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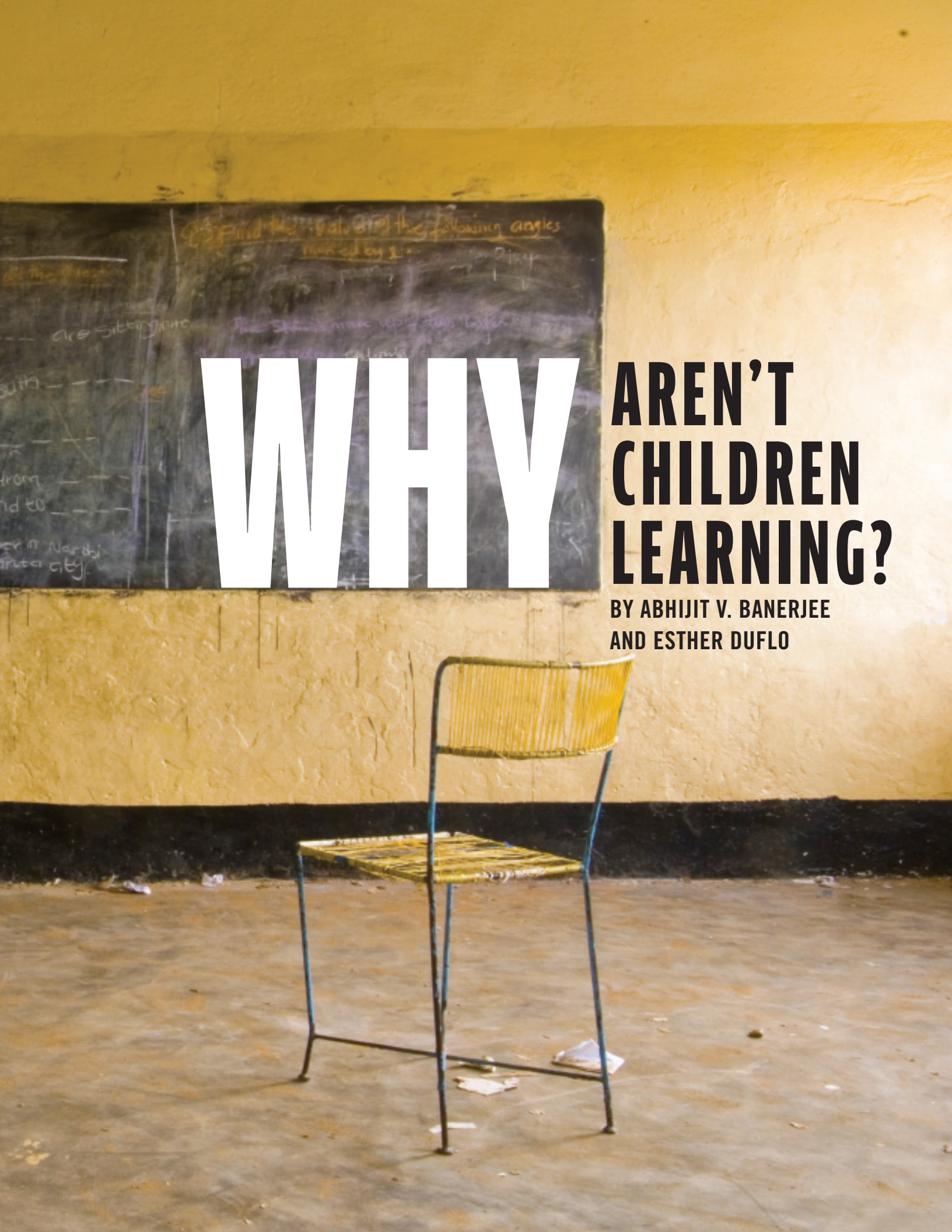

WHY AREN'T CHILDREN LEARNING?

BY ABHIJIT V. BANERJEE AND ESTHER DUFLO

We are five years away from 2015, the year when the Millennium Development Goal of universal education is supposed to be achieved, and the school attendance numbers do look good. In many parts of both East and West Africa, and almost all of South Asia, school enrollment has grown rapidly, with primary school enrollment now exceeding 90 percent in many areas (UNESCO 2009).

SO WHY AREN'T WE CELEBRATING? The problem is that the children are in school, but they are not learning. In India, for example, nearly 60 percent of children in grade 4 cannot read a simple story at grade 2 level, and 76 percent cannot do simple division (Pratham 2005). In neighboring Pakistan, 80 percent of children in grade 3 cannot read a grade 1 paragraph (Andrabi et al. 2009). In Kenya, 27 percent of grade 5 children cannot read even a simple paragraph (Uwezo 2010).

What's keeping children from learning? Or to reverse the question, what enables them to learn? In this article, we offer a reading of the recent evidence, primarily but not exclusively from randomized trials, that, we hope, contributes to an answer.

THE FIRST STEP IS SHOWING UP

ENSURING THAT CHILDREN have access to schools and actually spend time there does matter. The data clearly show that children who spend more time in school have better life outcomes (for example, Duflo 2001, Spohr 2003). The trouble is that while being enrolled is obviously a necessary condition for this, there are many reasons why enrollment by itself may not translate into much more effective schooling. The school year in India is only about 140 days, and each school day often lasts only 3 hours. By contrast, children in most OECD countries spend between 180 and 200 days in school, with longer school days of 6 to 8 hours.

...AND TEACHING

MOREOVER, being in the classroom is less useful if the teacher is not there. In 2002 and 2003, the World Absenteeism Survey of six countries, led by the World Bank, concluded that in Bangladesh, Ecuador, India, Indonesia, Peru and Uganda, teachers miss one day of work out of five on average, and the ratio is even higher (one in four) in India and Uganda. Their data from India also find that teachers who are in school do not necessarily teach—they read the newspaper, drink tea, or chat with their colleagues. Overall, teachers spend less than half the time they are supposed to be teaching actually doing so (Chaudhury et al. 2006).

INCENTIVES HELP

THERE IS NOT ENOUGH PRESSURE on teachers to teach. When such pressure is brought to bear, they do teach more, and students' test scores improve, suggesting that students can indeed be taught (something teachers often question), and that teachers know how to teach (something education experts, who tend to insist on the need for training, sometimes doubt). A randomized evaluation in nonformal schools in Rajasthan, India found that linking teacher compensation to attendance, by verifying attendance with objective impersonal means (such as photos taken with tamper-proof date and time stamps), was effective. Teacher absences fell by half, from 42 percent to 21 percent. And, students learned more: test scores rose by 0.16 standard deviations, and children were 50 percent more likely to pass the exam allowing them to join formal schools (Duflo et al. 2010a). Another evaluation in India found that basing teacher pay on student performance was highly effective at improving student learning (Muralidharan and Sundararaman 2009). In Kenya, teachers hired on short contracts, under supervision by the school committee, were much more likely to be present then regular teachers, and their students had higher test scores than those of regular teachers, even though the contract teachers had no prior teaching experience (Duflo et al. 2010b).

PRIVATE SCHOOLS DO BETTER, BUT NOT BY A HUGE MARGIN

ANOTHER WAY TO LOOK at incentives is to compare children in private schools with children in government schools. In Colombia, students who won a lottery for a private school voucher were 15 percent more likely than losers to attend private school, and scored significantly higher on a standardized test (Angrist et al. 2002). In Pakistan, students in private schools increase average achievement by 0.25 standard deviations each year, compared to students in public school. Self-selection is obviously an issue here, but Sonalde Desai and others try to deal with it by comparing siblings in India who belong to the same family. They found that, compared to their siblings in public schools, primary school age children attending private school score 0.31 standard deviations higher in reading and 0.22 standard deviations higher in arithmetic. This likely remains an overestimate of the impact of private school in India, if parents send the most able children to private school or if they provide them with other additional inputs.

The net effect of private school is thus not that much higher than the effect of improving incentives in the NGO (nongovernmental organization) schools in Rajasthan. Indeed, part of the effect of private school may be due to the fact that private school teachers attend school more often: using the effect of teacher attendance estimated from the Rajasthan study combined with the estimate from the World Bank's study on absenteeism that private school teachers in India are 8 percentage points less likely to be absent than public school teachers in the same village, it is possible to account for roughly half to a third of the estimated overall gain in test scores from private schooling just by virtue of the fact that private school teachers are more likely to be at work. The rest may be the result of teacher effort while in school, or better pedagogy.

BUT INCENTIVES ARE ONLY PART OF THE STORY

IN THE 2000s, Pratham, a large NGO in India, trained *balsakhis* (children's friends) to provide remedial education to the lowest performing 3rd and 4th graders in Vadodara and Mumbai municipal schools. *Balsakhis* were mostly local high school girls with a week's training who were paid a relatively low salary of 1,000 Rupees per month, ($62.50, at purchasing power parity).

The primary focus was to teach basic literacy and numeracy skills to students who were lagging behind. After one year, these students' test scores were a very large 0.6 standard deviations higher than those of similarly low achieving children in comparison schools (Banerjee et al. 2007), and students initially at the bottom of the class scored a whole standard deviation higher in the program schools.

Another evaluation of a Pratham program measured the results of a volunteer teacher program in Jaunpur, India, where school attendance is only 50 percent. More than 60 percent of the children aged 7 to14 could not read and understand a simple, first-grade level story. Pratham recruited and trained local volunteers in 65 randomly selected villages to conduct evening "camps" for two months. The volunteers typically had a high school education and received only a week of training, but the children benefited from these camps. A year later, children who initially could not read anything were 60 percentage points more likely to decipher letters than children in comparison schools. Those who initially could already decipher letters were 26 percentage points more likely to be able to read and understand a story (Banerjee et al. 2010).

In another program, in Bihar, India, government schoolteachers received special training from Pratham to conduct summer school, focusing on basic skills. Participating children showed large learning gains. On average, they tested 0.2 standard deviations higher than children in the comparison group—comparable to the private school effect—even though the summer school program lasted only four weeks and less than one in five children participated in the program, so the effect on those who did would have to be five times larger or about one standard deviation(JPAL, 2009).

A fourth study, also with Pratham, shows that even children who have mastered the basics can benefit from these types of programs though the effect may be smaller. In Bihar, India, another supplemental education program was targeted at all children, including those who could already read. Pratham provided educational materials and trained volunteers to use them. The evaluation suggests that children who were taught by these volunteers saw large gains as well (0.15 standard deviations in math and 0.16 in language for children in grades 3 to 5) [JPAL 2009]. However, when Pratham trained government school teachers in these techniques, rather than volunteers, and the teachers were asked by the government to use these techniques during the regular school year, we see no evidence of similar gains.

IT'S PUZZLING

FIRST, MANY OF THESE GAINS seem large relative to the gains from private school. Why don't the private schools adopt Pratham-style pedagogical techniques to improve their performance, since it takes only a week's training? Second, why do government school teachers use the Pratham techniques during the summer, but not during the school year? Third, why did parents and children not respond more enthusiastically to the offer of Pratham's remarkably effective remedial programs? In Jaunpur only 8 percent of the children (13 percent of those who could not read) attended the evening remedial sessions. With the summer schools, the corresponding number was 18 percent.

EDUCATION AS A LOTTERY

WE PROPOSE A VERY SIMPLE THEORY to account for all of this, which we call the education-as-lottery hypothesis. Surveys of parental aspirations suggest that the average semieducated or uneducated parent sees education mainly as a way to secure a government or other salaried job. For this reason, they think that education is only worthwhile if their child can get through the gatekeeping public exams that restrict access to these kinds of jobs. All the evidence suggests that they are probably wrong. That is, while the evidence suggest that the return to an extra year of education in developing countries is more or less constant, parents believe that the returns are concentrated at the higher levels of education: in Morocco for example, parents believe that each year of primary education increases a boy's earning by 5 percent, but each year of secondary education by 15 percent. The pattern was even more extreme for girls: parents believed each year of primary education was worth almost nothing, 0.4 percent. But each year of secondary education was perceived to increase earnings 17 percent. As a result they believe that education is much more of a lottery than it really is.

Several implications follow from this hypothesis:

Given the winner-take-all nature of education, it is very important to identify the child who has the best chance of being a winner as early as possible and putting all the resources behind him or her.

This is the child who gets sent to private schools, and we often see parents referring to her as the only smart child in the family. In Pakistan, children perceived by their parents as more intelligent are four times more likely to be enrolled in private schools (Andrabi et al. 2009, p. 100). In Burkina Faso, a study found that adolescents were more likely to be enrolled in school when they scored high on a test of intelligence, but they were less likely to be enrolled in school when their siblings had scored high. The result is that many children (perhaps a majority) get a signal from their parents relatively early in their lives (the private school/public school choice, for example, often happens at the primary school level) that they are likely to be unsuited to education. It is no wonder that after this, many of them are mostly going through the motions in school, waiting for when they can drop out. This would explain why, for example, child attendance rates in India are 70 percent, worse even than teacher attendance (ASER 2005).

This tendency to pick winners early and focus on them would explain why parents are not very excited by remedial education. If their child needs remedial education, they feel, he is probably beyond help.

Because parents are focused on the lottery, it is no surprise that the education system gets designed to reflect those preferences. Since the bet is on the highest performing children, the focus in class is always to cover the whole syllabus even if the average child is totally lost. Think of those fourth graders who cannot read but get geography and history and science thrown at them. The whole system conspires against them on this—India's Right to Education Bill makes finishing the syllabus a legal requirement. In Kenya, providing additional textbooks benefited only those students who were already at the top of their class since the textbooks were far too advanced to be useful to the rest of the children (Glewwe et al. 2007).

This explains why teachers do not use the Pratham techniques in class, since those techniques focus on helping the average child master the basic concept better and distract from "finishing" the syllabus. On the other hand, during summer school, they were there explicitly to help the children to catch up and therefore willing to do what Pratham suggested.

What is true for government schools is probably even more so for private schools, which depend for their existence on pleasing the parents. Why would we expect them to use techniques that are meant for the average child?

THE EVIDENCE FOR OUR HYPOTHESIS?

A STUDY BY TRANG NGUYEN is highly consistent with this view. She finds that in Madagascar some parents considerably overestimate the return to education and some substantially underestimate it, though on average they get it about right. However, they dramatically overestimate (by a factor of two) the chance that those who graduate

from school will get a government job, making education more of a lottery (Nguyen, 2008).

Nguyen also finds that when parents who underestimate the returns are given information about actual returns to education, their children perform much better: their test scores improved by 0.37 standard deviations. An earlier study by Jensen also finds that in the Dominican Republic giving students information about the returns to education reduced the chance of dropping out (Jensen, 2010b). More recently, a randomized evaluation in three Northern States in India (also by Jensen) found that once parents became aware of the high-paying jobs available to educated young women through a recruitment drive for call centers, they were more likely to keep their daughters in school. In other words, this convinced them that investing in their daughters was a better lottery ticket than they thought (Jensen 2010a). On the other hand, interestingly, this study also found that in response to the drive parents reduced educational investment for boys they wanted to keep with them on the farm, and they increased the education of boys they wanted to send to the city.

A more indirect but compelling piece of evidence comes from a randomized evaluation of a tracking program in Kenyan government schools. Extra teachers were hired, and classes were split to allow for smaller class sizes. Some randomly selected classes were divided into a more advanced and a less advanced class based on the children's performance, while other classes were split at random—what is sometimes called tracking. Children in the tracked classrooms (both those in the advanced and the less advanced class) learned more than children in classes that were split without tracking, and these gains persisted even one year after the program ended and all the students were put back in the same class (Duflo et al. forthcoming). The children in the less advanced tracked classes benefitted presumably from the fact that, although the teacher was probably still teaching to the top of the (new) class, they were now nearer the top.

WHAT DOES THIS MEAN FOR EDUCATION POLICY?

A PROPER ANSWER to this question goes beyond the scope of this article. A few remarks however seem warranted. First, there is now huge pressure all over the world to hire more teachers, but if we are right, just cutting class size without changing pedagogy will not work. This is indeed what was found in India in the 1990s (Banerjee et al. 2005), and also in Kenya more recently (Duflo et al. 2010b).

Second, because the long-term incentives are distorted by the assumption of a lottery, creating short-term rewards for educational success are all the more important. A program in Kenya that offered girls who scored in the top 15 percent of an exam a scholarship for the next year worth about twenty dollars, not only got the girls to do much better but also put pressure on the teachers to work harder (to help the girls), which meant that boys did better too, even though there was no scholarship for them (Kremer et al. forthcoming). A computer-based teaching program that rewards successful learning by allowing kids to play games, should also work well in this environment, because, apart from everything else, it is a way to create short-term incentives. This is in fact what was found in Vadodara, where a program that allowed pairs of children to play math learning games for two hours a week generated gains of 0.39 standard deviations, and those gains were obtained at all levels of the distribution of test scores (Banerjee et al. 2007).

The ultimate solution, however, has to involve a wholesale attitude shift by everyone in the system from parents to educators. The good news is that if this shift takes place, very large gains can follow. □

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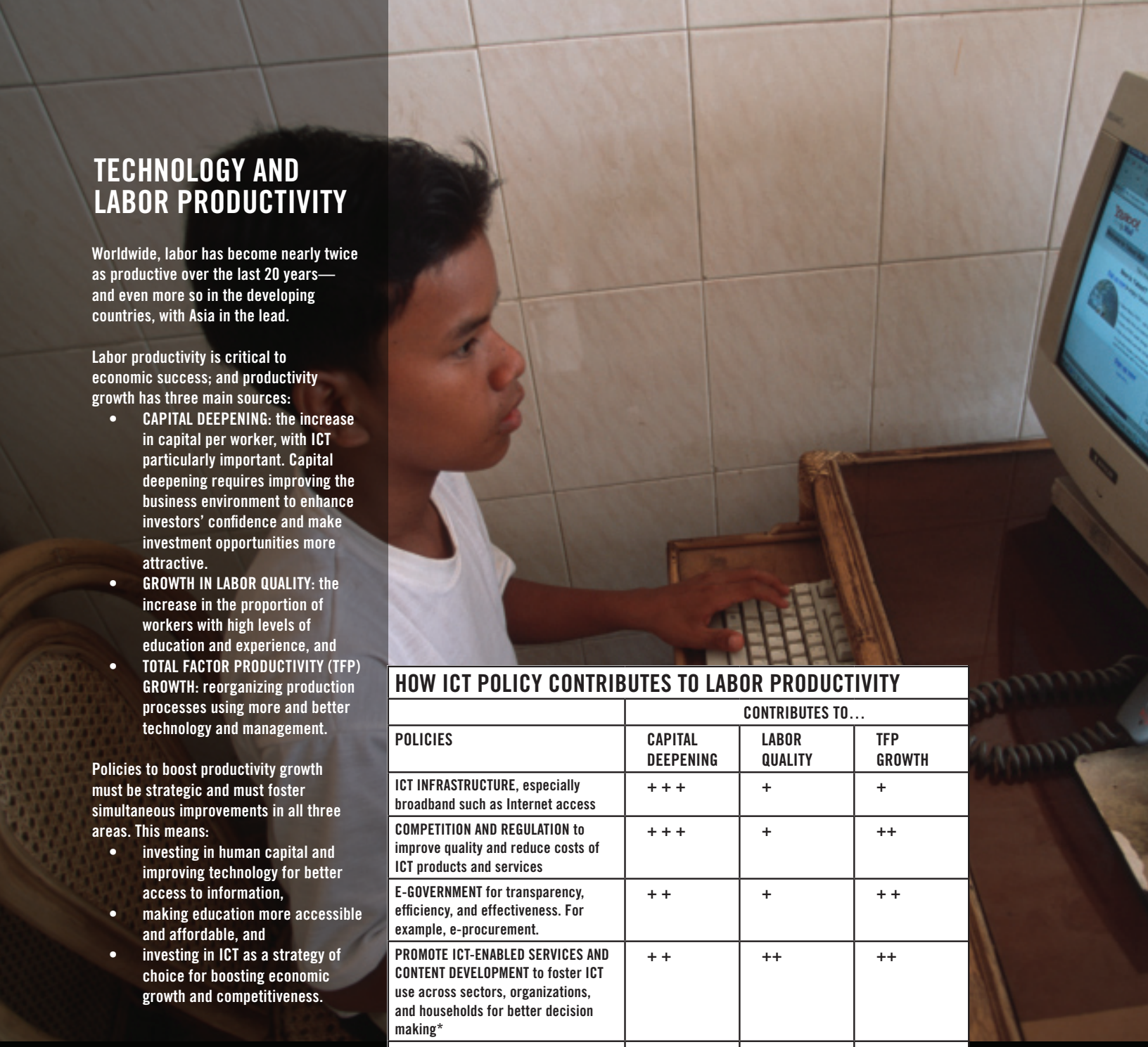

TECHNOLOGY AND LABOR PRODUCTIVITY

Worldwide, labor has become nearly twice as productive over the last 20 years—and even more so in the developing countries, with Asia in the lead.

Labor productivity is critical to economic success; and productivity growth has three main sources:

- CAPITAL DEEPENING: the increase in capital per worker, with ICT particularly important. Capital deepening requires improving the business environment to enhance investors' confidence and make investment opportunities more attractive.
- GROWTH IN LABOR QUALITY: the increase in the proportion of workers with high levels of education and experience, and
- TOTAL FACTOR PRODUCTIVITY (TFP) GROWTH: reorganizing production processes using more and better technology and management.

Policies to boost productivity growth must be strategic and must foster simultaneous improvements in all three areas. This means:

- investing in human capital and improving technology for better access to information,
- making education more accessible and affordable, and
- investing in ICT as a strategy of choice for boosting economic growth and competitiveness.

HOW ICT POLICY CONTRIBUTES TO LABOR PRODUCTIVITY

	CONTRIBUTES TO…		
POLICIES	CAPITAL DEEPENING	LABOR QUALITY	TFP GROWTH
ICT INFRASTRUCTURE, especially broadband such as Internet access	+ + +	+	+
COMPETITION AND REGULATION to improve quality and reduce costs of ICT products and services	+ + +	+	++
E-GOVERNMENT for transparency, efficiency, and effectiveness. For example, e-procurement.	+ +	+	+ +
PROMOTE ICT-ENABLED SERVICES AND CONTENT DEVELOPMENT to foster ICT use across sectors, organizations, and households for better decision making*	+ +	++	++
PROMOTE ICT-ENABLED SERVICES AND CONTENT DEVELOPMENT to foster technology diffusion to business*	++	+	+ + +
ICT FOR EDUCATION such as online courses and other distance learning	+	+ + +	+
EDUCATION FOR IT DEVELOPMENT AND MAINTENANCE	+ +	+ +	

Source: Dale Jorgenson and Khuong Vu (2010). "Potential Growth of the World Economy." Journal of Policy Modeling, 32: 615–631.

* Government ICT policy should follow market principles and encourage the participation of the private sector as much as possible. Enhancing the benefits that users can reap from ICT-enabled services and products is more effective than providing them with subsidies.

Note: Most of the policy options are adapted from OECD (2008). The authors use the "+" sign to express their own judgment of the expected effect of each policy option:

+ + + = strong effect
+ + = significant effect
+ = some effect