Political Economic Digest Series 20

Dear Political Economic Digest Series Participant,

Welcome to the twentieth issue of Political Economic Digest Series. In the last issue of Political Economic Digest Series we discussed about how the economic reforms in China after Mao Zedong were initiated and how they made an impact in the Chinese economy. In this issue, we will be discussing about the role of education in the economic growth of a country but from a new perspective. There is a widely held belief that education is one of the major requirements for economic growth and hence, any wishing for economic growth should focus on making its citizens educated. However, in the readings of this issue, we provide you a different perspective. Economist William Easterly in his book "The Elusive Quest for Growth" has argued for the other way round. As per him, economic growth doesn't follow education but education follows economic growth. Below is the chapter about education from his book. We hope you'll enjoy this reading.

Educated for What?

William Easterly

Having devoted twenty-two out of the first twenty-eight years of my life to getting an education, I have a natural bias toward thinking education is important. So do many other well-educated experts.

In 1996, the UNESCO Commission on Education for the Twenty- first Century published Learning: The Treasure Within. The chairman of the commission, former European Commission president Jacques Delors, wrote in the introduction that the commission did not see education as a "miracle cure." Rather the members saw it as "one of the principal means available to foster a deeper and more harmonious form of human development and thereby to reduce poverty, exclusion, ignorance, oppression and war."

The Commission on Education for the Twenty-first Century was made up of a distinguished collection of unemployed statesmen and stateswomen. Another member was Michael Manley, the former prime minister of Jamaica, apparently not disqualified as a development expert by his having bankrupted the Jamaican economy from 1972 to 1980.

Delors, in the introduction to Learning: The Treasure Within quoted some poetry from La Fontaine:

Be sure (the ploughman said), not to sell the inheritance

Our forebears left to us:

A treasure lies concealed therein.

Then Delors drew on his own poetic muse to add:

But the old man was wise

To show them before he died

That learning is the treasure.

Others have echoed the sentiment that education is "one of the principal means" to "human development." UNESCO, UNICEF, the World Bank, and the United Nations Development Program convened a previous global body, the World Conference on Education for All, held in Jomtien near Bangkok, Thailand, from March 5 to 9, 1990. In their official World Declaration on Education for All, they noted that education accomplishes such tasks as ensuring "a safer, healthier, more prosperous and environmentally sound world, while simultaneously contributing to social, economic, and cultural progress, tolerance, and international cooperation." The World Conference on Education for All set a goal of universal primary education in every country by the year 2000. (They didn't make it, apparently as ineffectual as they were well meaning.)

The secretary general to UNESCO, Federico Mayor, chimed in with rather less poetic language: "The level of education of the overall population of a particular country ... determine that country's ability to share in world development, ... to benefit from the advancement of knowledge and to make progress itself while contributing to the education of others. This is a self-evident truth that is no longer in dispute."

Other statements of this self-evident truth don't go quite that far but still stress education as one of the secrets to success on the quest for growth. The Inter-American Development Bank (lADB) noted "that investment in human capital [education] promotes economic growth is well recognized." The 1997 World Development Report of the World Bank notes that "many attribute a good part of the East Asian countries' economic success to their unwavering commitment to public funding for basic education as the cornerstone of economic development."^ A World Bank economist summarizes the conventional wisdom: "The education and training of men and—although often neglected—of women contributes directly to economic growth through its effects on productivity, earnings, job mobility, entrepreneurial skills, and technological innovation."

In the light of these affirmations of faith in education, it may come as a surprise—as it did to me—to learn that the growth response to the dramatic educational expansion of the last four decades has been distinctly disappointing. The failure of government-sponsored educational growth is once again due to our motto: people respond to incentives. If the incentives to invest in the future are not there, expanding education is worth little. Having the government force you to go to school do not change your incentives to invest in the future. Creating people with high skill in countries where the only profitable activity is lobbying the government for favors is not a formula for success. Creating skills where there exists no technology to use them is not going to foster economic growth.

The Education Explosion

From 1960 to 1990, reflecting the paeans to education in government policy circles, there was a remarkable expansion of schooling. Fueled by the emphasis of the World Bank and other donors on basic education, primary enrollment had reached 100 percent in half of the world's countries by 1990. In 1960, only 28 percent of the world's nations had had 100 percent primary enrollment. The median primary enrollment increased from 80 percent in 1960 to 99 percent in 1990. Behind these figures lie educational miracles like Nepal, going from 10 percent primary enrollment in 1960 to 80 percent in 1990.

In 1960, there were such secondary education disasters as Niger, which had only 1 in 200 of children of secondary school age in school. Since 1960 the median rate of secondary enrollment in the countries of the world has more than quadrupled, from 13 percent of secondary school age children in 1960 to 45 percent in 1990.

We see similar explosions in university enrollment. In 1960, twenty-nine countries had no college students whatsoever. By 1990 ,only three countries (the Comoros, the Gambia, and Guinea-Bissau) had none. From 1960 to 1990, the median college enrollment rate of the countries of the world increased more than seven times, from 1 percent to 7.5 percent.

Where Has All the Education Gone?

What has been the response of economic growth to the educational explosion? Alas, the answer is: little or none. The lack of association between growth in schooling and GDP growth has been noted in several studies. The lack of African growth despite an educational explosion, caused one study to ask, "Where has all the education gone?"^ This study constructed a series on the growth in human capital (education) and could find no positive association between growth in education and growth of output per worker. (It actually found a negative and significant relationship in some statistical exercises.)^ Figure 4.1 compares East Asia and Africa with numbers from this study.

African countries with rapid growth in human capital over the 1960 to 1987 period—countries like Angola, Mozambique, Ghana, Zambia ,Madagascar, Sudan, and Senegal—were nevertheless growth disasters. Countries like Japan, with modest growth in human capital, were growth miracles. Other East Asian miracles like Singapore, Korea, China, and Indonesia did have rapid growth in human capital, but equal to or less than that of the African growth disasters. To take one comparison, Zambia had slightly faster expansion in human capital than Korea, but Zambia's growth rate was seven percentage points lower.

This study also pointed out that Eastern Europe and the former Soviet Union compare favorably with Western Europe and North America in years of schooling attained. Yet we now know their GDP per worker was only a small fraction of Western European and North American levels. For example, the 97 percent secondary enrollment ratio of the United States is only slightly higher than Ukraine's 92 percent, but the United States has nine times the per capita income of Ukraine.

Another fact about the world also reflects poorly on education's contribution to growth. The median growth rate of poor countries has fallen over time. The growth of output per worker was 3 percent in

the 1960s, 2.5 percent in the 1970s, -0.5 percent in the 1980s, and 0 percent in the 1990s. This study noted that the decline in growth happened at the same time as the massive educational expansion in the poor countries.

Because this study's findings are so surprising, it's worth checking if they are replicated in other studies. Another set of economists did a similar study of how growth responds to the percentage change in the labor force's average years of schooling from 1965 to 1985. They also found that there is no relationship between growth in years of schooling and per capita GDP growth, a non relationship that holds even when they controlled for other determinants of growth. (They did find a positive relationship between initial level of education and subsequent productivity growth.)

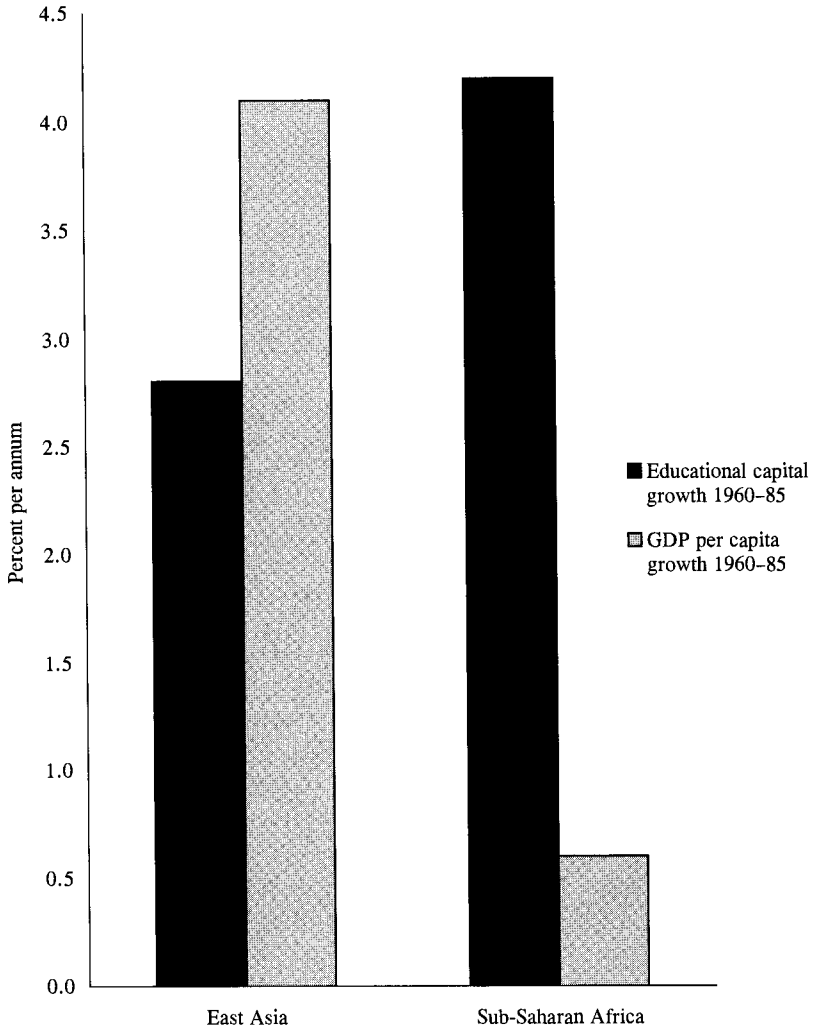

Figure 4.1
Where has all the education gone? *Source*: Pritchett 1999

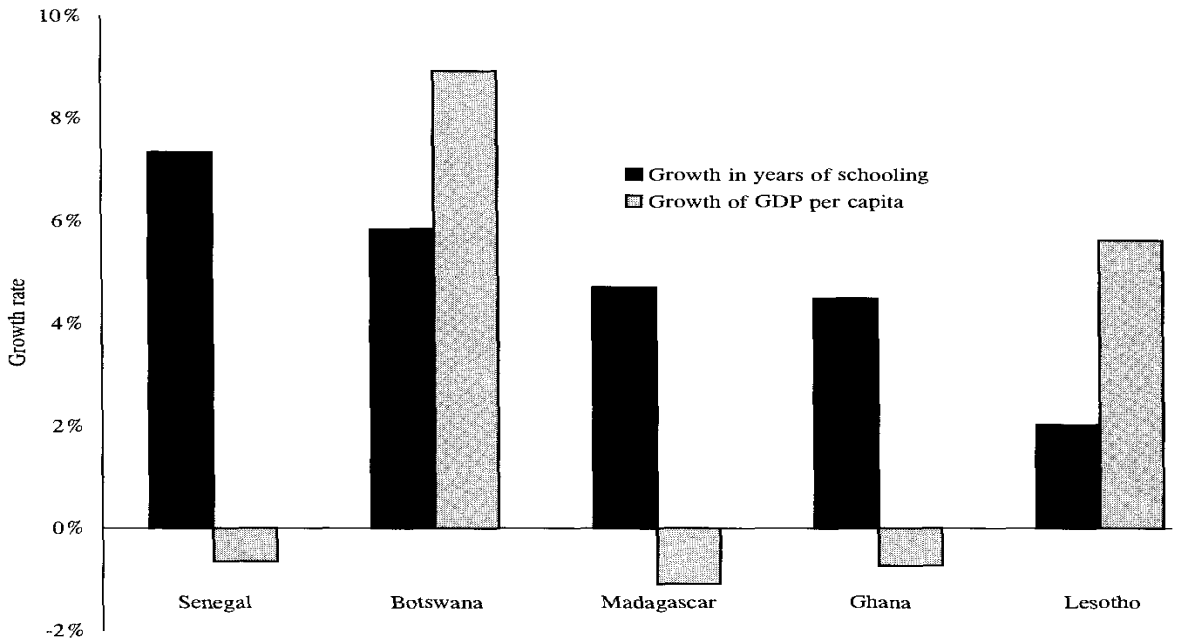

Figure 4.2
Diverse growth outcomes from educational expansion in Africa, 1965–1985. *Source:* Benhabib and Spiegel 1994

You might think that Africa is explaining the non association in these two studies, perhaps because starting from a low initial base may have blown up the percentage change in human capital in Africa. And we know that Africa has had poor growth. But this second study still found a lack of correlation between schooling growth and GDP growth when Africa was excluded from the sample. Also, if the absolute change in average years of schooling is used instead of the percentage change, there is still a non relationship. Moreover, the educational expansion had very different effects within Africa (Figure 4.2).

This study did find that the level of initial schooling is positively correlated with subsequent productivity growth. Thus, a country with high initial human capital will grow fast through the indirect effect of human capital on growth through productivity. Other economists have similarly found the growth of output to depend positively on initial schooling. This relationship is usually thought to be temporary. When there is a high level of human capital relative to physical capital, the return to investing in physical capital will be high and thus growth will be higher until physical and human capital comes back into balance.

The relationship has to be temporary, because the set-up of growth depending on initial schooling doesn't make much sense in the long run. As the first study noted, growth tends to fluctuate around a constant average while schooling trends upward. The growth- initial schooling relationship would imply that growth should trend upward, but this didn't happen. For example, world average growth decreased

from the 1960s to the 1990s despite the increase in education levels. However well the initial schooling might drive growth for short periods like decades or twenty-year averages, it doesn't make much sense as a long-run determinant of growth.

A third set of economists also found that variations in growth across nations have very little to do with variations in human capital growth. If a country's per capita growth rate is 1 percentage point faster than average, they attribute only 0.06 percentage point of this to human capital growth being faster than average, while growth in productivity accounts for 0.91 percentage point of the output growth being 1.0 percentage points faster. (The other factor that is also supposed to be a key to development, physical capital, contributes only 0.03 percentage point to the 1 percentage point faster growth.)

Yet a fourth study pointed out a more subtle problem with the idea that growth in human capital is a major force behind growth. If human capital growth is driving GDP growth, then rapidly growing economies will have rapidly growing human capital. This means that young workers will have considerably more human capital than those who were educated during a time of much lower human capital. This factor would tend to give the young workers higher wages than the old workers. But everywhere we see wages increasing with years of experience; the older workers always earn significantly more than the young, even in rapidly growing economies. Even if years of experience count for something, we would have expected fast- growing countries to have less of a wage increase with experience, because of the human capital advantage of the young. We do not find this. So the growth of human capital cannot be that rapid in a fast-growing economy, and cannot account for its rapid growth.

This study pointed out an even more serious flaw in the level of schooling to subsequent growth relationship. The causality between initial schooling and subsequent growth could be the reverse. If you can forecast growth to some extent, then higher growth in the future will raise the rate of return to today's education. Education is worth more where the skilled wage is rapidly growing than where the skilled wage is stagnant. The magnitude of the relationship between initial schooling and subsequent growth is more consistent with the story of growth causing schooling rather than schooling causing growth.

The bottom line is that education is another magic formula that has failed to live up to expectations.

Education and Income

The finding that education doesn't matter much for growth is intensely controversial. Despite the failure of physical capital and human capital growth to explain variations in growth, a number of economists aver that physical capital and human capital can explain the large international variations in income. These economists, like Gregory Mankiw of Harvard, point out that income in the long run in the Solow model is determined by saving in the form of physical capital and by saving in the form of human capital. Mankiw uses the percentage of children enrolled in secondary school as his measure of human capital saving. There is indeed a strong association between income levels and secondary enrollment ratios. Mankiw shows that his measures of saving in physical capital and human capital can explain as much as 78 percent of the per capita income differences among nations. How can this finding be reconciled with the finding that growth in output is not related to growth in human capital?

Before getting to this question, however, notice how neatly Mankiw ties up some of the loose ends in the Solow framework (as applied to poor countries) by adding human capital. Physical capital accumulation could not be a source of growth in the Solow model because it had severe diminishing returns, a consequence of the low share (about a quarter to a third) of physical capital in output. Once we add human capital, however, the share of all types of capital in output goes all the way up to 80 percent. Diminishing returns to human and physical capital together are much less severe. It's as if we are expanding the flour and milk together in the pancake example. These two ingredients are such an important part of the recipe that we can increase pancake production quite a bit by increasing them even if all the other ingredients stay unchanged. In the same way, there is significant scope for increasing output by expanding physical and human capital together. This meant that countries with the same technology could have very different incomes because of human and physical capital accumulation. Supporting Mankiw's view, several studies gave evidence that high rates of physical and human capital accumulation explained most of the high growth in East Asia.

Second, Mankiw tied up the loose end of the slow growth of poor countries. Remember that poor countries were supposed to grow faster but didn't. Mankiw finds that once capital accumulation and education are controlled for, poor countries did tend to grow faster. The idea in the Solow model that all countries were moving toward the same destination did not have to hold. Countries with different rates of capital accumulation and education were headed to different destinations. The ones who were saving a lot (both in the form of human and physical capital) were moving toward being rich; the ones who were saving little were moving toward being poor. But being poor relative to your own final destination meant you would move faster toward that destination. Another widely cited study also found that poor countries grew faster, conditional on different control variables than Mankiw's.

Third, Mankiw tied up the loose end of the lack of capital flows to poor countries. He supposed that human capital (people with skills) could not move across countries but physical capital could. If poor countries' poverty is explained by their low human capital, then international investors will not want to invest in these countries because skilled labor is necessary to get a good return on machines. If the skilled labor is absent, then the return on machinery is low.This could explain why capital flows went more to rich countries than to poor ones.

Alas, nice theoretical packages don't always bear close scrutiny. There are three problems with Mankiw's relationship between secondary enrollment and income.

The first problem is that secondary education is a very narrow measure of educational accumulation. What about primary education? The relationship between per capita income and primary enrollment is considerably less satisfying. There appears to be no strong relationship as one goes from primary enrollment of 0.2 to 0.9. All of these countries are poor. The many countries with universal primary enrollment have a higher average income than this group but also have an incredible range of incomes, from very poor to very rich. In short, primary education varies much less across countries than secondary education and explains much less of the variation in income. Concentrating on secondary education alone, Mankiw exaggerated the variation of education in general.

The second problem is with human capital's earnings under the Mankiw assumptions. Mankiw assumed that capital flows would equalize rates of return to physical capital. That leaves only human capital to have different rates of return across countries. Explaining income differences with human capital alone is like explaining income differences with physical capital alone. You are back to explaining big differences in income with a relatively minor ingredient. If a poor country is poor because of lack of skills, as Stanford's Paul Romer pointed out in his comment on Mankiw's work, the few skilled workers must be earning very high salaries.

Let's compare the United States and India again. The United States has fourteen times the per capita income of India in 1992. This is also the ratio of unskilled wages in the United States to unskilled wages in India. Unskilled labor is abundant in India while skilled labor is scarce. Mankiw's assumptions implied the wage for skilled labor should be three times larger in India than in the United States.^^ Such wage differentials should induce skilled labor to try to move from the United States to India. Instead, we see the reverse: skilled Indians coming to the United States. What's more, if the predictions of Mankiw's approach had come true, we would expect that the unskilled Indians would be the ones who want to move to the United States while skilled Indians would stay put. That didn't happen: educated Indians were 14.4 times more likely to move to the United States than uneducated Indians.

This propensity of skilled Indians to migrate to the United States is part of the general brain drain phenomenon. A recent study of sixty- one poor countries found that people with secondary education and above were more likely to move to the United States than those with primary education and below in all of the sixty-one countries. Those with university education were more likely to migrate than those with secondary education in fifty-one of the countries. Some countries are losing most of their skilled workforce to the United States. In Guyana, for example, a conservative estimate is that 11 percent of those with university education have moved to the United States.

We see the reverse of Mankiw's prediction that the skilled would want to move to poor countries, because the skilled wage differential is actually in favor of the rich countries. An engineer in Bombay earns $2,300 per year; an engineer in New York earns $55,000 a year.^^ Instead of skilled wages being three times higher in India than in the United States, as the Mankiw framework predicted, skilled wages are twenty-four times higher in the United States than in India. Mankiw's framework predicts a negative association between skilled wages and per capita income; instead, the association is strongly positive.

The Mankiw framework also implies a nonsensically high ratio of skilled to unskilled wages in India. The United States has fourteen times the unskilled wage of India, according to Mankiw’s assumptions. Mankiw predicted that the skilled wage in India would be three times higher. If the ratio of skilled to unskilled wages is two in the United States (as Mankiw suggested), then the skilled wage in India should be eighty-four times the unskilled wage. If people respond to incentives, then there should a massive movement into education in India to acquire skills to earn the skilled wage. The rate of return to education should be forty-two times higher in India than in the United States. But no such mammoth skill differential exists in India (or any other poor countries). The wage of engineers in India is only about three times the wage of building laborers. And studies find that returns to education in poor countries range no higher than twice that of rich countries—not forty-two times higher and even then, the rate of

return to education is only higher because the cost of the investment—foregone earnings—is lower in poor countries.

The third problem is causality (again). What if high school education is a luxury in which you indulge yourself as you get richer? Then naturally demand for high schools would go up as per capita income rises, but that would not prove anything how much high schools make anyone more productive.

This brings me to a more fundamental problem I have with Mankiw's explanation of income differences across nations. Even if we accepted his argument that income differences are explained by differences in saving, then what explains differences in saving? This solution only shifts the problem of explaining growth differences to one of explaining savings differences across nations. I find it unappealing to say that poor nations are poor because they're not naturally thrifty. This is too close to blaming the poor for their own poverty.

Education and Incentives

One clue as to why education is worth little more than hula hoops to a society that wants to grow comes from what the educated people are doing with their skills. In an economy with extensive government intervention, the activity with the highest returns to skills might be lobbying the government for favors. The government creates profit opportunities by its interventions. For example, a government that fixes the exchange rate, prohibits trading of foreign currency, and creates high inflation has created the opportunity for profitable trading in dollars. Skilled people will want to lobby the government for access to foreign exchange at the low fixed rate and then resell it on the black market for a fat profit. This activity does not contribute to higher GDP; it just redistributes income from the poor exporter who was forced to turn over his dollars at the official exchange rate to the black market trader. In an economy with many government interventions, skilled people opt for activities that redistribute income rather than activities that create growth. (One somewhat whimsical piece of evidence that supports this story is that economies with lots of lawyers grow more slowly than economies with lots of engineers.)^^ For example, economies with a high black market premium on foreign exchange have low growth regardless of whether they have high or low schooling. Economies with a low black market premium have more growth with higher schooling than with lower schooling. Schooling pays off only when government actions create incentives for growth rather than redistribution.

Another clue is that the state largely drove the educational expansion by providing free public schooling and requiring that children attend school. Administrative targets for universal primary education do not in themselves create the incentives for investing in the future that matter for growth. The quality of education will be different in an economy with incentives to invest in the future versus an economy where there are none. In an economy with incentives to invest in the future, students will apply themselves to their studies,parents will monitor the quality of education, and teachers will face pressure to teach. In a stagnant economy without incentives to invest in the future, students will goof off in the classroom or sometimes not show up at all, parents will often pull their children away to work on the farm, and teachers will while the time away as overqualified babysitters.

Corruption, low salaries for teachers, and inadequate spending on textbooks, paper, and pencils are all problems that wreck incentives for quality education.

In Vila Junqueira, Brazil, people told interviewers that the "state school is falling apart, there are whole weeks without a teacher, no director or efficient teachers, no safety, no hygiene. In Malawi, respondents said:

We hear the government introduced free primary education and provides for all essential requirements, note books, pens and pencils. The pupils have never received these items. We still have to provide them ourselves. We strongly believe it is not the government's fault but it is sheer malpractice on the part of the school's management. We have seen several teachers going around selling notebooks and pens. In addition the teachers are not dedicated to their duty. Often pupils go back home without attending even a single lesson. We hear they [the teachers] are unmotivated by poor working conditions. Their salaries are particularly inadequate. It is not surprising that they divert free primary education resources to supplement their miserable salaries. This has adversely affected the standards of education at school. Only ten pupils have been selected to secondary schools in the last six years.

In Pakistan, politicians dispense teaching positions as patronage. There is large-scale cheating at examinations, supervised by unscrupulous or intimidated teachers. Three-quarters of the teachers could not pass the exams they administer to their students. The medium of instruction in the public schools is Urdu, although the working language in this multilingual society is English. Some of the publicly supported schools are Islamic schools, where the students mainly learn the Koran. The other public schools are of such poor quality that anyone who can afford to do so sends their children to expensive private schools. High school students from rival religious factions have fought each other in the schools with AK-47s. Not much good is going to happen when there are more guns than textbooks in the schools.

Although teachers are often underpaid, there are sometimes too many of them. A common pattern is that much more is spent on teacher salaries (a convenient vehicle for political patronage) than on textbooks, paper, and pencils. Filmer and Pritchett find that spending on school materials has a rate of return ten to one hundred times larger than additional spending on teachers, which means that school materials are very scarce relative to teachers.

A third clue comes from what is going on with other investments in the economy. High skills are productive if they go together with high-tech machinery, adaptation of advanced technology, and other investments that happen in an economy with incentives to grow. Without incentive to grow, there is no high-tech machinery or advanced technology to complement the skills. You have created a supply of skills where there is no demand for skills. And so the skills go to waste—with, say, highly educated taxi drivers—or the skilled people emigrate to rich countries where they can match with high- tech machines and advanced technology.

It is true that the creation of skills itself could lead to incentives for investing in high-tech machinery and adapting advanced technology. However, if government policy has destroyed the incentive to grow, this

will more than offset the incentives to make other investments that the high skills could have otherwise created.

Conclusion

Despite all the lofty sentiments about education, the return to the educational explosion of the past four decades has been disappointing. I think that learning under the right circumstances is a very good thing, but administrative targets for enrollment rates and overwrought rhetoric from international commissions do not in themselves create the incentive to grow. Education is another magic formula that failed us on the quest for growth.

The creation of skills in people will respond to incentives to invest in the future. No country has become rich with a universally unskilled population. Enrollment in formal schooling may be a poor measure of creation of skills.

Belatedly realizing that lack of incentives for growth might be responsible for the disappointing response to accumulation of machines and schooling, the international community turned next to another idea: controlling population growth so as to economize on machines and schools.

Question to think about:

What do you think about the role of education in economic growth?

In your views, does economic growth follow education or is it the other way round?