

Short Essay/Concept Note on

**Information, Assessment and the Quality of Education  
around the World in a Changing Global Labor  
Market: Making More People Winners**

by

Jere R. Behrman and Nancy Birdsall\*

Prepared for the Global Citizens Foundation

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## **Introduction:**

Over the past half century or so large increases in public investments in child health and schooling across the developing world have contributed to dramatic declines in infant and child mortality, substantial increases in preschool enrollments and in near-complete enrollment of children in primary schooling. These investments have been widely politically supported in virtually all countries, even the poorest; domestic spending on health and schooling now averages about 20 percent of governmental revenue in low- and middle-income countries.<sup>1</sup>

But over the last decade, evidence has accumulated of dramatically lower levels of learning for the same grade in school in low- and even middle-income countries compared to high-income countries, and within developing countries between children from higher-income compared to poorer families. Also children start school systematically less prepared on average in poor households and countries than in higher-income households and countries. These variations suggest the logic and potential for greater emphasis in developing countries on improving the quality, not just increasing the quantity of school, and greater emphasis on familial and public investments in early child development of all kinds.

However, emphasis on the quality of schooling and of pre-school child investments does not currently command the kind of popular political support within countries and on the part of donors as did and does investment in basic health and schooling infrastructure and systems. The academic research community and education and child development experts are aware of the potential high returns to greater pre-school investments in children and to school system reforms to increase learning. But legislators and schooling officials of national and local governments in developing countries do not seem to be aware of unexploited returns, nor are apparently many parents and other citizens in both developing and donor countries.

Existing studies suggest there is considerable potential through higher-quality education to improve children's and families' well-being in the short run and ultimately to increase growth and reduce inequities within and across countries. In this note we assume that citizens' lack of information on the low quality of preschools and schools is a barrier to their own household investments in children and to their political support for greater and smarter public investments in early child development and in better school systems. We propose that the Global Citizens Foundation sponsor a contest and select from entries the three best ideas for increasing popular understanding of the unexploited options for smarter investments in children – especially popular understanding on the part of citizens and the political leadership in developing countries, but also understanding in the broader community of global citizens around the world concerned with a more fair and prosperous global system.

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<sup>1</sup> Combined public spending on education (as a percentage of total governmental expenditure) and public health expenditure (as a percentage of total governmental expenditure). World Development Indicators, World Bank (2014).

## 1. A Critical Issue: Schooling without much Learning

Schooling enrollments and attainments globally have increased enormously in the past half century, which is all the more impressive because of the simultaneous unprecedented increase in human population. Between 1970 and 2000, for example, world population increased by 64%, but the numbers of individuals in the 15-64 age range with no schooling declined in numbers and declined substantially as a share of the adult population, those with primary schooling increased significantly in numbers but declined notably as a share of the adult population, and those with secondary and tertiary schooling increased substantially in numbers and even more as shares in the world adult population (Figure 1, Behrman and Kohler (2014)). To put these increases in schooling attainment into further perspective, Pritchett (2013a, b)

notes that “the average adult in the developing world today receives more schooling than the average adult in advanced countries did in 1960.” Projections are for ongoing increases in schooling in coming decades (KC et al. (2010); Lutz and KC (2011)).

Though schooling attainment differentials have declined on average across countries and within countries, substantial differences in education in terms of what people have learned persist. For international comparisons, the most influential assessment of educational performance is the Organization of Economic Cooperation (OECD) Programme for International Student Assessment (PISA), which “assesses the extent to which 15-year-old students have acquired key knowledge and skills that are essential for full participation in modern societies. The assessment, which focuses on reading, mathematics, science and problem-solving, does not just ascertain whether students can reproduce what they have learned; it also examines how well they can extrapolate from what they have learned and apply that knowledge in unfamiliar settings, both in and outside of school. This approach reflects the fact that modern societies reward individuals not for what they know, but for what they can do with what they know” (OECD (2014), p. 4). While PISA

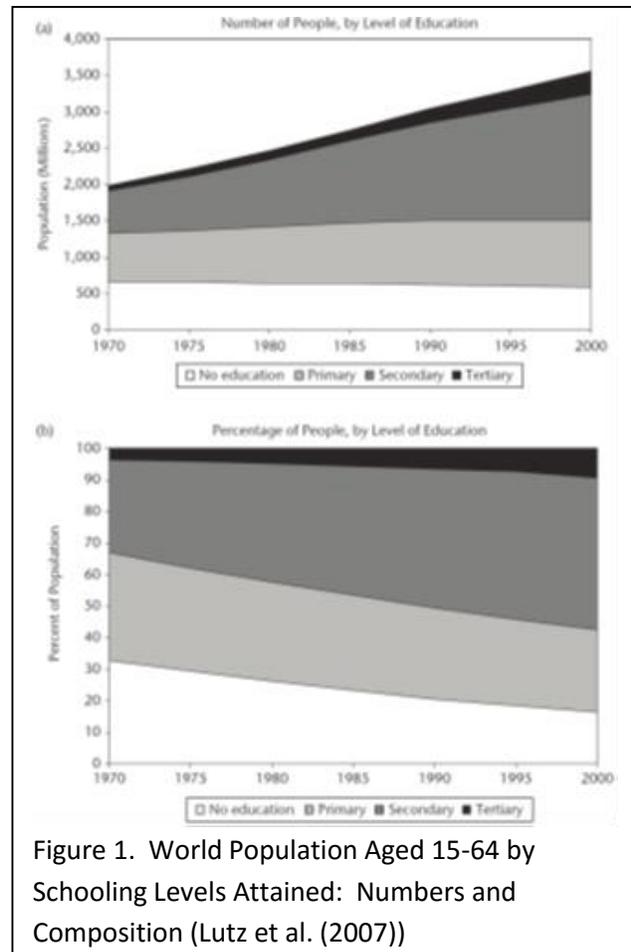


Figure 1. World Population Aged 15-64 by Schooling Levels Attained: Numbers and Composition (Lutz et al. (2007))

does not cover all dimensions of education,<sup>2</sup> PISA does cover some of what are widely thought to be very important indicators of education for global citizens in the 21<sup>st</sup> century.

The latest available PISA scores are for 2012 (OECD (2014)). The PISA 2012 survey focused on mathematics, with reading, science, financial literacy and problem-solving also among the areas of assessment. All 34 OECD member countries and 31 partner countries and economies participated, with about 510 000 students between the ages of 15 years 3 months and 16 years 2 months, representing about 28 million 15-year-olds in the schools of the 65 participating countries and economies.

Table 1 summarizes the mean 2012 PISA scores and the annualized changes since the earliest PISA available for each country, by countries listed in order of their mean mathematics scores, for mathematics, reading and science (for mathematics the shares of low and high achievers are also given). For all three subject areas, the mean scores indicate substantial variation across countries. With a few notable exceptions (e.g., Shanghai-China, Vietnam), the middle-income countries that participated in the 2012 PISA, are concentrated in the lower part of the distribution, generally with mean scores that are low compared to the distribution of most OECD country scores and quite low compared to the scores for countries near the top of the rankings. While for some middle-income countries there appears to be some convergence in test scores towards the OECD averages, in most of these cases the convergence is not that rapid – and for many middle-income countries there is no evidence of significant convergences.

[Table 1 about here.]

No countries currently classified by the World Bank as low-income countries participated in the 2012 PISA, and relatively few middle-income countries have done so: not for example Bangladesh, Egypt, Ethiopia, Ghana, India, Kenya, Nigeria, or Pakistan.. But it would not be surprising if most other low- and middle-income developing countries would have performed as or more poorly on learning outcomes of school attendees than the participating middle-income countries.<sup>3</sup> Literacy and numeracy results from 15 participating countries in the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) are suggestive. The SACMEQ reading and mathematics tests measure students' ability at the end of their primary

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<sup>2</sup> For example, they do not cover socio-emotional skills, executive function and other skills that recently have been emphasized substantially in the economics literature (in some cases in that literature lumped together under the rubric of “non-cognitive skills” though psychologists suggest that they are multi-faceted and relate to cognition). Some prominent examples are Cunha and Heckman (2008a); Cunha et al. (2010).

<sup>3</sup> Vietnam, a low-income country in 2012, is a notable exception – both in administering the PISA, and in its good performance (Table 1).

education, usually equivalent to six years (referred to as ‘Standard 6’ in most SACMEQ participating countries) across eight competence levels. Students who score below level 3<sup>4</sup> in reading or mathematics can be considered functionally illiterate and functionally innumerate, respectively.

**Table 2. Proportion of students with complete primary education below basic mathematics and reading competency thresholds, select SACMEQ III (2007) participating countries**

<b>Country</b>	<b>Mathematics competence: Functionally innumerate</b>	<b>Reading competence: Functionally illiterate</b>
Botswana	22%	11%
Kenya	11%	8%
Lesotho	42%	21%
Malawi	60%	37%
Namibia	48%	14%
South Africa	40%	27%
Swaziland	9%	1%
Tanzania	13%	4%
Uganda	39%	20%
Zambia	67%	44%
Zimbabwe	27%	19%

*Sources: Spaul (2012); SACMEQ (2011).*

A similar assessment of students in 13 countries in Francophone West Africa, named PASEC (Programme d’Analyse des Systemes Educatifs de la CONFEMEN), also shows large and worrying gaps in students’ knowledge after five years of schooling. Over one half of students fail to achieve basic competency in mathematics in Ivory Coast, Chad, Comoros and the DRC after completing fifth grade. Results are even lower for reading and understanding spoken French.

Finally, Early Grade Reading Assessments (sponsored by USAID and other donors) in such countries as Haiti, Uganda, and Mali, in which students in grade 2 or grade 3 are tested, indicate that more than 50 percent of pupils do not recognize simple words (Gove and Cvelich (2011)). Pritchett (2013a) uses similar data on reading and mathematics from non-universal tests in countries including Pakistan and India to show, moreover, that students who have not mastered simple competencies in the early grades have limited incremental learning in subsequent grades; they have surprisingly flat “grade learning profiles” as they spend more time in school.

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<sup>4</sup> Below ‘basic reading’ competency in the reading test, described as “interprets meaning (by matching words and phrases, completing sentences) in a short and simple text” and below ‘basic numeracy’ in the mathematics test, described as “translates verbal information into arithmetic operations”.

**In short**, schooling enrollment and attendance are converging across and within countries, especially at primary level, but big differentials in education – what people know on completion of primary school—are large between most developed and developing countries (and within developing countries too between the great majority of children and a relatively small elite). This is not a contradiction: schooling is NOT the same as education, if by education is meant the process of learning. (Pritchett (2013a) effectively summarizes this point in the sub-title of his book on “...*Schooling Ain't Learning*”). Schooling refers to the time spent in educational institutions, but time in such institutions is only one input into learning (Behrman and Birdsall (1983); Pritchett (2013a), b)).

## 2. Two Likely Determinants of Poor Learning

Primary emphasis on what underlies these differences in educational outcomes across countries, as well as within countries, is a broad category of schooling inputs pertaining to the *quality of schooling* that is, the multiple dimensions of schools that affect what is learned, conditional on time spent in these institutions. Both on national and international levels, school quality varies substantially and a number of influential commentators on such educational differences as are reflected in the PISA scores

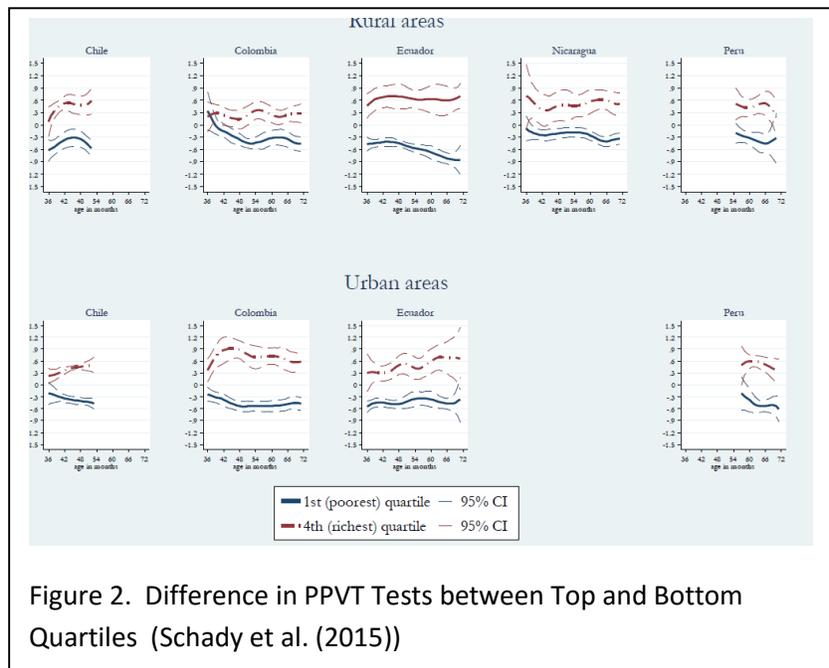


Figure 2. Difference in PPVT Tests between Top and Bottom Quartiles (Schady et al. (2015))

attribute these educational differences primarily to differentials in schooling quality (e.g., Banerji et al. (2013); Glewwe (2014); Hanushek and Woessmann (2008), (2012); Pritchett (2013a)). Furthermore, within simple models of schooling investments, better schooling quality induces greater schooling quantity, so if there is not control for schooling quality in empirical estimates, part of the estimated returns to schooling quantity are the correlated effects of schooling quality – thus leading to overestimates of the impact of improving schooling quality (Behrman and Birdsall (1983)). We suspect that differences in school quality are an important part of the explanation of educational differences across and within countries.

But we do not think that such differences in schooling quality are the only important explanation. An additional important set of other inputs into producing education pertain to *what is invested in children before they enter school*. Evidence has been increasing rapidly, for example, about

the importance in learning of what happens before children enter school, both at home and in programs such as preschools (Engle et al. (2007); Engle et al. (2011); Heckman (2008), (2006); Maluccio et al. (2009)). For the relatively few developing countries for which data are available, there are important differences in cognitive skills between low- and high-wealth families well before entering school (Figure 2 gives some examples) and the distribution of performance on cognitive tests developed for use in developed countries is much to the left of the distributions found for developed countries.

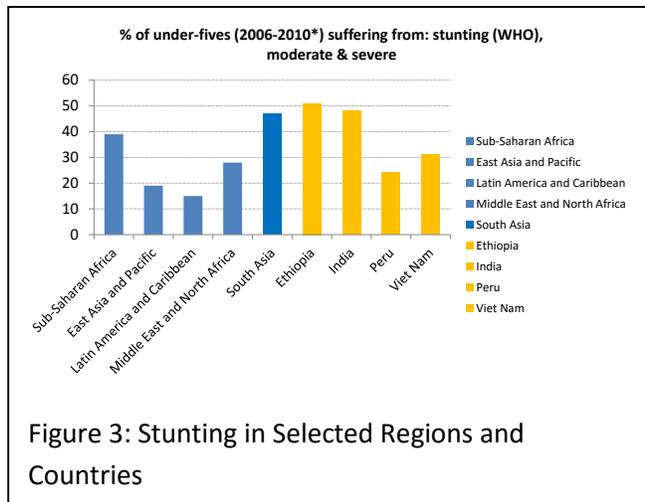


Figure 3: Stunting in Selected Regions and Countries

Not only do such patterns continue into school ages, but if dynamic complementarities are important as emphasized in the recent economic literature (e.g., Cunha et al. (2006); Cunha, et al. (2010)), they induce further school-age investments in children that reinforce such differentials. We expect that such patterns in preschool cognitive achievement are common in many developing countries, in part because of the patterns in two important indicators of investments in children before they enter school.

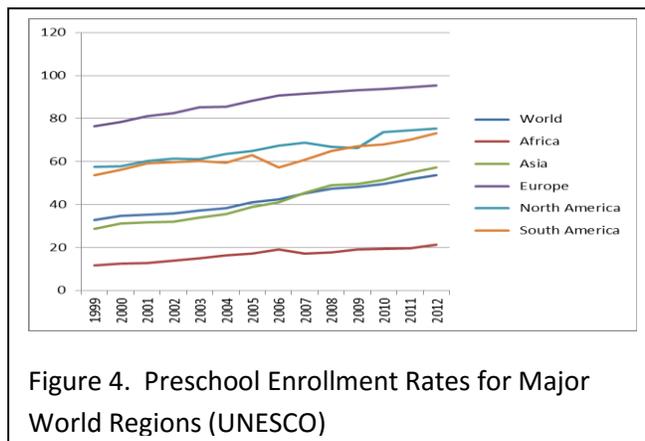


Figure 4. Preschool Enrollment Rates for Major World Regions (UNESCO)

First, stunting rates for children under 5 years of age are high in many developing countries, particularly in South Asia and sub-Saharan Africa (Figure 3) – and early-life growth faltering is associated with malnutrition and infectious diseases that also affect neurologic developments during critical early life periods (Victora et al. (2008); Victora et al. (2010)). Note that the standards used to estimate these stunting rates are standards that were developed on the bases of well-nourished children in six diverse countries (Brazil, Ghana, India, Norway, Oman, and the United States) and for these well-nourished children there are not significant differences in the distributions of height-for-age across a range of different populations and countries (WHO (2006)). Second, though primary schooling rates in developing countries are comparable to those in developed countries, preschool enrollment rates are significantly below European levels, particularly for Africa (Figure 4) and there are considerable income-related variations within countries (Engle, et al. (2011)).

### 3. The Possible Role of Better Information for More Citizens

There are many factors that may affect both school quality and policy-related investments in children before they enter school. Members of a Center for Global Development Study Group on Learning chaired by Banerji and Pritchett (Banerji, et al. (2013)) proposed increased focus of

countries and the international community on assessment regimes at all levels, on the grounds that large differences in learning within and across countries persist in part because current assessment regimes fail to allow comparisons across schools, districts, and countries, and over time within schools, districts and countries. Assessments that were systematized and expanded would provide parents, the media, civil society and public officials a sense of the nature and magnitude of learning failures in their schools.

We think that this is a promising possibility worthy of testing and exploration from the point of view of the Global Citizens Foundation. We add that in addition to more systematic assessment and dissemination of information on schooling quality, there should also be better information on programs and norms for the preschool ages.

An important component of this claim is that most global citizens do not have very accurate information about quality deficits or possible standards and therefore do not demand sufficiently high investments in their children. Casual observations suggest, for example, that the reference group for quality comparisons for all but the elite often is very localized and not a broader international group. For parents in many areas of South Asia and sub-Saharan Africa, for example, reference groups are often very local. Their children mostly have experienced some degree of growth faltering, have limited or low-quality options for preschool programs, have low-quality schooling options, and are in environments in which the returns to human capital investments in previous generations have been limited. That means that their children are like the other children in their communities, facing options that appear normal within such communities. In such contexts it is hard to conceive that normal healthy growth by international standards and preschools and schools of the quality of those in the countries in the top group of the PISA scores are possibilities. Interestingly, the OECD (2014) suggests that the PISA tests have the potential to play the role of revealing what possibilities are:

“PISA results reveal what is possible in education by showing what students in the highest-performing and most rapidly improving education systems can do. The findings allow policy makers around the world to gauge the knowledge and skills of students in their own countries in comparison with those in other countries, set policy targets against measurable goals achieved by other education systems, and learn from policies and practices applied elsewhere.” (p. 4)

We perceive that the PISA tests have served this purpose to a limited degree to date. They have served to make a certain community aware of international differences in the dimensions of education that are covered by these tests and of the real possibilities that have been attained in the “high-flying” countries. However we perceive that this is a limited group of individuals who are relatively well-linked into the global community and evidence of the large ‘closeable’ gaps in educational attainment between countries has had limited impact on domestic policymakers. In the

US, for example, evidence emerged several decades ago that the pre-school HeadStart program targeted to poor children has high economic and social returns, with beneficiaries more likely to complete secondary school and less likely to commit crimes (Garces et al. (2002)). Yet only recently has there been a proposal for universal pre-K programs (from the Obama Administration) and the idea has not gathered any political momentum. Similarly, relatively poor test outcomes in the US (based on PISA math scores, where the US is below the average for all countries: Table 1) are rarely referred to in the context of contentions debate about schooling in the United States. It may be that to the extent lower averages reflect racial and ethnic gaps, higher-income citizens who might be more influential in policy decisions assume their own children are insulated from the shortcomings by good pre-school private care and attendance at good public schools in high-income neighborhoods or high-quality private schools. That reaction may also reflect a lack of any technical evidence or policy consensus on how to fix the “system” overall.

In developing countries, and especially, we suspect, in those that are “low-income” compared to “middle income,”<sup>5</sup> where learning outcomes are on average much worse, we perceive - if anything - even less awareness of learning outcomes in schools and of the importance of pre-school child development to school success. The experience with citizen-led (as opposed to government-sponsored) assessments in India and Tanzania, as far as we know the first of their kind anywhere in the world, is illustrative. The Annual Status of Education Report (ASER) is an assessment program of the NGO Pratham in India; it has administered simple out-of-school reading and math tests to children in villages, with parents and others present, since 2005, covering 600,000 children in 16,000 villages in 2013. Uwezo is a testing initiative run by Twaweza, an NGO based in Tanzania, which has been assessing the basic numeracy and literacy skills of children aged 5 to 16 years since 2009 in Tanzania, Kenya, and Uganda.

Results in both cases have shown poor learning outcomes and have generated considerable discussion in the international education research community. But there is no indication that either is known to or has affected the views of the public at large in the countries themselves. Several randomized control trials suggest that information on poor learning outcomes does not necessarily influence parents’ behavior. A 2014 study examining differences between the behavior of parents in Uwezo-tested households and those in non-tested ones in Kenya found no impact on parents’ involvement in their children’s education as a result of being given detailed information about their performance on literacy and numeracy tests (Lieberman et al. (2014)). In the case of ASER, the Pratham leadership is now working with school system officials in Bihar to complete in-school assessments of grades 2, 4, and 6 to improve teaching methods and learning outcomes. But India as a country is far from any large-scale reform program to deal with its weak schooling system. In the case of Uwezo, the former head of the sponsoring NGO, Twaweza, believes the testing played some role in leading the national government to choose education as one sector for its “Big Results Now” campaign launched in 2013. At the same time, he also notes that other factors were at least

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<sup>5</sup> World Bank Classifications

as important, including local press attention to an unusually high failure rate in the well-known secondary school admissions test in a year when the test was made more systematic, followed by a potentially controversial commission report the results of which have not been made public. At the policy level, dismal results for Tanzania of an internationally-sponsored Service Delivery Indicators project may also have played a role. Teachers were found to spend only as little as an hour and a half on teaching, while one in four were absent from the school as a whole. Close to two-thirds of teachers didn't meet the minimum knowledge requirements to teach basic reading, writing and arithmetic skills.<sup>6</sup>

In summary, we perceive that poor results on learning assessments of children given their time in school, especially but not only in developing countries, have not permeated broadly to the consciousness among most citizens of the countries where they have taken place, nor of global citizens more generally. Though they have informed the international research community and the policy elites in some countries, they have not added to broad pressures for attaining what is possible for education generally in developing countries.

#### **4. Might the Global Citizens Foundation Contribute to Improving Education for Global Citizens through Improving Assessments of Relevant Options?**

In short, we hypothesize that most global citizens, particularly poorer ones, are not aware of the potential high returns of their own and their societies' investments in their children. If this is the case, then a fundamental question about possible GCF contributions pertains to how the GCF might help to empower citizens broadly by improving information about such potentialities for their children.

*Improving information of global citizens about current investments in their children and about the expected returns to such investments:* There are at least four types of information about investments in their children about which most global citizens usefully might be better informed:

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<sup>6</sup> For more details, see Service Delivery Indicators (World Bank) website: <http://www.sdindicators.org/tanzania-education/>.

(1) *Standards or norms for healthy child development:* By healthy child development we mean a holistic multidimensional concept of child development throughout childhood, including physical, cognitive, socioemotional and executive function developments.

Currently, for most global citizens, awareness of norms for physical development may be most widely known among the various dimensions of

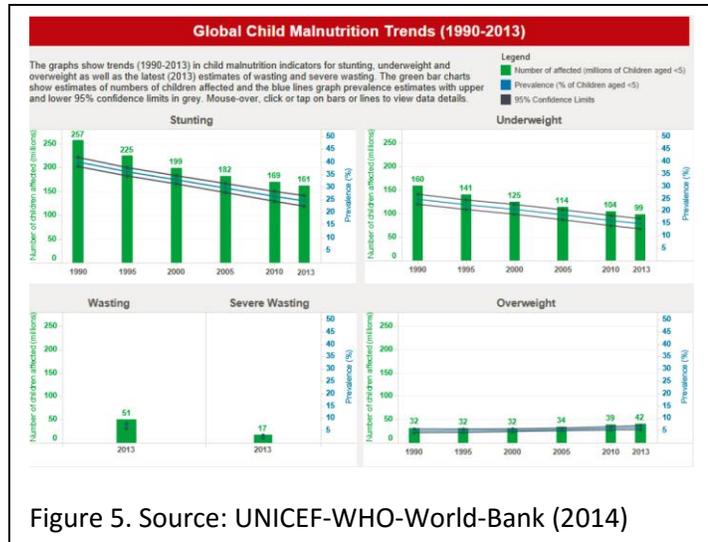


Figure 5. Source: UNICEF-WHO-World-Bank (2014)

child development because of the promotion of the use of growth curves by many Ministries of Health and by international organizations such as UNICEF-WHO-World-Bank (2014). On the aggregate level these seem to lead to knowledge, at least in Health Ministries, of general patterns of nutritional deficits (Figure 5), with more detailed country or subcountry information recently provided in dashboards on the international organization websites. On a much more micro level such national and international organizations for some time have attempted to disseminate such information by using growth charts for recording regularly for individual children in local health clinics how they are growing relative to standards for well-nourished children based on WHO (2006). Figure 6 gives an example for length/height-for-age for girls; such charts are also provided for weight-for-age and body mass indices (BMI) (and, of course, for boys). That there is fairly extensive experience with child growth charts raises a set of important questions regarding how effective such provision of information to global citizens broadly has been in altering both familial and public sector investments in child growth because of better information on what are norms for well-nourished children? And under what conditions is the provision of such information effective? Under what conditions have global citizens been able to act themselves on the bases of such information and under what conditions have they been able to pressure effectively for better public-sector incentives and provision of services to improve child growth?

For other dimensions of child development the information basis on which global citizens have to act

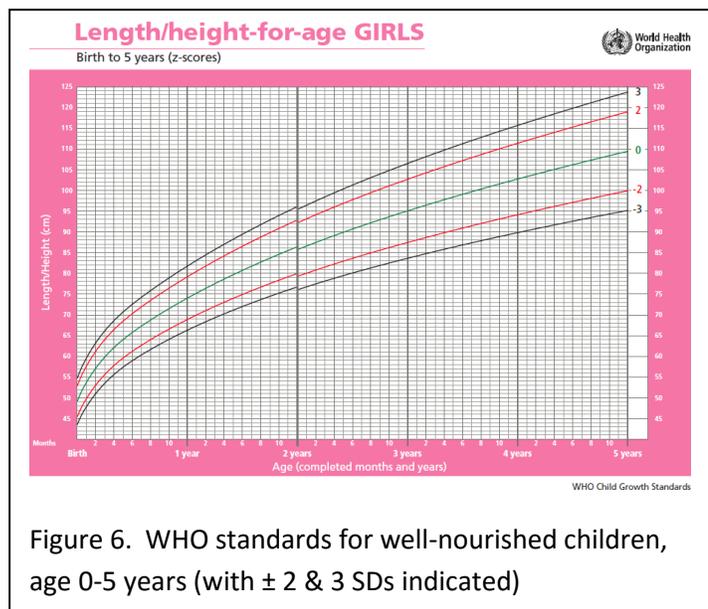


Figure 6. WHO standards for well-nourished children, age 0-5 years (with  $\pm 2$  &  $3$  SDs indicated)

regarding appropriate norms appears much less adequate than for child growth. Probably second to child growth is child cognitive achievement. For a subset of countries, as noted above, in recent years PISA scores provide the basis for some valuable international comparisons. But these scores have a number of limitations. They are for 15 year olds, and do not permit comparisons during important formative years earlier in the life cycle nor for older students who are engaged in tertiary education. They also are available only for selected countries, not including any low-income countries or many middle-income countries. Their implications, finally, seem to date to have mostly penetrated primarily to small proportions of populations that are relatively integrated into international networks. This limited effect raises questions about how to make global citizens more broadly aware of these international standards for cognitive achievement. Beyond the PISA scores, there are a few scattered efforts of which we are aware to make citizens more aware of how their children are performing on cognitive tests in comparison with other children throughout the same country, and what are the average performances of children in various schools through online provision of information about the distribution of scores on standardized tests (e.g., Chile, Mexico). We are aware, however, of only very limited efforts to assess whether such information has affected citizen behavior directly or through political processes in ways that are likely to improve educational performance. Encouraging such efforts might have substantial payoffs in terms of learning to what degree global citizens might be more empowered through better information about what are standard for cognitive skills within their own countries, with possible implications for learning about international standards.

Dimensions of child development in addition to cognitive skills – such as socioemotional development, executive function and grit – have received considerable emphasis in the recent economics literature (and probably longer in the psychological literature), with Nobel Laureate James J. Heckman being perhaps the most visible and influential economist regarding the importance of these dimensions (Cunha and Heckman (2008b); Cunha, et al. (2006); Heckman et al. (2006); Heckman and Rubinstein (2001)). However there are currently huge information gaps regarding the measurement of such dimensions of child development across varied international contexts and their roles in terms of education and adult productivity in varied international contexts. Therefore probably only a very small proportion of global citizens are aware that some prominent economists claim that at least in some developed country contexts investments in these dimensions of children are critical for education and productivity, possibly more critical than investments to increase cognitive skills. Thus there is substantial potential for learning first of all the basic facts about the roles of these dimensions of child development and then in assuring that such learning is widespread among global citizens.

(2) *Access to services related to human capital investments in their children:*

Though access to basic schooling and lower secondary schooling has expanded substantially with significant convergence among world regions, as noted in the introduction, there are some important differences in use of services related to education that in a number of cases appear to be related to limited access. Some examples follow: The proportion of pregnant women in low- and middle-income countries who had at least four prenatal care visits increased from approximately 37% in 1990 to about 50% in 2011, still leaving about half of pregnant women in developing countries not receiving the WHO (2014) recommended minimum of at least four prenatal care visits. The proportion of preschool-aged children enrolled in preschool globally is a little over half, with wide variation across regions -- e.g., rates over four times as high in Europe as in Africa (Figure 4). Though out-of-school rates for primary-school-aged children have dropped substantially in low- and middle-income countries since 1990, in recent years they have tended to stabilize and in 2012 they still were estimated to be 16.5% for low-income countries, 9.8% for lower middle-income countries, and 7.8% for upper middle-income countries (Figure 7) and to include over 57.8 million children globally, somewhat more girls than boys. The patterns for lower-secondary-school age children are similar, but with substantially higher rates (Figure 8). Thus it would be premature to declare victory in enrolling children in basic schooling. To the contrary, though enrollment rates have increased dramatically in recent decades and out-of-school rates have dropped substantially, the latter still remain high and seem to have stagnated for primary-school-age children. For schooling, thus, as for other services related to educational performance of children, such as prenatal care and preschool that are discussed above, there are questions of whether global citizens are not being well-served in part because of inadequate information -- and/or inadequate voice to pressure for change -- about inadequate access to important education-related services from conception through the schooling years. From the point of view of many global citizens,

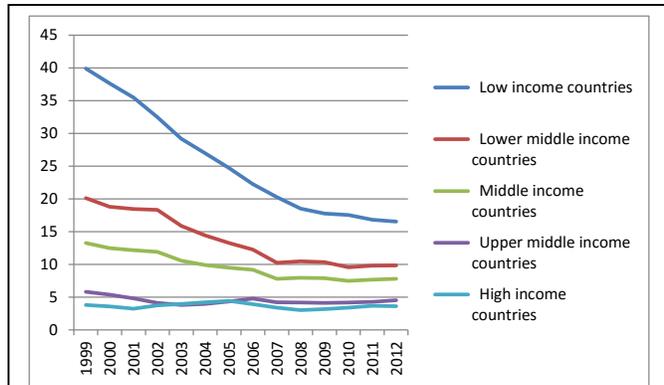


Figure 7. Out-of-school rates for primary-school age children (data extracted on 05 Oct 2014 from <http://www.uis.unesco.org>)

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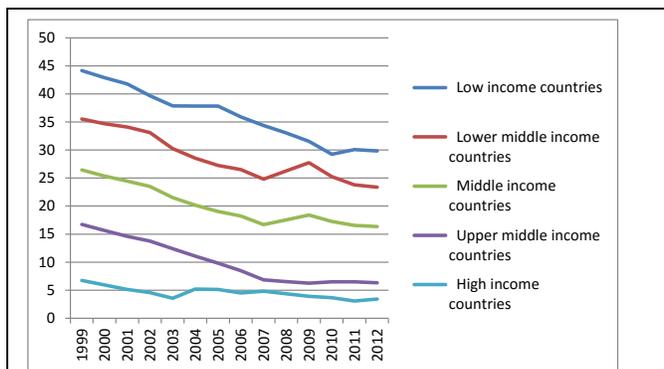


Figure 8. Out-of-school rates for lower-secondary-school aged children (data extracted on 05 Oct 2014 from <http://www.uis.unesco.org>)

particularly poorer ones, limited access to services related to education may be viewed as the norm.

(3) *Quality of services related to human capital investments in their children:* A predominant theme in critiques of institutions providing services from conception through school ages is that the quality of such services is heterogeneous and generally very poor for most global citizens. As noted above, some, such as Banerji, et al. (2013); Pritchett (2013a), attribute all, or almost all, of the gaps between education obtained by most global citizens and the “high fliers” on comparable tests such as provided by PISA to be a reflection of poor schooling quality for most of the world’s children. But, as we note above, substantial educational gaps exist both within countries and across countries prior to entering school – and concerns about poor quality are widespread for the institutions serving children before they enter school and well as in the schools. A basic conjecture of this essay, and related to a similar conjecture for schools (e.g., Banerji, et al. (2013); Pritchett (2013a)), is that poor quality in the provision of services for relevant service providers before entering school as well as in school is due in important part to most global citizens, who (or whose children) are the clients for such services, having too pessimistic perceptions of what is possible for their children and thereby demanding too low quality from service providers. The provision of information about what is possible for the development of their children, along the lines discussed in point 2 above, is expected to increase global citizens’ demands for greater access (point 3) and higher quality. But how this might work in various contexts is a challenge that this essay poses.

(4) *Returns or impacts of human capital investments in their children:* A possibly related point is that global citizens do not think about quality in terms of what is likely to be long-run returns to children over the decades in the future when their children will be in engaged in adult production of various sorts including at home and in labor markets, but in terms of other goals such as children’s behaviors while they are children. Furthermore quality may be benchmarked by current and past labor markets, not how labor activities are likely to evolve over the next half century. And what can be said credibly about future labor productivity developments? On a priori grounds information is a public good that is not likely to be provided sufficiently. In addition there is some evidence that providing information about the rates of return to schooling quantity has impact on schooling attainment (Jensen and Lleras-Muney (2012)) which may carry over to information about quality. However past experience suggests that usually most governments have not been all that good about predicting future global labor market developments, and any particular specific training that is likely to have high returns. Therefore perhaps the most useful information that can help global citizens have better expectations about future returns to human capital investments in their children is better understanding of developments in the most dynamic parts of the world.

## **5. Why and How Might Information for Citizens Make a Difference?**

There are examples of success in linking poor learning outcomes to school system changes – including in Brazil, which conducted sample-based student assessments since the mid-1990s, and which in 2005 instituted universal testing in grades 4 and 8 across all states (Bruns et al. (2012)). On a smaller scale, a randomized control trial conducted in three Indian states found that when parents and community members receive more information about their oversight roles in school management, learning outcomes improved (Pandey et al. (2009)). But, as suggested above, what little evidence we have suggests limited if any links between information about poor health/nutrition or poor learning for given schooling on increased public awareness, nor of evidence linking increased public awareness to early childhood development programs or to school system reforms.

We have in mind a simple framework for how a vector of better information (“beliefs”) held by households ( $B^h$ ) or by whomever determines the nature of related public or private services (health, nutrition, preschool, school-related, tutoring) ( $B^s$ ) affects child human capital development ( $H^c$ ), a matrix of age-related indicators of the multiple dimensions of capital (e.g., cognitive skills, socio-emotional skills, health and nutritional status). First,  $H^c$  depends on a vector of direct investments by the household in the child’s human capital, including quantity and quality components ( $I^h$ ) and of direct investments by service providers in the child’s human capital, including quantity and quality components ( $I^s$ ), controlling for a vector of any other factors ( $X^h$ ) that do not work exclusively through  $I^h$  and  $I^s$  (e.g., parenting abilities, innate child abilities) and a vector of stochastic factors ( $e^h$ ) such as weather variations:

$$(1) H^c = H^c(I^h, I^s, X^h, e^h).$$

Second, the vector of direct investments by the household in the child’s human capital, including quantity and quality components ( $I^h$ ), depends on parental (household) beliefs ( $B^h$ ) regarding the costs and returns to these investments, as well as a vector of any other factors ( $X^{ih}$ ) that do not work exclusively through  $B^h$  and a vector of stochastic factors  $e^{ih}$ :

$$(2) I^h = I^h(B^h, X^{ih}, e^{ih}).$$

Third, the vector of direct investments by service-providers in the child’s human capital, including quantity and quality components ( $I^s$ ), depends on whomever determines service components beliefs ( $B^s$ ) regarding the costs and returns to these investments and parental (household) beliefs ( $B^h$ ) regarding the costs and returns to these investments, as well as a vector of any other factors ( $X^{is}$ ) that do not work exclusively through  $B^s$  and  $B^h$  and a vector of stochastic factors  $e^{is}$ :

$$(3) I^s = I^s(B^s, B^h, X^{is}, e^{is}).$$

The idea is that the beliefs  $B^s$  of whomever determines directly the characteristics of the service provision affect these service-provider investments ( $I^s$ ), but there also in general are effects of parental (household) beliefs ( $B^h$ ) regarding the costs and returns to these investments that may work through market or political pressures that households can exert on service providers.

While this is a simple formulation that does not explicitly incorporate many complications (e.g., the nature of the dynamic complementarities in relation 1), it does suggest a number of important questions about which current knowledge is at best limited: What determines parental (household) beliefs ( $B^h$ ) regarding the costs and returns to these investments in children? What determines service-provider beliefs ( $B^s$ ) regarding the costs and returns to these investments in children? To what extent do these beliefs interact by one determining the other? What roles do measuring human-capital outcomes in comparison with potentials through indicators such as growth curves or test results affect such beliefs? How much impact do parental (household) beliefs ( $B^h$ ) regarding the costs and returns to these investments in children have on the household investments in children ( $I^h$ )? How much impact do beliefs of whomever determines supply-side factors ( $B^s$ ) regarding the costs and returns to these investments in children have on supply-side investments in children ( $I^s$ )? How much impact do parental (household) beliefs ( $B^h$ ) regarding the costs and returns to these investments in children have on the supply-side investments in children ( $I^s$ )? How do all these relations differ across contexts and what are the important dimensions of contexts? In what circumstances might greater awareness of a child human capital development crisis on the part of country and global citizens make a difference? Are the links among these beliefs and child development less likely to “work” the poorer and less educated a country’s population? Are they more likely to “work” in more inclusive political and social systems?

## **6. A Global Citizen Foundation Challenge for Improving Global Citizens’ Information about What is Possible for Their Children Based on a Broad Perspective and Thus Their Capacities for Assessing Their Current Options and How They Might Be Improved:**

We propose that the Global Citizens Foundation contribute to improving pre-school and school quality choices for global citizens, in important part through improving assessments of providers of services for child development from conception through the school years, by conducting a tournament to select the three best ideas for improving related choices of parents, providers, and politicians – all in some sense “global citizens”. We discuss above some dimensions of information limitations that most global citizens have in mind regarding making investments in their children and assessing the related services available to their children that applicants might consider, but stress that there may be many other possibilities that are more promising. We suggest that the applications will have not only a promising idea about improving the relevant information for parents, policymakers and politicians, but will explain how their idea would test directly or indirectly the why/how questions of sections 4 and 5 above, and will set out an evaluation strategy to assessing the merit of the idea in a particular context.

We propose that the applications submitted will be reviewed and ranked by a selection committee of experts in international child development broadly-defined to include multiple dimensions (skills and health/nutritional status) and multiple life-cycle stages (preschool and school ages).



## **Brief Biosketches for Behrman and Birdsall**

**Jere R. Behrman** is the William R. Kenan, Jr. Professor of Economics and Sociology and Population Studies Center Research Associate at the University of Pennsylvania. His research is in empirical microeconomics, economic development; early childhood development; labor economics; human resources (education, training, health, nutrition); economic demography; household behaviors; life-cycle and intergenerational relations; and policy evaluation. He has published more than 370 professional articles and 33 books, been a research consultant with numerous international organizations, conducted research or lectured in more than 40 countries, and served as principal investigator on more than 75 research projects. He is a Fellow of the Econometric Society, a 40th Anniversary Fulbright Fellow, the recipient of the 2008 biennial Carlos Diaz-Alejandro Prize for outstanding research contributions to Latin America, and a member of the U.S. National Institutes of Child Health and Development (NICHD) Advisory Council. He holds an honorary doctorate from the University de Chile and a PhD from MIT. He was Research Project Manager and co-author on two chapters in the Global Citizen Foundation sponsored conference and book on *Towards a Better Global Economy*. Allen et al. (2014) His email address is [jbehrman@econ.upenn.edu](mailto:jbehrman@econ.upenn.edu).

**Nancy Birdsall** is the founding president of the Center for Global Development. Before launching the Center, she served as executive vice president of the Inter-American Development Bank; held research, policy, and management positions at the World Bank, including as director of the Policy Research Department; and served as Senior Associate and Director of the Economic Reform Project at the Carnegie Endowment for International Peace. She is the author, coauthor, or editor of more than a dozen books and many scholarly papers. Her most recent publications include *Cash on Delivery: A New Approach to Foreign Aid* (2010) and *New Ideas on Development after the Financial Crisis* (2011), coedited with Francis Fukuyama. She holds a PhD from Yale University. She was lead author on a chapter in the Global Citizen Foundation sponsored conference and book on *Towards a Better Global Economy*. Allen, et al. (2014) Her email address is [nbirdsall@cgdev.org](mailto:nbirdsall@cgdev.org).

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Table 1. Summary of 2012 PISA Results by Countries in Order of Math Scores (OECD 2014, p. 5)

Snapshot of performance in mathematics, reading and science							
Mathematics				Reading		Science	
Mean score in PISA 2012	Share of low achievers in mathematics (Below Level 2)	Share of top performers in mathematics (Level 5 or 6)	Annualised change in score points	Mean score in PISA 2012	Annualised change in score points	Mean score in PISA 2012	Annualised change in score points
OECD average	23.0	12.6	-0.3	496	0.3	501	0.5
Shanghai-China	3.8	55.4	4.2	570	4.6	580	1.8
Singapore	8.3	40.0	3.8	542	5.4	551	3.3
Hong Kong-China	8.5	33.7	1.3	545	2.3	555	2.1
Chinese Taipei	12.8	37.2	1.7	523	4.5	523	-1.5
Korea	9.1	30.9	1.1	536	0.9	538	2.6
Macao-China	10.8	24.3	1.0	509	0.8	521	1.6
Japan	11.1	23.7	0.4	538	1.5	547	2.6
Liechtenstein	14.1	24.8	0.3	516	1.3	525	0.4
Switzerland	12.4	21.4	0.6	509	1.0	515	0.6
Netherlands	14.8	19.3	-1.6	511	-0.1	522	-0.5
Estonia	10.5	14.6	0.9	516	2.4	541	1.5
Finland	12.3	15.3	-2.8	524	-1.7	545	-3.0
Canada	13.8	16.4	-1.4	523	-0.9	525	-1.5
Poland	14.4	16.7	2.6	518	2.8	526	4.6
Belgium	19.0	19.5	-1.6	509	0.1	505	-0.9
Germany	17.7	17.5	1.4	508	1.8	524	1.4
Viet Nam	14.2	13.3	m	508	m	528	m
Austria	18.7	14.3	0.0	490	-0.2	506	-0.8
Australia	19.7	14.8	-2.2	512	-1.4	521	-0.9
Ireland	16.9	10.7	-0.6	523	-0.9	522	2.3
Slovenia	20.1	13.7	-0.6	481	-2.2	514	-0.8
Denmark	16.8	10.0	-1.8	496	0.1	498	0.4
New Zealand	22.6	15.0	-2.5	512	-1.1	516	-2.5
Czech Republic	21.0	12.9	-2.5	493	-0.5	508	-1.0
France	22.4	12.9	-1.5	505	0.0	499	0.6
United Kingdom	21.8	11.8	-0.3	499	0.7	514	-0.1
Iceland	21.5	11.2	-2.2	483	-1.3	478	-2.0
Latvia	19.9	8.0	0.5	489	1.9	502	2.0
Luxembourg	24.3	11.2	-0.3	488	0.7	491	0.9
Norway	22.3	9.4	-0.3	504	0.1	495	1.3
Portugal	24.9	10.6	2.8	488	1.6	489	2.5
Italy	24.7	9.9	2.7	490	0.5	494	3.0
Spain	23.6	8.0	0.1	488	-0.3	496	1.3
Russian Federation	24.0	7.8	1.1	475	1.1	486	1.0
Slovak Republic	27.5	11.0	-1.4	463	-0.1	471	-2.7
United States	25.8	8.8	0.3	498	-0.3	497	1.4
Lithuania	26.0	8.1	-1.4	477	1.1	496	1.3
Sweden	27.1	8.0	-3.3	483	-2.8	485	-3.1
Hungary	28.1	9.3	-1.3	488	1.0	494	-1.6
Croatia	29.9	7.0	0.6	485	1.2	491	-0.3
Israel	33.5	9.4	4.2	486	3.7	470	2.8
Greece	35.7	3.9	1.1	477	0.5	467	-1.1
Serbia	38.9	4.6	2.2	446	7.6	445	1.5
Turkey	42.0	5.9	3.2	475	4.1	463	6.4
Romania	40.8	3.2	4.9	438	1.1	439	3.4
Cyprus <sup>1,2</sup>	42.0	3.7	m	449	m	438	m
Bulgaria	43.8	4.1	4.2	436	0.4	446	2.0
United Arab Emirates	46.3	3.5	m	442	m	448	m
Kazakhstan	45.2	0.9	9.0	393	0.8	425	8.1
Thailand	49.7	2.6	1.0	441	1.1	444	3.9
Chile	51.5	1.6	1.9	441	3.1	445	1.1
Malaysia	51.8	1.3	8.1	398	-7.8	420	-1.4
Mexico	54.7	0.6	3.1	424	1.1	415	0.9
Montenegro	56.6	1.0	1.7	422	5.0	410	-0.3
Uruguay	55.8	1.4	-1.4	411	-1.8	416	-2.1
Costa Rica	59.9	0.6	-1.2	441	-1.0	429	-0.6
Albania	60.7	0.8	5.6	394	4.1	397	2.2
Brazil	67.1	0.8	4.1	410	1.2	405	2.3
Argentina	66.5	0.3	1.2	396	-1.6	406	2.4
Tunisia	67.7	0.8	3.1	404	3.8	398	2.2
Jordan	68.6	0.6	0.2	399	-0.3	409	-2.1
Colombia	73.8	0.3	1.1	403	3.0	399	1.8
Qatar	69.6	2.0	9.2	388	12.0	384	5.4
Indonesia	75.7	0.3	0.7	396	2.3	382	-1.9
Peru	74.6	0.6	1.0	384	5.2	373	1.3

1. Footnote by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

2. Footnote by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

The annualised change is the average annual change in PISA score points from a country's/economy's earliest participation in PISA to PISA 2012. It is calculated taking into account all of a country's/economy's participation in PISA.

Note: Countries/economies in which the annualised change in performance is statistically significant are marked in bold.

Countries and economies are ranked in descending order of the mean mathematics score in PISA 2012.

Source: OECD, PISA 2012 Database; Tables I.2.1a, I.2.1b, I.2.3a, I.2.3b, I.4.3a, I.4.3b, I.5.3a and I.5.3b.