studying rather than working.

In developed countries this is rarely an issue until your mid-teens. Until then, school is compulsory: to 16 in most of Europe and the U.S., but even later in Belgium and Germany. For most 15 year olds, not to mention those aged nine or 12, the choice between school and work isn’t real.

From age 16, however, it certainly is. Huge numbers of high school students now combine education with part-time work, although this falls far short of a full-time wage. But suppose someone who left with a high school degree earns 5 percent more full-time than someone who left school two years earlier. Is that really worth it? Two years is also 5 percent of a 40-year working life. Straight away this suggests that, over a lifetime, the high school graduate is financially pretty much where they would have been anyway. In the meantime, depending on your tastes, you could say that they have had either two years hard slog with no ready cash, or two years avoiding the boredom of work and enjoying long school holidays.

These costs of staying in school explain why it isn’t enough simply to compare the average earnings of people with different education levels. We need to see what people get from more education after allowing for both

direct expenses and income forgone. This is what economists mean by the net returns on education. Think of your education spending (including what you don’t earn) as an investment. What percentage return do you get, and how does it compare with alternatives – for example, saving that amount of money in a bank account?

A lot of ink and effort has been expended on calculating such returns, with no great change in the general conclusion. Education, especially higher education for those who can get it, still comes out looking like a good deal. In Britain, a government committee estimated the rate of return on students’ own investments at between 11 and 14 percent, adjusted for inflation. Other British studies suggest the returns are even higher. And research from America shows comparable results.

But how about governments? Should they take the higher incomes of the more educated as a signal that education breeds wealth (and so growth)? Most policymakers appear to believe precisely that. But in fact, you can’t use the link between education and earnings to predict anything about future growth. The higher incomes of the more educated don’t, in themselves, tell you anything, except that the educated are doing better than if national income were shared out equally. Before concluding that they “deserve” it because of the wealth they themselves generate, or that the whole country benefits because of their skills, we need a good deal more evidence.

PRIVATE INCOMES OR NATIONAL WEALTH?

People who look at the returns to education are at pains to distinguish between private returns – the benefits to individuals who receive the education – and “social returns,” which take into account costs and benefits to society as a whole, not just those educated. To

calculate the social return, people work out how much income is generated as a result of education, and what sort of return this offers on the *total* amount spent rather than on just the amount spent by the educated themselves.

These estimates of the social returns to education spending have almost invariably been large. Even though governments in industrialized countries are spending vast sums, the calculations yield high rates of return, indicating that the country gets back substantially more than it puts in. This is one reason why the growth-education link is such a deeply rooted part of received wisdom. Unfortunately, when we look at how these estimates are made, it becomes clear that we can't make a leap from the pay of the educated to collective economic success.

The problem is that the only real measure of people's productivity is their wages. What government economists do, therefore, is assume that wages reflect the contribution people make in their workplaces. In other words, the higher wages of the educated are interpreted as a reward for their greater productivity. So, if an average graduate is paid twice as much as an average dropout, this is taken to mean that one graduate can in effect do as much for the economy as two 16-year-old dropouts.

Social return calculations adjust for costs differently from the individual calculations discussed above, and so provide a different take on the yield to education. Governments cover the full costs of primary and secondary education, and also most of the costs of higher education; so there is an obvious difference between the net benefits to an individual, and those that his or her education brings society. As an individual you take into account what you pay, and what you might have earned if you hadn't been in school. The government, by contrast, takes into account all the costs of

education. State spending swamps individual spending at the school and university levels. Even in the U.S., where university students traditionally pay tuition, less than a third of university income comes from tuition, and enters a private rate-of-return calculation.

So working out the social rate of return on education – i.e., what education spending actually does for economic growth – involves calculating the return that an individual's wages represent on the total educational spending or investment that preceded it.

Rates-of-return calculations sometimes also take account of the likelihood that those with the greatest natural ability also tend to be highly educated. This means that some of their wages reflect natural ability rather than education, and so can't be counted as a return on education spending. Economists guess how much this amounts to, and deflate the estimated returns accordingly. But they still rely on wages as a measure of productivity, so basically, the social returns to education will appear high if the highly educated are getting paid a lot more than their less educated fellow citizens.

Using this approach, we typically end up with figures that are considerably lower than those for individuals, but still pretty high. For example, the Dearing Inquiry in the U.K. estimated that, since the late 1960s, the social rate of return on investments in higher education have run about 7 to 9 percent.

In other words, education comes out looking like an excellent way of generating economic growth. Unfortunately, while using wages may be the best we can do when estimating people's economic productivity, as a basis for major policy decisions it is thin gruel. To see why, take everyone's favorite profession – the law.

The rebels in Shakespeare's *Henry VI* had a simple political program: "The first thing we

do, let's kill all the lawyers." Few of us would go that far. But it is very hard to see lawyers' salaries, and their share of GDP, as somehow reflecting their contribution to economic growth. They have far more to do with the nature and volume of law and regulation in a society – most obviously in the U.S., which has at least six times as many lawyers per head as Japan.

so. Plenty of other developed country pairs offer comparable differences in relative rates of return.

Rate-of-return analyses are hugely seductive because of their apparent precision: "Society gets X percent from upper secondary education, Minister, but a hefty Y percent from more graduates." Such comparisons can and do influence policy, but their apparent

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A detailed rate-of-return analysis in the U.S. would suggest that the fastest way to boost growth would be to send everyone to law school. This is clearly ridiculous, but it is an exact parallel with what happens when we use calculations of social rates of return to defend increased education spending.

In reality, earnings reflect a great deal more than individual productivity. The amount paid to different groups and different individuals also depends heavily on the way a society is organized – how it runs services such as health and education, how much its public and civic cultures value equality, how professionals' fees are regulated. Look again at Denmark and the U.S. The U.S. has enjoyed a huge economic boom in recent years, but so, too, has Denmark. This tiny country has the highest proportion of its working-age population employed, the highest income per head in the EU, and a thoroughly high-tech industrial structure. Yet returns to education are, apparently, markedly lower than in the U.S.

Does this prove that education contributes less to the Danish economy than it does to the American? We would be most unwise to think

precision is spurious. A person's earnings are a highly imperfect measure of his productivity. The statistics we use in these calculations are themselves often far from accurate; and social returns are, to quote my colleague Gareth Williams, merely "private returns tweaked a bit."

Consequently, we cannot use rates of return to prove that more education spending must be a good idea. On the contrary: it is no more self-evident that since some education makes some of us richer, more would make more of us richer, than it is that "two aspirin are good" means "five aspirin are better."

To reach some firmer conclusions about education and growth, we need to go beyond the statistics and look at what the underlying processes might be. We know that modern societies couldn't be run by illiterates, or without lots of scientists and engineers. But can we tell whether educated people are paid more because of specific skills learned at school and others didn't? Or whether education spills over into economic development across the whole of society, with the educated doing us all a favor in the course of bettering

themselves? Can we tell, finally, from current trends in the world economy whether more education now is really the priority that our politicians proclaim?

SORTING BY SKILL OR JUST SORTING?

The higher wages of the more educated may reflect education's contributions to growth and productivity. This is certainly the argument made when rates of return are used to justify yet more government spending. But incomes depend on a lot more than school-learned skills. Another factor is the overall level of industrial development in the society

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around us – which is why unskilled workers from the third world can be so much more productive if they make it to Europe or the U.S. Yet another important influence may be personality or basic ability, which have nothing directly to do with education.

Employers are certainly using education when they hire. But might they be using it as something more than a measure of skills? Might education serve, essentially, as a simple way of ranking, screening and selecting people in a mass society?

The simple answer to this last question is: “yes.” Education today is a socially acceptable way of ranking people that most employers would find hard to do without. But if selecting by education is so widespread, it must also be delivering more or less what the selectors

need. So why are they paying more to the educated? Is it because this guarantees them employees with particular skills, or because the more educated tend to be smarter and to work harder? Or is it just that hiring by credentials is convenient, legal and unlikely to lead to trouble?

This is, quite literally, the multibillion-dollar question for education policy. It is obvious that education is a good bet for individuals. However, the decision to pour vast sums into it rests on the belief that high wages are recognition of greater productivity, itself based on learned skills. Unfortunately, the question also turns out to be almost impossible to answer with any accuracy because a lot of things are going on at once.

Employers are generally on the lookout, other things being equal, for the most able and intelligent people they can find. How long you stay in education is itself very closely related to how well you do in school, so years of education are a good proxy for the sort of general intelligence that schools reward. Academic achievement fairly early on also determines what sort of courses you take. So the differences in earnings associated with different qualifications may say less about skills these courses teach than about the people who take them.

On top of that, years in education are also a reasonably good indicator of motivation, perseverance and organization – all of which top employers' wish lists. Of course, this isn't all that employers want, or that jobs demand. Nonetheless, if one single indicator of educational success, like a college degree or a high school diploma, wraps up a whole bundle of cognitive and personality measures, then, from an employer's point of view, it is a pretty good indicator. What is more, the evidence suggests that employers are right to see cognitive skills (along with motivation and self-



discipline) as good predictors of productivity. Measures of general cognitive ability are quite strongly correlated, for example, with how quickly people learn skills and with their performance on the job – at least in situations where we can actually obtain some reasonably objective measures.

For many employers, education’s usefulness as a signal of ability may be the salient consideration. However, that doesn’t mean concrete skills learned through education are totally irrelevant. Someone who has very high cognitive abilities but is totally illiterate is not much use to most employers in a modern, developed economy, and certainly couldn’t substitute for many of the graduates currently parlaying their education into high pay.

Suppose, though, that everyone left school for good at 15, or even 12. Suppose too, that, before leaving, everyone took some exams that provided a clear ranking of the popula-

tion. How much less productive would the economy, and most of these people, be? Conversely, is all the money poured into education and training beyond that point really having a substantial effect on the sorts of skills people have, and their usefulness to employers?

Economists have devised a number of ways to assess whether returns are to “ability” or “skills.” However all of them are open to serious criticism. A common approach looks at employed versus self-employed workers on the assumption that the self-employed don’t need to signal their ability to employers; instead, their incomes (and returns to their education) reflect their human capital. But the employed and the self-employed are very different groups (notably in their taste for self-employment) so you are not comparing like with like. Nor is it clear that formal qualifications are as irrelevant as signals in the

self-employed sector as this approach assumes. Comparisons of identical twins (to see how education differences affect the pay of genetically identical people) are also problematic because of the small and nonrandom nature of the samples that can be studied.

We are left with the conclusion that returns to education partly reflect its use to sort people, and serve both as a proxy for ability, and a recognition of concrete skills. This is



sensible enough – but not much help in actually planning an education system, let alone pinning down the best sort of education for growth. Can we say anything more about what sorts of skills seem to matter to employers, and how far they are the product of formal education?

WHICH SKILLS MATTER?

So far, this discussion has treated education as though all that mattered was how much you got. So 10 years is better than nine; some college education is better than just going to high school. But if the skills people acquire are important for growth, then this way of treating education looks rather odd. Do employers really reward you equally whichever courses or degree you took?

Perhaps they might if they were only using these qualifications as a general screen for

ability. Conversely, if they don't, we may get some clues here about which skills learned in school, college and university are more closely linked to the requirements of the economy than others.

Earnings data show very marked differences in the salaries associated with different types of qualification. However, it is impossible to use these data as a source of information on skill needs because different qualifications have different status. If a degree pays better than a vocational diploma, this may be largely, or entirely, due to that same screening for ability we have just discussed; employers assume college graduates are brighter and keep the better paying jobs for them. Instead, we need to look inside a group with equivalent education – for example, those same university graduates for whom so many occupations are now reserved.

It turns out that the market does indeed distinguish between different sorts of university education and that there are major differences in the average earnings of graduates with different degree subjects. This is no doubt true partly because some people and some degrees are not oriented toward high-earning opportunities. Few of us conclude that being a religious leader must be a worthless, low-status occupation because it is badly paid. Again, some degrees lead to occupations where the financial reward is government-rather than market-controlled. Here, what people are paid says as much about politics as it does about productivity.

However, in other cases, one is looking at what people get paid in a fairly open market. And, here again, you find that the subject of a degree matters a great deal. English graduates are simply not paid as much, on average, as those with accountancy, economics, engineering or mathematics degrees.

This can partly be explained by differences

in graduates' previous academic records – some subjects are harder to get into than others. That is only a part of the answer though. Even when you control for these factors, there are major differences in later earnings according to your type of degree. This strongly suggests that employers aren't solely occupied with putting people in rank-order. What this information doesn't do is translate into some sort of fail-safe policy of education for growth.

The table to the right summarizes private rates of return in Britain for different sorts of degrees, but looks, too, at the social rate of return. This is calculated in the conventional way, by adding in the costs borne by government. Science degrees and engineering degrees cost a lot more because they need a lot of equipment and more individual attention from staff. So while they pay better than arts degrees, once you add in the full cost of the degree (borne by the state), the social rate of return looks rather different. Engineers may have higher private rates of return (and average salaries), but the social rates of return look much lower for them than for graduates in the social sciences.

Does that mean that a government going for growth should ignore the salary evidence, mothball the science laboratories, and channel everyone into social science? Packing thousands of students into halls to hear economics or business professors lecture is certainly a very cheap way to generate credentials and increase graduate numbers. But a surefire way to growth?

The returns to different degree subjects underline how limited a guide to policy these seductive numbers can be, and how dangerous it is to use them to peddle educational spending as an elixir for growth. On the other hand, treated carefully, they can provide some indications of which concrete skills are im-

portant in the modern economy – and whether governments' assumptions and spending priorities make any real sense.

The best data for this purpose in the U.K. (and some of the best in the world) come from the National Child Development Study. This remarkable study tracks all the children in the U.K. born in one week of March 1958. Findings from it and a sister study (involving a cohort born in 1970) are a major source for

EXTRA EARNINGS FOR GRADUATES

DEGREE	WAGE PREMIUM FOR GRADUATES (Men: 1984-86 and 1989-91)	SOCIAL RATES OF RETURN (Young men: 1986-89)
Social Sciences	20-25%	11-11.5%
Engineering Science	18-24%	5-6.5% 4.5-5.5%
Arts	2-4%	—

understanding how education really affects people in 21st century Britain. Information is collected at regular intervals on participants' education, jobs, family experiences and health. In addition, as adults, they have been asked to complete independent literacy and numeracy tests – tests quite separate from anything required for schools or employers. The results were not known to anybody but the researchers. So again, they provide a measure that can be used to assay the effect of skills rather than formal education.

These study participants' experiences underscore the enormous importance of basic academic skills in modern societies. Poor literacy and numeracy – especially poor numeracy – have a devastating effect on people's chances for well-paid and stable employment. This is not just because people with poor skills tend to have few formal qualifications. Even after you control for these, the effects of low skill levels are major and evident.

To compare like with like, the figure focuses only on those who left school at 16, and who therefore could, in principle, have been employed for equal lengths of time. These people can be classified by their performance on a set of literacy and numeracy tasks, which they were given at the age of 37. And as the

ly over time. As young people, their relative chances of employment compared to the more skilled are nothing like as bad as they become later.

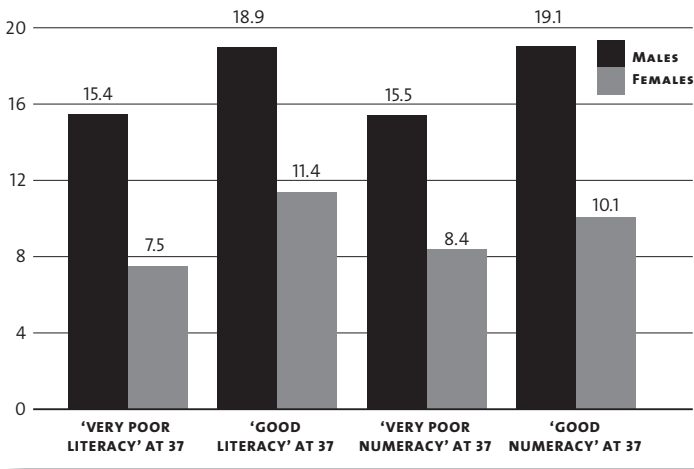
The National Child Development Study data also allow us to see whether particular school subjects are more important in the labor market. The answer generally seems to be “no.” There is, however, one striking exception. Even after allowing for every other factor imaginable, people who did well in math earn substantially more – around 10 percent more – than those who did not.

The reason this finding is so interesting is that it applies across all occupations, however wages are fixed or determined. Of course, we can’t be sure that people are actually more productive because of their math skills. But given that we are looking at the

effects of a qualification that most employers and colleagues won’t even know the individual possesses, it does seem very likely the case. Thus, for once, we have found strong evidence for economically valuable skills rewarded as such.

Evidence from the U.S. also suggests that what is important, and increasingly so, is the traditional core of the school curriculum. The evidence again comes from large longitudinal studies – this time of young Americans who were in their final year of high school in 1972 or in 1980. These young people were given language and math tests by the researchers, but the results were not known by their employers or by colleges they subsequently attended.

**AVERAGE YEARS IN FULL-TIME EMPLOYMENT
BETWEEN AGES 16 AND 37; LEAVING SCHOOL AT 16**



SOURCE: J. Bynner & S. Parsons (2000); additional unpublished NCDS data.

figure shows, there were major differences between high and low scoring groups in their employment histories. The groups were also very different in terms of the likelihood that they would be unemployed at age 37, and in the types of employment they held.

Moreover, there were still large and significant differences after researchers controlled for formal qualifications obtained before leaving school at 16. This suggests that people’s work success was related to their actual skills, not just to screening by qualifications. Further support for this idea comes from people’s relative chances of being employed not just at age 37 but also at 21, 24 or 30. For very low scorers, and especially very low numeracy scorers, the gap widens dramati-

This again makes it possible to look at whether skills, as measured on these tests, affect future earnings over and above the effects of formal qualifications or of test scores that are public knowledge. The answer is that they do. Moreover, the effects are higher for the 1980 than the 1972 group, and higher six years into employment than two years in – which means their effect is greater at the point when someone’s substantive skills, rather than just bits of paper, will be more evident to employers. Moreover, it

levels and formal degree awards. However, we can’t conclude from this that the skills that employers are actually using and looking for are indeed the ones gained late in one education. The most valuable could well have been acquired much earlier, by age 14, 16 or 18 – and we have seen strong suggestions that this may indeed be the case.

Second, the importance of core academic skills provides support for emphasis on literacy and numeracy, but precious little for vocational education and training. The evi-

Even after allowing for every other factor imaginable, people who did well in math earn substantially more – around 10 percent more – than those who did not.

seems, again, to be math that matters most. The test results are likely, of course, to be proxies for more general ability. However, their increasing importance between the 1972 and the 1980 cohort cannot easily be explained away.

None of this strengthens the case for using rates of return to different formal qualifications as a guide to education policy. The arguments that politicians advance for the importance of more education at higher levels rest ultimately on the apparent value of advanced education compared to what is learned in schooling that ends at 16. Yet, in the context of a modern economy, this focus on returns to different qualifications risks devaluing core academic skills.

Almost everyone who masters the core skills properly now goes on to higher education. So the returns they get look as though they aren’t payoffs to primary or even lower secondary education, but to later education

dence on skills suggests that employers in the brave new knowledge economy are after just those traditional academic skills that schools have always tried to promote. The ability to read and comprehend, to write fluently and correctly, and to do math appears more important than ever. It isn’t obvious why this means pouring resources into more years of education rather than increasing quality in the places that already teach these skills.

Nonetheless, if the data on screening and skills are so inconclusive, perhaps we would do better to look at a wider picture. Advocates of greater educational spending argue not just that it increases the productivity of individuals, but that there are spillover effects that raise the whole country to higher levels of wealth. This seems plausible enough. The unskilled worker from the third world whose wages quadruple as he crosses a border illustrates how much our welfare depends on where we have the luck to be born. Can we,



though, come to any clear conclusions about how education plays a key role in kickstarting or accelerating a country's growth as opposed to other candidates – good governance, open markets, tax incentives, investment and the like? Can we, in particular, find support for government policies to promote education?

ECONOMIC MIRACLES AND ASIAN TIGERS: WAS EDUCATION THE KEY?

If links between education and earnings within a country are less clear than most of us think, perhaps we would do better by comparing countries. It is, after all, international comparisons that have really fueled the U.K.'s education panic. In the 1970s and 1980s, Britain was preoccupied with its relative economic decline compared to other European countries and the Asian tigers. The concern: Britain was caught in a "low-skills equilibrium" because its relative failure to educate its

workforce had left it ill-equipped to adapt to international competition.

The enthusiasm developed countries' politicians now show for education (and not just in the U.K.) echoes the experience of many developing countries in their first years of independence. It is self-evident that prosperous nations are also highly educated ones. But can you conclude that the education caused the prosperity, and that spending on schools spills over into general well-being?

The short answer is "no." The experience of the developing world actually makes it all too clear that education cannot guarantee growth. It is certainly not enough on its own; the more interesting question is whether it is even relevant.

A comparison of developing countries in the decades since World War II suggests a rather weak link between education and economic growth. In 1980, Egypt was the 47th

poorest country in the world with GNP per capita of \$580. Fifteen years later it was the 48th poorest, averaging growth of less than 2 percent a year in the meantime. Yet in the period since 1970, primary school participation had risen to well over 90 percent and secondary school participation from 32 percent to 75 percent, while between 1970 and 1980 university participation rose from 9 percent to 17 percent.

Compare this with South Korea, and almost the only common feature to be found is educational expansion. South Korea had a growth in per capita income of over 7 percent a year from the 1960s to the 1998 crash. In that period it also took primary education from near-universal to universal, and secondary participation from one-quarter to everyone. And while in 1979 it had a smaller proportion in university than Egypt, by 1993 this proportion was much higher. So you grow economically and expand your education system enormously. Or, like Egypt, fail dismally to achieve economic success, in spite of huge educational expansion.

A number of recent World Bank analyses suggest that, across the world's developing economies, there exists a negative relationship between education levels and growth. In other words, the countries that have done most to increase the education levels of their population have, on average, grown less fast than those that have devoted fewer resources to education.

This finding seems profoundly anti-intuitive. However, when we look more closely at some of these economies, it becomes clear that, while spending on education isn't really reducing economic growth, educating people also doesn't, in itself, offer them much to bolster economic success. Yet the belief that it did led many developing countries to spend a great deal of money without creating suc-

cessful economies.

Egypt made a commitment to give graduates first call on jobs in the public sector. It very quickly found itself with a vast underemployed army of civil servants, and a huge queue of students aiming at comparable sinecures for themselves. Sri Lanka and much of sub-Saharan Africa exhibit similar characteristics. In Sri Lanka, for example, the post-colonial governments inherited and continued a system in which school exams were used to ration government jobs. Mounting pressure on these jobs, from educated teenagers in an economically stagnant society, was the trigger for two major youth insurrections and loss of life, in 1971 and again in 1988-89.

In situations like these, rates-of-return simply reflect back social inequalities. Compare the salaries of those who actually make it into government and other top jobs with the wages of the population at large, and the figures will suggest that what is needed is yet more university or academic high school graduates. You could easily conclude that education in Egypt was contributing splendidly to growth, since the huge graduate-filled bureaucracy is paid a lot more than the vast majority of less educated Egyptians.

Economies that embraced central planning were also likely to believe in the importance of rapid educational expansion, and to generate large numbers of expensively educated bureaucrats who had gone through both upper-secondary and university education – along with low economic growth. In post-Thatcher New Labour Britain, a belief in central planning now seems like ancient history. But in the early 1970s, an organization like UNESCO was behaving in a completely mainstream and uncontroversial manner when it identified its priority as establishing “a close relationship between educational planning ... and national overall plans for

economic and social development.” This helps to explain why, in comparisons of developing countries, education spending and growth in human capital can end up looking as though they are negatively related.

The obvious riposte is that neither developing countries nor the command economies of the post-World War II period have much relevance to education’s role in the most successful industrial countries. As a senior British Government bureaucrat might point out, no members of the OECD “rich men’s club,” whether longstanding (like the U.K.) or new (like Korea) has practiced manpower planning for many a decade. And what possi-

The experience of the developing world actually makes it all too clear that education cannot guarantee growth.

ble lessons can the heavily agricultural, low productivity economies of Egypt or Sri Lanka have for the U.K. government’s plans to foster economic growth?

But do comparisons of developed countries, older and newer, show anything different? More specifically, once you reach a certain point, does the effect of education spending change so that it really does become the engine of growth? Again, not obviously so. Reviews of the industrialized world do not produce anything quite so startling as an apparent fall in the growth rate associated with high education spending. But they don’t generate evidence of positive effects either.

Korea is the favorite example of those who want to make a case for both educational spending and active government involvement

in education. They point out how Korea ran a massive national literacy campaign in the immediate postwar period, and then expanded secondary schooling with a strong emphasis on equalizing school quality across the country. How it expanded vocational high schools and technical universities, even though this cut against the direction of student demand. And how there has been no problem with skill shortages during a remarkable 50-year period of growth.

All true, and very impressive. It is hard to believe that this education policy didn’t help Korea’s success. But did it cause it? Was it even a critical factor? If you want to argue that, you also have to find evidence that developed countries with poorer education policy and lower spending levels suffered.

In fact, among the most successful economies, there is no clear link between growth and spending on education—let alone between growth and central government involvement in education planning. Surges in growth don’t follow consistently from surges in educational achievement; nor is the reverse true.

This holds even for the tiger economies. Hong Kong had nothing like the central planning of education evident in Singapore or Korea, but its growth rate has been comparable. Switzerland was the richest developed country in both 1980 and 1993—and also one with a history of relatively low public expenditure. The proportion of its young people in university or other higher education is way below the average for the developed world. Compared with the average for the OECD countries, Swiss university enrollment rates have for much of the past quarter century hovered at around a third of the average for the OECD, and some OECD countries registered rates five or six times higher.

In the late 1990s there were headlines galore for England and Scotland’s relatively



poor showing in the Third International Maths and Science Study – or rather plenty for the maths results, and far fewer for science, where scores were near the top. This study, like a number of previous ones, involved giving the same tests (in translation) to large samples of primary-school age children at the same points in their school careers. A considerable number of developed countries participated: Singapore, Korea, Japan and Hong Kong were all at the top in math, while England and Scotland came just below the middle. But for the group as a whole, the correlation between math scores and GNP per capita is so weak as to be insignificant.

The country whose performance really deserves more attention in this context than it usually receives is the U.S., which lurks consistently below England in these international tables. Most European commentators register

American education only to condemn it. In this they echo Americans themselves, who have been worried enough about their children's poor performance to publish official reports accusing themselves of "unthinking, unilateral educational disarmament," and who bemoan the "dumbing down" of American culture and the low prestige attached to academic success by teenagers.

Critics have therefore viewed American education as unproductive and inefficient. Indeed, one analysis arguing for the importance of education and educational planning by governments, perceived America as caught in something akin to a low-skills equilibrium – the state of which the U.K. stands accused. Such an equilibrium implies that there is a self-reinforcing situation in which minimally skilled dropouts are delivered into a labor market, which must therefore concentrate on low-skill, low-value products.

The timing was unfortunate, for the analysis appeared in 1996 when the U.S. boom of the 1990s was already underway. Suppose American education really is so poor, and education really is so critical to growth. One may well wonder why this country not only enjoyed record-breaking growth in both output and employment, but was also the main source of innovation and product development throughout the last decades of the 20th



century. Do we conclude that American education was getting it right all along and should be copied? Or that the links are less obvious and less direct than we once thought?

I would argue that there is no more guarantee in developed than in undeveloped countries that skills will necessarily be used productively, in the sense of fostering growth. In discussing what set countries on the road to prosperity in the past, Douglass North provided a vivid example of how time and circumstance may steer human capital into productive or unproductive channels. He points out that, “to be a successful pirate one needs to know a great deal about naval warfare, the trade routes of commercial shipping; the armament, rigging and crew size of potential victims, and the market for booty.”

In other words, a successful pirate was a highly skilled human being. Moreover, in much of the world, through much of history, piracy was one of the few ways in which able young men from poor families could hope to make large sums of money. But pirates hardly generated economic growth or enriched the society around them. Indeed, the more skilled, the less so.

Modern developed countries give their trained and educated people strong incentives to go into more obviously productive, or socially worthwhile, careers than piracy. They nonetheless vary enormously in how much they promote economic growth in other ways – and in how many people choose jobs that are “dead weight” in terms of growth. Lawyers and sheet-metal workers are both highly skilled (if somewhat less versatile than your top-rank

pirate). But suppose the lawyers spend their time advising businesses how to circumvent laws. Or that sheet-metal workers, as happened in the 1980s in Britain, are poured out into a saturated marketplace by government training workshops with targets to meet, and a staff of highly experienced trainers whom industrial change had made redundant.

There is also another possibility. Maybe at the levels of income and education that the developed world has reached, we are seeing things back to front. Could it be growth causing education, and not education causing growth at all? Hong Kong children, if this scenario is right, may be pouring into higher education, and outperforming the English at math, *after* the meteoric growth rate of their economy – indeed, because of it. They are

doing so in order to compete for jobs in an economy that, as the number of professional jobs grows, uses credentials more and more for hiring. And their prosperous parents can now afford long schooling – indeed encourage it – pushing them to compete academically, and so get into the best schools.

Economists Mark Bills of the University of Rochester and Peter Klenow of the Federal Reserve Bank of Minneapolis offer a test of this idea. The basic argument of the “education leads to growth” school is that education

the fastest growing, as they benefit from educated young workers.

These patterns can’t be found; the breadth or narrowness of the experience bonus in workers’ wages seems to bear no relationship to growth rates. If high-quality schooling is making any difference to the relative economic performance of countries, it is doing so in a very undramatic fashion since its effects appear to be swamped by other factors.

What Bills and Klenow do show, however, is that growth generates education whether or

If high quality schooling is making any difference to the relative economic performance of countries, it is doing so in a very undramatic fashion

increases productivity, and this is why the educated have higher wages. However, it is also the case that, as workers become more experienced and build up time on the job, they tend to earn more. This is because of the skills they have gained while in employment – an “experience premium.”

In most countries, over the past few decades the average duration of education for young workers in any given occupation has increased markedly compared to their older workmates. If all this additional education has really increased their productivity, both immediately (since they have less to learn when they start work) and in the longer-term (because they learn faster and more thoroughly), wages should reflect this. Over time, we should find that the experience premium declines. Highly educated young workers should get paid more on entry than the previous generation, but less of an experience premium because they have less to learn and learn it faster. And those countries with the most rapidly narrowing premiums should be

not education generates growth. While this reflects individual self-interest clearly, it is not at all obvious that every extra bit of education is benefiting the economy, or is the best thing on which to spend public money.

This evidence pours further cold water on any simple equating of education spending with national economic success. Should we go even further, though? Should we argue that education is actually irrelevant to growth?

The answer must be no, for all the obvious reasons that fuel our education panic in the first place. Modern economies do require educated people, and the latter command a premium in the marketplace in part because of their skills – not just because education serves as a sorting mechanism. While Switzerland may be educating fewer people for less time than France or Japan, it is still spending a lot, and supporting highly skilled research and development teams, in both private industry and in universities. Equally, in a modern society, illiteracy brings misery to people, erecting barriers in front of them and their children.



So it would be bizarre to see our education systems as just a collection of white elephants. But, then, no one is seriously advocating closing down all publicly funded education, or even cutting 25 percent from its budget.

Plenty of people are advocating major increases in spending – and doing so not because people enjoy education, not because of its contribution to culture and learning, but because it leads to growth. Just what evidence does the late 20th century offer that suggests education policy should take pride of place in a government’s strategy for growth, or that further public spending on education is the way to deliver productivity gains?

GLOBALIZATION AND A NEW DAWN?

To these skeptical arguments there is one obvious riposte: everything is different now. All this looking back at the experiences of people born in the 1960s and before is beside the point. We are now heading for a 21st century economy in which, to quote Tony Blair, “Brainpower, skills and flexibility – not cheap

manual labor – are the key to competitiveness and productivity.” What is relevant is surely not evidence from the past, but the emergence of what Blair calls a new “learning society,” a new “knowledge economy,” in which only education can deliver growth.

This view has been extremely influential and very widespread. The argument that a low-skills equilibrium is disastrous in a world of integrated markets and new technologies has, as we have seen, found precise echoes in the speeches of government leaders and the analyses of establishment think tanks. Kevin Roberts, the CEO of Saatchi & Saatchi, announces “Western economies [have] moved from manufacturing goods to manufacturing ideas.” Ideas are why government enthusiasm for education has taken the particular forms it has – an enthusiasm for more and more higher education graduates.

And yet, does current conventional wisdom really follow? It would be silly to deny the importance of universities as generators of pure ideas, of applications and patents, and

of practical industrial consultancy. But though we may know that our economies need universities, does that mean they need more of them, or even as many as we have? We know many jobs are highly skilled and that well-educated, high-achieving employees tend to be more productive and quicker to learn on the job. Does that mean that the unskilled are in peril of losing their livelihoods in an emerging knowledge economy?

There are two ways to help answer these questions. The first is simply to look at the way the labor force has altered over the past few decades. This gives us some broad idea of whether we are currently under- or overeducated, and whether we are heading for huge shortages of the skilled and mass unemployment for those with no qualifications. The second is to look for evidence of bonanzas for those societies for whom “high-tech” related education is a public priority. Does pumping up your supply of graduates deliver 21st century style growth, even if it couldn’t guarantee earlier variants of economic development?

THE OCCUPATIONAL STRUCTURE

On one point, the new economy enthusiasts are absolutely right. If we compare the British (or any other Western) labor force in 1900 and in 2000, it is obvious that there has been a huge change in the sorts of jobs that people do. In 1900 about 780,000 people were employed in the British coal mining industry. By the mid-1990s, the number was 18,000. At the same time, there has been a century-long growth in the proportion of jobs that count as “professional,” “technical” or “managerial,” and a decline in both skilled manual jobs and in unskilled jobs generally. Moreover, these trends are expected to continue. Projections for the next decade are for a growth of 30 percent in openings for professionals, and for continued, if less dramatic, growth of 8 per-

cent in job openings for managers.

This does not mean that we are all becoming computer programmers or biotechnology entrepreneurs. The data make clear the decline in traditional manual jobs. Manufacturing jobs have declined particularly fast, as happened with agricultural ones before them. However, this is far from meaning that there are fewer jobs for the unskilled because the labor market is only demanding skilled labor. On the contrary: the percentage of jobs that fall into the “skilled crafts” categories has

Modern economies do require educated people; and the latter command a premium in the marketplace in part because of their skills, not just because education serves as a sorting mechanism

fallen steadily throughout the 1980s and 1990s, and is projected to decline yet more. Meanwhile, some occupations that require much less of a knowledge base are thriving. The single fastest growing job in the 1980s was “postman;” that of the 1990s looks like “care assistant” in nursing homes and hospitals – i.e., an essential, low-grade, low-paid and pretty thankless service job. While professional and managerial jobs have certainly exploded in numbers, the greatest shrinkage has been among the skilled and semiskilled manual jobs in the middle. Millions of openings still exist for people to do things like cleaning offices, packing boxes, staffing call centers or operating supermarket checkouts.

There are all sorts of reasons why more education might benefit people who end up doing jobs like this – but they are not the sort of hard-nosed education-for-growth reasons so beloved by contemporary politicians. It is difficult to construct a convincing argument that more degrees are needed so that people will be educated enough to stack shelves, swipe credit cards or operate cappuccino machines effectively. And it is important to remember just how many jobs like this do exist. To listen to the rhetoric, you would

lower-wage countries) is a subject of enormous debate.

However, whatever the absolute impact of trade on manufacturing jobs, the general picture is the same throughout the developed world. In the foreseeable future, manufacturing is very unlikely, to generate big increases in employment, and very likely to continue falling in size as a proportion of the workforce. The absolute numbers vary between countries: Germany, for example, has an economy that is much more manufacturing-

The idea of “overeducation” is a slippery one on which a great deal of ink has been expended.

think that every semiskilled job was going to vanish tomorrow, if not this afternoon.

There are two particularly important (and interrelated) reasons why it is skilled manual jobs, and manufacturing jobs generally, that have declined. The first is the vast increases in productivity that have occurred in manufacturing industries over the past few decades, so that equal amounts of output can be produced with a small fraction of the old workforce. The second is that manufactured goods – unlike nannies or bus drivers – can be made abroad and imported. So countries with lower wages than ours can undercut our manufacturers, especially for products that only need semiskilled workers.

This could mean, on the one hand, that manufacturers in developed countries have moved to high-productivity methods, involving more machines and even fewer workers, even faster than they would in the absence of such overseas competition – and on the other hand, that companies that can't manage this, simply close. How far this has actually happened (and how far it is because of trade with

based than those of the U.K. or France, so the absolute importance of manufacturing has stayed higher there. But the trend is consistent, and there are no other major changes on the horizon that would generate big increases in demand for skilled manual jobs.

Governments seem on firmer ground with university expansion. These occupational changes certainly bear out the conventional wisdom that demand for highly educated people has grown; since 1961, the proportion of jobs classified as managerial, technical or professional has actually doubled. But even here, it is not obvious that the current passion for yet more graduates makes sense. On the contrary, it is much easier to argue that we have an overeducated work force.

The idea of “overeducation” is a slippery one on which a great deal of ink has been expended. The usual, fairly common sense definition takes people to be overeducated if they have more education than is required to do their jobs. This begs the question of whether the overeducated person is doing the job much better – or, alternatively, rather

worse – than someone who has had less formal education. However, if some people have skills that they feel aren't being used by their jobs, or if others with the same skills and qualifications are employed elsewhere for much more pay, one can reasonably deduce that these people are not working up to their full productive capacity. In other words, the economy has more skills around than we apparently know how to use.

People who look at this issue in detail have almost unanimously concluded that in these senses of the term, Britain definitely overeducates. They point out that large numbers of jobs now demand levels of education that were not required in the past. Spiraling numbers with formal qualifications mean that employers can now insist on people with more education, and will also suspect that anyone without them isn't worth having. The result is that jobs that 20 years ago were done by people who had left school at 16 or 18 now only go those with degrees. Projected increases in graduate numbers seem bound to make this mismatch even more marked.

At the time of the 1991 U.K. Census, the numbers of people in professional, managerial and technical posts with degrees and other higher qualifications was still under half. This might suggest a considerable skill shortage, in spite of ever-rising entry requirements. But the phenomenon is age related – older managers came to work straight from school, the young via university. Moreover, the category itself is misleading, since it includes huge numbers of owner/managers of small shops, hotels and businesses. It is hard to argue that a degree is a prerequisite for running a successful fish-and-chip shop or motor-repair business – though, on current trends, more and more proprietors are likely to have them.

The overeducated may, of course, be more productive than their less educated predecessors

CHANGES IN THE OCCUPATIONAL STRUCTURE OF EMPLOYMENT

% OF TOTAL EMPLOYMENT, U.K.

OCCUPATION	1984	1990	1998
Managerial/professional/technical	29.1%	31.8%	36.6%
Clerical/secretarial	16.1	17.0	15.0
Craft and related	17.7	16.0	12.2
Sales and personal services	14.3	15.0	18.8
Manual operatives	11.6	10.6	9.4
Other	11.2	9.6	8.0

CHANGES IN THE OCCUPATIONAL STRUCTURE OF EMPLOYMENT

% OF CIVIL EMPLOYMENT BY SECTOR, U.K.

SECTOR	1950	1971	1998
Agriculture	5.5	3.1	1.7
Industry	48.9	43.8	26.6
Services	45.6	53.1	71.7

SOURCE: Robinson (1997) and Institute for Employment Research (2000).

sors in a given job. However, this is another of those things where you can choose to believe it or not. There is certainly no firm evidence to suggest that the overeducated are more productive; nor, conversely, that being better educated makes you less motivated or actually worse at your job. We can't use the overeducation figures to establish whether much current education is economically a waste of money. However, we equally can't get much support from occupational changes for the idea that we are currently undereducating for our new century's economy.

There is one final possibility to be considered. Earlier, we looked at the historic link between education spending and growth on an international basis, and found it far from self-evident. Perhaps, though, the 21st century is going to be different. Perhaps we will find that those countries that are economic powerhouses are also those that have educated their way into a "high-skills equilibrium."

A simple comparison of occupational trends doesn't show anything obvious of this

nature. The general direction is the same everywhere in the developed world – less manufacturing and more services – although countries differ in the absolute size of each sector and the speed of change. A more sophisticated analysis comes from endogenous growth theory. This literature examines whether, in the new economy, highly educated people don't just produce more themselves but create an environment in which everyone is more productive. This would mean that their education spills over to everyone's general benefit – that the whole is more than the sum of the parts.

If true, this is very good news indeed for education spending enthusiasts. Instead of muttering about students lolling around at taxpayers' and parental expense, we could see them as future benefactors of the nation; rather than seeing overeducation as a mistake, we could expect that the whole workplace was benefiting from those extra skills.

But, as with so many other ideas, there is very little hard evidence. Of course, if you look at somewhere special, like Silicon Valley, something on these lines is certainly happening. The ideas generated by a critical mass of very clever and skilled people are greater than if you scattered that group evenly across the U.S. But the idea that a higher volume of education in a whole society creates spillover effects and, as a general rule, raises everyone's productivity, finds no clear empirical support. Nor is there anything to suggest that, in this respect, the new economy is vastly different from the old.

CONCLUSION

Throughout the developed world, the mass of politicians take it for a fact that education and economic growth are directly linked. They translate this into an enthusiasm for more education spending; yet the balance of evi-

dence is clearly against them. One argument after another falls apart on closer examination. There is no indication that this, or any other developed country, is spending below some critical level, or that pumping more money into education will guarantee even half a percent a year's extra growth.

At the same time, we do have some indication of what is important. We know that employers use qualifications partly as a simple screening device, and that, in a modern economy, people are well aware of this. Industrial economies create their own demand for education. At the same time, schooling and qualifications do signal certain substantive skills – and people's earnings are related not just to their paper qualifications but also to their relative academic ability and to (some) things they have studied and learned. We know that basic literacy and numeracy matter a great deal and that the labor market rewards mathematical skills. We also know that technical progress depends on the scientific research, but that there is no evidence that education spills over to raise economy-wide productivity.

Of course the opposite applies as well. We don't recommend cutting educational expenditure in some sweeping fashion. From a purely economic point of view, we don't have any idea of how much less education we could get away with. But all this suggests that a government serious about economic growth needs to be discriminating in its education spending. It needs to eschew sheer quantity, and think about where there is a clearly demonstrated demand, about where and for what it should be paying, and about the quality of what is provided. It is all too easy for developed as well as developing countries to sacrifice quality to quantity – a process more likely to reduce growth than stimulate it. **M**